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February-2019 Special Issue – 133

Agriculture and Rural Development Planning for Drought Prone Areas

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I/c Principal,
Mudhoji College, Phaltan
Dist. Satara [M.S.] India

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INDEX

No.	Title of the Paper	Author's Name	Page No.
1	Strategy and Planning for Drought-Prone Areas of India	Dr. T. P. Shinde & Dr. S. D. Ingale	07
2	"Assessment of Meteorological Drought Intensity in Ahmednagar District"	Mr.Vaibhav Chagan Wardule & Mr.Dhananjay Shivaji Kadam	12
3	Challenges in Agricultural Resource and Rural Development Planning of Satara District: A Geographical Study	Dr. Rathod S.B. & Shri. Kharat D.N. & Prin. Dr. Gholap T.N.	17
4	Agricultural Transformation in Drought Prone Region : A Case Study of Jat Tahsil in Sangli District	Dr. Sachin Hudale	22
5	Changing Cropping Pattern of Satara District Special Reference To Sugarcane Crop	Mr. R. S. Chaure & Dr. H. Y. Karande	25
6	Socio-Economic Status of Milk Producers in Phaltan Tahsil of Satara District	Dr. K. S. Surwase & Dr. S. B. Zodage	30
7	Important Factors for Agro Tourism in India	Mr. Mahadev B. Chavan	35
8	A Study of Prevention and Manegement of Drought in Malshiras Tahsil of Solapur District	Miss. Patil S.S & Shri Nangare M.R.	40
9	Soil Degradation and Its Impact on Agricultural Production in Daund Tahsil of Pune District, Maharashtra	Dr. Durgade D.J.	44
10	Status of Irrigation Intensity in Man River Basin	Mr. B. M. Mali & Dr. K. A. Mali	52
11	Pattern of Water Table in Lower Sina Basin: A Geographical Study	Mr. Amar Wakade & Dr. Arjun Nanaware	59
12	Application of GPS for Field Measurement: A Case Study of Karjat, Tehsil, Ahmednagar, Maharashtra	Dr. Arun B. Patil	64
13	Drought & Drought Management	Pradeep Hanmant Nikam	67
14	A Geographical Study of Landuse Pattern In Karnataka State By	Dr. C.Mallanna & Prof, D.A.Kolhapure & Prof, B.N.Yaligar	71
15	Rainfall Trend in Drought Prone Region of Ahmednagar District of Maharashtra in India: A Geographical Study	Dr. Ramraje Shivajirav Mane-Deshmukh & Mr. Agastirishi Bharat Toradmal	78
16	Cropping Pattern and Agriculture Efficiency of Selective Villages in Mulshi Tahsil of Pune District in Maharashtra, India	Dr. Rajesh Trambak Birajdar & Mr. Sanjay Savalaram Nangare	84
17	The Sustainable Development on Rural Maharashtra With References An Agricultural Sector	Prof. Jawahar. L. Chaudhari	89
18	Rural Development: Concept and Programmes	Dr. Arjun Wagh & Ms. Rani Shinde	95
19	Agriculture and Rural Development Policies: An Overview	Kamble Krushna Shivaji & Waghmare Balaji Bhimrao	101
20	A Case Study: Industrial Development of State Government	Bhosale Varsha Haibati	108
21	Potential of Agro Tourism Around Baramati City	Mr.V.H.Madane & Dr.H.Y.Karande	122
22	Ethics of Agriculture	Mr. Tilekar Vilas Pandurang	125
23	A Geographical Study of Social Status of Quarry Workers in Darewadi Quarry Area In Kolhapur District (M. S.)	Dr Suresh Genurao Salve	127

24	Developing Facilities Provided By Sahyadri Co-Operative Sugar Factory, Yashwantnagar, Karad for The Rural Development **Miss.Nilam Pujari & Miss. Bhagyashree Powar & Mrs. Pushpalata Ghadage & Dr. Sunita. M. Chavan**	131
25	Study on The Saturation Index of The Carbonates in The Groundwater By Using Lsi and Ri Index in The Villages of Phaltan Teshil **Mr. Kalebere R.S & Dr. Acharya A.P.**	136
26	"Spatial Variation in Rural-Urban Sex Ratio of Solapur District (2001-2011)" **Dr.S.N.GUJAR**	142
27	Baromas by Dr. Sadanand Deshmukh As A Mirror to the Rural and Agricultural Life in India. **Mr. Shinde Ashok Krishna**	147
28	Scenario of Country Cow's in Satara District: A Spatio-Temporal Analysis **Mr. Popat S. Shende & Dr. Subhash S. Kothawale**	152
29	An Economic Study of Banana Farming in Jalgaon District **Mr. Gaurav Ganesh Mahajan**	160
30	Agriculture Marketing in India-Problems and Prospects **Prof. L. C.Velekar**	164
31	Farm Mechanization in Kolhapur District **Anubhuti Hitesh Ghodake**	168
32	Spatio-Temporal Analysis in Agricultural Cropping Pattern of Indapur Tahsil, Pune District (Maharashtra) **Miss. Ghuge Radhika Dashrath**	175
33	A Study of Correlation Between Literacy & Sex Ratio in Vita City of Sangli District **Prof. Gurav P. J. & Dr. Gharge R.R. & Smt. Khot**	181
34	An Overview of Agrarian Distress in India **Dr. Tilekar Sharad B.**	185
35	An Analysis of Development of Floriculture **Dr. P. H. Kadam**	191
36	Spatio-Temporal Analysis of Land Holdings in Osmanabad District (Maharashtra) **Smt. Manuja Bhaskar Sonar & Dr. Harish Bhanudas Tipe**	196
37	Dairy Industries Leads To Rural Development In Sangli District (Maharashtra) **Dr. Dattatray Dadaso Shinde**	203
38	A Study of Potentials of Ecotourism in Wai Tehsil of Satara District **Bhandare D. J.**	207
39	Concentration of Sugarcane Crop in Satara District: A Geographical Approach **Anirudha Bhosale & Dr. Vinod Veer**	213
40	Socio-Economic Growth of Tourism Need for Sustainable Development in Ratnagiri District: A Geographical Analysis. **Mr.Amol S. Shinde**	218
41	Contribution of Sugar Factories in Agricultural Transformation in Kadegaon Tehsil **Mr. A. A. Phate & Dr.P.V.Patil & Dr.S.D.Shinde**	224
42	Reconstruction of Urban Core Is Need of Urban Development- A Case Study of Ahmednagar City Gaonthan During 1999-2002 **Lagad Santosh Jabaji**	229
43	Levels of Development in Drought Prone Area of Eastern Sangli District: A Comparative Analysis **Tushar T. Waghmare & Prakash T. Waghmare**	235
44	Suitable Geographical Sites for Constructing Surface Rainwater Harvesting Structures in Satara District of Maharashtra **Dr. V. P. Gaikwad**	242
45	Educational and Medical Facilities in Mahabaleshwar Taluka of Satara District (M.S) **Dr. Shrikant Tukaram Ghadge**	251
46	Mah"Major Role of Swarnjayanti Gram Swarojgar Yojana (Sgsy) in Women Empowerment: A Case Study of South East Villages of Walwa Tehasil , Sangli District Arashtra **Dr. Mrs. Snehal Makarand Rajhans**	258
47	A Study of Per Capita Net Sown Area in Parbhani District **Dr. Vaijnath K. Chavan**	266
48	Study of Changing Cropping Pattern of Pune District Maharashtra; A Case Study of Baramati and Purandar Tahsil **Madhuri Sambhaji Jadhav**	270

49	Tehsil-Wise Landuse Pattern in Southern Konkan Region of Maharashtra **Dr. D. C. Kamble & S.T Gurav**	275
50	Farmers Club Programme and Rural Development in India **Dr. Pravinchandra D. Bhakare**	283
51	Population Growth in Ahmadnagar District oif Maharashtra: A Geographical Analysis **Dr. S. N. Pawar**	288
52	Reality in Front of Sustainable Farming in Indian Agriculture **Dr. D. B. Shedge**	293
53	A Comparative Study of Air Pollution Level in four Metropolitan Cities of Maharashtra **Dr.Vasudev Shivaji Salunke**	298
54	Crop Combination Calculate Based on Weaver's Method in Malshiras Tahsil **Somnath B Gaikwad & Santosh P Mane & Dr. Dashrath K. Banduke**	301
55	Status of food Indiustries in Satara Tehsil : A Case Study of food Industries Owners **Sumita Thorat. & Dr. M. B. Potdar**	307
56	Physico-Chemical Properties of Fresh Water Bodies from Drought Prone Area Around Mhaswad Tal. Man (MS) **Sujeet S. Jadhav**	313
57	Climate Change is of Great Concern for the Tourism Industry **Asso.Prof.Sanjayadevi Pawar (Gore)**	318
58	A Geographical Study of Settlement Pattern and Road Network Development in Kolhapur District **Shri. Sanjay Salokhe & Dr. A. S. Patil**	321
59	पाणलोट क्षेत्र विकासाकडून ग्रामीण विकासाकडे **प्रा. अशोक डिंबर**	327
60	श्रीमंत मालोजीरावानी कोरडवाहू आणि भूमीहीन शेतकऱ्यांसाठी केलेले कार्य **डॉ. एस. एम. गावंडे**	333
61	माळशिरस तालुक्यातील मंडलनिहाय हरभरा पिकाच्या उत्पादकतेचा चिकित्सक अभ्यास **डॉ. चंद्रकांत साळुंखे**	337
62	तालुकानिहाय ऊस पीक केंद्रीकरणाचा भौगोलिक अभ्यास : विशेष संदर्भ सोलापूर जिल्हा **डॉ. सी.बी. लोंढे व प्रा. आर. एल. सोनवणे**	341
63	भारतातील कोरडवाहू शेतीचे महत्त्व **डॉ. हरी वाघमारे**	346
64	भौगोलिक घटकांचे राष्ट्र शक्तीतील महत्त्व **प्रा. जयश्री शेंडे**	351
65	भारतीय शेती आणि ग्रामीण विकास **डॉ. सुजाता गडाख**	358
66	हवामान आणि मानवी जीवन पद्धती **प्रा. बालाजी गुरुडे**	364
67	सातारा जिल्ह्यातील जलसिंचनाची प्रगती **डॉ. अशोक जाधव**	370
68	महाराष्ट्रातील तेलबिया लागवड व सद्यस्थिती **एजाज पठाण**	377
69	कोल्हापूर संस्थानातील कृषी जलव्यवस्था (सन. १८५१-१९००) **डॉ. खंडेराव शिंदे**	380
70	बाबासाहेब आंबेडकरांची जलनीती **प्रा. सुलक्षणा कोळी**	383
71	महिला आरक्षणाची वाटचाल **प्रा. मदन पाडवी**	388
72	महात्मा जोतीराव फुले यांचे सामाजिक कार्य **डॉ. अनिल टिके**	398
73	आटपाडीतील शेळी-मेंढी बाजार **प्रा. डी. डी. जाधव**	403
74	पर्यटन आकर्षणाचे प्राकृतिक घटक **श्री अशोक पाटील, डॉ. आशिष जाधव**	405
75	दुष्काळग्रस्त माण तालुक्यातील शेती विकासाच्या समस्यांचा भौगोलिक अभ्यास **विशाल घोलप**	407
76	जगतीकीकरण, शेती आणि ग्रामीण विकास **प्रा. स्मिता मोहिते**	411

77	अवर्षण एक आपत्ती	**प्रा. सोमनाथ नवले**	**415**
78	वेदनेच्या हुंकारातून जन्मलेली कादंबरी 'बारोमास'	**प्रा. शैला क्षीरसागर**	**421**
79	शेती व ग्रामीण विकास नियोजन आणि दुष्काळ मुक्ती	**डॉ. जीवन गंगणे**	**424**
80	फलटण संस्थानातील कृषी विकासाचा आढावा	**प्रा. व्ही. पी. मोरे**	**428**
81	आदिवासी अर्थव्यवस्था व आदिवासी शेतकरी (संदर्भ यवतमाळ जिल्हा)	**प्रा. एन. एस. गेडाम**	**433**
82	ग्रामीण भागाच्या विकासात शैक्षणिक ग्रंथालयाचे महत्त्व	**प्रा. आनंद पवार**	**438**
83	बदलत्या कृषी जीवनाचे काव्यात्म हुंकार	**डॉ. देविदास गेजगे**	**441**
84	माण तालुक्यातील बिदाल या गावाचा दुष्काळी भागातील पाणी व शेती नियोजनाचा विकास : एक भौगोलिक अभ्यास	**श्री एस. आर. सोबान, डॉ. ए. जे. बरकडे**	**444**
85	महाराष्ट्रातील शेतीचा विकास व शेतीच्या समस्या	**प्रा. प्रदीप सावंत**	**449**
86	कृषी पर्यटनाचा विकास (रत्नागिरी जिल्हा)	**प्रा. डी. डी. आगम**	**452**

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- Chief & Executive Editor

Strategy and Planning for Drought-Prone Areas of India

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Abstract:

Drought affects all parts of our environment as well as our communities. Different types of droughts have varying economic, environmental and social impacts. Approximately 16 per cent of India's geographic area, mostly arid, semi-arid and sub-humid is drought-prone (GoI 2013a). Due to high temporal and spatial variability in rainfall and wide variations in physiographic and climatic conditions in the country, droughts are experienced in varying intensities (moderate or severe) almost every year irrespective of a good monsoon. Since 2001, the country has experienced three major droughts, in the years 2002, 2004 and 2009, severely affecting the various sectors and overall economic development of the country. The National Commission on Agriculture classifies droughts as meteorological, agricultural and hydrological based on the concept of its utilization. In this paper to analysis Strategy and planning for drought prone area in India.

Keywords: Drought, Uneven Rainfall, Flood, Irrigation, Management.

Introduction:

Drought affects all parts of our environment as well as our communities. Different types of droughts have varying economic, environmental and social impacts. Approximately 16 per cent of India's geographic area, mostly arid, semi-arid and sub-humid is drought-prone (GoI 2013a). Due to high temporal and spatial variability in rainfall and wide variations in physiographic and climatic conditions in the country, droughts are experienced in varying intensities (moderate or severe) almost every year irrespective of a good monsoon. Since 2001, the country has experienced three major droughts, in the years 2002, 2004 and 2009, severely affecting the various sectors and overall economic development of the country. The National Commission on Agriculture classifies droughts as meteorological, agricultural and hydrological based on the concept of its utilization. While it is difficult to demarcate the onset and end of drought, the impacts can be severe affecting the poorest and most deprived sections of the society (NRSC 2008). India is primarily an agrarian economy and while the sector's contribution to the national Gross Domestic Products (GDP) is gradually declining- from 51.9 per cent in 1950-51 to 13.7 per cent in 2012-13 at 2004-05 prices- it employs over 50% of the population. Adding to the vulnerability is the fact that approximately 56 per cent of the total cropped area is rain-fed (GoI 2013a). Although the country has experienced three major droughts between 2002 and 2012, the capacity to cope with the adverse impacts is steadily increasing due to improved technology and irrigation and partly due to diversification of rural economic activities away from pure farm activity (GoI 2013a). Several policy measures undertaken by the Government of India

(GoI) help in building capacity for drought prevention, preparedness, mitigation and management. This has also led to a shift in perception of droughts from a 'crisis of an urgent nature' to a management issue (GoI 2012). In this paper to analysis Strategy and planning for drought prone area in India.

Objectives:

1) To study the Strategy and planning for drought prone area in India.

Data And Methodology:

The present work is exclusively based on secondary data. Such data is collected from Indian Reports, Statistical Abstracts and District Gazetteers for the year 2008-2014. The data was collected from official web-site of Pune Vedhshala the Information published in Newspapers and Magazines was also obtained along with certain books. Besides this, some other published and unpublished records are also used for the collection from different government offices like statistical department.

Significance of Planning for Drought-Prone Areas:

1. The drought-prone areas form a significant proportion of the country's area.2. These areas are characterised by low productivity which is a major cause of regional imbalances.3.These areas are a strain on the country's financial resources.

The Drought-Prone Areas Programme:

The programme was launched as an integrated area development programme in 1973 as a centrally sponsored programme. The programme is taken up as a long-term measure to restore ecological balance by conserving, developing and harnessing land, water, livestock and human resources.The programme is implemented in the form of rural works projects to create durable community assets which will (i) mitigate adverse effects of droughts on production of crops and productivity of land, water, livestock and human resources through an integrated development of natural resource base of the area; and (ii) create additional employment in these areas.

The components of the strategy are as follows:

1. Development and scientific management of resources2. Land improvement 3. Soil conservation 4. Desiltation of tanks, canals and reservoirs 5. Afforestation and pasture development 6. Restructuring of cropping patterns 7. Scientific agronomic practices 8. Livestock development 9. Focus on small and marginal farmers and agricultural labourers 10. Development of infrastructure, availability of funds and civic amenities like roads, drinking water, and regulated markets etc .It is a truly comprehensive programme, because it takes a long-term view and follows a total approach to development. The DPAP projects are under implementation in 628 blocks of 96 districts in 13 states of the country. District is the unit of implementation.

Some drawbacks of the DPAP are:

1. Targeting is faulty—at places, small and marginal farmers and agricultural labourers are not benefiting.2. There are delays caused due to inadequate staff. 3. Lack of experience is reflected in plan formulation. 4. Lack of information regarding potential areas for development affects the pace of implementation. 5. Duplication of efforts leads to inefficiency.

Command Areas:

The areas fed by an irrigation system like canals, streams, tube wells, tanks, etc. are called command areas. An integrated planned development of command areas is essential because of persistent under-utilisation of irrigation potential, particularly, Tinder major and medium irrigation projects.At the end of 1995-96, the likely utilisation was 79.89 million hectares against the created potential of 89.44 million hectares. This leaves a gap of 9.55 million hectares of under-utilised potential (4.59 million hectares in major and medium and 4.96 million hectares in minor irrigation).

This gap is attributed to the following reasons:

1. Absence of on-farm infrastructure— channels and drains to take irrigation water to various fields.
2. Failure to switch to appropriate agronomic practices under irrigated conditions.
3. Lack of awareness among farmers.
4. Water loss through seepage and poor maintenance of canals etc.

Over-irrigation leads to waterlogging and salinity, and under-irrigation to failure of crops. An integrated approach is required because agricultural productivity depends on factors apart from irrigation also, such as inputs and infrastructural facilities. An overall efficiency demands a comprehensive approach including hydronomic and agronomic measures.

Basic Objectives of a Command Areas Programme:

The objectives of this programme are two-fold:

1. Maximum utilisation of precious land and water resources by (i) maximisation of area under irrigation; (ii) checking wastage and loss of water; and (iii) improving yield per unit of land and water through better agronomic practices.
2. Satisfying the ideal of social justice by equitable distribution of irrigation water by reaching the benefits even to small and marginal farmers and those at the tail end of the command area.

Command Areas Development Programme:

Tb address the problem of unutilised irrigation potential, the Command Areas Development Programme was launched in 1974-75 as a centrally sponsored programme in major and medium irrigation projects. The concept of command areas development (CAD) Came up through recommendations of the Irrigatio Commission (1972) and observations of the Ministers' Committee on Utilisation of Irrigation Potential.

The main components of the CAD strategy are:

Land levelling and shaping. ii. Construction of field channels and drains. iii. Consolidation of holdings and realignment of field boundaries. iv. Construction of proper warabandi system of fair distribution of irrigation water. v. Streamlining the supply of inputs and services including credit and extension services.vi. Setting up proper infrastructure such as roads, markets, storage facilities, drinking water etc. vii. Selection and adoption of suitable agronomic practices.viii. Development of groundwater resourced to supplement surface irrigation.

Current Status:

The present programme covers 193 projects with the culturable command area of 21.44 million hectares spread over 22 states and two union territories. The programme is being executed through 54 command area development authorities.

CADP Thrust during the Eighth Plan:

The thrust during the Eighth Plan has been on: Enhancing reliability of irrigation water,2. Better water management,3. Intensification of software activities like participation of farmers in water management and farmers training.

Watershed Management:

Water is a natural resource of prime importance and a valuable national asset. Therefore, there is a need for optimum development and proper use of water resources. It is the ministry of water resources that formulates policies and programmes to develop and regulate the water resources.These policies and programmes include aspects of sectoral planning, coordination and technical examination. The average annual water availability in India is stated to be over 1800 billion cubic metres, of which more than 1100 billion cubic metres is the total utilisable water resource. In 2001, the per capita availability of water at national level was estimated to be 1820 cubic metres. In India, as per the classification of the All India Soil and Land Use Survey Organisation of the Department of Agriculture, there are 35 river basins, 112 catchments, 500 sub-catchments and 3200 watersheds. The watersheds have been divided on the criterion of area into mini-water¬sheds (1 to 100 hectares in area); micro-watersheds (100 to 1000 hectares) and milli-watersheds (1,000 to 10,000 hectares).The comprehensive watershed management programme aims to make use of the available water and other resources to improve agricultural productivity and allied industrial activities, promote social forestry, create employment opportunities and check erosion of soil. A river basin is a natural physiographic unit, contributing to the supply of a river; or in other words, it is a watershed of a large size. The river basin becomes a practical agronomic unit (i) if it is taken up for planning the utilisation of hydel power potential, irrigation potential, forest resources, navigation, drinking water; or (ii) if it is used as a drainage line or for flood control. A total approach is an efficient one because uncoordinated efforts will mean that the efforts to harness the potential at one point can get negated because of some undesirable activity at another point. For instance, deforestation in the upper reaches will result in siltation of reservoirs down streams which are meant for flood control and irrigation, thus reducing their storage capacity and hydel power potential. There is immense scope for taking up the river basin as a unit for planning in an agricultural and geographically diverse country like India with huge surface water resources in the form of rivers, like the Ganga, Godavari, Brahmaputra and the west- flowing peninsular rivers. But inter-state rivalries are a major hurdle in this regard, as evident in disputes related to Cauveri and Narmada.

Conclusions:-

1.Situation before practice Prior to independence, measures to tackle famine and minimize deaths due to starvation were evolved and followed. At this time there were no mechanisms to monitor droughts scientifically and technologically. Crisis management was the solution.

2. Challenges a. Developing, and coordinating an institutional mechanism that can monitor/ predict/ warn occurrence of drought; its intensity, duration, area, impact and the immediate and long-term mitigation measures required. b. Response management that includes assessment of losses, governing relief operations and managing long-term measures for prevention

3. Strategy The strategy has gradually shifted from the crisis management approach of providing relief when the drought occurs to the risk management approach that includes forecasting and early warning, immediate relief in the short-term and drought proofing measures in the long-term.

4. Results q Deaths due to starvation is no longer encountered due to huge buffer stocks of foodgrains and wide public distribution network. q An early warning system is in place and drought monitoring is done regularly, frequently at GOI and state government levels. q Institutional mechanisms are in place for measurements, observations, research, forecasting, monitoring based on ground-based data and remote sensing data. q Institutional mechanisms are in place for disseminating weather forecasts, crop forecasts, contingency crop plans and so on so that they reach the farmers and others affected. q Institutional mechanisms are in place at the highest executive and political levels in the central and state governments for funding and administration of drought relief operations.

5. Sustainability Successful drought management depends on successful water management and other measures like afforestation, combating desertification and creating conditions of alternative livelihoods for people in drought affected areas. It also depends how successful are our meteorologists, hydrologists and agricultural scientists and their models are in forecasting drought and the EWS they design. Traditional technologies used by our farmers are of immense value in combating drought at less cost. 6. Replicability India's experience in drought management can be used in other countries facing similar situation. 7 2. Sector Agriculture 72% of India's population of over a billion

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"Assessment of Meteorological Drought Intensity in Ahmednagar District"

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Abstract:

In India Agriculture are Basic activity and more than 60 percent population engaging in these sector. These are the Prime sector of country. Agricultural activity total depend up on monsoon rainfall. The Indian subcontinent receiving seventy percent rainfall during June to September in these four month monsoon period. A various factor affecting the Monsoon rainfall such as global temperature, wind pressure, ocean current etc. The Monsoon rainfall is highly variable so highly impact on agricultural production. Drought condition occur in India due to monsoon rainfall is bad. The ground water level in monsoon period is crucial when rainfall is low and monsoon rainfall time is short then soil absorb low level of water as well as moisture. In drought period the area has deficiency of water but it depends on yearly rainfall. If onset of monsoon rainfall is good and other month rainfall is less then water deficiency occur that area after onset of monsoon.

Keywords: Meteorological Drought, Rainfall, Deviation index, Drought intensity.

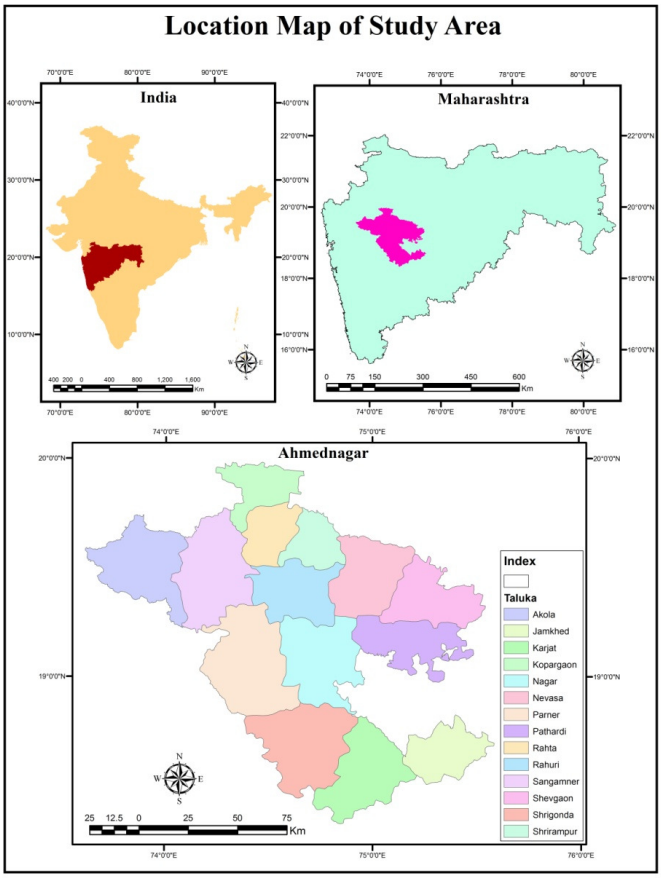
Introduction:-

Drought is meteorological hazards because rainfall is lower than normal. Indian Meteorological department consider meteorological drought when rainfall is less than 25 percent or more average of long term. Indian country two third geographical areas has receiving low rainfall with uneven distribution from place to place that way more cultivated areas suffering drought prone condition. In last four five decade drought frequency and intensity increase because impact of climate change.

The rainfall information is crucial factor to determine strategies and planning for agricultural sector. The Maharashtra State has Suffering drought frequently. The Ahmednagar district comes under western Maharashtra zone which is known as rain shadow zone. The annual average rainfall of Ahmednagar district is 345 mm. Ahmednagar district more area growing sugarcane crop but drought impact on sugarcane production so it effect on district economy. The majority Ahmednagar district farmer taken cash crop in Kharif season and food grains in rabbi season if south west Monsoon rainfall is less then impact on food grain crops. In some tahsil of Ahmednagar district is very poor irrigation facility and rainfed dependable agriculture cultivation .In Many indices of drought used now a day such as, severity index, crop moisture Index Standardized precipitation index. Generally does not any method available which applied for drought prediction.**Study area-**

The geographical area of Ahmednagar is17418 sq. it indicate the larger district of Maharashtra state. Latitude and longitude of Ahmednagar is 18° 2' to 19° 9'N latitude and 73° 9'

to 75° 5' E longitude. Ahmednagar district has 14 tahsil. In the district three type of landform covered which is western hilly region, central plateau and northern and southern plain.



Objective –

The present study has been undertaken with following objectives.

1. To the study metrological condition in Ahmednagar District.
2. To find out drought intensity with the help of Standard Deviation.
3. To understand Rainfall Variation in Ahmednagar District.

Methodology-

The rainfall data has collected from Indian Metrological department of India. These data of Ahmednagar district duration is 35 year from 1981 to 2015. The average annual rainfall 20 to 60 percent indicate Moderate and if average rainfall more than 60 percent Scanty drought area. The Indian metrological department suggested criteria in 1971 which basis on percentage deviation of rainfall from its long term mean and

equation is

$$Di= (pi-\mu /\mu) *100$$

Where **Di** indicate the percentage deviation from the long term mean,

Pi indicate the annual rainfall, mm and

μ is the long term mean of annual rainfall, mm.

Table. 1 Drought Deficiency Index of IMD (1971)

Drought Index	Drought intensity	Drought intensity code
-19% or above	No drought	M0
-20 to 59%	Moderate drought	M1
-60%	Severe drought	M2

Table 2 Intensity of drought in Ahmednagar district.

YEAR	RAINFALL	LTM	SDI	Code	YEAR	RAINFALL	LTM	SDI	Code
1981	531	520.28	2.060429	M0	1999	409	520.28	-21.3885	M1
1982	444	520.28	-14.6613	M0	2000	490	520.28	-5.81994	M0
1983	679	520.28	30.50665	M1	2001	372	520.28	-28.5	M1
1984	443	520.28	-14.8535	M0	2002	411	520.28	-21.0041	M1
1985	401	520.28	-22.9261	M1	2003	303	520.28	-41.7621	M1
1986	407	520.28	-21.7729	M1	2004	589	520.28	13.20827	M0
1987	553	520.28	6.288921	M0	2005	551	520.28	5.904513	M0
1988	694	520.28	33.38971	M1	2006	736	520.28	41.46229	M1
1989	673	520.28	29.35343	M1	2007	556	520.28	6.865534	M0
1990	697	520.28	33.96633	M1	2008	577	520.28	10.90182	M0
1991	468	520.28	-10.0484	M0	2009	510	520.28	-1.97586	M0
1992	435	520.28	-16.3912	M0	2010	771	520.28	48.18944	M1
1993	583	520.28	12.05505	M0	2011	488	520.28	-6.20435	M0
1994	501	520.28	-3.7057	M0	2012	383	520.28	-26.3858	M1
1995	470	520.28	-9.66403	M0	2013	591	520.28	13.59268	M0
1996	663	520.28	27.43138	M1	2014	382	520.28	-26.578	M1
1997	372	520.28	-28.5	M1	2015	301	520.28	-42.1465	M1
1998	776	520.28	49.15046	M1					

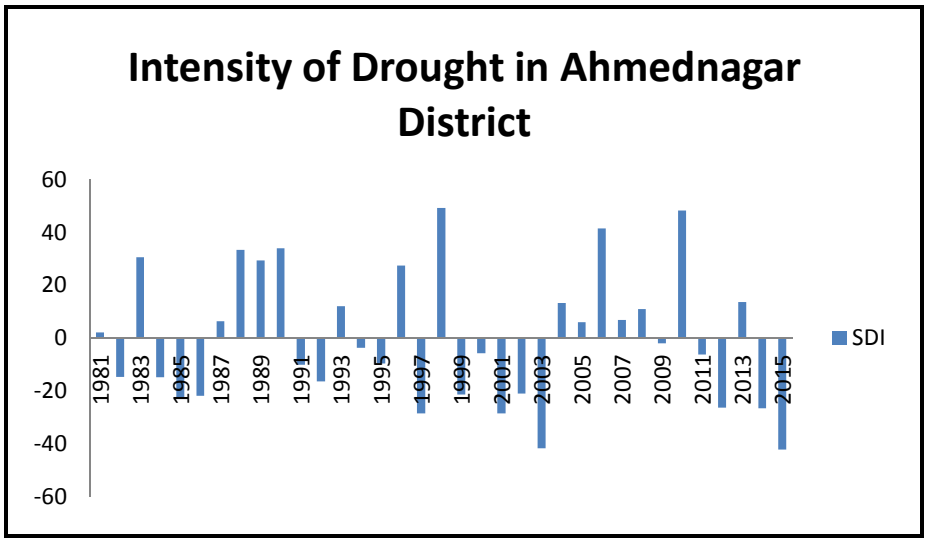
(Source- Indian Meteorological Department)

Whereas

LTM- Long Term Mean,

SDI- Standard deviation

Graph - Drought Intensity analysis of Ahmednagar District, Maharashtra



Result –

Statistical parameters which are mean, long term mean and standard deviation apply to table number two. In Ahmednagar district has received highest rainfall in 1998 it is 776 mm and lowest years in 2015 it are 301 mm. Interpretation of data of 35 year taken for analysis of drought intensity in the area. Here the study area in rainfall variation found. According to deficiency index every year categorized into three category i.e. Drought Deficiency index value is less-19% or above express No drought (M0), -20-59% is moderate drought (M1) and the value is more than- 60% represents severe drought (M2) (Table 1). The table number two show year wise intensity of drought analysis. In this table the intensity of drought was calculated on the based on long term Mean and Standard deviation index of rainfall data. After this analysis all years classified in three categories on the basis of Drought deficiency index of Indian Metrological Department of India. The Ahmednagar districted seventeen year, and eighteen years experienced No drought condition and moderate drought condition found respectively. Especially there was no severe drought found in this duration.

Conclusion-

The interpretation of rainfall data and drought frequency, Ahmednagar district in out of thirty five years data nearly fifty percent moderate drought condition found. Remaining years No drought situation found. In the thirty five year period severe drought is absent in Ahmednagar district. Uneven rainfall distribution seen in varies tahsil in Ahmednagar district.

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Challenges in Agricultural Resource and Rural Development Planning of Satara District: A Geographical Study

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Abstract:

Agriculture occupies an important position in Indian economy. Agricultural resources play a significant role in the exploitation of basics resources and conservation at any stage. Agricultural resource development is considered as a basics factor in the processes of national development. Satara district is well known district in western Maharashtra, but the levels of Agricultural Resource development is medium class in satara district Karad Tahsil has first rank in Agricultural resource development ,because development of Irrigation, Agro based industries, infrastructural facilities, Fertilizers, are largest proportion as compared to other tahsils. Lowest Agriculture resource development is found in Mahableshwar, Khandala and Javali tahsils ,because these are high rain fall, and other physiographic conditions.

Key Words: Challenges, Agricultural Resources, Rural Development Planning.

Introduction:

India is agriculturally developed country among the world. Nearly 70-80 % population of the country is depending upon the agriculture. India is having very intensified diversification in the climate, soil and socio-economic aspects. The same is observing in satara district. Satara district is having unique agriculture feature among the other district of the western Maharashtra. The district is agriculturally developed in the western Maharashtra. The varieties of crops are taken in the district. The food grains constitute a major part of agricultural produce. The main food grains grown in the district are rice, jowar, wheat, bajara, minor millets and vegetables as well as fruits too.

The majority of the peoples depend on this activity. Still disparities have observed in the agriculture in different pockets of the district because of the variable productivity of agriculture. To bring out the development in the agriculture is taken with different parameters. To achieve these following objectives has been taken into consideration.

Agricultural resources are uneven from one region to another due to the variation in nature and agricultural characteristics in space and time indicates, in balance in the overall development of an area in the present investigation an attempts has been made to analyze the variation in the development of agricultural resources in satara district at tahsil level.

Studay Area:

Satara district is situated in western part of Maharashtra state. There are the district lies between 17.5 degree and 18.11 degree North latitude and between 73.33 degree and 7 4.54 degree East longitudes. The district is completely landlocked being surrounded by Ratnagiri district on the West, Sangli district on the south, Solapur on the East, Pune on the north and Raigad on the North West. It covers 10,480 sq kms. Most of the central satara district's area falls in the river Krishna basin and limited area falls in the river Bhima basin.

Satara a east west extent of 135 km and a north south extent of 112 km. The district is divided into seven Sub Division and eleven administrative sub units (tahsils) - Satara, Wai, Khandala, Koregaon, Phaltan, Khatav, Man, Karad, Patan, Jawali and Mahabaleshwar.

Objectives:

In view of the above, the specific objectives of the present study to.

1. To identify spatial disparities in various attributes of Agriculture.
2. To analyze and find out the levels of agricultural resource development in the study region at the tahsil level.
3. To making the planning strategies for improving the levels of agricultural resource development in the study region.

Data Base And Methodology:

The present study is based on the secondary data,which is obtained from census of India-2011,socioeconomic abstract of satara district -2018, In this research paper Ten variables have been selected for measuring the levels of agricultural resource development for each of the tahsil ,with the help of kendals ranking co-efficient method .Here the index.values are inversely related to the levels of development . It means that the tahsil which having least index value is more developed. Collected data is processed and represented with choropleths method for representation of co-efficient index

Co- efficient index=-£R—N, Where, £R=sum of the all ranks, N=No of variables.

Location Map : Satara District

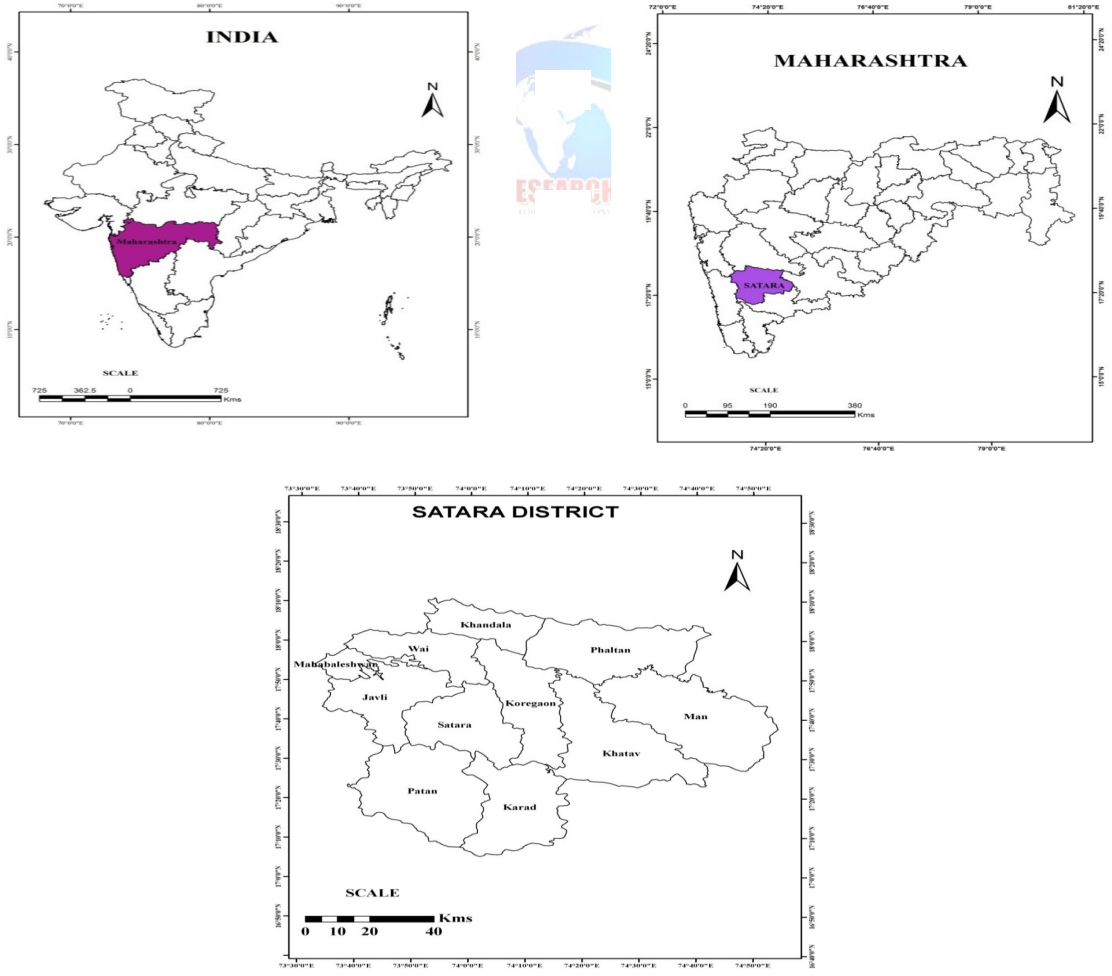


Table No.1 Agricultural Recourse Development in Satara District (2018)

		r1	r2	r3	r4	r5	r6	r7	r8	r9	r10		
Sr. No.	Tahsil Name	Total Cropped area	Fertilizer	Irrigation	Agro co-operative institue	Marketing institution	Banking Facilities	Agro besed indstries	Ware House	Wells	Dairyes Facilities	∑R	Co-efficient index
1	Satara	3	3	4	1	2	1	3	3	6	1	27	2.7
2	Wai	8	8	9	8	4	4	3	4	5	8	60	6.0
3	Khandala	10	9	10	9	4	5	-	4	10	10	79	7.9
4	Phaltan	6	2	3	3	3	3	2	3	3	9	37	3.7
5	Man	7	7	8	7	5	6	-	1	5	4	50	5.0
6	Khatav	4	4	7	5	5	7	3	1	8	5	49	4.9
7	Koregeon	5	5	5	6	4	6	3	3	7	6	50	5.0
8	Jawali	9	10	6	10	5	9	3	2	2	7	63	6.3
9	Patan	2	6	2	4	4	8	3	3	1	3	36	3.6
10	Karad	1	1	1	2	1	2	1	1	4	2	16	1.6
11	M.shwar	11	11	11	11	6	8	-	4	11	11	84	8.4

Source:-Socio-Economic Abstract of Satara District 2018.

Source:-Socio-Economic Abstract of Satara District 2018.

Table No: 2 Levels of Agriculture Resource Development in Satara District (2018)

Levels of development	Scale Value	No.of Tahsil	Name of the Tahsil
High	Below 4	04	Karad,Satara,Patan, Phaltan
Medium	4 to 6	04	Wai, ,Koregoan,Man, Khata
Low	Above 6	03	Khandala,Mahableshwar Jawali

Source:-Socio-Economic Abstract of Satara District 2018.

The table NO.1 Shows that, agriculture Resource development in Satara District with total cropped area, fertilizers, irrigation area, agro co-operative institute, agro-based industries, etc. some other variables like marketing institutions, banking facilities, dairies , warehouse and wells these all variable adopted to find out ranking co-efficient index method. Table No. 1 reveals the co-efficient index of Satara district has agricultural resource development is found in the medium size. We make three categories of co-efficient index value i.e. development of high levels (index below 4), development of moderate levels (index value 4 to 6), and development of low levels (index value above 6) respectively. High co-efficient index value is found in two tahsil of Satara district namely Khandala, Mahableshwar and Jawali which shows low levels of Agricultural resource development. The low co-efficient index value is found in Karad, Satara, Patan and Phaltan tahsil of Satara district, which shows high levels of agricultural resource development.

Levels of Agricultural Resources Development and Planning

High Developed Region:

In the study area, there are four tahsils included in this category. Highly developed region covers an area of 451557sq km.(42.67%) with the 13928340 (4.63%) population of the region. These tahsil are laying in the north, central and southern part of the study region. It comprises Karad, Satara, Patan and Phaltan tahsils. In this region total cropped area, fertilizers, irrigation, agro co -operatives, agro-based industries, marketing, banking, dairy and warehouse is very better than other region. Industrial sector, agricultural sector, marketing as well as transport

aboard communication facilities are the highest proportion, due to this the levels of agricultural resource development is found high in these tahsils. Karad tahsil is most developed tahsils in whole of the region. In this region development of sugar industries are very high concentration of co-operative societies. Karad tahsils get first rank due to the highly developed agricultural sector, high percentage of fertile soils, sufficient rainfall and perennial irrigation facilities leads high agricultural efficiency and development of agro based Industries.

Moderately Developed Region:

In this region there are four tahsils viz. Wai, Koregaon, Khatav Man. These tahsils having less development of agriculture resources, because physiographic and climate conditions are responsible for it. This region also cover an area of 443993 sq km. (41.95%) and the population of this region is 958677 (31.91%) included. Wai tahsils have more than 50 per cent of hilly area, Undulating topography and high rainfall in this tahsils. koregaon, Man, Khatav tahsils have inadequate rainfall which adversely affected on agriculture irrigation,

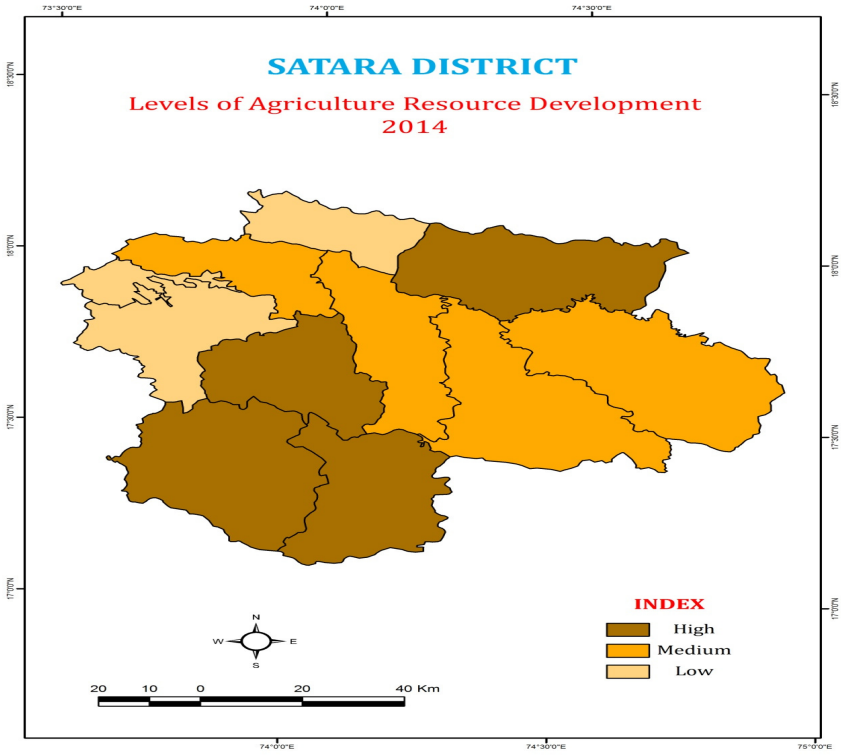


Fig No: 2

mining industries, transportation and infrastructural facilities are less developed therefore the levels of agricultural resource development is low as compared to developed region. In this region natural resources, irrigation, marketing and agro-based co-operative institutions facilities are well but proper utilization of natural resources are not sufficient.

Low Developed Region:

It is called as problematic region. In this region there are three tahsils included namely Khandala Mahableshwar and Jawali. These regions are mostly hilly and highest rainfall is found there. Above tahsils have lack of infrastructural, total cropped area, fertilizers, irrigation, agro co-operative institute, agro-based industries, marketing, dairies, wells and warehouse,

facilities is also compared other tahsils of the District is Low developed in the region. This tahsils occupies an area about 162694 sq km. (15.37%) and 316754(10.54%) population is concentrated. The Khandal tahsil have more indlistrilization, Mahabaleshwar and Jawali tahsils are have less irrigation and total cropped area and agricultural related facilities due to that reason most of people migrated to various places for various better job. Wells, warehouse, agro-based industries and agro co-operatives institutions is less in this region due to hilly area and therefore this area having low agricultural resources development.

Conclusion:

Satara district is well known district in western Maharashtra, but of agricultural Resource development is medium. In Satara District Karad tahsil has first rank in agricultural resource development, because of total cropped area, irrigation and agro based industries infrastructural facilities, are largest proportion as compared to other thasils. Northern, Central and southern part of the study area is well developed, but the east, west and northern part of the study area is less developed. Lowest agricultural resource development is found in Mahabaleshwar, Jawali and Khandala tahsil, because of uneven topography, high rainfall and thick forest excess rainfall and other physiographic condition.

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Agricultural Transformation in Drought Prone Region : A Case Study of Jat Tahsil in Sangli District

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Abstract :

India is country, which have an agrarian economy. Agriculture, therefore, became a backbone of India's economy. But since independence, particularly after the first green revolution, agriculture sector in India has enormous change, cropping pattern of many regions of India also changed accordingly. This research paper tries to throw a light on this issue, with the study of agricultural transformation in Sangli district particularly in the drought prone region like Jat tahsil. Only secondary source of data has been considered for almost last 50 years (i.e. 1964-65 to 2013-14) for this study. A major transformation is found in the production of cereals in the tahsil. The transformation in cereals is -23.71 per cent, while in the other hand transformation in non food crops is +28.01 per cent. This transformation has take place due to the less rainfall as well as lack of irrigation facilities. This agricultural transformation has also impacted on the cropping intensity in this drought prone area.

Keywords : Agriculture, Landuse, Transformation, Cropping Pattern, Crop Intensity

Introduction

Agriculture plays a vital role in India's economy. Over 58 per cent of the rural households depend on agriculture as their principal means of livelihood, while 70 per cent population is directly or indirectly depends upon agriculture for their survival. Agriculture, along with fisheries and forestry, is one of the largest contributors to the Gross Domestic Product (GDP) of India (IBEF, 2016). But since independence, with increasing advance means of agriculture, agriculture transformation takes place. Similarly, with increasing population crop intensity also starts increasing. In context to the drought prone region agricultural changes also take place, with increasing crop intensity, but the impact of drought is also found in these particular regions. Agricultural transformation is the process by which individual farms shift from highly diversified, subsistence-oriented production towards more specialized production oriented towards the market or other systems of exchange (Staatz, 1998). In this particular study, has attempted to study the agricultural transformation in the drought prone region in Sangli district during almost last fifty years (i.e. 1964-65 to 2013-14).

Objective

The only objective of this paper is to analyse the agricultural transformation and crop intensity in the drought prone region in Sangli district with the case study of Jat tahsil during 1964-65 to 2013-14.

Database and Methodology

The present paper is entirely based on the secondary data, which is collected from the Socio-Economic Abstract of Sangli district of 1964-65 and 2013-14. The simple techniques like percentage, average are used for analyse the agricultural landuse and cropping pattern. Crop intensity is calculated with the help of following formula –

$$\text{Crop Intensity} = \frac{\text{Gross Cropped Area}}{\text{Net Sown Area}} \times 100$$

Study Area

The area undertaken for the present paper is Jat tahsil in Sangli district, which situated in the extreme eastern part of Sangli district, and experiencing worst drought condition every year. Hence, this tahsil is considered as drought prone region for present study. Jat tahsil lies on 17.05 N latitude and 75.20 E longitude, and surrounded by Karnataka state to the east and south, Kavathemahankal tahsil to the west and Solapur district to the north.

Discussion

The agricultural landuse is depending upon many geographical aspects of the particular region, such as topography, climatic conditions, drainage pattern etc. Besides, some cultural aspects like irrigation, transport, communication, market, etc. are also affect agricultural landuse of that region. Accordingly in the following discussion, agricultural landuse and changes in the cropping pattern in Jat tahsil of Sangli district is studied for the 1964-65 to 2013-14.

Agricultural Landuse Pattern

The agricultural landuse pattern and transformation in landuse from 1964-65 to 2013-14 of Jat tahsil as follows –

Table 1 : Agricultural Transformation in Jat Tahsil

Cropping Pattern	Jat Tahsil				
	1964-65		2013-14		Trans-formation
	Area	%	Area	%	
Cereals	124279	76.38	111981	52.67	-23.71
Pulses	13481	8.28	12392	5.83	-2.45
Sugarcane	374	0.23	1560	0.73	0.5
Spices	914	0.56	556	0.26	-0.3
Fruits & Vegetables	915	0.56	5332	2.51	1.95
Fibres	2305	1.42	1959	0.92	-0.5
Oilseeds	17424	10.71	15409	7.25	-3.46
Drug and Narcotics	81	0.05	0	0.00	-0.05
Other Non Food Crops	2947	1.81	63404	29.82	28.01
Gross Cropped Area	**162720**	**100.00**	**212593**	**100.00**	

Source : Socio-Economic Abstract of Sangli District of Concern Years

In the year 1964-65, most of the cropped area was under the cereal crops (76.38%), after that commercial crop like oilseeds (10.71%) are mostly dominated crops in the cropping pattern of the Jat tahsil. Cropped area under pulses was only 8.28 per cent. Remaining crops like various spices, fruits and vegetable, fibre corps, drug and narcotics crops and other non-food crops covered only small part of the total cropped area.

In the year 2013-14, the area covered by cereals is remain highest with 52.67 per cent, but there is very excessive increase found in the area under the non food crops (29.82%). Afterward some ups and downs were found in the area covered by remaining crops.

Agricultural Transformation

As per the above table (Table 1) it was clearly found that, most of the negative agricultural transformation found in the cereals crop (-23.71%), while on the other hand most positive transformation was found in the non food crops (+28.01%). It means during the investigation period (i.e. 1964-65 to 2013-14) most of the area was shifted from the cereal crops to non-food crops especially fodder crops. Apart from that some positive transformation was found in the crops like sugarcane (+0.5%), fruits and vegetables (+1.95%). While negative transformation found in the corps such as pulses (-2.45%), spices (-0.3%), fibres (-0.5%), oilseeds (-3.46%), drug and narcotics crops (–0.05%).

Intensity of Cropping

Intensity of cropping of Jat tahsil were discussed and analysed in the following discussion.

Table 2 : Crop Intensity in Jat Tahsil (1964-65 to 2013-14)

Tahsil	1964-65			2013-14		
	Net Sown Area	Gross Cropped Area	Crop Intensity	Net Sown Area	Gross Cropped Area	Crop Intensity
Jath	160365	162720	101.47	188180	212593	112.97

Source : Socio-Economic Abstract of Sangli District of Concern Years

The overall cropping intensity in the Jat tahsil was increased from 101.47 per cent to 112.97 per cent during the investigation period including the area sown more than once.

Concluding Remark

It is clearly found that the agriculture landuse transform from cereal crops to non-food crops such as fodder crops. It is only due to the less rainfall, and lack of irrigation facilities. The area particularly lies in the drought prone area experiencing a severe drought almost every year. Apart from that lack of transport and communication, lack of modern agricultural means and tools also affected the cropping pattern. There is negligible change in area under sugarcane also associated with the lack of irrigation facilities and lack of rainfall. Crop intensity shows some increase but again the increase in the area of non-food crops such as fodder crops is the main reason behind it. It means, almost last fifty years these drought prone regions experiencing lack of planning and also deprivative by government.

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Changing Cropping Pattern of Satara District Special Reference To Sugarcane Crop

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Abstract:

Cropping pattern means the proportion of an area under various crops at a point of time in a unit area or the pattern of crops for given piece of land. It indicates the yearly sequence and spatial arrangements of crops and follows in an area. The present paper analyzes the changing cropping pattern of Satara district special reference to sugarcane crop. It shows the changing cropping pattern due to farmers are moving to cash crop, availability of irrigation facility, high yield varieties, development of Agro-based industries, etc. In the cropping pattern area under sugarcane crop is increased in Satara district.

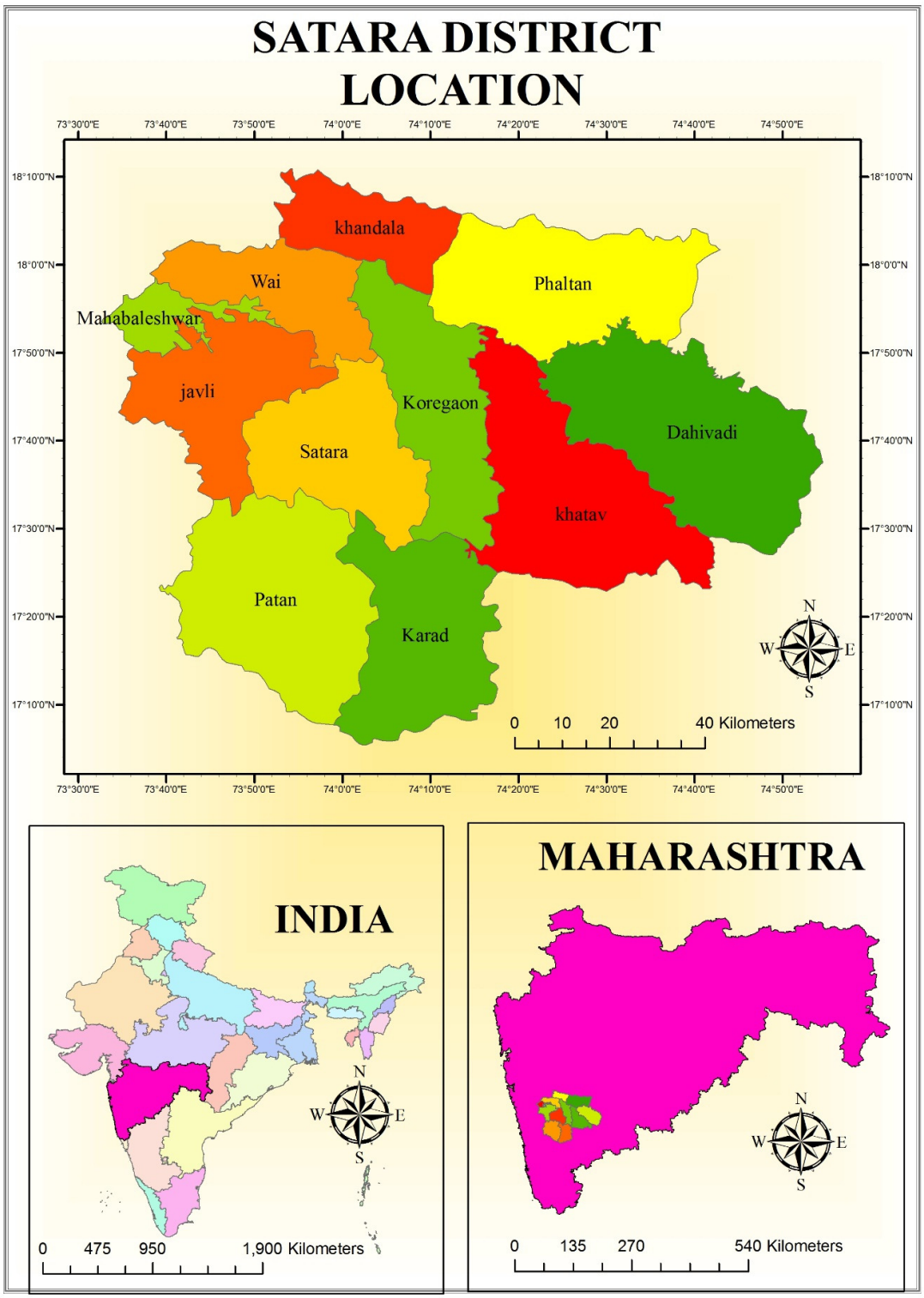
Keywords: Cropping pattern, sugarcane crop, irrigation

Introduction:

Cropping pattern is the proportion of area under various crops at a point of as it changes over space and time. The cropping patterns of a region are closely influenced by the geo-climatic, socio-economic, historical and political factors (Husain, M. 1996). Pattern of crop land use of a region are manifestation of combined influence of physical and human environment. Weather plays a decisive role in determining the existing cropping pattern. Cropping pattern is also depending on terrain, topography, slope, soils and availability of water for irrigation use of pesticides, fertilizers and mechanization. The change in cropping pattern in particular span of time clearly indicates the changes that have taken place in the agricultural development.

Study Area:

The Satara district covers a geographical area of 10,480 sq. Kms. which is 3.4 per cent of the Maharashtra state, among the 36 districts of the Maharashtra state, Satara district ranks 12th in terms of area, with a Population of 30, 03,741 according to 2011 census. The East-West length of the district is about 135 Kilometres and width is about North-South is about 112 Kilometres. It is bounded by the Pune in the North, Sangli in the South, Ratnagiri in the West, Raigarh in the North-West, Solapur district in the East. These administrative boundaries coincide with some physical features like Nira River in the North; Sahyadrian rang in the West and South-West, Mahadev Hills in the East. The district administratively divided in to eleven Tahsils namely, Mahabaleshwar, Wai, Khandala, Phaltan, Man, Khatav, Koregaon, Satara, Jaoli, Patan and Karad (Map-1).



Objective:

The Principal objective of the present paper is to analyze the cropping pattern of Satara district special reference to area under sugarcane crop change of Satara district.

Database And Methodology:

The present research work is based on secondary data sources, data collected from district socio-economic review, season and crop report, agricultural department of Satara district. Investigation is carried out for the year of 1996-97 and 2016-17. The data processed and analyzed by using different cartographic techniques, statistical and quantitative techniques.

Discussion:

The table no.1 shows the area under change of sugarcane crop in Satara district.

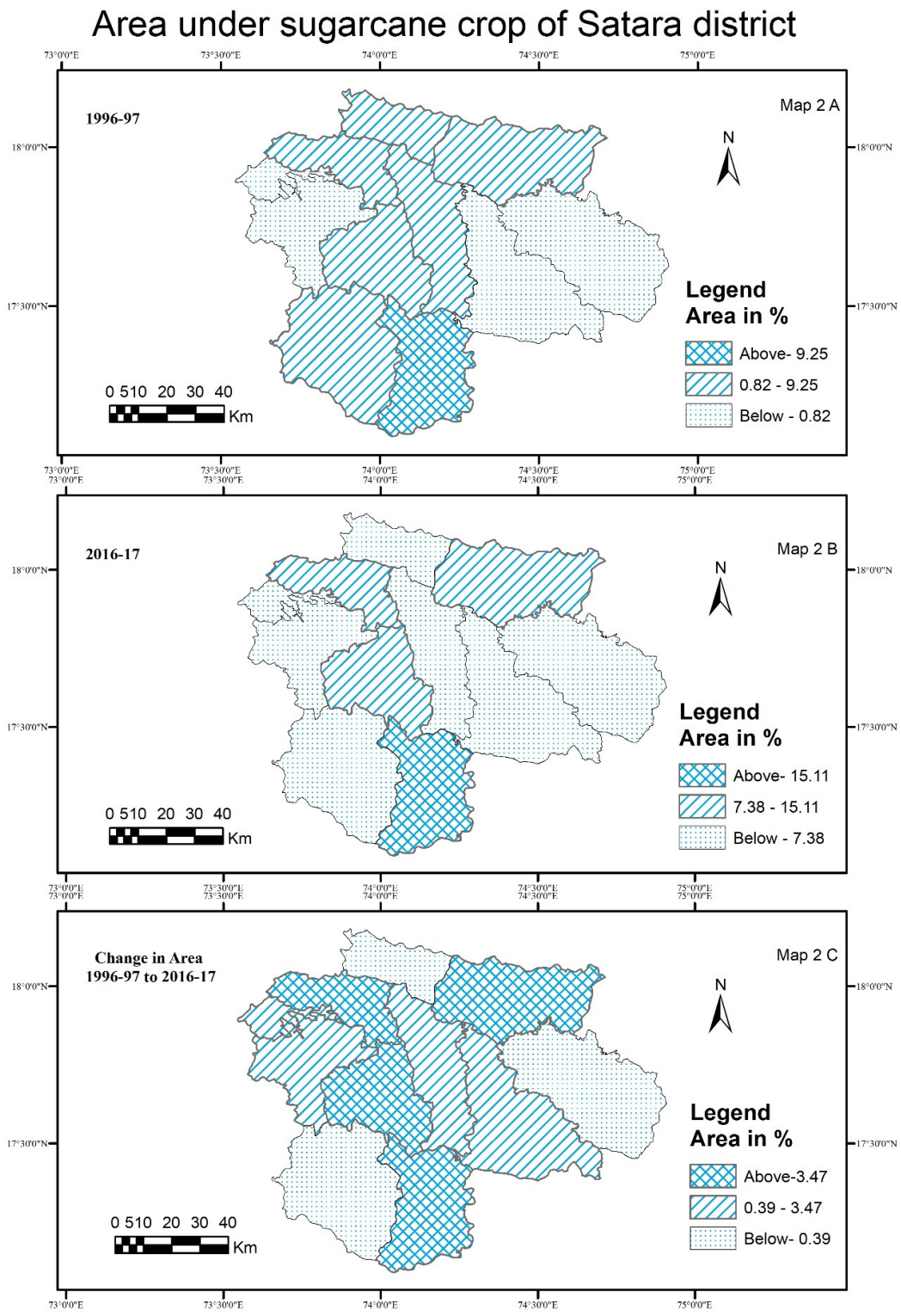
Table No.1

Satara District: Area under change in sugarcane in 1996-97 to 2016-17

Sr. No.	Name of Tahsils	Area under Sugarcane (in %)		
		1996-97	2016-17	Change
1	Mahabaleshwar	0	2.25	2.25
2	Wai	4.17	12.58	8.41
3	Khandala	3.27	3.66	0.39
4	Phaltan	9.25	14.29	5.04
5	Man	0.72	0.98	0.26
6	Khatav	0.82	3.07	2.25
7	Koregaon	4.52	7.38	2.86
8	Satara	8.15	15.11	6.96
9	Jaoli	0.55	4.02	3.47
10	Patan	3.68	1.56	-2.12
11	Karad	20.48	26.98	6.5
	District	6.26	9.53	3.27

Source: Socio-economic review & district statistical abstract of Satara district 1996-97 and 2016-17.

Area



under sugarcane crop of Satara district in 1996-97:

Table 1 and map 2 A Shows the total area under sugarcane crop of Satara district is 6.26 percent in 1996-97. High percentage area under sugarcane crop is found in the tahsils of Karad

tahsil i.e. above 9.25 percent. Moderate percentage is found in Wai, Khandala, Phaltan, Koregaon, Satara and Patan tahsils ranging between 0.82 to 9.25 percent. Whereas low in the tahsils of Man, Khatav, Jaoli and Mahabaleshwar tahsils i.e. below 0.82 percent.

Area under sugarcane crop of Satara district in 2016-17:

Table 1 and map 2 B Shows the total area under sugarcane crop of Satara district is 9.53 percent in 2016-17. High percentage area under sugarcane crop is found in the tahsils of Karad tahsil i.e. above 15.11 percent. Moderate percentage is found in Wai, Phaltan and Satara tahsils ranging between 7.38 to 15.11 percent. Whereas low in the tahsils of Koregaon, Man, Khatav, Khandala, Jaoli, Patan and Mahabaleshwar tahsils i.e. below 7.38 percent.

Change in Area under sugarcane crop of Satara district in 1996-97 to 2016-17:

Table 1 and map 2 C Shows the total change in area under sugarcane crop of Satara district is increased 3.27 percent in 1996-97 to 2016-17. High percentage area change in under sugarcane crop is found in the tahsils of Karad, Phaltan, Wai and Satara tahsils i.e. above 3.47 percent. Moderate percentage change is found in Koregaon, Khatav, Jaoli and Mahabaleshwar and tahsils ranging between 0.39 to 3.47 percent. Whereas low in the tahsils of Khandala, Man and Patan tahsils i.e. below 0.39 percent.

The area under sugarcane crop of Satara district is increased in the tahsil of Karad, Satara, Phaltan, Wai, Koregaon, Man, Khatav, Khandala, Jaoli and Mahabaleshwar because of farmers are moving to cash crop, availability of irrigation facility, high yield varieties, development of sugar industries, etc.

Conclusion:

The present paper concludes that the cropping pattern of Satara district is changed due to farmers are moving to cash crop, availability of irrigation facility, high yield varieties, development of Agro-based industries, etc. The area under sugarcane crop of Satara district is increased in the tahsil of Karad, Satara, Phaltan, Wai, Koregaon, Man, Khatav, Khandala, Jaoli and Mahabaleshwar.

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Socio-Economic Status of Milk Producers in Phaltan Tahsil of Satara District

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Introduction:

Agriculture is backbone of the Indian economy. In India, agriculture is a source of livelihood. According to 2011 census, 68 percent of Indian population is engaged in agricultural activity. It has been the source of supply of raw materials to our leading industries, but agriculture is known as gamble in the hands of monsoon due to inadequate and irregular rain fall. Indian farming is becoming uneconomic due to the heavy Pressure of population. Therefore, people cannot get adequate income. Hence they could not solve their economic problems. In this situation, in India where 80 Percent of the farmers are small holders, agriculture should be supplemented with the subsidiary occupation such as dairy, poultry sheep rearing, cattle breeding etc. In these activities, dairy is leading activity and plays a vital role in the rural economy specially drought prone area. It change in socio-economic structure of rural economy. It provides employment opportunities to the people like landless small and marginal farmers with supplementary occupation and ultimately helps them to increase the standard of living. We know due to less literacy rate workforce in tertiary area are also less so more illiterate people particularly woman from rural area are more attracted towards dairy sector. Today dairy is major regular source of income for the small and marginal farmers.

Objectives:-

The Main Objective of the present study is to highlight the Milk producer enriched villages in Phaltan tahsil. However the specific objectives are as under:

1. To study the dairy activity in the drought prone area.
2. To study the socio-economic status of milk producers in Phaltan tahsil.

The Study Region:-

Phaltan Tahsil is selected for the research paper. The choice of topic under investigation is influenced by many considerations. Firstly, researcher belongs to Phaltan Tahsil hence is familiar with study area. Secondly study area falls in drought prone region of Deccan trap of Maharashtra state, receiving annual average rainfall between 450 -500 mm. It is distributed unevenly in study area. Thirdly irrigation is a dominant factor in study area having considerable impact on land use of Phaltan Tahsil. The Banganga River, the Banganga canal, The Nira River and Nira right bank canal, wells and tube wells are the sources of irrigation in study area. Fourthly, this area has not been so far studied in depth from the land use point of view. Phaltan Tahsil covering the part of The Nira river basin is one of the economically prosperous Tahsil of Satara district in southern Maharashtra. It lies between $17^0 58'$ North to $18^0 5'$ North latitude and $74^0 20'$ East to $74^0 40'$ East longitude. It has total geographical area of 1190 sq.km.with128 villages and one urban settlement (2011 census). This area is bounded by the Nira River in the north side.

The region attains 576 metres height (M.S.L.) with northward slopping land drained mainly by the Banganga River, a right bank tributary of the Nira River.

The medium black and deep black soil appears within study area. The soil fertility encourages growth of various crops like sugarcane, jowar, bajara, onion, vegetables and fruits. According to 2011 census the area has 342667 population, out of these 176250 are males and 1 66417 are females and density of population is 287 per square kilometre. State highway, major district and other roads are major routs of transport besides broad-gauge railway route in Phaltan Tahsil. Phaltan is an administrative head quarter of this Tahsil.

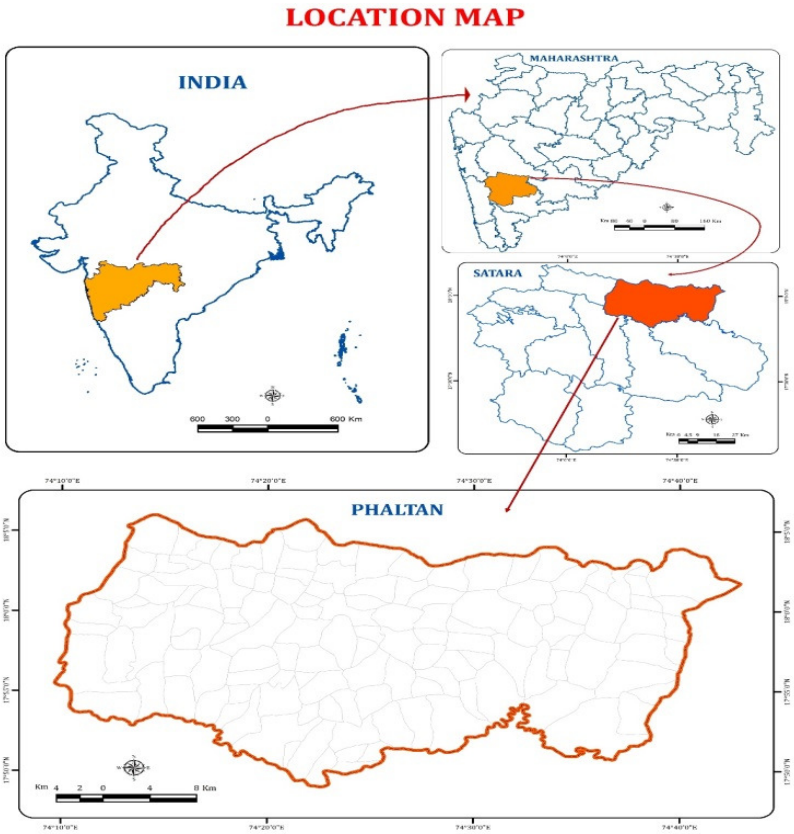


Fig.-1

Data base and Methodology:-

A geographical study is based on field work. The research work is based on both primary as well as secondary sources of data at village level. The Primary data relating to various parameters of socio-economic status were collected through field work and secondary data is collected from District Census Handbook, Animal census, various books and reports. The villages selected to 5.46 percent of total villages by random sampling method and the milk producers have also selected by 12 percent of total milk producers in each sample villages. Data and information were analysed by various methods conclusion were drawn.

Discussion:-

Table-1: Main Occupation of milk producers

Sr.No	Occupation	Milk Producers	Percentage
1	Farming	**120**	**75.0**

2	Dairy	**07**	**4.30**
3	Business	**03**	**1.80**
4	Services	**02**	**1.30**
5	Labour	**28**	**17.60**
	Total	**160**	**100**

Source: - Compiled by the researcher based on field work.

Table reveals that the main occupation of milk producers in the study region. It is observed that 75 percent milk producers main occupation is farming. The percentage of milk producers whose main occupation is dairy activity is 4.30 percent and 1.80 and 1.30 percent milk producers engaged in business and services respectively. Nearly 17.60 percent milk producers main occupation is working as labourer. Most of these labourers keep 2-3 cows or buffaloes for dairy activity. They get fodder free of cost the farmers for whom they work.

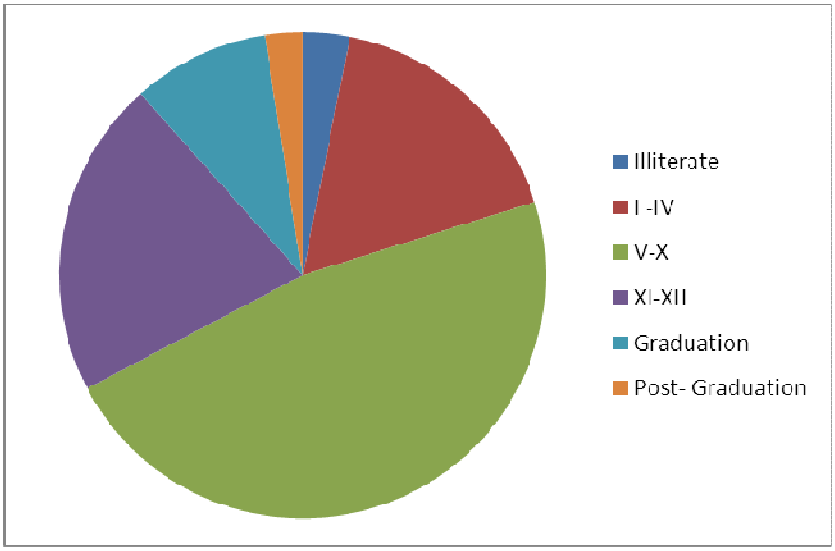
Table No. 2: Educational status of milk producers in sample villages

Sr.No	Education	Percentage
1	**Illiterate**	**3.12**
2	**I -IV**	**17.02**
3	**V-X**	**47.15**
4	**XI-XII**	**21.12**
5	**Graduation**	**9.10**
6	**Post- Graduation**	**2.49**
	Total	**100**

Source: - Compiled by the researcher based on field work.

The table reveals that the educational status of 160 milk producers in 10 sample villages in Phaltan tahsil. It is observed that the nearly 3.12 percent milk producers are illiterate. Illiteracy is generally observed among the agricultural labourers. It is also shows the highest percentage (47.15 percent) of milk producers in the high school category followed by Junior college (21.12 percent), Primary (17.02 percent), graduation and post-graduation. Most of the graduate and post- graduate milk producers have established their own dairy centres. They are financially supported by the banks.

Educational status of milk producers in sample villages



Economic Structure of the Region:

Table No-3: Employment provided by dairy activity

Dudh Sangh			**Milk Societies**		
Total No.	Total Workers	Total Monthly Salary (Lakh)	Total No.	Total Workers	Total Monthly Salary (Rs.)
03	**120**	**2.69**	**42**	**63**	**96500**

There are three number of dudh sanghs in Phaltan tahsil and it is provided the employment opportunity to 120 peoples and 42 milk societies provided employment to 63 peoples, which monthly salary is found Rs 2.69 lakh and 96500 per month respectively. It means dairy activity create a large scale employment and helps the reduction of rural poverty. It also helps milk producer to increase the standard of living.

Standard of Living:-

Every person's social status depends upon various factors such as economic condition, sources of income, land holding, irrigation facilities, job, size of family, business etc.

Table-4: Availability of Particulars by Milk Producers in Sample Villages

Sr. No.	**Particulars**	**No. of Milk Producers**	**Percentage**
1	Television	**156**	**97.50**
2	Telephone/Mobile	**160**	**100.00**
3	Electricity	**160**	**100.00**
4	Toilets	**147**	**91.87**
5	Simple Home	**108**	**67.50**
6	Rcc / Cement	**52**	**32.50**
7	Motor Cycle	**141**	**88.12**
8	Four Wheeler / Tracter	**97**	**60.62**
9	Refrigerator	**62**	**38.75**
10	Changing Cropping Pattern	**09**	**5.62**

Source: - Compiled by the researcher based on field work

The table-4 reveals that the milk producers and their infrastructural facilities in the 10 sample villages in Phaltan tahsil. It is observed that there are highest percentage of milk producers (100percent) have available telephone or mobile facilities, followed by electricity (100percent), Television (97.50percent) and Motor cycle (88.12percent). There are 67.50 per cent milk producers lived in simple homes and only 32.50 per cent milk producers lived in cement and RCC buildings. It is also shows that out of 160 milk producers, 38.75 per cent milk producers have refrigerator and 60.62 per cent have four wheelers. But out of total milk producers only 5.62 per cent milk producers have changed the cropping pattern in last ten years.

Limitations:-

As no records were maintained by the households, the data was collected by survey method on their memory and past experience.

Conclusion:

1. Agriculture is main occupation and dairy farming in subsidiary occupation of the study region.
2. Dairy activity has become an instrument of changing the socio-economic conditions of the rural poor milk producers.
3. In Phaltan tahsil, five dudh sanghs are collected the cows and buffaloes milk and chilling and pasteurized them.

Recommendation:

1. The milk producers do not maintain the records income and expenditure of dairy and related operations. It is suggested that the record should be maintained for their own performance.
2. Fodder especially green fodder supply should be increased the area under irrigation in drought prone area.
3. Farmers should be necessary to rethinking of HYV milk cattle in drought prone area.
4. Peoples should change their attitude regarding dairy farming, they should produce milk by-products.

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Important Factors for Agro Tourism in India

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Introduction

Tourism is now well recognized as an engine of growth in the various economies in global. Many countries have transformed their economies by developing their tourism potential. Tourism has great capacity to generate large-scale employment opportunities and additional income sources to the skilled, semiskilled and unskilled. Now the concept of traditional tourism has been changed. Some new areas of the tourism have been emerged like Agro-Tourism. Promotion of tourism would bring many direct and indirect benefits to the people and country. Agro-tourism is an innovative agricultural activity related to tourism and agriculture both. It was a great capacity to create additional source of income and employment opportunities to the farmers. Maharashtra is one of the major tourist centers in the India and there is large scope and great potential to develop agro-tourism. Agro tourism is a very latest concept and form of tourism in India. It gives an opportunity to experience the real life. The concept of Agro-tourism is an innovative agricultural activity related to tourism and agriculture both. It has a great capacity to create additional source of income and employment opportunities to the farmers. India is one of the major tourist centers in the World and there is large scope and great potential to develop agro-tourism.

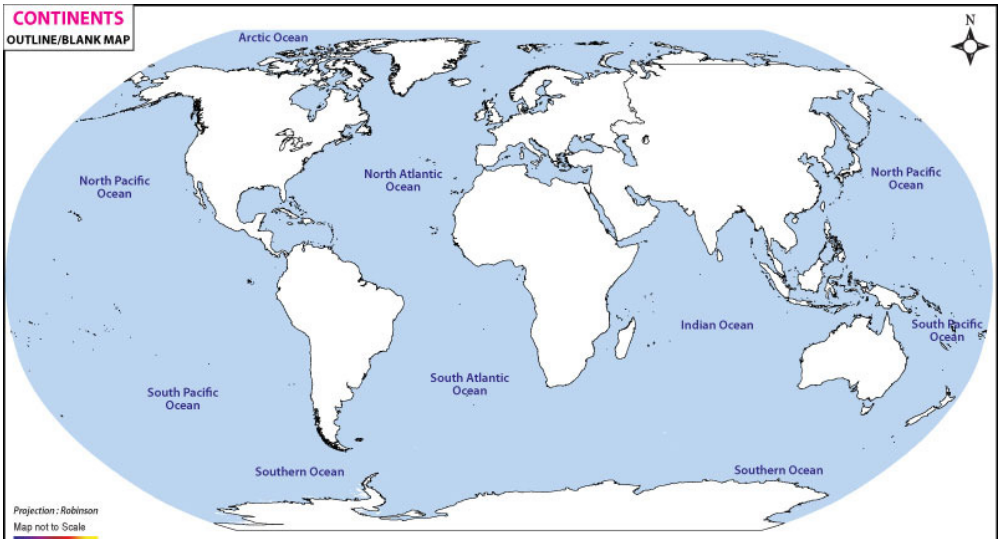
Objectives

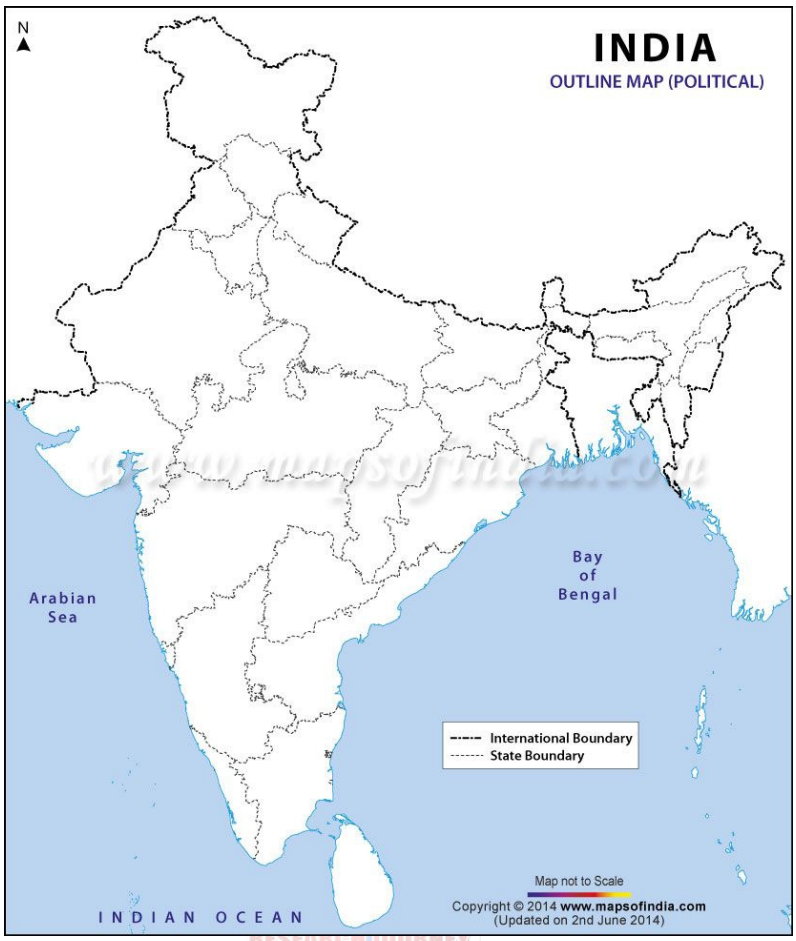
To study the important factors for agro tourism in India.

Study Area

India is one of the seventh largest country and tourist centers in the World. There is large scope and great potential to develop agro-tourism in rural area. The India lies in Asian continent. Agriculture is a most important occupation in the India.

Study Area : Location Map





Methodology

The present research paper is based on secondary data such as various reports, books etc. Some data has collected from the websites. Some ideas have been taken from the Indian Tourism Development Corporation (ITDC) for this research paper.

Infrastructure for Agro-Tourism Centre

1. Accommodation facilities at same place with nearest hotels.
2. Cooking equipment's for cooking food, if tourist have interested
3. Rich resources in agriculture namely water and plants at the place.
4. Farmhouse, which has the rural look and feel comfortable along with all required facilities.
5. Emergency medical cares with first aid box.

Significance of Agro-Tourism Centre

1. Agro-tourism is a way of sustainable tourist development and multi-activity in rural areas. The benefits of agro-tourism development are manifold. It would bring many direct and indirect benefits to the farmers and rural people.
2. Benefits to the urban peoples, they can understand about the rural life and know about the agricultural activities.
3. Employment opportunities to the farmers including farm family members and youth
4. Cultural transformation between urban and rural peoples including social moral values

5. Farmers can improve their standard of living due to the relation with urban peoples.
6. Extra income source for the farmers to protest against income fluctuation.

Important Factors for Agro Tourism:

Farmer:

Majority of the cases, farmer is less educated, less exposed and innocent. For farmer, any outsider is a guest and treated whole heartedly without any commercial motive. Treating guest is pleasure for them than pain. He entertains the guest while entertaining himself in the process. He is not like an exploitative natured businessman which itself facilitate a clean tourism atmosphere.

Village:

Village, which is located far from the city lacks urban facilities, but blessed with natural resources. The investment is made by nature in the form of water bodies, fields, forest, mountains, deserts and islands. Community is more homogenous and treating a guest is part of their culture rather than a profession leading to natural environment required for urban tourist.

Agriculture:

Rich resources in agriculture namely land; water and plants are unique from place to place bringing diversity and creating curiosity. Each field is unique which adds to the attraction of tourists. The way of cultivation and the products are great attraction to the urban population. Indigenous knowledge of rural people is a wealth, which adds to novelty and curiosity of urban population. Combination of farmer, village and agriculture create a wonderful situation which provides unlimited satisfaction to the tourists especially from urban areas.

Promotion of Agro Tourism:

In the context of solution to farmers' problem this model shall make agriculture more viable in three steps that are training has to be provided preferably to those farmers who have small land holdings, agri tourism centers have to be developed with onsite available resources with the help of local people and artisans and finally the most important thing is to create an awareness and infrastructure of field staff to guide the farmer and help them to market, run and operate the agri tourism center."

Public Awareness:

People have become more interested in how their food is produced. They want to meet farmers and processors and talk with them about what goes into food production. For many people who visit farms, especially children, the visit marks the first time they see the source of their food, be it a dairy cow, an ear of corn growing in a field or a fruit they can pick right off a tree. Farmers and ranchers use this interest to develop traffic at their farm or ranch, and interest in the quality of their products, as well as awareness of their products.

Agro Tourism Promotional Concepts at Farm Level

Seasonal Events:

Autumn time is a popular season for farm tourism. Popular holidays like Halloween have the ability to bring in many families with vegetable harvest, fruits picking, pumpkin picking, corn mazes, haunted houses and hay rides. With the possibility of a down season, having different events at farm level can bring in families.

Village Fairs and Festivals:

The tourists can also participate in the village seasonal harvest fair and festivals. The most famous harvest festivals are Pongal, Onam, Baishaki etc. During these festival occasions the tourists can participate and enjoy the traditional dance and music performed by the villagers.

Farmers Markets:

If a farmer grows a plethora of crops that can be sold, opening a small farmers' market can helpbring in extra money. Another option is to have a "pick-your-own" market where customers come in and pick their own vegetable or fruit of choice from what a farmer offers.It's crucial to have a plan when attracting visitors to your "you-pick" farm, especially when small children are present because they "contribute too disproportionately to damaged crops and inventory shrinkage", according to the National Sustainable Agriculture Information Service. Having restrooms and enough parking is also important in the business plan.

Vacation Stays:

For customers who want a getaway, farms can offer cabins or bed-and-breakfast amenities. With bed-and-breakfast, it requires farmers to interact more with guests. While many bed-and-breakfast don't offer many activities that gives the guests the perfect opportunities to explore the town they're in.The guests can be encouraged to discover the area surrounding the bed-and-breakfast, which also acts as a retreat from life outside the farm. A farmer should decide which days of the week work best for them to have guests at the bed-and-breakfast.

Tours:

Along with seasonal events, tours can help bring in schools and teach children about how farms work. According to the Cornell Cooperative Extension, people who visit farms are doing so in part because they want to learn more.Farm tours are a great source for agri tourism for children and others to learn more about farming and everything that goes into it. Having extra activities for children like story time or even the ability to milk cows is a great hands-on activity.

Farm Stay:

Well you must now be bored of visiting the hill stations and staying in the first class Ac hotel room. And you might be looking for the change this time. And to offer you the holidays with the difference agri tourism is definitely a good option.To get that very special experience of the rural ambiance and to enjoy the rural life, Indian tourism provides you the opportunity to stay right away in the farm houses along with the other villagers and experience the difference. Witness the unique lifestyle of the villagers.

Animal Rides:

Apart from all this, holidays on farms provides the complete entertainment. Ride on the bullock carts along with the villager's into the agricultural fields. See them carrying fodder for animals into the buggies. The tourists can even take the camel ride to explore the village and the surrounding areas.

Cow Milking:

Cow milking is real exciting activity, which can't be escaped. Practice the art of cow milking from the villagers. Feed the cows with the fodder and chapattis. See how the rural

women cook food on the chulas made of mud. Taste the authentic rural cuisine and drink fresh milk of cow.

Conclusion

India has the rich geographical and Agri-cultural background. The India has a greater potential of the development of the agro-tourism Centre's due to the good natural, climatic conditions and different types of agri-products as well as variety of rural traditions, festivals. More than 45 percent of population is live in the urban areas and they want enjoy rural life and to know about the rural life. It is a good opportunity to develop an agro-tourism business for rural development in India. But there is a problem of low awareness about this business in the farmer and problem of the finance and proper view in the farmers of the India

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A Study of Prevention and Manegement of Drought in Malshiras Tahsil of Solapur District

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Abstract:

Drought is normal and recurrent feature of climate, it has occurred everywhere on the earth. Drought is no longer mere scarcity or the absence of rainfall, but related to inefficient water resource management. Drought conditions are induced by low precipitation or when monsoons are delayed. On an average 18% of the geographical area of India is vulnerable to droughts. Agro-climatically, the entire Solapur district comes under the rain shadow area. Rainfall is uncertain and scanty. Drought is a recurrent phenomenon in Solapur District where drought conditions are prevailing consistently over many years serve stress to local economy as well as agriculture.

For present study Malshiras tahsil of Solapur district is selected purposively. For the purpose of the study, both primary and secondary information was collected from different sources. Study shows that, 9 percent farmers having water tank in our farm. 43 percent farmers of study region have made effort to increasing under ground water level. Such as "pani adva pani jirva" program, "Jalyoukta shivar" etc. Government has play an impotent role in drought prone area of Malshiras tahsil.

Key Words: Awareness, Disaster, Drought, Management, Farmers.

Introduction:

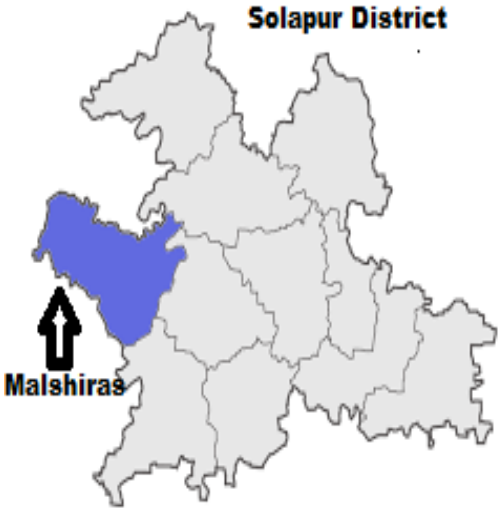
Extreme climatic event such as droughts are very common in India. Drought is the most complex but least understood of all natural hazards, affecting more people than any other hazard. Drought is a natural hazards, although it is differs from other natural hazards by several ways. Drought is no longer mere scarcity or the absence of rainfall, but related to inefficient water resource management.(Dr.G.U Todkari and B.D Patil, 2016). Droughts can be defined in a number of ways as we have various measures to identify drought conditions in a particular space and time. The meteorological drought, which is widely accepted, is based on the degree of dryness and the duration of dry period. It defines drought conditions when precipitation is less than 25 per cent to its normal in a particular region. Drought is a threat to the food security and human mortality all around the world. On an average 18% of the geographical area of India is vulnerable to droughts. Meteorologically ± 19% deviation of rainfall from the long term mean is considered as normal in India. Deficiency in the range of 20 to 59 % represents moderate and more than 60 % severe drought13 Sangli district is one of the drought-hit districts of Maharashtra. (R.P.Singh and Kumar Ajay, 2014). Drought conditions are induced by low precipitation or when monsoons are delayed.

Agro-climatically, the entire Solapur district comes under the rain shadow area. Rainfall is uncertain and scanty. Drought is a recurrent phenomenon in Solapur District where drought conditions are prevailing consistently over many years serve stress to local economy as well as agriculture. There should be long-term measures to ameliorate the severity of drought. Such measures include afforestation, recharging of ground water, micro irrigation system in

agriculture etc. Therefore attempt is made here to study the prevention and management of drought in Malshiras tahsil of Solapur district".

Study Region:

For present study Malshiras tahsil of Solapur district is selected purposively. Malshiras tahsil is extends from 17º 36' North latitudes to 18º 01' North latitudes and 74º 42' East longitude to 75º 13' East longitudes. The total geographical area of Malshiras tahsil is 1522.2 $km^{2,}$ which is 11% of total geography area of Solapur district. The Population of Malshiras tahsil was 485645 (Censes 2011). There was 98260 hectare area under cropping in Malshiras tahsil. The principal source of irrigation in Malshiras tahsil is Bhatghar right bank canal and Ujjani right bank canal. Temperature is high in summer season. The tahsil has hot and dry climate, with an average annual rainfall of 463.4 mm.



Objective:

The main objectives of this paper are as following.

1) To study of prevention and management of drought in Malshiras tahsil.
2) To suggest positive solution to face the drought.

Database and Methodology:

The study was conducted in the Malshiras tahsil of Solapur district in Maharashtra state. For the purpose of the study, both primary and secondary information was collected from different sources. Data regarded prevention and management of drought is collected based on the primary sources used for the year of 2018. For which special questionnaires were designed and field survey has been made to obtain primary data. During the field survey, 10 villages were selected randomly. 10 farmers were selected from each village. The secondary data like cropped area, irrigated area and geographical information collected through Agriculture Department, District statistical Department of Solapur and socio-economic abstract of Solapur district in 2012-13.

Result and Discussion:

Solapur district is one of the most drought affected districts of the Maharashtra state. According to state and National government agencies all tahsils of Solapur district are drought pron. The year 1972, 1986, 1987,1994, 2003 and 2013 were drought years in the district. Malshiras tahsil has lowest rainfall occurring tahsil in Solapur district. Here 10 questions were asked for respondent regarding prevention and management of drought. Following table no. 1 shows that whether the measures were taken for prevention and management of drought in Malshiras tahsil.

Table No. 01

Prevention and management of Drought in Malshiras Tahsil (2018)

Sr. No.	Prevention and management of Drought	Yes (%)	No (%)	Total Respondent (%)
01	Efforts to increase Underground water level	43	57	100
02	Farm tank	09	91	100
03	Participation in tree plantation programs.	32	68	100
04	Use of drip irrigation in our farm	43	57	100
05	Participation in social water conservation programs.	27	73	100
06	Drought forecasting information from any kinds of source.	34	66	100
07	Crop insurance	17	83	100
08	Animal insurance	09	91	100
09	Do you satisfied with measures taken by government in drought concision.	86	14	100
10	Do you think can we overcome on the drought?	45	55	100

Source: Fieldwork, December, 2018

According to above table, 43 percent farmers of study region have made effort to increase under ground water level. Such as "pani adva pani jirva" programe, "Jalyoukta shivar" etc. There are only 9 percent farmers having water tank in their farm to provide water to crop during drought period. Drip is very effective irrigation system in drought prone areas, like Malshiras tahsil**.** There is an average 43 per cent farmers of Malshiras tahsil have adopted drip irrigation method in their farm. Table no. 1 also shows that only 17per cent farmers have crop insurance and 09 per cent farmers have animal insurance. It is easily noticed that very few farmers of Malshiras tahsil are interested in crop and animal insurance.

There are 86 percent farmers of study region were satisfied with measures taken by government in drought condition, like water supply, cattle camps, restructuring of loans and

relief from government revenue. Less than one third farmers have participated in water conservation and tree plantation programs. Drought is natural phenomenon but we can minimize the intensity by taking some measures. Only 45 percent farmers think that they can overcome the drought by taking effective measures.

Conclusion and suggestion:

From the above observation we can conclude that, there are only 9 percent farmers have water tank in their farm to provide water to crop during drought period. There is large scope to construct new farm tank in the study region. It is quite clear that maximum farmers are not interested in crop and animal insurance. Only 43 per cent farmers use drip irrigation in our farm because Bhatghar right bank canal and Ujjani left bank canal provide water in study region. It is noticed that government has played an impotent role in drought prone area of Malshiras tahsil, like water supply, cattle camps, restructuring of loans and relief from government revenue.

The empirical results suggest that, people adopt various strategies to cope with the effect of drought such as drip irrigation, afforestation, construction of farm tank etc. It is also suggested that, there is an urgent need to improve awareness about prevention and management of drought among farmers of Malshiras tahsil.

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Soil Degradation and Its Impact on Agricultural Production in Daund Tahsil of Pune District, Maharashtra

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Abstract:

Soil degradation is one of the most significant environmental problem. In Study region the problem of soil degradation is increasing because of the large scale irrigation facilities, larger area under sugarcane cultivation and more use of chemical fertilizers. Due to the large scale irrigation and more use of chemical fertilizer for sugarcane cultivation without considering the principles of soil and water management has led to salinization and resulting into decline in agricultural production. The present paper has been attempted to study the problem of soil salinization and its impact on agriculture production in Daund tahsil. The tahsil consists of 1288.04 square kilometers area and irrigated land is about 74463 hectares accounting 58.05 percent. Daund is a major agricultural, educational and industrial Tahsil in Pune district of Maharashtra. The area is characterized by intensive subsistence agriculture and good network of roads and railways. In study area over irrigation, percolation of canal water, use of over dose of chemical fertilizers, tendency of farmers for practicing cash crops like sugarcane are responsible for the degradation of soil in the form of saline land. Therefore it is necessary to carry out the geographical analysis of irrigated agriculture and to decide the strategy for agricultural development through reclamation of saline land and proper management of water resources has become the need for healthier environment

Key words: Soil Degradation, Salinization, Irrigation, Agricultural Production.

Introduction:

Soil is a basic natural resource for the living organisms. Soil and water are very interactive and influence on agriculture production. In study region the problem of soil degradation is great significance because of the large-scale of irrigation facilities and more area under sugarcane cultivation. Irrigation is basically on agricultural operation and supplying water for plants. Irrigation has played an important role in transforming the crop cultivation and better yield. Degradation of soil causes by rapid rate of their exploitation and increasing dependence on energy consuming and loss of habitats due to industrial, urban, agricultural expansion. Use of chemical fertilizers, modern irrigation facilities, high-yielding varieties of seeds, modern scientific techniques and technology increases the agricultural production and solves the problem of growing demand of food of increasing population. Increase of population causes increase in the demand of food supply which can be met through increase in agricultural land and productivity of agriculture. Increase in agricultural land is possible by earth-cutting on the foothills and converting the forest land into agricultural land. This process result into soil erosion. The increased rate of soil erosion caused by deforestation has affected on environmental condition. In study region, increasing the sugarcane cultivation has created the problems of soil erosion. The amount of chemicals in the soil is increasing every year. This high concentration of chemical in the soil and water pollutes them. Over irrigation and over dose of chemical fertilizers

are responsible for salinization and degradation of soil. Salinization is the regime characterized by accumulation of highly soluble salts in the soil. Maintenance of canal irrigation has contributing significantly to the problem of soil degradation. Over irrigation has affected on the fertility of soil. In the present study an attempt has been made to provide a comprehensive study of the soil degradation and its impact on agricultural production.

Study region

Daund taluka lies in Pune district consists of 102 villages and one urban centre. Geographically, this region extents from 18°18' to 18° 41' North Latitude and 74° 07' to 74° 51' East Longitude. The region is drained by river Bhima on both north and east side in northern part of study region. Purandhar taluka lies in southwest, Indapur taluka lies southern side and Haveli taluka belongs to western side of the Daund taluka. The geographical area of the study region is 1284.65 sq. km according to 2011 Census. The river Bhima and its tributary rivers Mula - Mutha are dominating drainage pattern in study region. The study region experiences semi - arid climate. May and June are the hottest months with a mean maximum temperature of 40° C. Temperature gradually reduces in December and January with a mean minimum temperature is 12° C. According to 2011 Census the region has 382535 populations out of this 198269 male and 184266 female. And the density of population is 297 per square kilometer National highway, state highway; major district road, other district road and village road and railway are major routes of transport in Daund taluka. It is significant to note that administratively Daund is a headquarter of this taluka and junction place in study region.

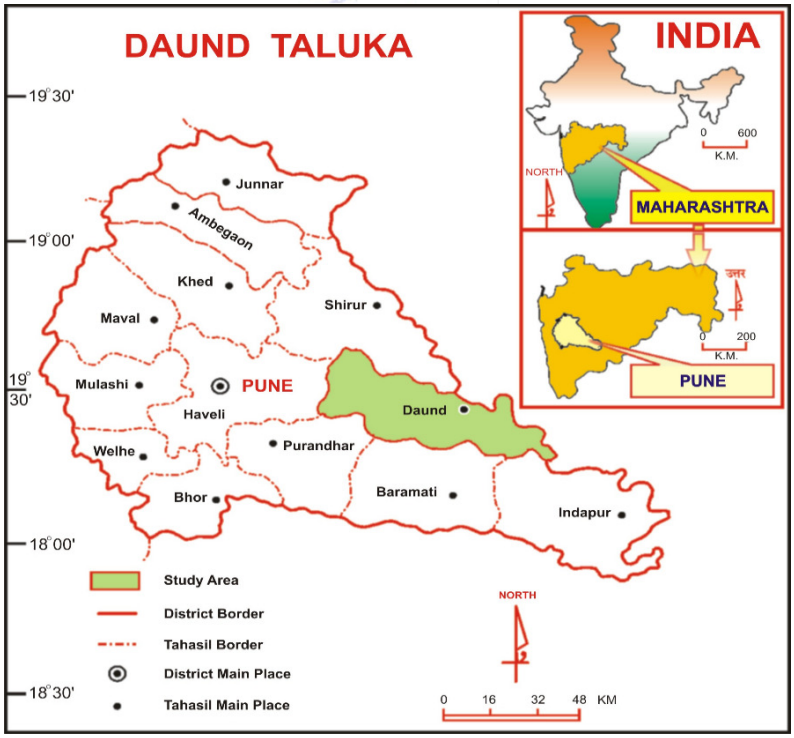


Fig. No. 1

Objectives:

1. To examine the soil degradation and its impact on agricultural production.
2. To identify the problems of salinization in irrigated land.
3. To assess the factors that affect on degradation of soil.

Database and methodology:

This research work is based on both primary and secondary sources of data. The primary data is collected by taking interviews of local people and farmers. The direct questionnaire method is adapted for interview. This data is pertained to the soil degradation and its impact on agricultural production by applying questionnaire. The questions based on locations, timing, economy, functions, sex, education, transportations, irrigation, use of fertilizers, salinization will be analyzed carefully. Secondary data will be obtained from government and non-government agencies.

Soil Types:

The study region consists of basalt rock developed through numerous eruptions during the period from the early Eocene to late Cretaceous and has step-like topography. This types of rock occurs in the form of massive vesicular having dark brown colour with a fine texture and basaltic in nature containing minerals like augite, labradorite, paraoxon, etc. Basaltic surface has free and exchangeable calcium i.e. augite and labradonite. The basalt appears in the form of vesicular and vermicular in nature and is easily weathered and eroded. The fine grained basalt is very resistant to weathering and erosion. Both types of flow are found in study region. There is one major and several minor lineaments running perpendicular to the major one. The major lineament lies from the northwest to southeast region for a distance of about 40 kilometers. These lineaments control the drainage system and soil types. The northern part in the vicinity of Bhima River is undissected and degree of dissection increases towards southern part. The central part of study region is characterized by upland plateau and is found dissected.

Soil is formed by the process of disintegration and decomposition of rocks together with plants and animals over a long period of time. The soils are mainly formed in this sedimentary manner due to deposition of original occurrence. Soil is a resource from which we obtain our food, clothing and other necessities of life. The major soil types in study region are, namely coarse shallow soil, medium black soil and deep black soil.

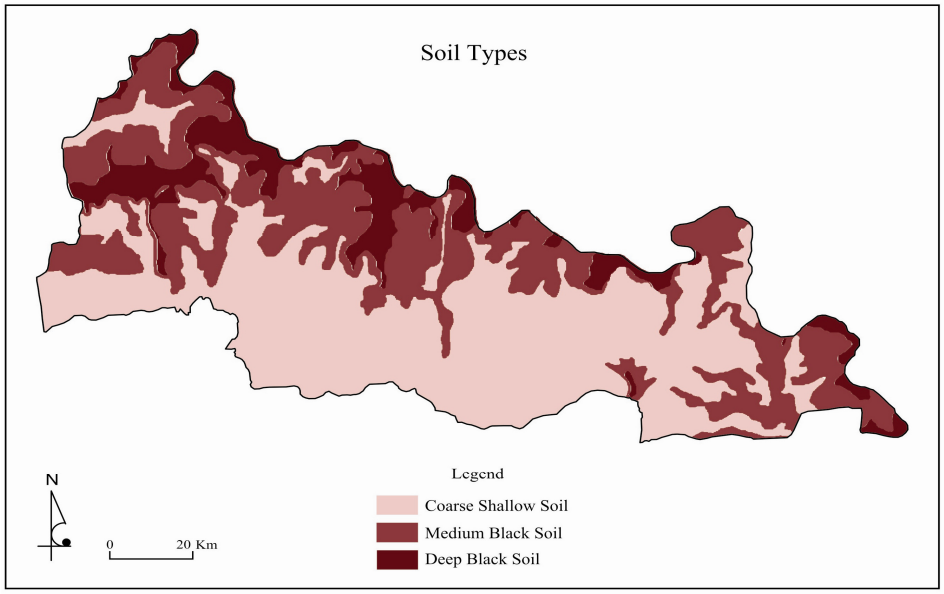


Fig. No. 2

Coarse shallow soil:

In study region 60 percent area is covered by coarse shallow soil. It is confined to south and central parts in study region. This soil appears at the higher altitude upto 600 meters on undulating land containing less moisture resulting into low yield. Jowar and Bajra crops are well grown on this soil

Medium black soil:

The medium black soil is appeared in surrounding Bhima and Mula-Mutha rivers areas covering 25 percent area in study region. It is fairly deep, well drained and fine textured. It suffers from moderate erosion. It is moderate saline, clayey and calcarious in nature. This soil is comparatively less fertile than deep soil. Sugarcane, wheat, vegetables and fodder are common crops grown in this soil in study region.

Deep black soil:

Deep black soil lies on low lying area of Bhima and Mula-Mutha basin. It is well drained, clayey and it appears dark brown to grayish black in colour owing to excessive predominance of humus content. This soil varies in depth from 3 to 15 feet. This soil contains high moisture holding capacity with calcium carbonate in varying proportions and is suitable for cultivation. The crop cultivation in this soil is supplemented by irrigation. Vegetables, sugarcane, wheat, fodder crops are grown on black deep soil in study region.

Soil Fertility and pH Value of Soil:

Soil formation is a slow, but continuous process taking place over a long period of time. The presence of water in the soil is also a significant of soil aeration and its fertility. In any agricultural operation soil is important as it is the cradle for all crops and plants. The standard of living of the people depending on agriculture is often determined by the fertility and productivity of soil. Soil fertility in Daund tahsil is on an average good, medium black and deep black soil are generally fertile. The use of bio-fertilizers may also considerably add the fertility to the soil. The fertility of soil is related to the nutrient available in the soil which varies from place to place. Over irrigation and over doses of chemical fertilizer directly affects on the quality of soil. The quality of soil is measured through standardized soil testing method which are pH or soil reaction which indicates acidity, alkalinity and salinity in term of soluble salts determined through electrical conductivity test ' EC '. The proportion of free hydrogen ion in the soil solution is measured and stated as pH value. The pH range for most agriculture soil is 5 to 8.5. Values below pH 7 indicate an acidic soil and value above pH 7 indicate alkalinity. On the basis of pH measurements of soils, the soil quality of the study region is categorized as follows.

Table-1: pH Value Index

Sr. No.	pH	Reaction
1.	Under 4.5	Very high acidity
2.	4.5 to 5.0	High acidity
3.	5.1 to 5.5	Moderate High acidity
4.	5.6 to 6.0	Moderate acidity
5.	6.1 to 6.5	Slightly acidity
6.	6.6 to 7.0	Neutrality
7.	7.1 to 7.5	Slight alkalinity

8.	7.6 to 8.0	Moderated alkalinity
9.	8.1 to 9.0	Strongly alkalinity
10.	Above 9.0	Very Strong alkalinity

Sources: Majid Husain (2010): Agriculture Geography.

It is observed that in the present study the soils are highly affected by excessive amount of salts in the soil in northern part of the study region. Examining the pH of soil has performed using for surface soil having depth up to 25cm. It is observed that thirteen villages of Daund tahsil have included in backward category. In study region, villages located in southern part are more backward than the villages in central part. Follow land in this region is not fully utilized, non-availability of irrigation and soils showing pH less than 7.5. In Daund taluka, sixty-six villages are included in developed region, in central part of the study area soils showing pH is 7.6 to 8. The villages are located near the national highway and can easily access to accept new technology in agricultural development due to its roadside location. The roads provide means by which farm families can get health and education services, improved community life and better rural development in study region. The high irrigated area is observed in northern part in study region. There are twenty four villages included in study region that are found in the process of change and development. These villages are located in northern part in study region on the bank of river Bhima in fertile belt with irrigation facility. Irrigated crops like sugarcane, vegetable, wheat and onion are grown in this village, soils showing pH above 8 are all spread uniformly through the northern part in study region and are self-explanatory as far as the problem of salinization is concerned. The farmers are using excess salty water for farming from lifts and canal irrigation therefor the salinization of soil is continuously increasing in northern part in study region and hence agricultural production is also decreasing.

Soil Degradation:

Soil erosion is a destructive process that results in removal of organic matter from the top layer and its leaching by the agent of denudation. When the denudation of surface layer of soil take place faster, it is known as soil erosion. Soil erosion may take place by the action of agents of erosion. Erosion is influenced by the nature of the soil. When soil erosion takes place on gentle slopes, a thin layer of soil is removed uniformly from the entire area. Agricultural practices and the crops grown do have their influence on soil denudation. In more denudation takes place in the fields of soil exposing crops as compared to the soil protecting crops. Overgrazing and devegetation also increase soil erosion. In Daund tahsil the problems of soil denudation has been mainly caused by the salt tolerant crops and running water on sloping lands. Indiscriminate irrigation of land led to mass salinization of soil in study region. Saline soil this problem is day to day increasing in northern part of study region. Unless this is effectively checked, this will put the area to a great soil loss and for that matter, the loss of agricultural production.

Soil Conservation:

Agriculture is the main occupation in study region. 66.93 percent population of the study region is engaged in agriculture activity. In the area which is not suitable for cultivation, afforestation will check soil erosion. Afforestation in sandy stretches along the Bhima river channel will form a wind break and prevent the shifting sands. Overgrazing and cutting of trees must also be effectively prevented. It is estimated that 3.50 percent fallow land and 6.85 percent

cultivable waste land are found in study region. These are in some way or the other affected by the growing menace of soil erosion. However, the department of soil conservation of the government is helping farmers through technical advice, demonstration and financial assistance in form of subsidies and loans to fight out the soil erosion in study area. The areas affected by soil denudation along the Bhima River are being reclaimed by constructing bunds and leveling of lands. Saline soils are improved by establishing artificial drains. The salt tolerant crops, suitable for the saline affected lands, are sugarcane, wheat, tomato. Crops having low salt tolerance include Pulses and all fruit trees and salinization can be controlled by minimizing the area under sugarcane. In Daund taluka some of the important devices to check soil denudation are rotate soil protection crops, develop a protective vegetation cover. Over irrigation is the main cause of soil salinization hence the modern techniques should be used like drip irrigation and sprinkler irrigation, this will be ultimately helps in increasing the productivity of land. Farmers should use bio-fertilizers for the crops and reduce the use of chemical fertilizers. Bio-fertilizers increases the fertility of soils.

General Landuse Pattern:

The total area reported under land use in Daund Tehsil is 103303 hectares of which 68.39 percent is net sown area, 58.05 percent irrigated area and 41.95 percent is double cropped area. The waste land is share 6.85 percent. Fallow land shows a very slight variation. The percentage of land under cultivation is almost the same in study region. Which is indicative of the fact that the agricultural sector is must be contributing a large share to the total economy of the area. The major factors responsible for this comfortable situation are availability of deep, flat and fertile land and soils, heavy dependence of population on agriculture. Agriculture being a traditional occupation of the masses, growing unemployment and slow movement of rural population into other sectors of economy.

Table-2: Comparative Landuse Pattern

Sr. No.	Landuse Types	District Pune	Tehsil Daund
1.	Net sown area	60.23	68.39
2.	Area not available for cultivation	17.14	21.17
3.	Cultivable waste	8.05	6.85
4.	Fallow land	4.19	3.50
5.	Forest	10.39	0.09
Total		100	100

Source: Socio-economic Abstracts, Pune (2011)

Agricultural Landuse Pattern:

Agriculture is predominant in study region provides livelihood to 66.93 percent population. It is largely depends upon soil types, climatic condition and irrigation and reflects the variations on cultivation of different crops. Sugarcane is one of the important crops in Daund taluka. The area under sugarcane cultivation in study region is increasing due available irrigation facility. The agricultural operation of this crop requires more care and more capital. Other important crops are jowar, bajra and onion. But, area under these crops under cultivation in study region is decline as in comparison of sugarcane area. The farmers are generally reluctant in cultivation the pulses, grams and vegetables. Therefore, the acreage under above crops are

declined largely in study region. The cash crops are sold in wholesale market. The remaining crops are consumed locally. The agriculture in study region is entirely depended on amount of rainfall receives in both kharif and rabbi seasons. Total area under cultivation is 103844.94 hectares in study region.

Table-3: Agricultural Landuse of Daund Taluka

Sr. No.	Name of Crops	Cultivated Area (In Hector)	Percent of Cultivated Area
1.	Jowar	31978	30.96
2.	Sugarcane	24951	24.15
3.	Wheat	13711	13.27
4.	Bajra	8932	8.65
5.	Onion	6235	6.03
6.	Fodder Crops	7199	6.97
7.	Oilseeds	2745	2.66
8.	Vegetables	3479	3.37
9.	Gram	2379	2.30
10.	Fruits	1694	1.64
	Total Cultivated Area	103303	100

Source: Socio-economic Abstracts, Pune (2011)

Irrigated And Double Cropped Area:

In Daund taluka there is dense network of irrigation facilities. Irrigation is largely depend upon the types of sources. The main source of irrigation in study region is canal irrigation besides wells, tanks and ponds. Victoria tank is major tank and it supplies water to Warwand and Patas villages. Lift irrigation is available along south bank of Bhima River. Villages lying on river side irrigate land by using pump sets both for drinking and land cultivation. Irrigation through exploitation of ground water is found high. The irrigated land in study region is 74463 hectares accounting 58.05 percent. Out of this 42.66 percent land is irrigated by canal in study region. Tanks irrigation accounts only 27.29 percent, wells irrigation constitutes 27.90 percent whereas followed by 2.15 percent of borewells in study region.

Table-4: Irrigated area in Daund Taluka

Sr. No.	Means of Irrigation	Irrigated Area (Hecters)	Percent
1.	Canal Irrigation	31765	42.66
2.	Tanks Irrigation	20324	27.29
3.	Wells Irrigation	20774	27.90
4.	Borewells Irrigation	1600	2.15
Total		74463	100

Source: Socio-economic Abstracts, Pune (2011)

The percentage of land under irrigation has the direct beaing on the cropping intensity of an area. Besides there are other factors that are fertile soils and use of modern techniques which cause appreciable rise in cropping intensity in the area. In study area all factors are more or less evenly effective except means of irrigation. Irrigation facilities are affected on special variation in double cropped area with highest 41.95 percent in low lying area of Bhima and Mula-Mutha basin.

Conclusion:

The degradation of soil caused by over irrigation, percolation of canal water, unclean outlets, use of over dose of chemical fertilizers, frequency of cash crops like sugarcane are responsible for the formation of saline land. Reliable and suitable irrigation and bio-fertilizers can improve the agricultural productivity and agricultural production. Agricultural development increases agricultural production on one hand and soil degradation on the other hand, which is creating environmental problems. The modern techniques should be used like drip and sprinkler irrigation to reduce the over exploitation of natural resources.

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Status of Irrigation Intensity in Man River Basin

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Abstract:

Agriculture is the backbone of Indian economy, 70 per cent people are directly or indirectly engaged in agriculture sector. The development of Agriculture depends on irrigation facilities. Irrigation is necessary of the agriculture. The present paper focuses on irrigation statues in man river basin. There are presents traditional methods of irrigation in the study area but recently the proportional of traditional irrigation has been decreasing in the basin as well as the modern water construction methods and small, large irrigation projects, water conservation techniques have developed therefore irrigation intensity has been increased.

Key word- Agriculture, Irrigation, Irrigation Intensity

Introduction:

Agriculture is the backbone of Indian economy, where more than 70 per cent people are directly or indirectly engaged in this activity. Development of Agriculture is mainly depends upon irrigation facilities. In the next 30 to 40 years world's food production will need to double to fulfil the demands of the increased population. More than 80 per cent of this increased food production will have to come from existing lands and 75 per cent of this increased food production will have to come from irrigated land. In the absence of irrigation, farming is very constricted. If the rainfall receives less than 30 cm agriculture becomes unthinkable without irrigation. Irrigated water contributes to improving water circumstance of soil, increases the water content of plant fibers', dissolves nutrients, and makes them available to plants. Irrigation influences temperature a condition by regulating the temperature of the surface layer of the soil and the ground layer of the air and also makes possible control of the growth and development of plants and improvement of the quality of the harvest. In the state like Maharashtra, where the rainfall is unpredictable and inadequate, so the irrigation plays the significant role in agricultural practices.

Study Region

Man basin stretches from 16°50'30" North to 17°31'42'North latitudes and 74°22'30'' East to 75°30'30'' East longitudes. It is a part of Southern Maharashtra, lies in the district of Satara, Sangli and Solapur tahsils of Maharashtra State. The river Man originates at Kalasakarwadi (Kulakjai) nearby Shitamai hill, 25 km away from western side of Shikhar Shingnapur, at the height of 917m from mean sea level. 4753 sq km has covered under man river basin. The average temperature in the summer season recorded 40° C to 45° C while in winter season recorded 15° C to 25° C. Due to hot and dry Climate very low amount of rainfall and high

evaporation rate is observed. The average annual rainfall in the region is 250- 350 mm since the area lies in the rain shadow zone of Maharashtra.

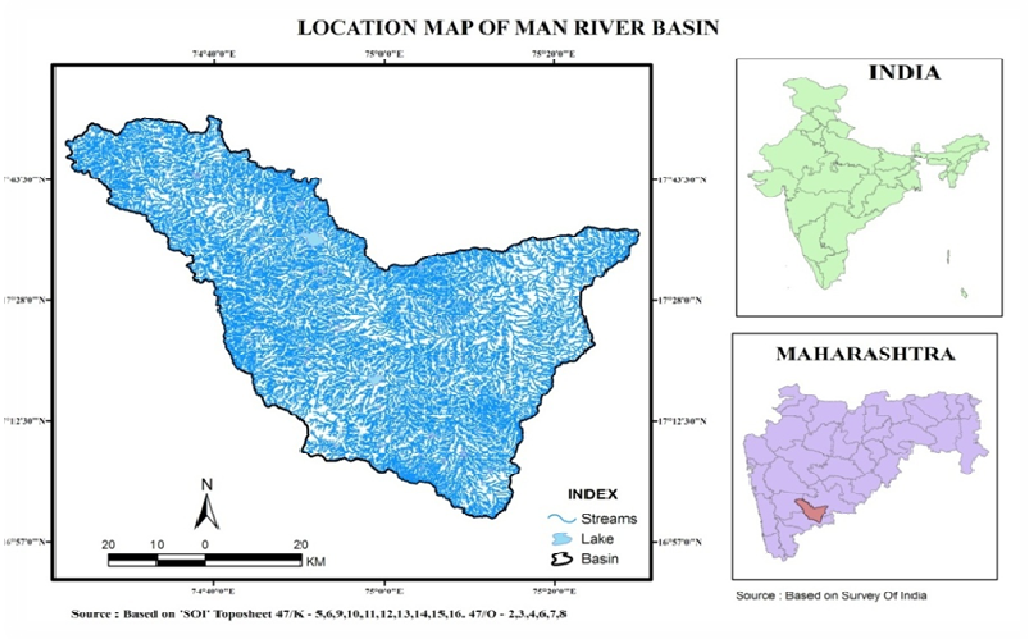


Fig.-1

Objective

1. To Study Irrigation Status of the Man River Basin.
2. To find out spatio-temporal change in irrigation intensity.

Database:

For the present study following data have been used.

1. The principal source to the database is 'SOI" Topographical maps of 1:50,000 scales which is used for preparation of basin map.
2. Other related secondary data have been collected from different Govt. Agencies and research organizations as well as data published by the agricultural department. Irrigation data is collected from irrigation department, District census handbook, district socio-economic and statistical abstract.

Methodology:

The percentage of area under cultivation and area under the irrigation has considered to find out Irrigation intensity in the Man river basin. The following formulas has been used.

$$\text{Irrigation Intensity} = \frac{\text{Total Irrigated Area}}{\text{Total Cropped Area}} \times 100$$

Irrigation Status

Irrigation is a one of the most effective technical means to the raising agricultural production in Maharashtra. Presently Man river basin is in the progressive stage in agricultural sector. The need of food grains has been increasing day by day due to the increasing population, This has leads to the need for increasing agricultural production, by giving priority to agricultural development projects and irrigation facilities. An attempt has been made to achieve irrigation development in a planned manner. Timely, adequate and reliable water supply is of paramount

importance in agriculture. Development of irrigation facilities lays the key role in alleviating rural poverty. However, agriculture in the man basin developing state because of limited irrigation facilities, coarse shallow and poor quality soil and precarious and erratic rainfall.

Irrigation Pattern Of Man River Basin

In Man river basin, the total area under irrigation was recorded 12.66 per cent in1991 but it has increased by14.33 per cent in 2010-11. This is mainly due to the modernization of agricultural activities, construction of dams or pounds, water conservation scheme etc. Man river basin is a drought-prone region as it receives very less rainfall throughout the year.

In 1990-91, below 10 per cent irrigated area out of total cropped area of Mangalwedha tahsil has recorded, while Sangola, Jat and Kavathe-Mahankal region, which is recorded 7.08 per cent, 8.51 per cent, 7.59 per cent and 8.36 per cent respectively. Man and Atpadi region recorded 16.55 per cent and 16.16 per cent irrigated area. Pandharpur region of the basin is recorded above 20 per cent irrigated area, it is 26.93 per cent.

Table: - 1
Percentage Of Irrigation In Different Region Of Man River Basin

Sr. No.	Region name	Percentage of irrigated area		
		1990-91	2000-01	2010-11
1	Man	16.55	16.51	18.29
2	Mangalwedha	7.08	9.35	25.64
3	Pandharpur	26.93	33.26	38.68
4	Sangola	8.51	7.57	17.79
5	Atpadi	16.16	11.50	18.50
6	Jat	7.59	9.83	10.99
7	Kavathe-Mahankal	8.36	11.03	12.48
Man basin total		12.66	12.34	14.33

Source- District socio-economic abstract.

During 2000-01, the irrigated area was decreased because of the drought condition in the study region. The irrigated area of the overall basin was decreased from 12.66 per cent to 12.34 per cent in the 2000-01 year. Sangola, Mangalwedha and Jat region of basin shows below 10 per cent of irrigated area. Man, Atpadi and Kavathe-Mahankal region show the 10 to 20 per cent irrigated area. Pandharpur region of study area recorded 33.26 per cent irrigated area because it is lies near Bhima River.

According 2010-11, the irrigated area of the different region has recorded more than 10 per cent. Man, Sangola, Atpadi, Jat and Kavathe-Mahankal region of study area recorded irrigated area in between 10 to 20 per cent. Above 20 per cent irrigated area shows in the Pandharpur and Mangalwedha region of the basin.

Above overall discussion reveals that the irrigated area of Man river basin is increasing since 1990-91, but in the 2000-01, the area shows decreasing state, due to the drought situation a prevail in the year. But trend of irrigation shows the increasing area under irrigation, due to the the construction of a dam, canal, farm pound and other irrigation facilities. And its impacts also found on the crop pattern.

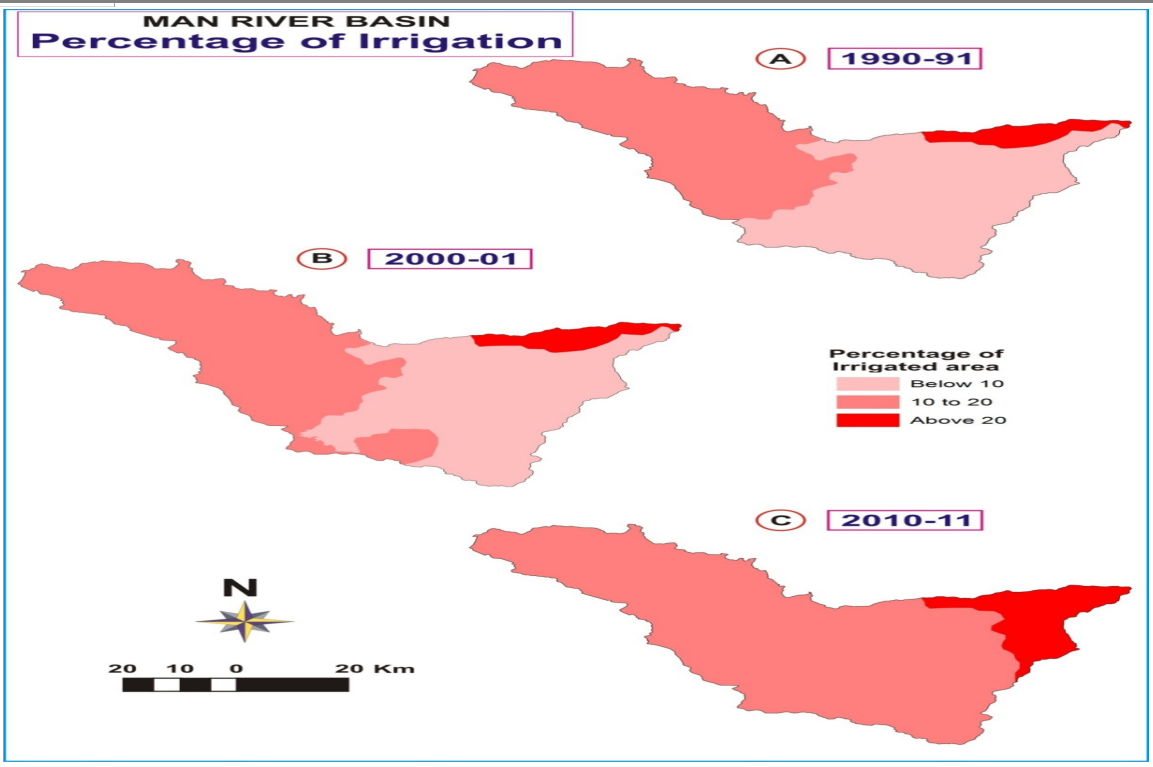


Fig. 2

Irrigation Intensity

Irrigation intensity of each region is calculated with using above formula and represented in the table no 2. As per table-2, in 1990-91 the irrigation intensity in Jat and Mangalwedha region shows the below 10 per cent, as well as 10 to 20 per cent intensity found in the Sangola, Atpadi and Kavathe-Mahankal region of the basin. Man and Pandharpur region of Man basin recorded the above 20 per cent intensity. In the overall Man basin irrigation intensity is 15.80 per cent in 1990-91.

Table: - 2

Irrigation Intensity Of Man River Basin (In Percent)

Sr. No.	Region Name	1990-91	2000-01	2010-11
1	Man	21.13	13.62	27.79
2	Mangalwedha	8.67	11.99	41.34
3	Pandharpur	28.10	38.99	42.36
4	Sangola	14.46	12.24	42.10
5	Atpadi	18.93	13.36	22.39
6	Jat	8.65	10.83	12.44
7	Kavathe-Mahankal	10.63	12.28	12.77
Man basin total		15.80	16.19	28.74

Source- on basis of district socio-economic abstract.

In 2000-01, irrigation intensity is more than 10 percent in all regions. In Man, Mangalwedha, Sangola, Atpadi, Jat and Kavathe-Mahankal region irrigation intensity is rescored in-between 10 to 20 per cent. Pandharpur region records the irrigation intensity above 20 per cent. In the overall study area irrigation intensity was 16.19 per cent.

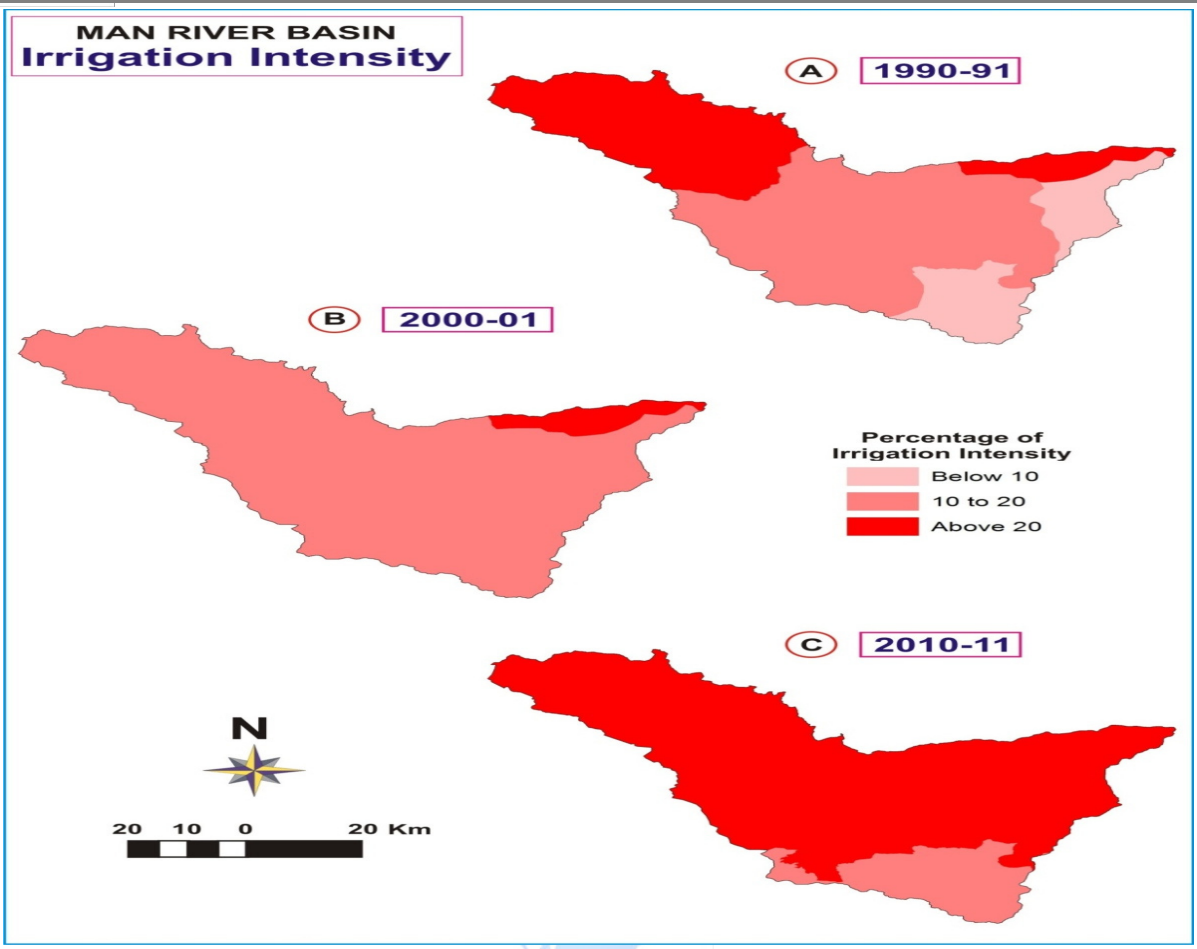


Fig: - 3

In 2010-11, irrigation intensity has been increased in all regions in man river basin. Jat and Kavathe-Mahankal region of Man river basin is coming under the 10 to 20 per cent category of irrigation intensity. Man, Mangalwedha, Pandharpur, Sangola and Atpadi region of basin came under above 20 per cent irrigation intensity category. In the overall study area irrigation intensity is 28.74 per cent.

Above all discussion reveals that, from 1990-91 to 2010-11 irrigation intensity has increased from 15.80 per cent to 28.74 per cent. In the whole basin, the intensity of irrigation has increasing since 1990-91 except 2000-2001. This increasing trend resulted in the crops combination of the basin.

Changes In Irrigation Intensity

Change in irrigation intensity is calculated and shown in Table:- 3, as per table 3,In 1990-91 to 2000-01, Man, Sangola and Atpadi region of the basin shows the negative change in irrigation intensity. Mangalwedha, Pandharpur, Jat and Kavathe-Mahankal region of the basin recorded the increasing intensity. The highest increasing intensity recorded in the Pandharpur region with 10.89 per cent, followed by Mangalwedha (3.32 per cent), Jat (2.18 per cent), and Kavathe-Mahankal (1.65 per cent). The decreasing intensity shows in Man, Atpadi and Sangola region with -7.51, -5.57 and -2.21 per cent. In the overall Man, basin region shows the increasing intensity of 0.39 per cent.

Table: - 3

Changes In Irrigation Intensity (In Percent)

Sr. No.	Region name	1991 to 2001	2001 to 2011	1991 to 2011
1	Man	-7.51	14.17	6.66
2	Mangalwedha	3.32	29.35	32.67
3	Pandharpur	10.89	3.37	14.26
4	Sangola	-2.21	29.86	27.64
5	Atpadi	-5.57	9.03	3.46
6	Jat	2.18	1.61	3.79
7	Kavathe-Mahankal	1.65	0.50	2.14
Man basin total		0.39	12.56	12.95

Source- on basis of district socio-economic abstract.

From 2000-01 to 2010-11, in the overall study area records the 12.56 per cent increasing irrigation intensity. The highest increasing intensity shows in the Sangola region with 29.86 per cent, followed by Mangalwedha (29.35 per cent), Man (14.17 per cent), Atpadi (9.03 per cent), Pandharpur (3.37 per cent), Jat (1.61 per cent) and Kavathe-Mahankal (0.50 per cent) region.

1990-91 to 2010-11, in the overall study area, shows the 12.95 per cent increasing intensity. The highest change in intensity shows in the Mangalwedha region (32.67 per cent), followed by Sangola (27.64 per cent), Pandharpur (14.26 per cent), Man (6.66 per cent), Jat (3.79 percent), Atpadi (3.46 percent) and Kavathe-Mahankal (2.14 percent) region of Man river basin.

Man river basin recorded the positive change in irrigation intensity from 1990-91 to 2010-11. In the first decade (i.e 1990-91 to 2000-01) the percentage of change in intensity was only 0.39. It is very little change because the drought condition was occurred in the basin region. But after 2000-01, the intensity of irrigation was increased very rapidly i.e. 12.56 per cent. This rapid change shows due to the construction of dams, canal, farm pound, KT ware, and other irrigation facilities in the study region.

Conclusion

Above overall discussion reveals that the irrigation status in man river basin area has changing because it is depends upon many factors like rainfall and irrigation facilities. The irrigated area of the study region is decreased in 2000-01 because of drought condition. But in 2010-11, it was recorded rapid changes in the irrigated area because of the development irrigation facilities. As compare the irrigation intensity in the year 1990-91 and 2000-01, it shows the negative change in three tahsil in the study area. But in 2000-01 to 2010-11, the intensity of irrigation is recorded the rapid positive changes in the Man river basin. Man river basin has the different irrigation systems; it covered in the large and small irrigation system. Large irrigation systems like projects and large tanks, which are used for irrigation and other purposes. Mostly in the western parts of the study area connected with canal irrigation. Central and eastern parts depended on the small irrigation methods. In the Man river basin wells and the tube wells irrigated area is larger than any other small irrigation systems. In the overall, modern water conserving and storing techniques are used by farmers of this region like farm pond, drip irrigation, sprinkler irrigation etc. Due to the increasing irrigation facilities and government scheme farmers are diverting from cultivation of traditional crops to the cash crops in the study region.

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Pattern of Water Table in Lower Sina Basin: A Geographical Study

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Abstract:

Water is an important factor for all living things, it is important for Agriculture. Not only Agriculture production is depending on irrigation facility but also availability of water. Sina river basin is in drought prone area. In this basin rainfall is generally low in the rainy season, but during the monsoon season the water flowing through the rivers and nullahs, but these rivers is very dry after releasing of rainy season, hence the level of water is decreasing. Ground water is the water found in the surface of the soil and the fracture of rock formation. Rock or composite deposit is called a unifier when it can get water for usable amount. Natural emissions are mostly on springs and seas, and may make oases to research the underground water. Underground water table is generally prepared and run by drain wells, tub wells for agriculture, municipal, and industrial use. In the study region we observed underground water table is decline from all over study region. The Central Ground Water Board, Maharashtra Irrigation Department and Agriculture Department have been highlighting the rapidly declining water table for the past many years.

Keywords: Ground water, recharge, Irrigation, scarcity, Agriculture etc.

Introduction

Ground water is depend on geological structure of the area. According to Merriam Webster's Collegiate Dictionary, ground water means water within the earth especially that supplies wells and springs (Merriam Webster's collegiate dictionary, 2003). The upper surface of ground water is called water table (Valdiya K.S.,1987). Occurs of ground water is controlled by climate, topography and under ground rock structure. Ground water occurs at great depths in arid region and shallow depths in humid region (Nanaware, 2009). Ground water exists wherever water penetrates beneath the surface (Mahajan Gautam, 1989).

The study area comes under drought prone region of the Maharashtra state. It is a heart of drought prone area. Underground Waters level is important for agriculture. The room where the soil is dry or fracture and the sound of the rock, the water is completely saturated and the water recharged from the earth's surface and finally naturally goes to the underground the water level of the Sina river basin mainly increase from the rainy season and decline of underground water table in period of March to June. Water level reduction in large amount of water used in sugarcane farming in study region. In summer season, we observed Paranda, Karmala, some parts of Madha tahsil, South Solapur tahsil found water scarcity problem, due to the decreasing water level in this region. In summer season a scarcity scenario is created in this region.

Objectives:

The main objective of the present study is to decline underground water table in Lower Sina basin.

The Study Region:

The Study area is located in south central part of Maharashtra state. It is situated between 17^0 18' to 19^0 15' North Latitude and 74^0 30'to 76^0 15' East Longitude. Lower The study region is bounded to the North by upper Sina basin, to the East by Manjra sub basin No 4, to the West by upper Bhima basin No 17 and 18, to The South bounded by Karnataka State. Its shape is roughly rectangle. Its East edge of Sina basin is covered by scarp of the Balaghat Ranges and Uneven with patches of low level plain.

Sina Basin is a part of Deccan plateau. An average height of lower Sina basin is 548 meters above sea level. The total Geographical area of Sina Basin is 12742 Square kilometer and total length of river is 300 kilometers out of them lower basin length is 180 Kilometer in Solapur District. The study region has hot and dry climate with 626.49 M. M. average rainfall and the mean monthly minimum and maximum temperature is 19.97^0 Celsius and 33.73^0 Celsius respectively. Agriculture is main occupation of the people of study region. Lower Sina drains total seven tahsils of Solapur and Osmanabad districts of Maharashtra State, out of them six tahsil are of Solapur district i.e. Karmala, Barshi, Madha, Mohol, North Solapur, South Solapur and one tahsils are of Osmanabad District i.e. Paranda tahsil.

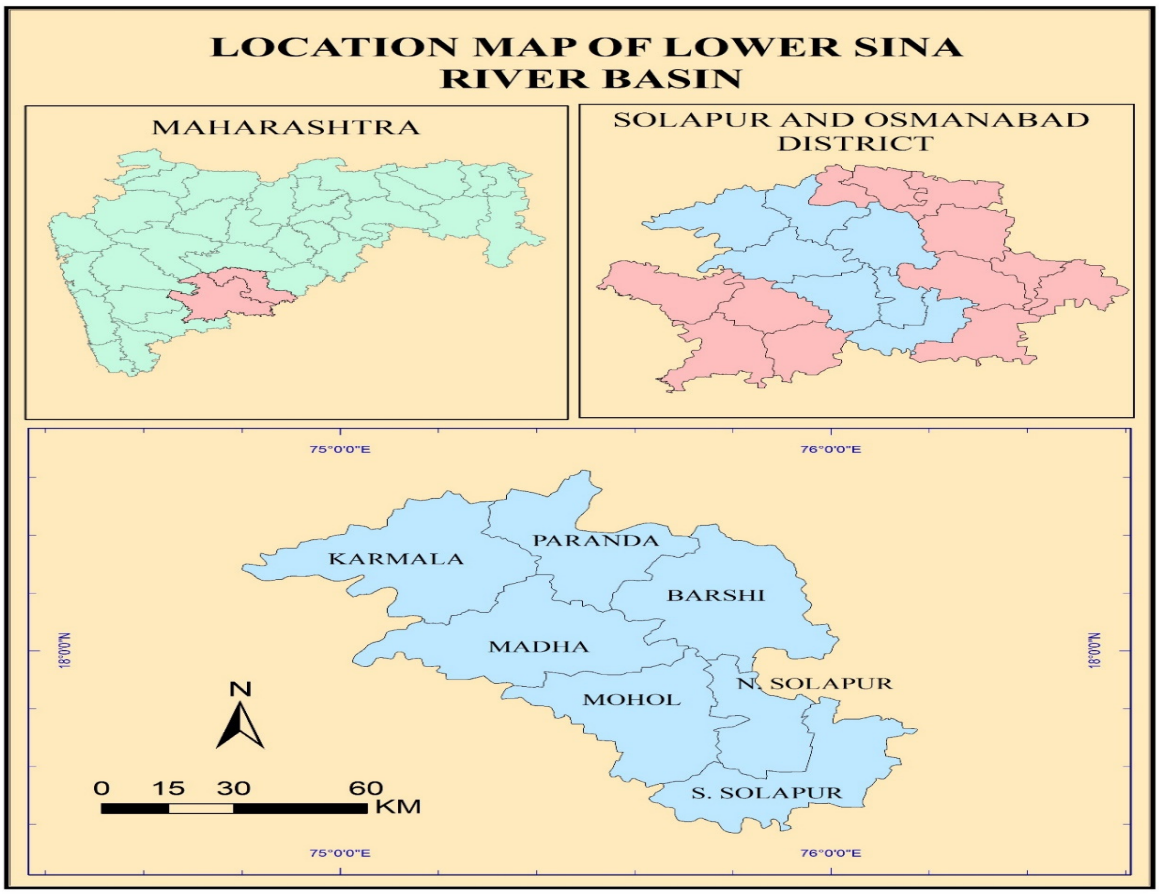


Figure- 1

Data collection and Methodology:

The present study is based on secondary data source. To fulfill the objective data regarding Ground water level information is collected from the Senior Geologist, Ground water and Development Agency Solapur and Osmanabad District for the period of 1994-99. The collected data is analyzing the water table and changes therein in lower Sina basin. the tahsils are grouped into different categories i. e. High, moderate and low change of water table in Lower Sina basin. For the effective presentation the tables and graph are prepared on the basis of above statistical Information, the result and conclusions are drawn.

Discussion:

A) Spatial Pattern of Water Table:

Overall, under groundwater is very unevenly distributed in lower sina basin. The storage of groundwater is not consistent and it is varying from tahsil to tahsil. Groundwater level is different from season to season causing widespread regional imbalances. In fact, the rise in water table is the fluctuating phenomena in study region.

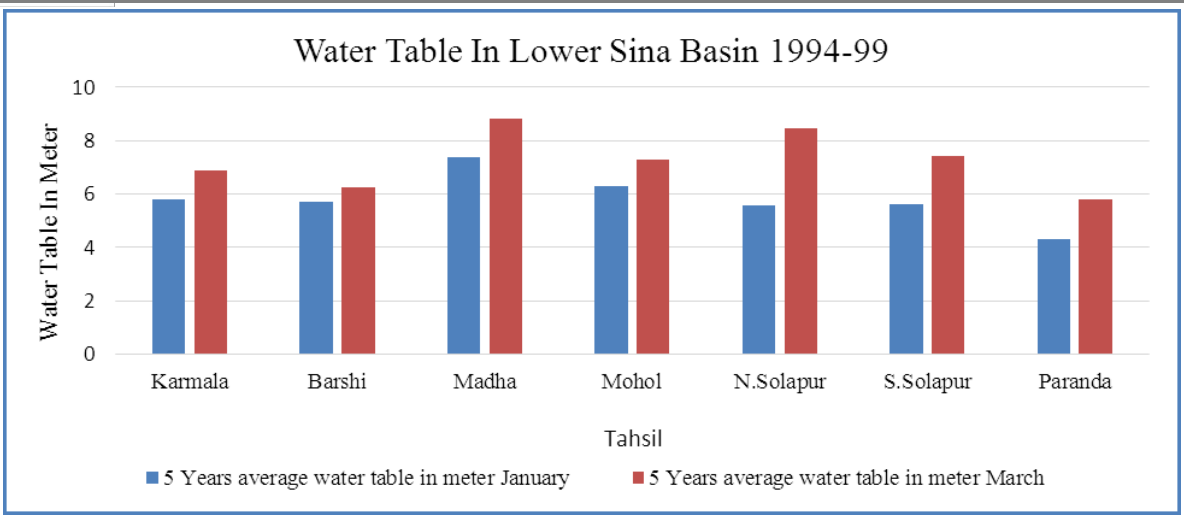
Table No. 1 Tahsil wise water table 1994-99

Tahsil	No. Observation wells	5 Years average water table in meter January	5 Years average water table in meter March	Decline water table in meter
Karmala	23	5.8	6.9	-1.1
Barshi	23	5.71	6.26	-0.55
Madha	15	7.4	8.84	-1.44
Mohol	15	6.29	7.27	-0.98
N.Solapur	6	5.59	8.46	-2.87
S.Solapur	15	5.63	7.42	-1.79
Paranda	19	4.3	5.8	-1.50
Avarage	16.57	5.82	7.28	-1.46

Source: Office of Senior Geologist, Ground water and Development Agency Solapur (1994-99)

Table No. 1 revels that the study region January to March average five years decline of water table is -1.46 meter. In January depth of water table is 4.3 meter to 7.4 meter all over of the study region. Depth of water table in January is high only found in Madha tahsil i.e. above 7meter. Whereas it is moderate in Karmala, Barshi, Mohol, North Solapur and South Solapur i.e. 5 to 7 meters. It is low observed in only Paranda tahsil i.e. below 5 meters.

In the month of March average depth of water table is between 5.8 to 8.84 meters in study region. The high depth of groundwater is in Madha, and North Solapur and tahsils i.e. above 8 meter in study region. The moderate depth of ground water is observed in Karmala, Barshi, Mohol and South Solapur tahsil i.e. 6 to meters. The low ground water depth is found only in Paranda tahsil i.e. below 6 meters.



In the study region, there is spatio temporal variation in water table show that water shirked from January to march due to withdrawal by wells to rabbi crops. This decline in water table is 0.55 to 2.87 meter all over study region.

More than one meter shrinkage in water table is observed in Karmala, Madha, North Solapur, South Solapur and Paranda tahsil. It is less than one meter water table is observed in Barshi and Mohol tahsils.

The water table has close association with surface almost all area situated along Ujni canal, Sina kolegaon Project and Sina river basin Covering all these Seven tahsil of study region. This association influenced on cropping pattern and agriculture pattern and agriculture operation. In Madha, Mohol and North Solapur tahsil Sugarcane is more than other tahsil as well as intensity of operation is high.

The water table should at least remain between 3.5 meter to 5 meters below the natural surface to be able for profitable irrigation. (Singh and Dhillon 1984) Since this condition is not in the most part of the region. The irrigation from underground water sources are not profitable for traditional crops like Jawar, Maze, Bajara, Wheat and pulses.

Decline of Water Table:

Decline of water table is a burring problem in Lower Sina basin region. Because of excess draft of groundwater under high use of water in sugarcane Agriculture in this area, water table is declined by year to year.

Table No. 2 shows that in march 2000 water table is declined 2.12 meters to 4.55 meters from its backward five-year average all over the study region. High decline (more than 4 meters) is observed only in Barshi tahsil. It is between 3 to 4 meters in Paranda and Mohol tahsils. Whereas below 3 meters decline is observed in Karmala, Madha, North Solapur and South Solapur tahsils.

Table No. 2 Decline of water table (Water table below surface in meters)

Tahsil	Average water table (1994 to 1999) in March	Water Table in March 2000	Decline water table in meter
Karmala	6.9	9.31	-2.41
Barshi	6.26	10.81	-4.55

Madha	8.94	11.06	-2.12
Mohol	7.27	10.51	-3.24
North Solapur	8.46	10.75	-2.29
South Solapur	7.42	9.89	-2.47
Paranda	8.4	11.6	-3.2
Study Region	7.66	10.56	-2.90

Source: Office of Senior Geologist, Ground water and Development Agency Solapur (1994-99 and 2000)

This picture is worry full considering agriculture and natural vegetation. Therefore, it is very essential to increase ground water recharge by artificial way to survive Agriculture and Natural vegetation in the study region.

Conclusion:

In the study region we are observed that under ground water table is decline from all over tahsil. In study region 2.90 meter underground water table is declined. Highest 4.55meter underground water is declined from Barshi tahsil and lowest 2.12 meter under ground water table is declined from Madha tahsil. The reason is that due to the large number of ground water continuous decline because of rainfall is decreasing year to year and agriculture purpose water pumping due to decline of water level in lower Sina basin. For all the above things, the decline of water level of the Sina river basin, declining water level is a problem of future concern. Keeping the underground water level in such a way would be a need recharge of them.

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Application of GPS for Field Measurement: A Case Study of Karjat, Tehsil, Ahmednagar, Maharashtra

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Abstract-

The Global Positioning System is tool to use find location of object on the earth. This system operated by U.S. Department of Defense. It work with 24 GPS Satellite signals. Now it available for civilian uses. Mobile phone GPS technology has enabled today's smartphones with suitable and highly well-organized means for end users to receive navigating information via a global positioning system process called "trilateration." For the present study Social and governmental offices and places are used for area measurement. Now various GPS applications are developed for different purposes. Mainly Latitude, Longitude and Height information provided by GPS system. Field Area Measurement app is used for present study. In this study different social offices / places are used for area measurements. This application is free to all users for navigation. Download the app for mobile phone and installed it. Find the location what we want and trace selected area and click on calculate button. Then we get area with our measurement scale. This is easy, user friendly app for best area calculation.

Key Words- Latitude, Longitude, GPS, Trilateration

Introduction-

The Global Positioning System (GPS), initially Navstar GPS. It is a satellite-based radio navigation system maintained by the government of United States and worked by the United States Air Force. It is a global navigation satellite system that arrange for geo-location and time information to a GPS receiver anywhere on or near the Earth where there is an open line of sight to four or more GPS satellites. In the mountains and buildings block are receive relatively weak GPS signals. Global Positioning System (GPS) satellites broadcast microwave signals to allow GPS receivers on or near the Earth's surface to decide time and location and derive velocity. The GPS system that one is operated by the U.S. Department of Defense (DoD) for use by both the military and the civilians.

Mobile phone GPS technology has enabled today's smartphones with suitable and highly well-organized means for end users to receive navigating information via a global positioning system process called "trilateration." In the mobile phone's built-in GPS receiver also communicates with an arrangement of satellites those gives navigation instructions for those either in an automobile or on foot. Better technologically advanced mobile phones can identify individual paths and attractions on maps. It also provide narrated tracking capability.

Study Area-

For the present study select some social places for Karjat tehsil, District Ahmednagar, Maharashtra, India. The latitudinal and longitudinal extension is 18^0 33' 09" north and 75^0 00' 39" east.

Aims and Objective-

- To find out area with help of GPS map area measurement app.

- To simplify area measurement process through GPS System.

Methodology

- Free download Fields area measuring app for an area measurement and installed this app on the Mobile.
- Find the area or Station which we want measure.
- Points on the map should be positioned clock wise or counter clock wise and path must not self-intersect.

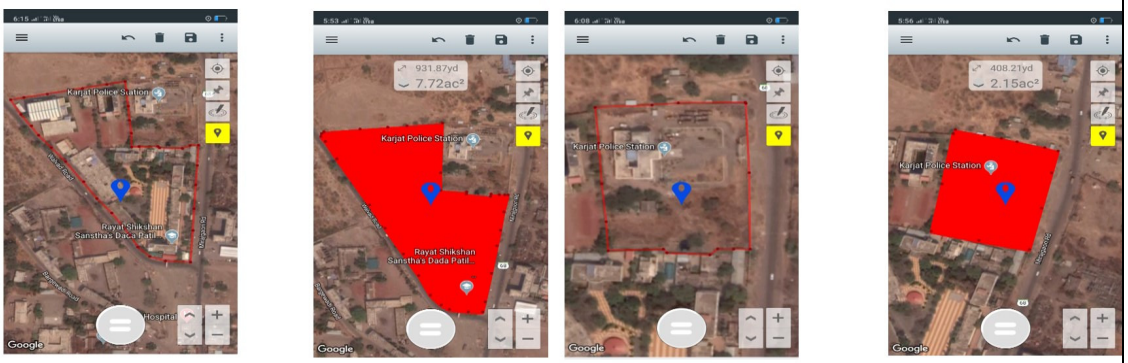
Area Measurement on Field-

Fields area measurer is a smart tool for measuring areas on the map. This GPS area measurement app takes into account the World's geodesic structure and assists highly accurate distance and area measurement information. For area measurement we want to insert points around the station/place on map. Point insertion can be conducted in three ways: finger tool, pin tool and sensitive pin tool. Once we place our points on the map and then click on the calculate button, path completes itself and handles calculation. Area and perimeter of the resulting field area measurement is also calculated. This GPS area measurement app is mostly use full for measurement of agricultural areas, building areas.

Features of Fields Area Measurer App

- High accuracy
- Land Surveying app
- User friendly interface
- Perimeter measure
- Map, Satellite, Terrain and Hybrid modes
- Finger tool for path measurements
- Meter, Kilometer, Mile and Feet distance units available
- Pin tool for linear measurements
- Map tilt angle adjustment

• Dada Patil Mahavidyalaya, Karjat • Poilce Station Karjat



Measurement of Area through Field Area Measurement App Public places in Karjat Tehsil				
Sr. No	**Name of the Place**	**Co-ordinates**		**Area (Acr^2)**
		Latitude	Longitude	
1.	Dada Patil Mahavidyalaya, Karjat	18.556539	75.007651,19	7.72
2.	Mahatma Gandhi Mahavidyalaya, Karjat & Sau. Sonabai Sonmali Vidyalaya, Karjat.	18.555500	75.006859,18	5.03
3.	Amarnath Mahavidyalaya, Karjat	18.553420	75.009842,18	0.87
4.	Police Station, Karjat	18.557889	75.007602,19	2.15
5.	Nagar Panchayat of Karjat	18.553608	75.009048,18	8.84
6.	Sub District Hospital, Karjat	18.545430	75.005368,18	3.99
7.	Civil Court, Karjat	18.550680	75.009421,19	0.02
8.	Krushi Uttpanna Bazar Samiti, Karjat	18.543945	75.006521	7.00
9.	Tehsil Office Karjat	18.547228	75.007229	0.93
10.	Sub Divisional Office Karjat	18.544662	75.004898	0.34

Conclusion-

Field area measurement app is easy to use, useful app for measurement distance, area and perimeter of station. This tool is helping for million people to measure their interested place, mark their required points and sharing their measured maps with their colleagues. This is limitless user tool for civilians. This app is best for land surveying purposes.

Reference-

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https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5805339/

https://play.google.com/store/apps/details?id=lt.noframe.fieldsareameasure&hl...

Drought & Drought Management

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Introduction:

Farmers may lose money if a drought destroys their crops. ... Ranchers may have to spend more money on feed and water for their animals. Businesses that depend on farming, like companies that make tractors and food, may lose business when drought damages crops or livestock. Many Spatial Issues and challenges in Agricultural & rural Development. Drought conditions result from a lack of precipitation and this has many effects on the surrounding land and weather conditions. Drought conditions can worsen after prolonged periods of no rainfall, especially in areas where the water supply is short. Drought is considered by many to be the most complex but least understood of all natural hazards, affecting more people than any other. It is a normal feature of climate and its recurrence is inevitable. However, there remains much confusion about its characteristics. It is precisely this confusion that explains, to some extent, the lack of emphasis on proactive drought management efforts in most parts of the world. Through an improved understanding of the inevitability and characteristics of drought, as well as its differences from other natural hazards, scientists, policymakers, and the public will be better equipped to establish much-needed policies and plans whereby future vulnerability to drought can be reduced.

What is Drought?

Drought is a temporary aberration unlike aridity, which is a permanent feature of climate. Seasonal aridity (i.e. a well-defined dry season) also needs to be distinguished from drought. Thus drought is a normal, recurrent feature of climate and occurs in all climatic regimes and is usually characterized in terms of its spatial extension, intensity and duration. Conditions of drought appear when the rainfall is deficient in relation to the statistical multi-year average for a region, over an extended period of a season or year, or even more.

Drought as a Natural Hazard

Drought differs from other natural hazards in several ways. First, drought is a slow-onset, creeping natural hazard. Its effects often accumulate slowly over a considerable period of time and may linger for years after the termination of the drought event. Second, the absence of a precise and universally accepted definition of drought adds to the confusion about whether a drought exists and, if it does, its degree of severity. Third, the impacts of drought are nonstructural and typically are spread over a larger geographical area than are damages resulting from other natural hazards. These characteristics of drought have hindered the development of accurate, reliable, and timely estimates of severity and impacts and, ultimately, the formulation of effective drought preparedness plans. Drought differs from other natural hazards such as cyclones, floods, earthquakes, volcanic eruptions, and tsunamis in that:

• No universal definition exists;
• Being of slow-onset it is difficult to determine the beginning and end of the event;
• Duration may range from months to years and the core area or epicenter changes over time, reinforcing the need for continuous monitoring of climate and water Supply indicators;

• No single indicator or index can identify precisely the onset and severity of the event and its potential impacts; multiple indicators are more effective;

Drought Characteristics

Droughts differ from one another in three essential characteristics: intensity, duration, and spatial coverage. Moreover, many disciplinary perspectives of drought exist. Because of these numerous and diverse disciplinary views, considerable confusion often exists over exactly what constitutes a drought. Regardless of such disparate views, the overriding feature of drought is its negative impacts on people and the environment.

Types of Drought

Drought is normally grouped by type: meteorological, hydrological, agricultural, and socioeconomic. The impacts associated with drought usually take 3 months or more to develop, but this time period can vary considerably, depending on the timing of the initiation of the precipitation deficiency.

Measuring Meteorological and agricultural Drought

Meteorological Drought	Measuring Drought	Agricultural Drought
Rainfall deficiency wrt LTA 25 % or less Normal 26-50% Moderate drought 50%< Severe drought		4 consecutive weeks of Meteorological drought Weekly rainfall= 50 mm from 15/5 to 15/10 6 such consecutive weeks rest of the year

Impacts of Drought

The impacts of drought that must be addressed can be classified into one of three principal types: economic, environmental, and social. Drought produces both direct and indirect impacts. Direct impacts or primary impacts are usually physical / material and include reduced agricultural production; increased fire hazard; depleted water levels; higher livestock and wildlife mortality rates; and damage to wildlife and fish habitats. When direct impacts have multiplier effects through the economy and society, they are referred to as indirect impacts. The impacts of drought appear to be increasing in both developing and developed countries, which in many cases reflects the persistence of no sustainable development and population growth. Lessening the impacts of future drought events will require nations to pursue development of drought policies that emphasize a wide range of risk management techniques, including improved monitoring and early warning systems, preparedness plans, and appropriate mitigation actions and programs.

Management Alternatives during Drought

Many of the management alternatives available to water suppliers to prepare for and respond to drought events fall into two broad categories: demand management and supply augmentation.

Demand Management

- Public information and education campaigns
- Emergency conservation programs
- Water service restrictions
- Restrictions on nonessential uses of water
- Prohibition of selected commercial uses
- Drought emergency pricing

Develop a Decision Support System for Drought Management

The mission / task force should recommend establishing automated weather stations and rain gauges to improve the collection of information, promote the use of data related to soil, vegetation and water resource obtained through remote sensing technology and actively support research on climate and natural resource management. Such information provides more analytical tools for understanding drought and making informed policy choices for drought mitigation.

Promote Education and Awareness of Mitigation Policies and Measures

The mission / task force should encourage education and awareness of drought mitigation issues. People must be informed of the importance of water conservation and harvesting, optimal water use and the need for increasing forest cover. A wide public awareness about the importance of natural resource management is a very important aspect of a long-term drought mitigation programme.

Water Harvesting and Conservation

Water harvesting and conservation refer to processes and structures of rainfall and runoff collection from large catchments area and channeling them for human consumption. In India, these processes and structures have been in existence since antiquity, but the increasing frequency and severity of droughts and population growth have focused on the revival of these practices and structures. Every household's minimum water requirements can be easily met by collecting rainwater locally from village / community ponds / large manmade containers, by diverting and storing water from local streams / springs and by tapping sub-surface water below river / stream beds. There are two methods for water conservation: (i) artificial recharge of groundwater,
and (ii) traditional methods.

Hill Slope Collection

This system is common in many hilly areas with good rainfall (in Uttarakhand, Himachal Pradesh, Meghalaya, Arunachal Pradesh). It consists of lined channels that are built across the hill slopes to intercept rainwater. These channels convey water for irrigating terraced agricultural fields. The water is also used to fill small ponds for domestic use and for cattle.

Spring Water Harvesting

In the Lahaul and Spiti areas of Himachal Pradesh, water from hill streams are diverted through small excavated channels, called kuls, for domestic use and irrigation. In Jammu region these are called kuhals. This practice can also be seen in Arunachal Pradesh, Meghalaya, Nagaland, Manipur, Sikkim and Darjeeling area of West Bengal. Where the springs are merely

in the form of water trickling through layers and joints in rocks, split bamboo channels are used to trap and convey water up to the village / hamlet for drinking purposes.

Water Saving Technologies: Drip and Sprinkler Irrigation Systems

These systems require much less maintenance when compared with the conventional pressurized irrigation systems. The ease of maintenance is more significant in micro tube drip systems. However, the adoption of these technologies by poor farmers would depend heavily on the supply of information, materials and services for installation.

Long-term Irrigation Management

A long-term strategy is required for managing water resources through irrigation projects. It consists of several measures which would expand the area under irrigation and reduce the incidence of drought.

Conclusions

Drought is considered by many to be the most complex but least understood of all natural hazards, affecting more people than any other. It is a normal feature of climate and its recurrence is inevitable. However, there remains much confusion about its characteristics. It is precisely this confusion that explains, to some extent, the lack of emphasis on proactive drought management efforts in most parts of the world. Through an improved understanding of the inevitability and characteristics of drought, as well as its differences from other natural hazards, scientists, policymakers, and the public will be better equipped to establish much-needed policies and plans whereby future vulnerability to drought can be reduced.

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A Geographical Study of Landuse Pattern In Karnataka State By

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Abstract

Land is one of the important natural resource of a country or a state. Its proper use will encourage the growth or economy. However, improper use leads to progressive deterioration and loss of productivity of this valuable resource. The distributions of land for different purposes are known as "Land Utilization" or "Land Use Pattern". Land Utilization is determined by various factors such as relief features, climate, soil, density of population, Socio-economic factors and technical factors……..

Karnataka State extends over an area of 1, 91,791 sq. kms, it occupies about 5.84% of the total geographical area of the country. This puts it in 7th place in terms of size in the Country. The state is situated in the West-Central part of the Deccan Peninsula of the Indian union and is stretched between 13° 3' and 18°45' north latitudes and 74° 12' and 78° 40' east longitudes. The major portion of Karnataka lies in the elevation range between 450 and 900 meters above mean sea level. According to 2011 census the State has 6, 10, 95,297 population, it accounts for 5.4% of the country's population. It ranks 8th place in view of population. For administrative purpose, the state has been divided into 04 divisions, 30 districts and 176 taluks. There are 27,024 villages spread over 176 taluks. 61.33% of the population resides in rural areas (3, 74, 69,000 People).38.67 (2, 36, 26,000) of population residing in urban areas.

Key Words: - Land use pattern, Cultivable Waste, Permanent Pastures, Fellow land, Net Sown Area, Area sown more than once.

Introduction: -

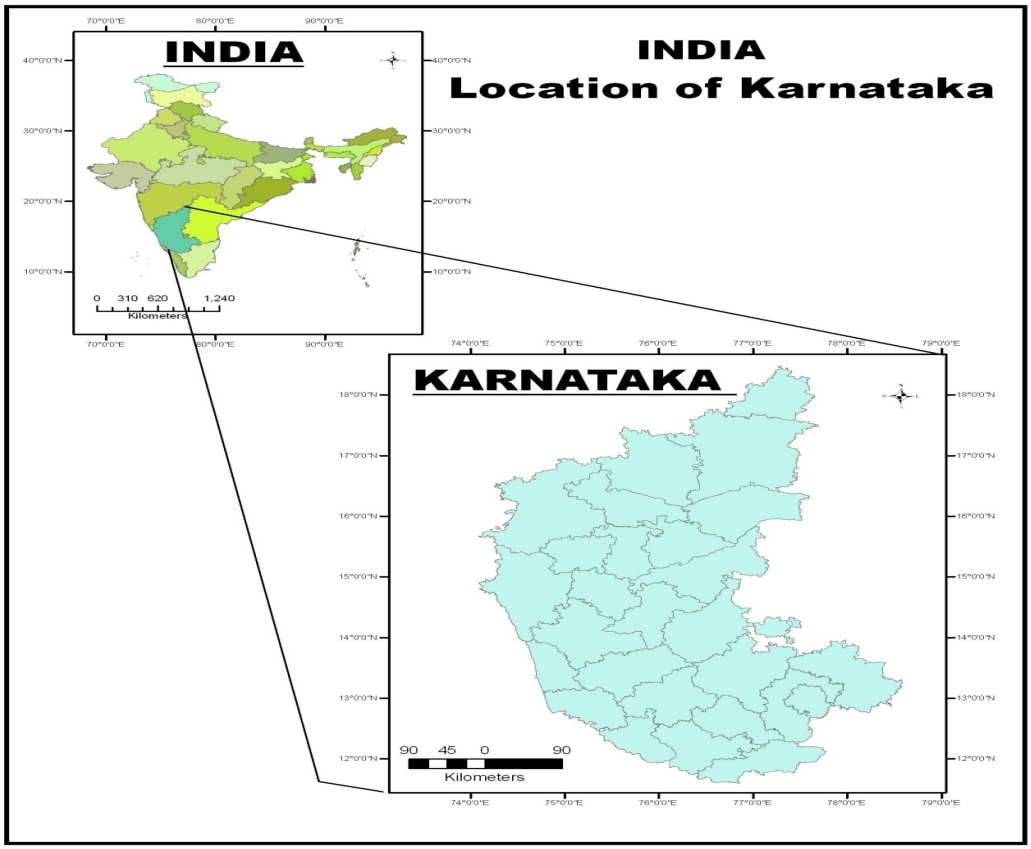
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Study Area: -

Karnataka State extends over an area of 1, 91,791 sq. kms, it occupies about 5.84% of the total geographical area of the country. This puts it in 7th place in terms of size in the county. The state is situated in the West-Central part of the Deccan Peninsula of the Indian union and is stretched between 13° 3' and 18°45' north latitudes and 74° 12' and 78° 40' east longitudes. The major portion of Karnataka lies in the elevation range between 450 and 900 meters above mean

sea level (see Fig No:- 01). According to 2011 census the State has 6, 10, 95,297 population, it accounts for 5.4% of the country's population. It ranks 8th place in view of population in the country. For administrative purpose, the state has been divided into 04 divisions, 30 districts and 176 taluks. There are 27,024 villages spread over 176 taluks. 61.33% of the population resides in rural areas (3, 74, 69,000 People).38.67 (2, 36, 26,000) of population residing in urban areas.

Fig No: - 01



Objectives:- The main objectives of the present study are:

a) To find out the trend of land Utilization in Karnataka State.
b) To examine the changes of land Utilization in District wise.

Data Base And Methodology:-

The present study is mainly based on secondary data collected from A hand book of Karnataka, Economic Survey of Karnataka and Karnataka at a glance. Simple statistical method has used to compute the graphs. Karnataka State Remote Sensing Application Center (KSRSAC) Maps were also used to analyze the land Utilization of the district.

Trends Of Land Utilization In Karnataka State; -

Agriculture is the important occupation of the study area. So more than 70 percent of the people are engaged in agricultural activities. Hence, eight categories of land utilization have been selected for the study. Land use pattern of the State can be divided into eight categories. (See Table No:-01).

1.Forest:-

According to 2014-15 survey census the total geographical area of the State is 1,90,49,836 hectares, out of this 30,73,376 hectares (16.1%) of area is consists of forest. Even though it ranks 7th place in the country, it is too smaller than the National average (24.39%) in 2017-18 also. There is no change in forest area in the State during the study period (See Table No: - 01) . According to 2011 survey, the proportion of the forest area is not evenly distributed in the State. Uttara Kannada, Chamarajanagara, Kodagu and Shivamogga districts are reporting more under forest. It is due to heavy rainfall and relief features. In contrast Bijapur, Bangalore, Raichur and Gulbarga districts have less area under forest. See Table No: - 02 & Graph No: - 01

2.Land Not Available For Cultivation: -

This class consists Barren and uncultivable waste and the area put to non-agricultural uses include settlements, road, railways, water etc. It accounts 11.3 percent of total geographical area of the State, in 2007-08, but it decreased to 7.6 percent in 2014-15(See Table No:- 01) . The districts like Bangalore Urban, Bangalore Rural, Dakshina Kannada, Ballery and Mandya are having more area under this category. Districts like Gadag, Raichur, Uttara Kannada, Bijapur and Gulbarga are having less area under this category (2010-11). See Table No: - 02 & Graph No: - 01.

3.Cultivable Waste:-

The "Wasteland survey and reclamation committee" defines "Cultivable Waste land available for cultivation but not used for cultivation for one or the other reason like, lack of water, salinity, water logging, etc. The land under this category has declined slightly from 4, 15,051hectares in 2007-08 to 4, 09,263 hectares in 2014-15 in the State. This diminish is caused by the reclamation (reforms) schemes launched at National level and State level.

Trend Of Land Utiltioniza (2007-08 TO 2014-15) Area In Hectares.

Note:- Values Brackets are in Percentage

Table No: - 01

Year	2007-08	2009-10	2010-11	2011-12	2013-14	2014-15
Total Geographical Area	1,90,49,836	1,90,49,836	1,90,49,836	1,90,49,836	1,90,49,836	1,90,49,836
Forest Area	30,71,833 (16.1)	30,71,833 (16.1)	30,71,833 (16.1)	30,71,833 (16.1)	30,73,376 (16.1)	30,73,376 (16.1)
Land not available for cultivation	21,57,057 (11.3)	13,86,419 (7.2)	14,30,363 (7.5)	22,19,577 (11.6)	14,43,633 (7.5)	14,61,823 (7.6)
Cultivable Waste	4,15,051 (2.1)	4,12,831 (2.1)	4,14,397 (2.1)	4,13,284 (2.1)	4,10,512 (2.1)	4,09,263 (2.1)
Permanent Pastures	9,29,642 (4.8)	9,13,551 (4.7)	9,12,385 (4.7)	9,08,393 (4.7)	9,06,259 (4.7)	9,04,168 (4.7)
Fallow Land (Current)	12,62,420 (6.6)	13,01,361 (6.8)	11,99,134 (6.2)	1671,787 (8.7)	16,99,937 (8.9)	15,82,638 (8.3)
Other	5,05,075 (2.6)	4,83,927 (2.5)	4,26,458 (2.2)	5,38,550 (2.8)	525,238 (2.7)	5,23,485 (2.7)

Net Sown Area	1,04,18.792 (54.6)	1,04,04,107 (54.6)	1,05,22,653 (55.2)	99,41,399 (52.1)	99,23,339 (52.0)	10,04,467 (52.7)
Area sown More than once	24,73,879 (12.9)	24,69,201 (12.9)	25,39,510 (13.3)	21,17,968 (11.1)	23,43,567 (12.3)	22,03,456 (11.5)

Source :- Karnataka At a Glance and Economic Survey of Karnataka

District wise Land Utilization (2010-11) Area in Hectares

Table No:- 02

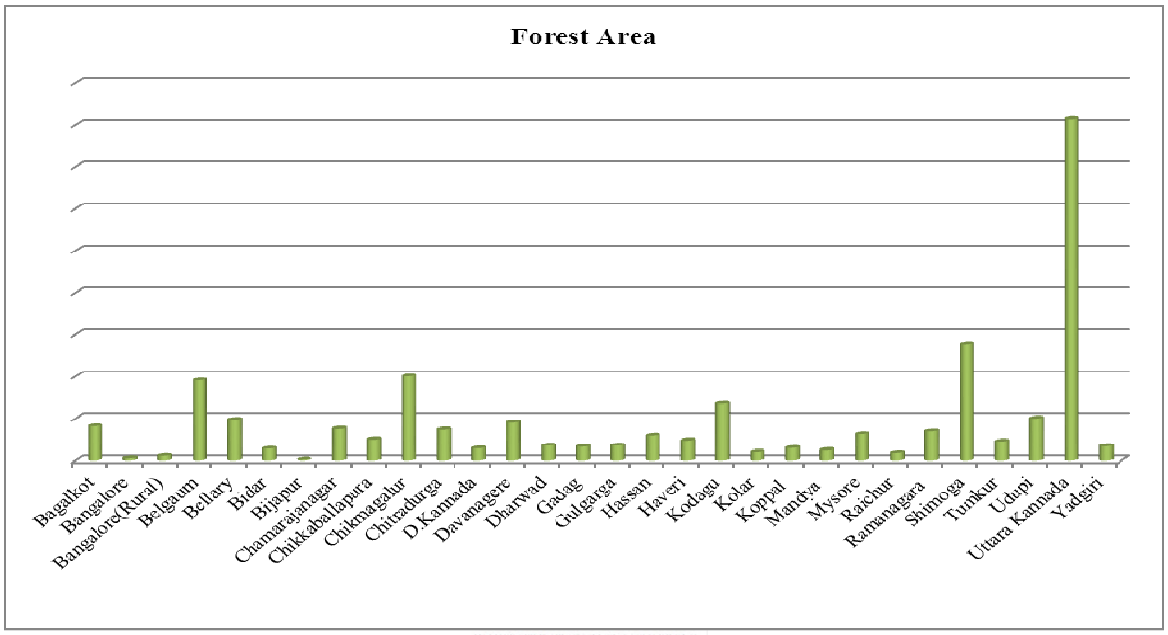
Sl.No	District	Total Geographical Area	Forest Area	Land not available for cultivation	Permanent Pastures	Fallow Land	Net Sown Area
1	Bagalkot	658877	81126	28832	3429	45985	472386
2	Bangalore	217410	5055	115530	5674	24633	50371
3	Bangalore(Rural)	229519	11322	39978	3879	21686	125134
4	Belgaum	1344382	190424	69663	24807	162755	837880
5	Bellary	813196	97017	110291	5472	76315	442179
6	Bidar	541765	27707	22006	13964	67940	360724
7	Bijapur	1053471	1977	36027	9575	92681	877334
8	Chamarajanagar	569901	75610	24611	22750	24251	188867
9	Chikkaballapura	404501	49704	31933	59510	23313	193114
10	Chikmagalur	722075	200485	43125	88585	21843	299054
11	Chitradurga	770702	73719	51243	88740	65276	433392
12	D.Kannada	477149	28476	65483	19059	12204	130745
13	Davanagere	597597	89918	38992	19538	19457	395679
14	Dharwad	427329	35235	22572	3571	48279	310816
15	Gadag	465715	32614	10481	2592	2660	404457
16	Gulgarga	1094120	35316	38420	25855	24866	924002
17	Hassan	662602	58775	78877	32943	43378	397159
18	Haveri	485156	47454	33037	12209	17445	363939
19	Kodagu	410775	134597	24200	13884	7429	169515
20	Kolar	374966	20620	45677	39418	40501	186474
21	Koppal	552495	29451	39003	14675	80104	369857
22	Mandya	498244	24765	60906	32049	60968	252700
23	Mysore	676382	62851	75758	46808	80702	337967
24	Raichur	835843	18167	20563	19816	222710	510107
25	Ramanagara	355912	69946	26225	24662	36409	169203
26	Shimoga	847784	276855	88708	163463	35421	226846
27	Tumkur	1064755	45177	84504	76453	148454	558953

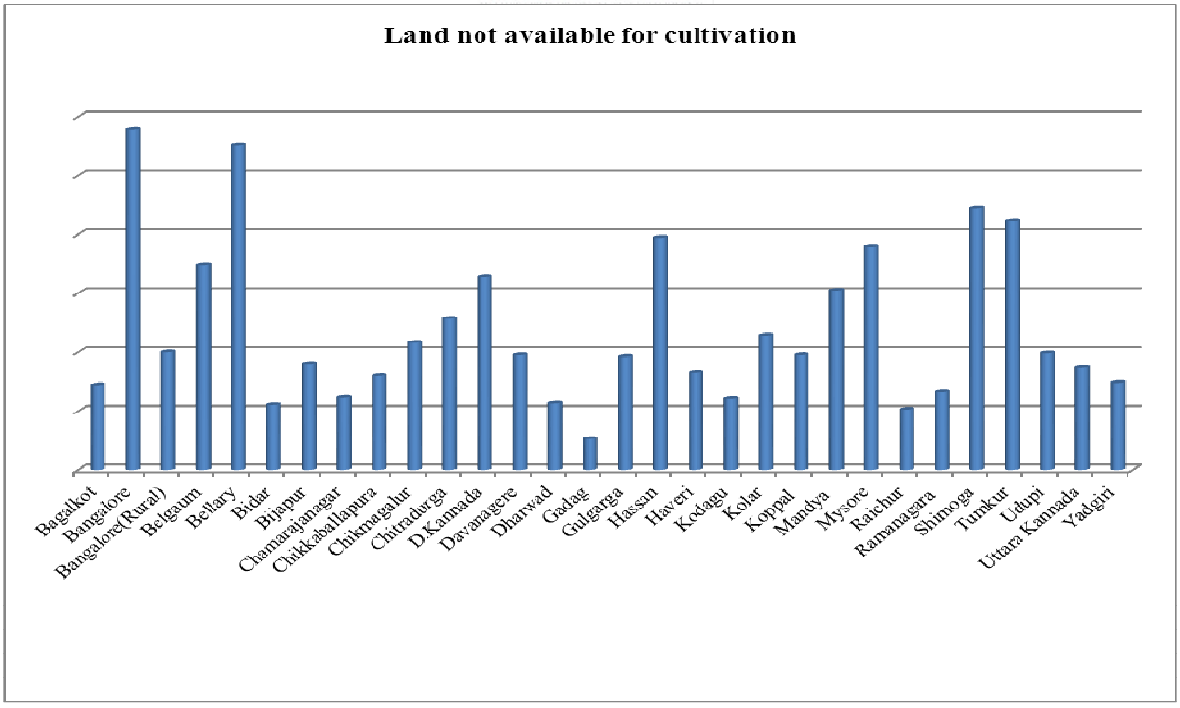
28	Udupi	356446	100102	39602	10625	9678	99713
29	Uttara Kannada	1024679	813595	34514	16625	20305	112150
30	Yadgiri	516088	33773	29602	11755	87944	321936
	STATE	19049836	3071833	1430363	912385	1625592	10522653

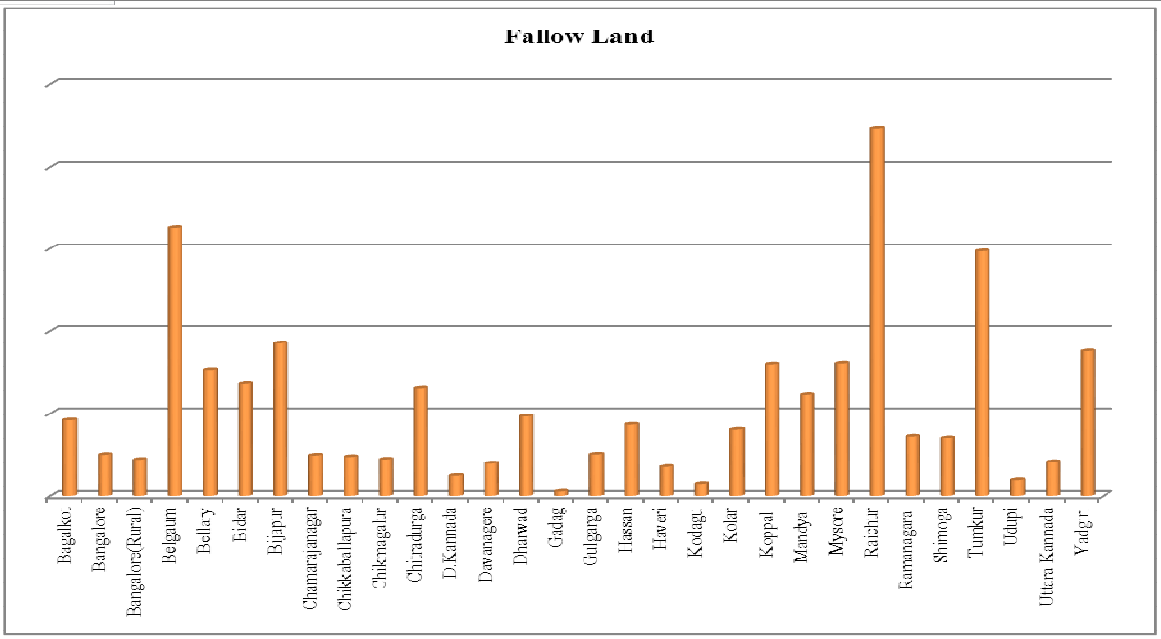
Source:- Directorate of Economics and Statistics, Agriculture census 2010-11

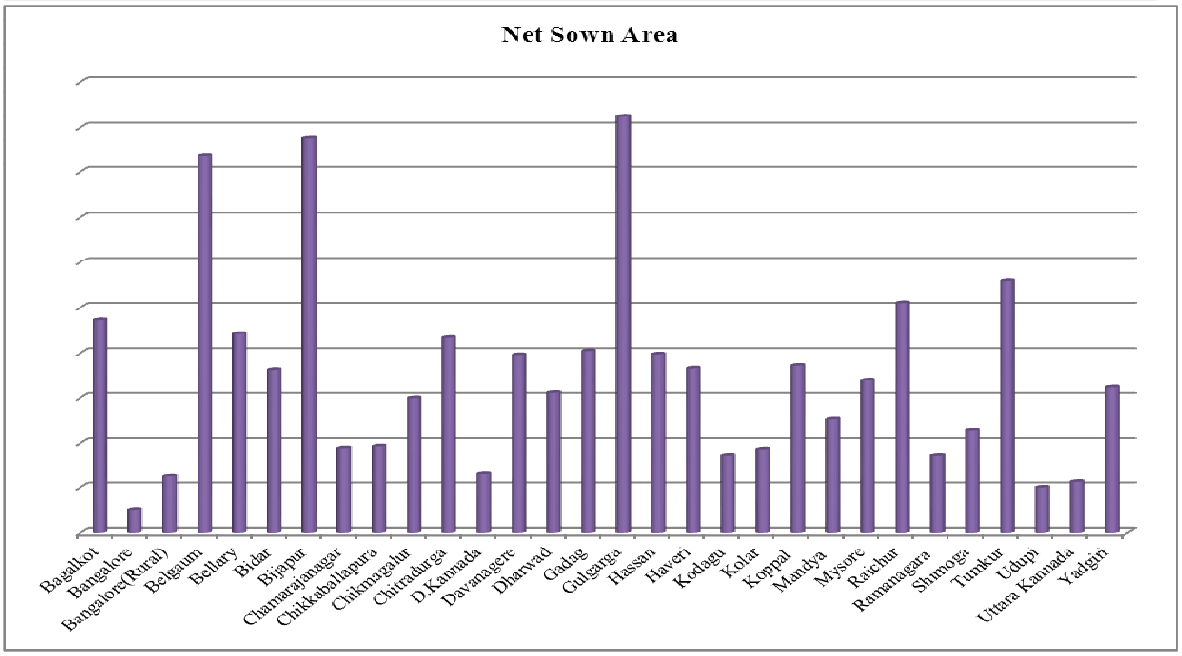
District wise Land Utilization (2010-11) Area in Hectares

Graph No: - 01









4.Permanent Pastures: -

As per 2007-08 the total permanent Pastures of the State is 9, 29,642 hectares. It accounts 4.8 percent of total geographical area of the State. However, it decreased to 9, 04,263 hectares (4.7percent) in 2014-15. The conversion of permanent pasture in to agriculture land is caused to decrease of this category. (See Table No-01).

5. Fellow Land: -

It includes current and other fallow land. Fallow of one year is called 'Current fallow' while that of 2 to 5 years is called as 'other fallow land'. Area under current fallow land is gradually increased from 12, 62,420 hectares (6.6%) in 2007-08 to 15, 82,638 hectares (8.3 %) in 2014-15 in the State. The other fallow land is also increased from 5, 05,075 hectare (2.6%) in 2007-08 to 55, 23,485 hectares (2.7%) in 2014-15 in the State.(See Table No-01). The land under this

category is reported more in the districts of Raichur,(26.6%), Yadgiri (17.0%),Koppala(14.5%),Thumkur(13.9%) and in Bidar(12.5%). It is less in Gadag,Kodagu,Uttara Kannada,Gulbarga and in Dakshina Kannada districts. (See Table No: - 02, & Graph No: - 01).

6. Net Sown Area: -

cropped area in the year under consideration is called net sown area. It is observable that, in between 2007-08 and 2014-15 the net sown area has gradually decreased from 54.6 percent to 52.7 percent in the State. This is because of the reclamation of barren and uncultivable wasteland. (Table No-01). It is greater than the National average (46.14%).Net sown area has reached its maximum level in Gadag(86.8%),Gulbarga(84.5%),Bijapura(83.3%),Haveri(75%) and in Dharwad (72%) districts. Udupi(28%), Dakhina Kannada(27.4%),Shivamogga(26.8%),Bangalore Urban(23.2%) and Uttara Kannada(10.9%) districts are reporting less than 30 percentage of Net Sown area (2010-11). See Table No:-02 & Graph No: - 01.

7. Area Sown More Than Once: -

Area sown more than once indicates, the area is used to grow more than one crop in a year. Land under this category is gradually decreases from 12.9 percent (2007-08) to 11.5 percent in 2014-15 in the State. Decaling of rainfall in the State during this period is the main cause for this condition. Even though, with compare to National average (5.85%) is little more.

Conclusion And Suggestions: -

Following suggestions should be implemented for the proper utilization of land, to improve productivity of land and quality of life.

- According to the National Forest Policy (Report of National Agricultural Commission, 1976) drawn up the central government and ecological and protective reasons at least a place should be covered with 33 percent of forest. But, the district is covered with just 9.78 percent of forest area only. Hence, measures should be taken to improve the forest area in the district.
- The net sown area increases from 72.78 percent (1990-91) to 74.86 percent (2011-12). Even though it is necessary to increase the net sown area for meeting the food and other requirements of increasing population of the district.
- Area sown more than once in the district is drastically decline from 23.11 percent in 1998-99 to 9.87 percent in 2011 – 12. It is because of the decline of rainfall in the district during this period. Hence, steps should be taken from the government to provide irrigation facilities in the district.

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Rainfall Trend in Drought Prone Region of Ahmednagar District of Maharashtra in India: A Geographical Study

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Abstract

In this paper the present study reveal the tehsil wise annual rainfall trend in Ahmednagar District of Maharashtra State during 1984 to 2018. The rainfall is one of the significant parameter among the climate for the development of society. They determine the scarcity of particular region. The rate of rainfall is varied in different region. The average annual rainfall in the Ahmednagar district varies from about 625.09 mm to 405.3; some area has been traditionally affected by drought. The large area of the district comes under the agriculture due to large population depend on agricultural for employment. This studies focus on the nine (out of total 14) tahsils in Ahmednagar district which is particularly sensitive to drought Karjat, Jamkhed, Shrirampur, Sangamner, Shrigonda, Newasa, Shevgaon, Parner tahsils. The aim of this research to understand trends of rainfall Ahmednagar district. In a study on tahsil wise trend analysis nine tahsils had decreasing trend in annual rainfall. Among two tahsils showing increasing trend, Akole tahsil shows highest rainfall trend. Remaining three tahsil had the same direction of trend in annual rainfall and seasonal scale.

Keywords: Drought Prone, Annual Rainfall, Rainfall Variability, Trend

Introduction

To meet the various water demands of agriculture, industry, irrigation, hydroelectric power generation, and other human activities in district water budget is important factor. More than 70 per cent of the population in India is engaged in agricultural activities. Indian economy is completely depending on monsoon. The development of crops in any year is closely related to behavior of monsoon. The most of part of India receive 90 to 95 per cent rain from south-west monsoon. Rainfall is huge affecting on agriculture activity of man.

The Ahmednagar district comes under western Maharashtra region which is known as rain shadow zone. The Maharashtra State has Suffering drought frequently because of monsoon behavior. The highest rainfall receives in western part of the Ahmednagar district in Akole tahsil. The rainfall generally decreases toward east and south east part of the Ahmednagar district. The government of Maharashtra and Central government of India declared total nine tahsil of Ahmednagar district are comes under drought prone area. This attempt has been made 1984 to 2018 annual rainfall tabulation and use help of mean, standard deviation and variation of rainfall in Ahmednagar district.

Study Area:

The Ahmednagar district is one of the crucial districts of the Maharashtra state. Ahmednagar is the largest district of Maharashtra state. Near about 17418 Sq. Km area is

covered by Ahmednagar district. The geographical extension of Ahmednagar district is 18° 2' N to19° 9'N latitude and 73° 9' E to 75° 5' E longitude. This district has comprised by fourteen tehsil. According to the 2011 census the population of Ahmednagar is 4,543,159.

Objectives:

The objectives of the present study are:

1. To study the average annual rainfall during the year 1984 to 2018.
2. To find out trends of rainfall and coefficient of variations.

Data Base and Methodology:

The present study is based on the rainfall data which collected from Indian Metrological Department for 35 years. The data has been collected from 1984 to 2018. The trend of rainfall is calculated and represent by mean, Standard Deviation, and Coefficient of Variation in percentage of rainfall in Ahmednagar District. The result of these analysis shows with the help of chart, graph method. For the data analysis following formula has been used.

Where,

Mean = Mean of Rainfall

S.D. = Standard Deviation of Rainfall

C.V. = Coefficient of variability of Rainfall

Annual Rainfall Distribution:

Rainfall is a vital factor, considered by impacts the agricultural economy of the district. It also determines the cropping pattern, performance of various cultural and agricultural practices.

Table 1.1 Average Annual Rainfall in Ahmednagar District 1984 to 2018 (in mm)

Tahsil	Akola	Sangamner	Shrirampur	Kopargaon	Rahuri	Newasa	Rahata
1984	374	204	350	518	427	407	0
1985	184	204	392	300	301	302	0
1986	244	260	335	319	242	375	0
1987	296	306	582	460	533	488	0
1988	734	461	546	575	725	583	0
1989	444	558	585	594	524	593	0
1990	503	445	752	499	788	786	0
1991	544	450	401	296	466	395	0
1992	404.5	342	456	418	407	380	0
1993	636.3	435	566	408	548	447	0
1994	509.8	416.6	463.9	440.2	455	531.3	0
1995	374	290	508	321	642	664	0
1996	620	566	611	537	555	623	0
1997	587	402	312	290	345	312	0
1998	814.5	489	819	582	585	681	0
1999	403	348	315	384	581	461	0
2000	439	528	354	428	587	516	525
2001	473	337	341	360	358	312	413
2002	445	459	391	366	302	305	385

2003	489	380	313	280	299	219	249
2004	1074	570	485	428	509	508	490
2005	1080	518	396	541	465	479	588
2006	1090	576	557	745	777	629	690
2007	913	478	587	583	656	391	523
2008	1006	487	401	503	651	591	385
2009	549	329	333	485	551	456	337
2010	829	572	644	853	866	860	814
2011	500	240	455	636	589	474	395
2012	648	496.2	402	408	513	502.5	548
2013	767	378.3	413.3	504	501.4	489.4	690.4
2014	733	391.7	273	491	321.9	337	327.5
2015	847.6	385.5	383.8	374	381	457	367.8
2016	1030.1	495.5	616.6	480.1	540.5	615.7	494
2017	1265	580.3	793.5	519.8	622.1	786.5	712.9
2018	962.5	302.2	382.7	381.1	239.5	331.5	303.4
Total	21878.	14680.3	15470.8	16307.2	17196.4	15943.9	7701
Mean	625.09	419.43	442.02	465.92	491.32	455.54	405.31
S.D.	278.63	110.28	142.85	127.67	153.51	143.48	282.97
CV in %	44.57	26.29	32.32	27.40	31.24	31.50	69.81

Source- Indian Meteorological Department

Tahsil	Shevgaon	Pathardi	Parner	Shrigonda	Karjat	Jamkhed	Nagar
1984	309	351	575	496	532	727.0	497
1985	247.0	824	714	359	456.0	540	400
1986	422	318	313	460	637	872	498
1987	596	714	472	497	432	996	827
1988	824	807	738	531	689	1040	772
1989	730	701	713	610	864	920	914
1990	697	716	630	614	597	523	1446
1991	391	485	442	438	391	480	950
1992	369	434.5	551	521.6	352	603.2	572
1993	519	720	696	496	651	823	655
1994	584.6	571.6	486.9	359	493	583.3	531.1
1995	363	533	259	460	498	570	372
1996	782	932	656	497	514	922	710
1997	226	448	361	531	328	427	347
1998	780	1095	702	610	920	1070	730
1999	366	360	245	571	405	409	479
2000	531	471	456	392	400	661	580
2001	349	332	384	352	495	333	380
2002	449	502	438	334	436	561	394
2003	320	476	190	87	281	460	199
2004	715	595	695	527	565	570	518
2005	491	464	451	524	606	484	634
2006	798	703	751	843	746	505	906
2007	631	450	488	388	401	675	628
2008	648	473	625	388	763	448	715
2009	563	633	620	464	710	499	615
2010	791	824	932	604	729	710	770
2011	374	741	614	368	413	326	712
2012	224.8	276	250	248.5	245	258	345
2013	563.3	668	622	544	676	777	682
2014	429	379	414	176	343.7	268	464.8
2015	406.8	441.2	434.2	394.3	330.9	437.2	415.5
2016	698.7	686.9	437	523	631.7	844	575.6
2017	640.5	611	589.5	606.2	813.2	869.9	726.7
2018	292.3	288	235.2	203.1	264.9	377.5	261.7
Total	16041	20024.2	18179.8	14716.7	18153.4	20842.1	21222.4
Mean	458.31	572.12	519.42	420.47	518.6	595.48	606.35
S.D.	180.79	194.13	176.96	133.85	180.54	226.93	237.02
CV in %	39.45	33.93	34.07	31.83	34.81	38.11	39.09

The analysis of rainfall for the period 1984 – 2018 reveals that the normal annual rainfall over the district varies from 405.31 to about 625.09 mm. In the northeast, north and south part of the district around Shevgaon, Rahata, Newasa, Rahuri, Kopargaon, Shirampur, Sangamner,

Shrigonda, Karjat they are receive low rainfall and the rate of rainfall is increases towards the west around the area of Akola tehsil. The study also determines that entire eastern, north eastern, south and south eastern parts of the district comprising almost entire Shevgaon, Rahata, Newasa, Rahuri, Kopargaon, Shirampur, Sangamner, Shrigonda, Karjat which experienced droughts for more than 20% of the years can be categorized as "Drought Area". The average rainfall data for the period (1984-2018) are presented in Table-1. The mean annual rainfall for Ahmednagar district is 683.22 mm. The highest rainfall recorded in Akola 625.09 mm, Nagar 606.35 mm, Jamkhed 595.0 mm and Pathardi572.12 mm. Parner, Karjat, Rahuri, Kopargaon, Shevgaon, Newasa have medium rainfall which is 519.42, 518.60, 491.32, 465.92, 458.31, 455.54 respectively and rainfall rapidly decreases towards the Shrirampur 442.02 mm, Shrigonda 420.47, Sangamner 419.43, and Rahata 405.31.

The Coefficient of variation is 69.81 percent Rahata, 44.57 per cent Akole, 39.45 percent Shevgaon tehsil, 39.09 per cent Nagar tahsil and results comes to Parner, Karjat, Rahuri, Kopargaon, Newasa, Sangamner, Shrirampur, Shrigonda, Pathardi and Jamkhed tahsils respectively 34.07, 34.81, 31.24, 27.40, 31.50, 26.29, 32.32, 31.83, 33.93 38.11 per cent.

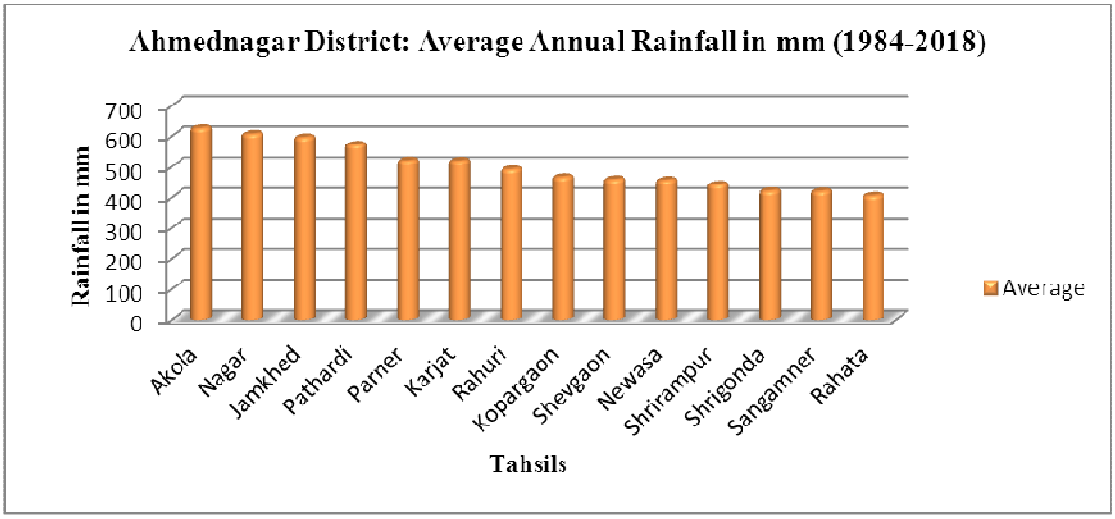


Figure 1: Average Annual Rainfall Distribution in Ahmednagar District (1984-2018)

Table No 1 and Fig. No. 1 shows that the Akole tehsil recorded highest average rainfall during the 35 years. Nagar, Jamkhed, Pathardi, Parner, Karjat, normal rainfall recorded in during the time. Then Kopergaon, Shevgaon, Rahuri recorded medium rainfall. Rahata, Shigonda, Sangamner and Shrirampur tahsils show the less amount of rainfall during the1984 to 2018 years. The results of some tahsils are mainly depending on physiographical condition and local level climatic condition.

Rainfall Trend in Ahmednagar District of the Drought Prone Region:

The data obtained on the average annual rainfall Ahmednagar district for the period in Four decade viz. 1984 to 2018 were analyzed by simple tabular method. The proportion were estimated for each of the below years to know the variation in the rainfall of the Ahmednagar district for period under the study. As the result of the rainfall variability in the Ahmednagar district. During the period 1984-2018, the difference of the actual average rainfall and trend of the rainfall in Ahmednagar district of eastern part of the drought prone region. This means that

the trend is negative. The deficit of the drinking water, reducing level of water, food shortage, shortage of grain for cattle, effects on agriculture, population emigrated searching of water another district.

Conclusion:

The study has presented a detailed analysis of rainfall variability and trend of rainfall in the drought prone area of the Ahmednagar district. By using 35 years recoded of rainfall in fourteen tahsils, the study examined the spatial and temporal variation of rainfall on the Ahmednagar district. The main conclusion of the study is summarized below.

Annual rainfall in the Ahmednagar district varies from about 625.09 mm in Akole to 405.31and 420.47 Rahata, Shrigonda respectively.

Trend analysis of annual average rainfall indicators shows to fluctuations in 35 years. During the period of 1985, 1986, 1997, 1999, 2001, 2003, 2012, 2014, and 2018 shows decreasing trends in drought prone region. In 1989, 1990, 1996, 1998, 2006, 2010,2016, 2017 shows pattern of increasing trends in heavy rainfall in the study region.

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Cropping Pattern and Agriculture Efficiency of Selective Villages in Mulshi Tahsil of Pune District in Maharashtra, India

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Abstract:

Agriculture is most important role for socio economic development and cropping pattern is important for the development of agriculture. Cropping pattern is depending on spatial and temporal variations and changes. It is depends on rainfall, climate, temperature, soil type, technological level of farmer and behavior of farmer.

The study was carrying out on the basis of primary and secondary sources. Primary data collect with the help of survey and secondary data collect through the Ggrampanchayat, Tashil office and local authority of Man & Marunji village. The research paper focus on variation of crops, area wise comparative analysis of crops, land use pattern & water sources of study area and its effects on rural development.

Keywords: - Field Surveys, observations, spatial analysis and statistical techniques.

Introduction:

Agriculture is largest and important sector in India. Near about 65% population in India are engaged in agriculture activities. Therefore the study of cropping pattern is important in agriculture sectors. Agriculture is helpfully for rural development, agriculture related occupation like transportation, animal rearing and increasing job like agriculture labors, open seeds stores and others and also it is supportive for Surrounding for development of agro base Industries like rice mill, cotton mill, dairy frames and other due to agriculture is responsible for the development rural.

Objectives of study area.

1. To find out the Land use pattrern in study area.
2. To calculate the crop combination and Agriculture effeciency in study area.

Methodology:

The primary data and secondary data have been used for the research paper. The questionnaire has been prepared to collect the data. The statistical method has been used for data calculation these are follows.

Crop combination use by weaver's methods:

Formula: $V = (O-E)^2/n + \text{----------}n^{th}$

Agriculture Efficiency by Bhatia method:

Formula: $Er = ya / yr \times 100$

Cr = Area under crop / Met shown area of same region X 100

$Ei = (Er \times Cr_1) + (Er \times Cr_2) / Cr_1 + Cr_2 + Cr_3 + Cr_4 + \text{------}n^{th}$

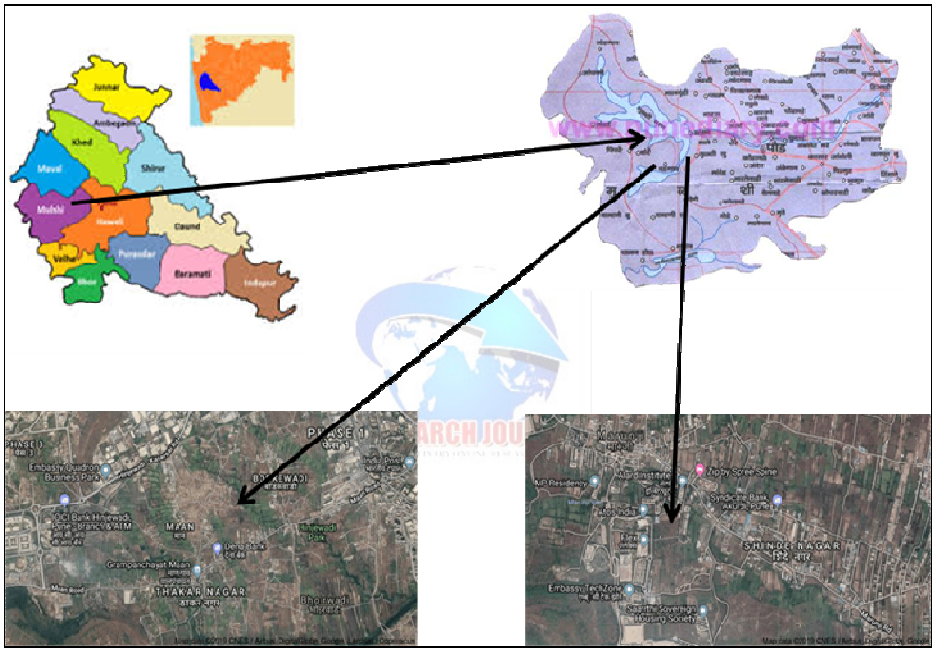
Data collection:

Data collection has done with the help of the observation, interviews, photos, Google images and field survey. Questionnaires have prepared for obtaining information of cropping pattern & agriculture system. However spatial analysis of study area has been done with the help of Google images for calculate area and related features.

The location of study area:

The Village Man and Marunji are located near to Pimpri Chinchwad. The approach road to village Man is 13 km westward from Hinjawadi chowk one should have to go to 3 km southward to village Man. This road is metalled road. The village Man is located on 20º 48'north and 77 º30' east and Marunji Village is located on 18º 32'northand 73 º25' east. Talegaon Dabade and Lavale is located near to study area in Mulashi Tahasil of Pune District in Maharashtra, India.

Figure no.1: Location map of Study Area



Soure: GPS Surveyed by Researcher**.**

Land use of study area:

Land use pattern in Man & Marunji relates to the physical characteristics of land, administration department and other resources framework like labour, capital and other. All these aspects are associated with the development of rural areas. Total area of Man & Marunji village is 3842.4 acre & 3561 acre respectively.

Table no.1: Land use of study area

Use of Land	Man (%)	Marunji (%)
Forest	4.42	5.27
Fallow land	16.56	13.93
Agriculture	30.26	31.17
Barren land	6.2	4.91

Land use for other	46.98	44.71

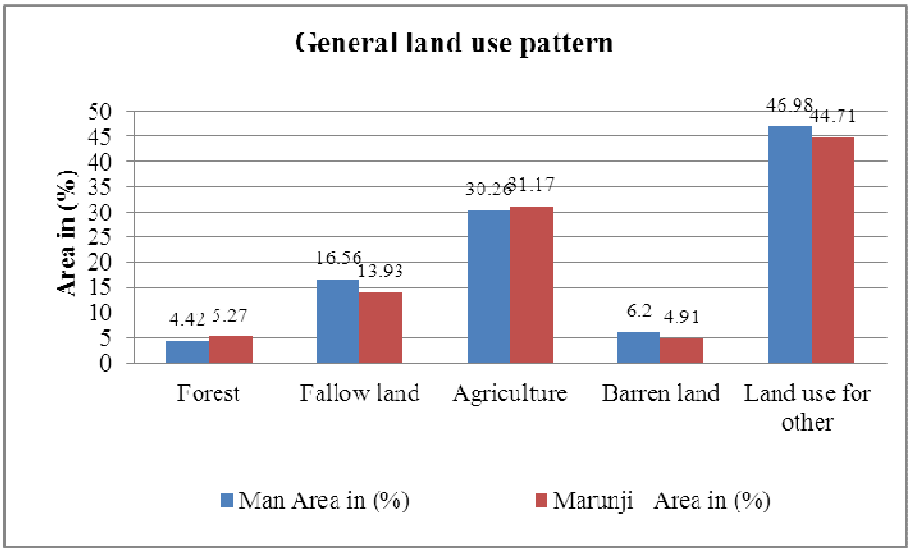


Figure no. 2: land use of study area

As per the study in Man & Marunjin village has a total land area is 3842.4 & 3561 acre respectively. More uses of land for other activities like settlement, roads, school ground etc. in both villages. Another use of land for Agriculture it is 30.26% & 31.17% respectively, and for forest 4.42 & 5.27, for barren land 6.2 & 4.91, and for fallow land16.56 & 13.93 for land uses in Man & Marunji village.

Crop Combination of study area:

Crop combination is a process of cultivating multiple crops and growing different types of crops under in the same field. This method is based on the combination comparison of actual percentage of crops, areas occupied by different field's crops. With the help of Wavers' crop combination method calculate the crop combination in Man and Marunji village.

Table no. 2: Criteria for Agriculture Efficiency

Below 80%	Very low Efficiency
80% to 100%	low Efficiency
100 % to 120%	Moderate Efficiency
120 % to 140%	High Efficiency
140% to 160%	Very high Efficiency
Above 160 %	Extremely high Efficiency

Collect the following data for Crop Combination in Man & Marunji village.

Table no. 3: Data collect for Crop Combination

Crop	Wheat	Jawar	Bajara	Ground nut	Soybean	Mustard	Sugar Cane	Vegetable	Total area
Man	210	68	12	24	31	25	40	60	**470**
Marunji	190	90	18	26	31	15	60	80	**510**

Table no. 4: Results Table of Crop Combination by Wavers method

Crop Combination	Results

	Man	Marunji
One crop Combination.	3060.30	3937.52
Two crop combination.	645.34	604.54
Three Crop Combinations.	307	190.8
Four crop combination.	2232.18	210.16
Five crop combination	202.04	-
Six crop combination	183.65	-
Seven crop combination	169.05	-
Eight crop combination	161.96	-

Above result table shows the crop combination of Man and Marunji village. In Man village Crop Combination is eight crop combinations in Man village favorable condition for the eight crops it is Wheat, Jawar, Bajara, Ground nut, Soybean, Mustard, Sugar Cane & Vegetable and Marunji village is supportive for three crops combinations it is Wheat, Jawar and Vegetable.

Agriculture Efficiency of study area:

Agriculture efficiency is the aggregate performance of variation of crops in regards output per hectors or per acres, limits the for contributions of each crops in agriculture efficiency be each share of crops land to determine indicates yield in efficiency of the hectare of yield of various crops in the part of regional unite may be explained as the percentage of corresponding arrange hector yield for the entire region. Agriculture efficiency depends upon various factors such as, soil types, structure, soil texture, and climatic condition, size of land irrigation, political discussion and technological land conditions.

Table no 5: Results Table of Agriculture Efficiency by Bhatia method

Sr. No	Man Cr	Marunji Cr	Man Er	Marunji Er
Wheat	105	**95**	52.5	**47.5**
Jawar	86.07	**113.92**	43.04	**56.96**
Bajara	80	**120**	40	**60**
Ground nut	96	**104**	48	**52**
Soybean	100	**100**	50	**50**
Mustard	125	**75**	62.5	**37.5**
Sugar Cane	80	**120**	40	**60**
vegetable	85.71	**114.28**	42.86	**57.14**
Results				
Agriculture Efficiency of Man (Ei)		96.88		**Low Efficiency**
Agriculture Efficiency of Marunji (Ei)		116.21		**Moderate Efficiency**

Above result table shows Agriculture Efficiency of Man and Marunji Villag. Agriculture efficiency of Man village is 96.88. It is represents Low Agriculture Efficiency. Agriculture efficiency of Marunji Village is 116.21. It represents Moderate Agriculture Efficiency.

Conclusion:

The aims & objectives stated for this study which has be supportively elaborated and interpreted by the many finding and conclusion driven the various ways of this study. The conclusions were elaborated in the following ways.

- Physical structure of the study area is Hillock, hilly and more access of water sources. Due to development of agriculture is well to comparatively other village in Mulashi Tashil
- More uses of land for other activities like settlement, roads, school ground etc. in both villages comparison to other land use.
- Man village Crop Combination is eight crop combinations and Marunji village is supportive for three crops combinations because favorable climatic condition is Man Village are responsible for that.
- Agriculture efficiency of Man village is Low comparatively of Marunji Village because development of IT sector, development of Market and etc.

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The Sustainable Development on Rural Maharashtra With References An Agricultural Sector

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Abstract –

The sustainable development improves become better quality of life in rural areas. For present and future generation getting much more enough increases food and income to the farmers. In sustainable agriculture peoples are trying to know and solve the problem in our am going agriculture system .Agricultural sector use new technology and process of irrigating especially the operation of causing to flow over lands for nourishing plants. Newly advanced irrigation method benefitted to rural farmers. The increasing natural calamities, disasters and changes of weather and climatic condition will negatively affect agricultural yield. So, need to earlier to change the agricultural production system and use organic farming also having been enlarged new technology in agricultural sector.

Key words – Sustainable development, Resources, Natural disasters, Crop production, Organic Farming and advanced technology.

Introduction –

Agriculture sector is more important for the development in rural economy. This Agro economy was the base on Agriculture. This agricultural sector contributes significantly to sustainable development of the country. Agriculture sector is the sunrise sector of the Indian economy in view of its large potential for growth and development. The largest objectives for the important of agricultural sector can be realized through rapid growth of agriculture with depend upon increasing area of agricultural productivity. Several commercial or cash are grown on a large scale in Maharashtra. In western Maharashtra was green belt on sugarcane. Chief among those are cotton, tobacco, oil seeds and sugarcane etc., They are of considerable economic importance to the country provides raw material for internal consumption and serving as valuable sources for earning foreign exchange. The word 'Sustainable' comes from the word 'Sustain 'which means to maintain support.

Objectives of the study –

1. To analysis the extent of sustainable development in the agricultural sector.
2. To evaluate experiments of agricultural sector as a part of G.D.P.
3. To study the satisfaction of human food and fiber need for sustainable agricultural development.
4. To study sustainable development of increases the quality of life for people in agricultural sectors.
5. To study, the agriculture sector contributed to sustainable socio – economic development.

Data base and Methodology –

The present study has been carried out with the primary and secondary data which is help of data collection, tabulation Computer analysis and interpret the basic data regarding for sustainable agriculture.

To study various relevant aspects have been collected from secondary source of information Agricultural government report. District statistically abstract, various published Agricultural report. The present work is done with the help of secondary source.

Significance of study –

The area covered an something and importance of sustainable development its after math and effect on the agricultural practices in Maharashtra, and how the production policies are changing in a manner confirming with make or become different scenario of the world.

Sustainable Agriculture development the issue of sustainable development can be studied under three .broad of areas on farming system which be composed or made up of traditional production systems, Modern agriculture system and Sustainable agriculture system. Further we can compare them by three dimensions relating to on concerned with the relation of limit organism to one another ecological, economic and social sustainability.

Sustainable Agriculture -

A diversity of Philosophical Policies and Practices have given in order to help achieve or provide something to these goods, People in many different capacities from farmers to a persons who purchases, have towards or way of regarding something a point of view the following there commonly weave through definition of sustainable agriculture.Sustainability an instance or period of relaxing on the creating to engage in strenuous or stressful activity that we must meet the needs of the present without revealing an embarrassing or incriminating secret about someone the skill of future generation to meet their own needs.

Therefore relating to the running of a business organization of both natural and human resources is of prime importance. Stewardship of human resources in close careful thought, cogitation of social the state or fact of having duty to deal with something, such as working and living conditions of labors. The need of rural communities and a person who purchase goods also services for his personal use health and safety both in the present and the future life. Stewardship of land and natural resources as a necessary part or a result maintaining or intensify increase or further improve the quality this vital resource base for the long term.

A System an apparent spatial distribution in perceived sound is basal to understanding the property of being sustainable. The systems is envisioned in its very noticeable and strong sense, from the individual farm, to the local ecosystem and to a group of people living in the same place for characteristic in common affected by this farming system both locally regional and globally..

There ismuch the actual application commonly used by people working in sustainable agriculture and sustainable food systems. It is also process of discussion aimed at reaching an agreement a push and pull between the sometimes strike to gain interest of an individual farmer or of people in a community as they work find an answer to complex problem about how are expand our food and fiber.

Rural society development is important in developing countries where a large part of the population is engaged in farming. Improving the quality of life in rural areas and ensuring enough food for present and future generation and getting much more sufficient income for farmers. Sustainable agriculture has which is good environment conditions and agriculture development.In sustainable agriculture peoples are trying to identifying and solve the problems in our current agricultural methods. Provide on food and fiber good environment for people over the long period.

National mission for sustainable agriculture –

The national mission for sustainable agricultural in India. To change the agriculture into an ecologically, sustainable climate resilient production at the same time, exploiting its fullest potential and these by enjoying food security, Suitable access to food resources, enhancing livelihood opportunities and contributing to economic stability at the national level allied activity. Around 72% of total working population is engaged in agricultural sector.Sustainable agriculture potential to reduce the risk or problems associated with a changing climatic conditions and growing population.The weather variability and climatic change will negatively affect agricultural yields. So, need to earlier change the agricultural production methods.

Economic Sustainability –

To make agricultural sector sustainable it should be feasible over long period. Sometime the government also aims to enhance the production of such products which is export oriented. This is not right policy as export include as a necessary part many cost like transportations packing, packaging, import duty of other countries, taxes etc., are included in contravention its earning, production should not be a commodity centered only it should also the center of interest or activity on domestic supply.

As agriculture is the main source of employment in rural areas it should the center of interest or activity on specialization of the skills, the act of specializing will help in further improve the quality the capability level and greater production.. In other words the states qualities of producing something make or manufacture from components or raw materials the specific commodity production with contribute to earn more. Main products from the developed countries are demanded will more as they are good in quality. Sustainable development of agriculture tries to achieve drive this objectives through the production of quality and environment friendly product.

Sustainable Agricultural Benifitted To Indian Economy

- AVAILABLE SUFFICIENT FOOD
- CREATE NEW EMPLOYMENT
- INCREASES ON NATIONAL INCOME
- GROWTH OF TRADE
- ESTABLISHED .INDUSTRY AND GROWTH OF INDUSTRILIZATION
- RURAL DEVELOPMENT IN MAHARASHTRA
- INCREASES IN FOREIGN EXCHANGE

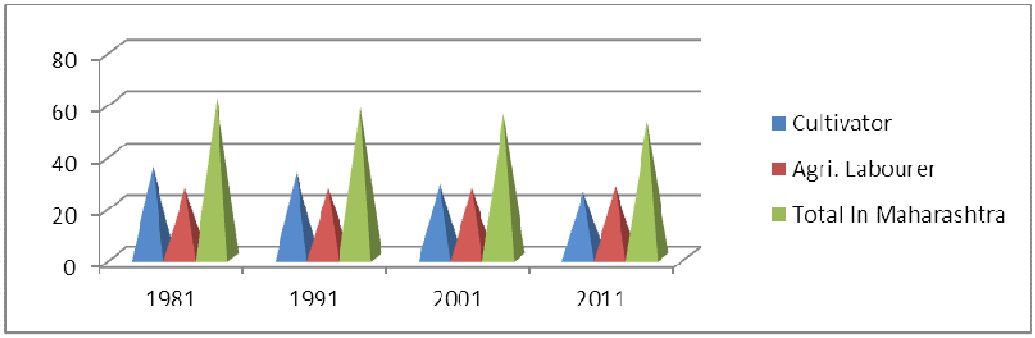
Share of Agriculture in workforce- %

While agriculture contribution to income in a rapid manner a way in which a thing is done or happens the workforce continued to perpetuate in this sector, point out restricted in size employment opportunities in other sectors..

Year	Cultivator %	Agri.,.Labor %	Total in Maharashtra
1981	35%	26.6 %	61.6 %
1991	32.8%	26.8 %	59.6 %
2001	28.7%	26.8 %	55.5 %
2011	25.4%	27.3 %	52.7 %

(Source – Census of India 2011)

Share of workforce in Maharashtra.



A instance of comparing of the state with the national figure display that at the all India level, 59% of work force (2000-01) is employed in agriculture while the consonant figure for Maharashtra is 55 %. Analysis of the sector wise contest however indicated that Maharashtra's and experiments was not always better than that of the method level. During 1980-81 to 1989-90 the growth rate in the primary sector in Maharashtra was only 2.19 % per annum and it was not statistically consequence while. All India registered a statistically consequence growth rate of three percent per annum, indicate doubt or hesitancy, this relatively lower growth rate during this period showed a better performance of 2.7 percent per annum and is also in the way of statistics. Significant if we exclude the drought year. Agriculture in Maharashtra is heavily dependent on monsoons as.The agricultural sector is playing main role in Indian economy.

- The share of agriculture in national income is a crucial indicator of the major role that agriculture plays in the economic development.
- Agriculture as a primary sector is the main sector providing employment opportunities.
- Established Agro industries and agro processing industries they benefited to regional economic development.
- Growth in agricultural productivity supports and sustains industrial development in this rural area.
- Indian agriculture has been a net earner of valuable foreign exchange for the country in the agricultural sector..
- The importance of agricultural sector of livelihood.

This has great significance for India's economic development because increased exports. Maharashtra has the largest economy in India. It is third most urbanized state in India. The productivity of agricultural sector is make a better by two ways, Firstly, it can growth output by effectively make practical and effective use by the available resources and secondly output canbe increased by contrast of input. In a country like India, productivity is most important to complement the need of people as we have a large Population. The important topics as related to agriculture can be studied through three basic categories.

As follows1. Traditional long established production systems. 2. Modern agricultural system 3. Sustainable agricultural system In a natural manner, in particular much work is needed very important to grow the agriculture to a level where it is least influenced by an external factor vagaries of monsoon agriculture on and help doing something little from outside the farm not so great or importance as the few dependence on chemical fertilizers and waste.

Ecological Sustainability –

Under this we can say that most of the long established traditional practices are not ecologically sustainable. It does not use natural resources correctly, reducing the fertility of soil which causes problem of soil erosion. The sustainable development in agriculture sector has come up to with a condition or circumstances that put one in a favorable or superior position to reduce the effect of these causes.

Soil erosion is the major problem in the agricultural sector. This can be put something right, correct with the actual application or use of anidea of sustainable development. There was improvement in soil quality interms of various parameters, physical, chemical, biological properties, availability of macro and macro nutrients indicating on enhanced soil health and sustainability of crop production in organic farming systems. Sustainable agriculture facilitates to increase the quality of top soil by facilitating to store and retain the rainwater.Fertilization management should minimize nutrient losses. Illumination of heavy metals and other pollutants should be prevented.Weeds, pests and diseases should be controlled by a number ofpreventative cultural techniques which limit their development e.g. suitable rotation green manures a balanced fertilizing programed, are predrilling seeds bed preparation mulching, mechanical control and disturbance of post development cycles. Use on chemical and other pesticides is prohibited; permitted products for plant pest and disease control are used in very important. Use chemicals, pesticides and fertilizers contrary effect the total ecology as well as the population not in accordance with accepted rules or standards use of pesticides, improper storage etc., may lead to health problems. Sustainable develop of agriculture make smaller or less in amount the use of speculative chemical and control pests.

Social Sustainability –

The Sustainable development aims at increasing the productivity as well as makes greater the level of employment on the country.

Conclusion -

Sustainable development is defined as balancing the protection of the natural environment with the sufficient of human needs and livelihood. Sustainable solutions of water, land resources problems can be found if people the roughly understand the issues and how each aspects of the society contributes to them. Organic agriculture was developed on farming system which is very important on agriculture.

It has been significant the for increasing and growth of Maharashtra the practice of sustainable agriculture is of quite importance as it accelerates the productivity, efficiency employment and providing guidance to reduce the practices which affect the quality of soil, water resources and degradation of various related natural resources. It is basically aims at adopting specialization and using environment and eco- friendly tools to protect and preserve the environment as well as to increases, further improve the quality the level of production without harming to the environment. As we see the performance of agriculture of Maharashtra we will be easily recognize that performance have been in created in a significant manner over the period. Despite of many challenges like urbanization, Growth of secondary sector etc., It has achieved a significant growth.

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Rural Development: Concept and Programmes

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Introduction

India s country of villages so first of all see towards rural development .Rural development is a topic which is pretty easy to understand but hard to implement. It focuses upon the upliftment and development of the sections of rural economies, that experience grave poverty issues and effectively aims at developing their productivity. It also emphasizes the need to address various pressing issues of village economies that hinder growth and improve these areas.

Objectives

1. To Understand the Present Situation of Villages in India
2. To Know the Rural Problems and Requirement.

Methodology

The present research paper is descriptive and the required information collected from various secondary sources of information.

Need of Rural Development in India

The rural economy is an example of an agrarian economy. Although farming and agriculture are one of the most important primary activities, the problem lies in the fact that the share in GDP of agriculture sector is on a constant decline. At the same time, about two-thirds of India's population depends on agriculture. As a result, the productivity is not up to the mark, with conditions only getting worse. Public investment coupled with lack of adequate infrastructure, credit, transport, employment etc. Henceforth the agricultural output has grown at only 3.2% during 2007-2011. All these factors have been denting the process of development. Therefore there is a need to focus on rural development and not just urban development.

Scope for enhancement

The primary area to improve should be providing employment in rural areas and improving the productivity of the agricultural sector. Often villages in our countries are not in sync with the urban areas because of bad connectivity. Eventually, this leads to segregation and a social divide between urban and rural areas. In essence, the infrastructure of rural areas should drastically improve. Even after so many years of Independence, stigmas like caste system still have a grip on rural people.

Quality education can help in achieving the goal of eradication of such social evils. The dwindling literacy rates in rural India, especially for females, are a major matter of concern. There is a need for land and technical reforms. Modern technologies like organic farming should be incorporated to improve outputs and profits. Lastly, people should be given access to easy credit and loans by improving the banking system in rural areas.

It can be easily concluded, that for the development of an economy in both rural and urban areas need to be focused upon. Rural areas need drastic changes in areas like INFRASTRUC, credit

availability infrastructure , literacy, poverty eradication etc. The schemes that are already in place with the aim of rural development need a new outlook and proper updating. Accordingly, the government needs to act for the upliftment of rural India.

To achieve food security and improved nutrition and promote sustainable agriculture Increase investment, including through enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development and plant and livestock gene banks in order to enhance agricultural productive capacity in developing countries, in particular least developed countries Make cities and human settlements inclusive, safe, resilient and sustainable strengthening national and regional development planning

The achievement of the Millennium Development Goals is at the centre of sustainable development. Sustainable Rural Development is vital to the economic, social and environmental viability of nations. It is essential for poverty eradication since global poverty is overwhelmingly rural. The manifestation of poverty goes beyond the urban-rural divide; it has subregional and regional contexts. It is therefore critical, and there is great value to be gained, by coordinating Rural Development initiatives that contribute to sustainable livelihoods through efforts at the global, regional, national and local levels, as appropriate. Strategies to deal with should take into Rural Development consideration the remoteness and potentials in rural areas and provide targeted differentiated approaches.

A healthy and dynamic agricultural sector is an important foundation of Rural Development, generating strong linkages to other economic sectors. Rural livelihoods are enhanced through effective participation of rural people and rural communities in the management of their own social, economic and environmental objectives by empowering people in rural areas, particularly women and youth, including through organizations such as local cooperatives and by applying the bottom-up approach. Close economic integration of rural areas with neighbouring urban areas and the creation of rural off-farm employment can narrow rural-urban disparities, expand opportunities and encourage the retention of skilled people, including youth, in rural areas. There is considerable potential for rural job creation not only in farming, agro processing and rural industry but also in building rural infrastructure, in the sustainable management of natural resources, waste and residues. Rural communities in developing countries are still faced with challenges related to access to basic services, economic opportunities and some degree of incoherence with regard to planning related to rural-urban divide. Investments in environmental protection, rural infrastructure and in rural health and education are critical to sustainable and can enhae nce national well-being. Beyond meeting basic needs, investments must be linked to the potential to raise productivity and income. The vulnerabilities of the rural poor to the economic and financial crisis and to climate change and water shortage must be addressed.

The success of sustainable rural development depends on, inter alia, developing and implementing comprehensive strategies for dealing with climate change, drought, desertification and natural disaster.

(a) Promoting poverty eradication in rural areas; (b) Promoting pro-poor planning and budgeting at the national and local levels; (c) Addressing basic needs and enhancing provision of and access to services as a precursor to improve livelihoods and as an enabling factor of people?s engagement in productive activities; (d) Providing social protection programmes to

benefit, inter alia, the vulnerable households, in particular the aged, persons with disabilities and unemployed many of whom are in rural areas.

Actions are needed to:

(a) Construct social capital and resilience in rural communities.

(i) Empower women and small-scale farmers, and indigenous peoples, including through securing equitable land tenure supported by appropriate legal frameworks;
(ii) Promote equitable access to land, water, financial resources and technologies by women, indigenous peoples and other vulnerable groups;
(iii) Support and promote efforts to harmonize modern technologies with traditional and indigenous knowledge for sustainability ;
(iv) Provide access to credit and other mechanisms as well as resources for farm-based activities, especially for small-scale farmers, including women in particular, in developing countries to better manage the various risks they face, including price, weather, climate, water shortages, land degradation and natural disasters, including by providing aid and promoting the development of agricultural insurance markets; (v) Protect and ensure sustainable use of traditional knowledge, including indigenous knowledge in accordance with article 8 (j) of the Convention on Biological Diversity, for the management of natural resources to address the challenges of sustainable development;
(vi) Facilitate the active participation of vulnerable groups, including women, youth and indigenous peoples and rural communities, in the elaboration of local and national planning of rural development , taking into account national legislation;
(vii) Build the resilience of rural communities to cope with and recover from natural disasters;
(viii) Promote and scale up labour-intensive recovery activities in addition to capital
(ix) Support training and capacity-building of rural communities to effectively implement adaptation programmes to climate change at the local level;
(x) Invest resources to enhance research aimed at adapting to the challenges of climate change;
(xi) Foster and strengthen capacities of rural communities for self-organization for building social capital, taking into account national legislation;

(b) To make sronger the human capacities of rural people.

(I)Strengthen rural health-care facilities and capacities, train and increase the number of health and nutrition professionals and sustain and expand access to primary health-care systems, including through promoting equitable and improved access to affordable and efficient health-care services, including provision of basic health-care services for the poor in rural areas, in particular in Africa, for effective disease prevention and treatment;
(ii) Create and develop educational programmes for rural communities aimed at disease prevention;
(iii) Eliminate old and new forms of illiteracy in rural communities and ensure provision of primary education and access to secondary and tertiary educational opportunities as well as vocational and entrepreneurship training including proactive and market-related elements to build capacities within rural communities, in particular for youth, young girls, women .
(iv) Encourage rural communities? Participation in decision-making, promote rural communities? empowerment and rural leadership;
(v) Improve access by rural people and communities to information, education, extension

services and learning resources, knowledge and training to support sustainable development planning and decision-making;

Invest in essential infrastructure and services for rural communities

(i) Increase public and private investments in infrastructure in rural areas, including roads, waterways and transport systems, storage and market facilities, livestock facilities, irrigation systems, affordable housing, water supply and sanitation services, electrification facilities, and information and communications networks;

(ii) Improve access to reliable and affordable energy services, including renewable and alternative sources of energy for sustainable development ;

(ii) Enhance access of rural populations to safe drinking water and adequate sanitation;

(iv) Develop and improve access of rural populations to information and communications technologies, inter alia, to support Internet access and build capacities for an effective use of technologies;

(v) Develop rural public and private services that realize the potential of those technologies, including cellular banking and e extension services;

(vi) Promote the development of rural organizations such as community-driven cooperatives to enhance investment in essential infrastructure and services,

(vii) Support improved access for all to strengthened rural health-care services and facilities;

(d) Stimulate the creation of new jobs and income opportunities in rural areas.

(i) Support rural diversification, including on-farm diversification towards non-agricultural and other non-primary production activities; (ii) Provide appropriate land-use frameworks in order to support the establishment of agricultural activities and both agricultural and non agricultural services related to sustainable. (iii) Strengthen the links between agriculture and other sectors of the rural economy; (iv) Develop sustainable ways to add value to agricultural products locally, subregionally and regionally to generate additional income; (v) Support the development, transfer and use of safe and environmentally sound construction technologies and practices, in particular for housing, to improve living standards and to create employment in rural areas;

(vi) Support as appropriate, sustainable tourism as a valuable source of employment and income supplement to farming and other primary production activities.(vii) Actively promote sustainable forest management; (viii) Increase access of rural populations, particularly women, youth, indigenous people and other vulnerable groups, especially in disadvantaged areas, to markets as well as affordable financial and business advisory services, such as market literacy, microcredit, loan guarantees and venture capital; (ix) Expand access to markets by assisting rural producers, associations and firms, especially those from developing countries, to respond to market demand;

(x) Increase employment opportunities through labour-intensive approaches including green jobs and development of rural infrastructure, taking into account the decent work agenda of the International Labour Organization as an important instrument to achieve the objective of full and productive employment

(xi) Develop the necessary infrastructure and encourage data collection, including disaggregated population data, synthesis and analysis, to enhance the understanding of the contribution of non farming activities to poverty reduction and income generation.

(xii) Support the development of integration into market of smallholder family agriculture and sharing of experiences and best practices;
(xiv) Promote non-agricultural industries such as mining, service industries, construction and commerce, in a sustainable manner, as a source of employment and income for rural populations.
(xiii) Provide entrepreneurial training, credit and other support to off-farm and other non-primary production activities.

(e) Ensure environmental sustainability in rural areas:
(i) Encourage the use of land resources in a sustainable manner to prevent land degradation that is caused by unsustainable exploitation of land resources;
(ii) Encourage the use of environmentally friendly practices; (iii) Promote sustainable natural resources use and management, including ecosystem conservation through community-based programmes;
(iv) Promote safe and environmentally sound waste management practices; (f) Promote women?s empowerment and gender equality. In that context: (i) Involve women in decision-making in all activities related to rural development; (ii) Take measures that promote access to and ownership of means of production, including land, capital, entrepreneurship, by women; (iii) Promote gender equality as well as take measures to achieve equal opportunities for women and men (iv) Carry out extensive education, and awareness-raising on the rights of women and the concept of empowerment and gender equality in rural areas.

Rural development implies both the economic betterment of people as well as greater social transformation. Increased participation of people in the rural development programmes, decentralization of planning, better enforcement of land reforms and greater access to credit are envisaged for providing the rural people with better prospects.

In the beginning, main thrust for development was laid on agriculture, industry, communication, education, health and allied sectors. Later on, realizing that accelerated development can be provided only if governmental efforts are adequately supplemented by direct and indirect involvement of people at the grass root level, the thrust shifted.

The following major programmes are being conducted by the Department of Rural Development in rural areas,

(i) Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) for providing wage employment,
(ii) National Rural Livelihoods Mission (NRLM) for self employment and skill development,
(iii) Indira Awaas Yojana (IAY) for providing housing to BPL households,
(iv) Pradhan Mantri Gram Sadak Yojana (PMGSY) for construction of quality roads
(v) National Social Assistance Programme (NSAP) for social pension
(vi) Saansad Adarsh Gram Yojana(SAGY) for Model Villages
(vii) Shyama Prasad Mukherjee Rurban Mission for Rural Growth Centres
In addition, the Ministry also has schemes for capacity development of rural functionaries; Information, Education and Communication; and Monitoring and Evaluation.

Some areas that need urgent attention for Rural Development in India are as follows

1. Public health and hygiene

2. Literacy
3. Feminine empowerment
4. Enforcement of law and order
5. Land reforms
6. Development of Infrastructure like irrigation, electricity etc.
7. Availability
8. Abolition of poverty

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Agriculture and Rural Development Policies: An Overview

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Abstract:

India is an agrarian country. According to the 2011 census, 68.31 percent of the population living in rural area and this population is the main business Agriculture. It is said that India is a country of villages and the development of this village is dependent on the agriculture sector. Therefore, rural areas will be developed. Since the country became independent, the government has announced a number of schemes and programs for rural development in recent years. In this, the government has given attention to the development of rural people under SFDA, NREP, MFAL, RLEGP, JRY, SGRY, NFFWS, MGNREGA, PDS etc. but compared to the developed countries, the rural people did not get much benefits from this program. If the rural area is to be developed, then it is necessary to implement this plan and program properly and efficiently. It is also an important agricultural place in the Indian economy. For today the agriculture sector has a share of 17 per cent in the GDP, so in this paper presented in agriculture and rural development policies as well as the Agricultural Production all this factors have been studied.

Introduction:

Agricultural sector is an important area of the Indian economy since ancient times because agriculture is the main occupation of the people of India, agricultural sector is important in national income, employment, industrial development, foreign trade and overall economic development of the country Agriculture is the backbone of the Indian economy. It is said that we are aware of the importance of agricultural sector in the Indian economy. The economic development of a developing nation like India is dependent on the agricultural sector's development. Although natural resources are available in India, there is a shortage of industrialization due to lack of capital. As a result, the agriculture sector has provided employment to the growing population. Employment in the agricultural and agricultural industries is available to the workers of the country.

Agriculture sector has an important role to play in reducing the unemployment rate in the country. India has a large scope of capital shortage. It can be overcome by the power deficit because of the low production of capital in the agricultural sector, and can result in large scale production by investing less capital. The need for large scale foreign currency for the development of agriculture sector is not the only industrial sector. Therefore, after the independence of the Five Year Plan, India's economic development through industrial sector as well as agriculture sector has also been given importance in the Five Year Plan. To develop the economic development of the country, it is necessary to develop the country's agricultural sector first of all. If adequate development of agriculture does not come forward, the obstacles in the development of industry and services sector are created. Therefore, during the first Five Year Plans, the Planning Commission of India gave the most importance to the agriculture sector. The performance of the agricultural sector influences the growth of Indian Economy. Agriculture has been a way of life and continuous to be the single most important livelihood of the masses.

Agriculture policy focus on India across decades has been on self- sufficiency and self-reliance in food grains production. The performance of the agricultural sector influences the growth of the Indian Economy.

Agriculture has been a way of life and continues to be the single most important livelihood of the masses. Agricultural policy focus in India across decades has been on self-sufficiency and self-reliance in food grains production. Considerable progress has been made on this front food grains production rose from 52million tones in 1951-52 to 264.77 million tonnes in 2013-14 but slightly declined to 252.22 million tonnes in 2015. As per the new series the growth in GVA in Agriculture and allied sector was estimates at 4.2 percent for the year 2013-14. For 2014-15, this estimate stands at -0.2 percent for the year 2016-17 this growth rate has been estimated at 4.1% besides the share of agriculture and allied sector in total GDP was estimated to be 17.4 percent. For 2016-17 it has been estimated at 17. % the share of Agriculture and allied sectors in total Gross Capital Formation has been estimated at 7.7% for the year 2014-15.

Concept of Rural Development:

Rural Development has never been a new concept for India it is rather interwoven in the heritage of Indian culture, mention of it has been made along with the history of mankind. Even in the famous epics and drams like Ramayana and Mahabharata the instances of rural governance in terms of welfare of the people, justice to the people has been made. The philosophy of governance in such literature gives hints of Rural Development. India is a country of villages and its development is synonymous with the development of the people living in rural areas. India is a vast and second most populous country of the world. (According to the 1991 census, 74.28 per cent population of our country reside in the countryside). But a big part of this population has been leading an uncertain economic life due to non-synchronization of employment opportunities in agriculture sector because of the fast growing population. Rural development has been receiving increasing attention of the governments across the world. In the Indian context rural development assumes special significance for two important reasons. First about two thirds of the population still lives in villages and there cannot be any progress so long as rural areas remain backward. Second, the backwardness of the rural sector would be a major impediment to the overall progress of the economy.

The term 'rural development' is of focal interest and is widely acclaimed in both the developed and the developing countries of the world. There is however no universally acceptable definition of rural development, and the term is used in different ways and in vastly divergent context. As a concept, it can note overall development of rural areas with a view to improve the quality of life of rural people. In this sense it is a comprehensive and multidimensional concept and encompasses the development of agriculture and allied activities-village and cottage industries and crafts, socio- economic infrastructure, community services and facilities, and above all, the human resources in rural areas. As a phenomenon, it is the result of interactions between various physical, technological, economic, socio-cultural, and institutional factors. As a strategy, it is designed to improve the economic and social well-being of a specific group of people the rural poor. As a discipline, it is multidisciplinary in nature representing an intersection of agriculture social behavioral, engineering and management sciences. In the words of Robert Chambers, "Rural Development is a strategy to enable a specific group of people poor rural

women and men, to gain for themselves and their children more of what they want and need. It involves helping the poorest among these who seek a livelihood in the rural areas to demand and control more of the benefits of rural development. The group includes small scale farmers, tenants and the landless.

Objectives of the Research Paper:

1. To study the policies adopted for the rural Development of Agriculture
2. To study the importance of Agriculture in the Indian Economy.
3. An Review of Agriculture Production.

Hypothesis of the research Paper:

1. The importance of Agriculture in the Indian Economy is increasing day by day.
2. Agriculture has been growing in recent Years.

Research Methodology:

For the present research paper, the information has been collected from various secondary sources present research paper is mostly based on various overview, reports various books, articles, internet, etc.

Policies of Rural Development: in the first and second plan the government has actually tries for rural development.1950-51 to 2018, the government has announced different schemes for rural development and the policies are not implemented properly a review of the government policies for rural development is as follows.

1. Technological measures: initiation of measures to increase Agriculture production substantially to meet the growing needs of the population and also to provide a base for industrial development included steps to increase both extensive cultivation and intensive cultivation. For the former, irrigation facilities were provided to a large area on an increasing basic and area hitherto unfit new agricultural strategy was introduced in the form of a package programmer in selected regions of the country in 1966. Sustain and extend this programmer to larger and larger areas of the country, steps were initiated to increase the production of high- yielding varieties of seeds, fertilizers and pesticides within the economy and supplement domestic production by imports whenever necessary as a result of these measures agricultural production and productivity increased day by day.

2. Land reforms: land reform measures to abolish intermediary interest in land and transfer of land to actual tiller of the soil were expected to be taken up on a priority basis measures taken under this head included 1) Abolition of intermediaries 2) Tenancy reforms to (a) regulate rents paid by tenants to landlords (b) provide securities of tenure to tenants and (c) confer ownership rights on tenants 3) imposition of ceiling on holding in a bid to procure land for distribution among landless labors and marginal farmers.

3. Co-operation and consolidation of holding: in a bid to reorganize agriculture and prevent subdivision and fragmentation of holding the Indian agriculture programmers of co-operation and consolidation of holding. The letter programmer aimed at consolidating all plots of land owned by a particular farmer in different places of the village by sanctioning him land at one place equal in area to his plots of land.

4. Institutions involving people's participation in planning: Bringing small and marginal farmers together to cultivate jointly is only half of the story. No planning in any country can be successful unless the masses are encouraged to join hands with the planning authorities in a bid to carry out the plans and programmers framed for their uplift and betterment.

5. Food security system: in a bid to provide food grains and other essential goods to consumers at cheap and subsidized rates the government of India has built up an elaborate food security system in the form of public distribution system (PDS) during the planning period. PDS not only ensures availability of food grains at cheap prices to the consumers but also operates as a 'safety net' by maintaining large stocks of food grains in order to combat any shortage and shortfalls that might occur in some years and in certain areas of the country.

6. Rural Employment programmer: PDS alone cannot serve as an effective safety net. This is due to the reason that unless the poor have adequate purchasing power they cannot buy their requirement from the PDS. Therefore, large scale poverty alleviation programmers in the form of rural employment programmer are require to provide purchasing power to the poor on account of this reason, the government introduction various poverty alleviation programmers particularly from fourth plan onwards like small farmer's development Agency(SFDA), Marginal farmers and Agricultural Labour Development Agency(NREP) (MFAL) National Rural Employment Programme (RLEGP) jawahar Rojgar Yojana (JRY), Jawahar Gram Samridhi Yojana, (SGRY) National Food for Work Programme (NFFWP) Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) etc. taken together and implementation efficiently, PDS and rural Employment programmes can work as effective safety net for the poor.

Importance of Agriculture in the Indian Economy:

Agriculture is an important place in the economic development of the country. To fulfil the basic needs of the population of the country, the agricultural business is seen as an area of supply of raw materials for industrial development. The following are some of the important aspects of farming in the economy of the country.

1.The main tool of survival:68 percent of the total population of the country is directly and indirect livelihood of people living in rural areas, depending on farming and affiliate business. The livelihood of 31 percent of urban people living in urban areas depends on agriculture.

2. Food supply to the people: To provide food to the Indian people, crops are grown in a big way. Foods like wheat, rice, jowar, millet, cereals and oilseeds include green revolution because of the positive change in the agricultural sector, due to the increase in the production of livelihoods, due to artificial insemination in the animal husbandry business, the Shevat Revolution has succeeded. Agriculture sector is considered for supply of food to huge population.

3. Fodder availability for livestock: Fertility availability is important for cattle in India. Agriculture produced by agricultural products is the production of fodder for agriculture as well as in agriculture. Milk business, the milk processing industry gets encouraged to generate employment.

4. Agriculture sector contribution to national income: The share of agricultural sector in the national income of the country is larger. In 1950- 51, agriculture sector's contribution to national

income was 57% and in 2001-02 it was 26.2% and the share of agriculture and allied sector in total GDP was estimated to be 17.4 percent in 2016-17.

5. The agricultural sector is the main tool of employment: If you think of 2011 census, 58% of the population is working in the field of agriculture. They have to rely on the farm sector for their livelihood. Even if employment is available from the agriculture sector, the quality of living is not raised. The problem of migrating seasonal unemployment is in the field of agriculture. Due to the absence of opportunity for self-employed, lack of professional and technical education, together with family methods, lack of scientific approach, etc., due to various reasons, the growing population in rural areas is dependent on agriculture.

6. To promote industrial development: The raw cotton required for the industry is available from the farming sector. Industry depends on many areas of cotton, sugarcane, oilseeds etc. Small businesses like handloom, rice, and these rely on agriculture. Fruit juice, papad, tea, coffee, soap, oil and salt stand on raw materials in the industry sector. Increasing agricultural productivity increases farmers' purchasing power, increasing demand for industrial products increases the cost of farm produce, which leads to cost reduction in the cost of increase in production. Industrial development process can accelerate in agricultural development in many ways

7. Foreign Currency Availability: Export of essential commodities and services required by the country for the development of the country must be increased. In order to get the modern technology of the developed country, there is huge opportunity for the country to export agricultural products to India. There is an opportunity to get foreign currency through exports of food grains, tea, sugar, tobacco, oilseeds, spices etc.

The importance of agriculture business cannot be denied in the economic socio-economic development of the country. Agriculture development is mandatory for industrial growth. Every sector of the economy has a direct and indirect relationship with the agriculture business.

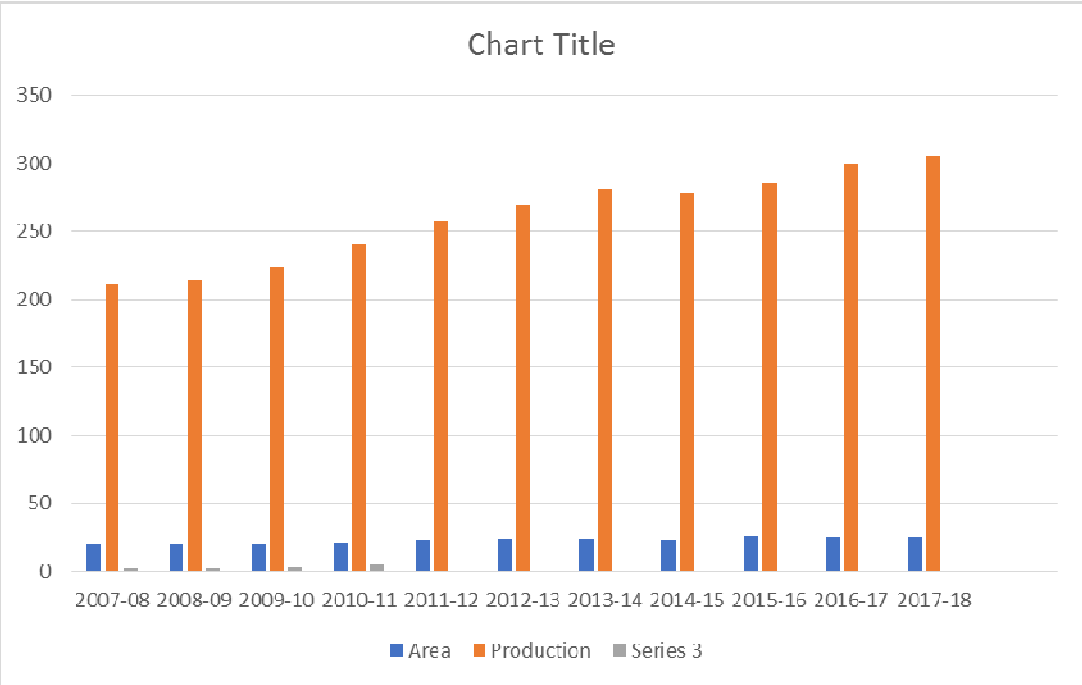
Review of Agriculture Production in India: The trend of agricultural production in recently is as Follows:

Table: -Area and Agriculture Production:

Year	Area (m. Ha)	Area (m. Ha)
2007-08	20.2	211.0
2008-09	20.5	214.4
2009-10	20.8	223.2
2010-11	21.8	240.4
2011-12	23.2	257.3
2012-13	23.7	268.8
2013-14	24.5	280.8
2014-15	23.2	277.7
2015-16	25.5	286.2
2016-17	24.8	300.2
2017-18	24.9	305.4

Sources: Department of Agriculture, Cooperation & Farmers Welfare -2018

From the above table it appears that the increase in agricultural production during 2007-08 to 2017-18 shows that there is an increase in agricultural production. Even if you think of agriculture, agriculture area is increasing.



Conclusion:

The above study shows that agriculture is the oldest and most traditional business in India, and development of agricultural sector depends on the development of the industries, transport, banks and financial institutions, foreign trade, etc. The importance of agriculture is more common in the Indian economy. In the pre-indigenous period, the share of agricultural sector in the national income of India has been decreasing, in the post-independence period, if agriculture is to be developed, then development and welfare of people in rural areas will be there. After independence, considering the Indian agricultural sector, the government has announced various schemes for rural development, some of which have helped in rural development, but these schemes should be implemented. After reviewing the Indian agricultural production, it seems that growth in agricultural production is seen from 2007 to 2018.rural development of our country includes any programmer for promoting the social and economic welfare of rural population or the upliftment of the masses in rural areas''. As may be seen this meaning is comprehensive block in India were set-up under the community development programmer which was started on a pilot basics in 1952 and was extended in states to the entire country by 1963. Sines than the development blocks have continued to function as primary units for rural and agricultural development not only in our country but in whole of the world.

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A Case Study: Industrial Development of State Government

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Abstract:

Maharashtra is one of the developed states in India with strong service sector and industry sector base. It is also one of the leading states in India, which is implementing economic reforms rigorously and honestly.

A growth of Industrial sector was Rs.21724 crores and growth of Industrial sector GSDP of state government of Maharashtra was 33.0 per cent in 1991-92. And growth of Industrial sector was Rs.385942 crores and GSDP of state government of Maharashtra was 26.4 per cent in revised estimate for the year 2013-14 respectively, also growth of in industrial sector, comprising manufacturing, Construction, Electricity, Gas & Water Supply sectors, slowed to CGR (Compound Growth Rate) 27.77 per cent,15.29 percent, and 12.79 percent in study period. Furthermore Total Growth of Secondary Sector CGR was 12.1 percent in the current year. The growth in electricity sector in 2013-14 has also moderated. The growth of GSDP the mining sector in 2012-13 is second revised estimated at Rs.150734 crores in current year 2004-05, whereas, the growth of GSDP the total industry sector (Mining &quarrying, Manufacturing Construction, Electricity, Gas & Water Supply) in 2012-13 is second revised estimated at Rs.362212 crores in current year 2004-05.

A study on Development Finance of industrial development has been undertaken to examine the role and participation of industry in the development features of state Government of Maharashtra, and this research paper focuses on the Secondary Sectoral Growth of GSDP, Industrial investments, Financial Assistance to industries, Approved industrial proposals, Investment in Mega and Large Projects, FDI & Approved FDI Projects, Export performance from Maharashtra and India, performance of Co-operative industrial estate The core material for the study was arranged by means of secondary data collected through gathered from published and unpublished records. The study is limited to a twenty four year especially in the post reforms period namely 1991-92 to 2014-15(BE). Maharashtra is one of the economically developed states in India. It is therefore here an attempt is made to examine the actual the development of the industrial sector in the state of Maharashtra by taking into account its sectors and sub sectors, especially in physical progress. With improved export and performance implementing space for rent subsidy for schemes and a partial rebound in industrial activity in other developing countries, industrial growth is expected to improve in the next financial year in the state government of Maharashtra state.

The conclusion and suggestions of the research paper to formulate strategies for the better implementation of the existing industrial schemes and plans researchers who intend to explore development of industry importance further than the scope of the present study.

Keywords: Industrial Development, Industrial Policy & Objectives, Secondary Sectoral Growth of GSDP, Investment in industrial sector, FDI & FDI Projects, Export performance from

Maharashtra and India, Division wise performance of co-operative industrial estate, Industrial physical progress, Industry-Environment relationship strategies etc.

Introduction:

Maharashtra is one of the important states in India on various grounds. Likewise, it is a developed state coupled with strong service sector and industry sector base. It is also one of the leading states in India, which is implementing economic reforms rigorously and honestly. It is a fact that, even though Maharashtra is a developed state, it has wide disparity across the regions and districts as well as within them. The economy of Maharashtra is basically service sector dominated demanding strong base of industry sector.

A growth of Industrial sector was Rs.21724 crores and growth of Industrial sector GSDP of state government of Maharashtra was 33.0 per cent in 1991-92. And growth of Industrial sector was Rs.385942 crores and GSDP of state government of Maharashtra was 26.4 per cent in revised estimate for the year 2013-14 respectively, also growth of in industrial sector, comprising manufacturing, Construction, Electricity, Gas & Water Supply sectors, slowed to CGR (Compound Growth Rate) 27.77 per cent,15.29 percent, and 12.79 percent in study period. Furthermore, total Growth of Secondary Sector CGR was 12.1 percent in the current year. The growth in electricity sector in 2013-14 has also moderated. The growth of GSDP the mining sector in 2012-13 is second revised estimated at Rs.150734 crores in current year 2004-05, whereas, the growth of GSDP the total industry sector (Mining &quarrying, Manufacturing Construction, Electricity, Gas & Water Supply) in 2012-13 is second revised estimated at Rs.362212 crores in current year 2004-05.Whereas, in that year 2011-12, overall industrial performance about the total number of industries are 28217, industries Fixed Capital was Rs.260966 crores, Working Capital was Rs.86932 crores,Weges to workers was Rs.17065 crores, Total Output was Rs,1005378 crores, Meterial Consumed was Rs.in 622906 crores, Total Input was Rs.826156 crores and value Added was Rs. 156766 crores in the state government of Maharashtra .

A study on industrial development has been undertaken to examine the role and participation of industry in the development features of state Government of Maharashtra, and this research paper focuses on the Secondary Sectoral Growth of GSDP, Industrial investments, Financial Assistance to industries, Approved industrial proposals, Investment in Mega and Large Projects, FDI & Approved FDI Projects, Export performance from Maharashtra and India, performance of Co-operative industrial estate The core material for the study was arranged by means of secondary data collected through gathered from published and unpublished records. The study is limited to a twenty four year especially in the post reforms period namely 1991-92 to 2014-15(BE). Maharashtra is one of the economically developed states in India. It is therefore here an attempt is made to examine the actual the development of the industrial sector in the state of Maharashtra by taking into account its sectors and sub sectors, especially in physical progress. With improved export and performance implementing space for rent subsidy for schemes and a partial rebound in industrial activity in other developing countries, industrial growth is expected to improve in the next financial year in the state government of Maharashtra state.

The first industrial policy in 1993 and thereafter revisiting it with the passage of time facilitated in attracting, development of Agro & Food processing hubs, technical and financial collaboration with foreign entrepreneurs, private investment creation of high quality

infrastructure, , investment in tourism & entertainment industries, etc. resulted in overall further development and growth of the industrial sector in the State. Developed infrastructure, large scale urbanisation, abundance of diverse skills & resources, presence of an active services sector conducive to industrial growth, socio-economic development, connectivity to all major areas, etc. provide an edge to the State for investment and setting up of new industries.

In the Twelfth five year Plan, the State has announced its Industrial Policy, 2013 on 22nd February, 2013, which will remain valid up to March, 2018.

Industrial Policy and objectives, 2013

1. To retain Maharashtra's leadership position in industrial investment within the country.
2. To further accelerate investment flow to industrially underdeveloped regions.
3. To create more employment opportunities.

Whereas, the state Government Maharashtra has set the following targets:

1. To achieve share of 28 per cent in GSDP for manufacturing sector.
2. To create new jobs for two million persons.
3. To achieve growth of 12 to 13 per cent per annum in manufacturing sector.
4. To attract investment of Rs. five lakh crore.[1] (Industrial Policy of Maharashtra2013, p.6)

Growth in (Secondary) Industrial Sector GSDP of the State:

The GSDP at current (1999-2000) price was Rs. 67558 crore with growth of 28% over 2000-01. Then manufacturing sector registered and un-registered growth was Rs. 35964 (53%) crores & Rs. 13469 (20%) crore in the state. And construction section growth was Rs. 12943 (19%) crores, electricity, Gas and water supply of the GSDP was Rs. 5182 (8%) crore in the state.

The second revised estimates of the GSDP at current (2004-05) prices is expected at Rs. 355705 crores, with aggregate growth 26.4% over 2012-13. Growth of manufacturing sector registered and un-registered Rs. 179127 (50%) crores, & Rs. 62956 (18%) crores of industry sector GSDP of the state. The construction section growth was Rs. 86222 (24%) crores and electricity, gas and water supply of the GSDP was Rs. 27400 (8%) crores in the state of Maharashtra. The details of year wise Secondary sector growth in the state are given in table no.

Table no.1.1

Growth in Secondary Sector GSDP of Maharashtra state

(Rs. in Corers)

Sr. No.	Year	Manufacturing		Construction	Electricity, Gas & Water Supply	Total Growth of Secondary Sector	Gross State Domestic Product (In %)
		Registered	Un-registered				
1	1991-92	11666 (54)	3845 (18)	5114 (24)	1099 (5)	21724 (100)	33.0
2	1992-93	13456 (52)	5031(19)	6043 (23)	1469 (6)	25999 (100)	31.7
3	1993-94	19354 (52)	9116 (25)	5581 (15)	3082 (8)	37133 (100)	32.8
4	1994-95	21759 (51)	10562 (25)	6285 (15)	3669 (9)	42275 (100)	32.8
5	1995-96	28385 (68)	1296 (31)	7204 (17)	4614 (11)	41499 (100)	32.5
6	1996-97	24564 (54)	11195 (24)	6142 (13)	3979 (9)	45880 (100)	33.7
7	1997-98	35599 (52)	17028 (25)	9794 (14)	5406 (8)	67827 (100)	32.9

8	1998-99	34677 (52)	14301 (22)	11316 (17)	5911 (9)	66205 (100)	34.9
9	1999-00	39067 (55)	12093 (17)	13253 (19)	6867 (10)	71280 (100)	31.1
10	2000-01	35964 (53)	13469 (20)	12943 (19)	5182 (8)	67558 (100)	28.8
11	2001-02	35516 (52)	13443 (20)	13596 (20)	6314 (9)	68869 (100)	26.6
12	2002-03	41194 (52)	14859 (19)	15637 (20)	7038 (9)	78728 (100)	25.4
13	2003-04	47888 (52)	16891 (18)	19377 (21)	7832 (9)	91988 (100)	26.3
14	2004-05	58545 (49)	26931 (23)	26143 (22)	7912 (7)	119531 (100)	27.3
15	2005-06	81943 (54)	31082 (21)	30207 (20)	7599 (5)	150831 (100)	29.6
16	2006-07	103310 (56)	36769 (20)	34386 (19)	9175 (5)	183640 (100)	31.2
17	2007-08	118209 (54)	44133 (20)	44744 (21)	10598 (5)	217684 (100)	32.0
18	2008-09	120748 (52)	46437 (20)	52512 (23)	11224 (5)	230921 (100)	31.3
19	2009-10	128812 (52)	51147 (20)	55658 (22)	14081 (6)	24969 (100)	29.8
20	2010-11	161529 (53)	59312 (19)	68368 (22)	17363 (7)	306571 (100)	29.7
21	2011-12	167905 (52)	60433 (19)	79573 (24)	17557(5)	325469 (100)	28.2
22	2012-13++	179127 (50)	62956 (18)	86222 (24)	27400 (8)	355705(100)	27.4
23	2013-14+	190349 (49)	65479 (17)	92871 (24)	37243(10)	385942 (100)	26.4
24	2014-15*	201571(48)	68002 (16)	99520 (24)	47086 (11)	416179 (100)	23.2
	C.G.R.	**13.09**	**13.87**	**15.29**	**12.79**	**12.1**	**-**
	C.V.	**3.32**	**3.21**	**3.89**	**4.18**	**3.69**	**-**

Sources:Economic Survey of Maharashtra Reports 1991-92 to 2013-14 + First Revised Estimates. ++ Second Revised Estimates *Advanced estimates A figure in brackets shows percentage.

Growth in Mining & quarrying Industry Sector GSDP of Maharashtra state:

Mining & quarrying Industry Sector GSDP at current (1994-95) price was Rs. 262 crores in 1991-92 to 13756 crores over 2014-15(BE). The details of year wise Secondary sector growth in the state are given in table no. 1.2

Table no.1.2

Growth in Mining & quarrying Industry Sector GSDP of Maharashtra state

Sr.No.	**Year**	**Mining & quarrying** (Rs.in Crore)
1	1991-92	262
2	1992-93	386
3	1993-94	752
4	1994-95	876
5	1995-96	1031
6	1996-97	1012
7	1997-98	2058
8	1998-99	1790
9	1999-00	1965

10	2000-01	2221
11	2001-02	2393
12	2002-03	2446
13	2003-04	2676
14	2004-05	3491
15	2005-06	3852
16	2006-07	2386
17	2007-08	3872
18	2008-09	5168
19	2009-10	5410
20	2010-11	5020
21	2011-12	6248
22	2012-13++	6507
23	2013-14+	6878
24	2014-15*	13756
	CGR	**13.63**
	CV	**3.60**

Sources:Maharashtra Survey Reports 1991-92 to 2012-13
+ First Revised Estimates. ++ Second Revised Estimates.
* Provosional

The Mining & quarrying sector of CGR is 13.63 percent and CV is in this sector 3.6 percent in 1991-92 to 2014-15(BE) respectively.

Industrial Development:

The number of Projects approved and implemented in state government of Maharashtra is given in table no.1.3

Table No.1.3

Industrial Development of State Government Maharashtra

Sr. No	**Year**	**Industrial Investment**			**Foreign Direct Investment (FDI)**	
		No. Of Project Approved	Proposed Investment (In Crorer)	Employment In 000)	No. Of Project Approved	Proposed Investment (In Crorer)
1	1991-92	448	12635	69	32	20
2	1992-93	553	8593	70	53	1644

3	1993-94	872	9879	90	136	1661
4	1994-95	583	11402	57	217	3719
5	1995-96	627	10402	46	197	3173
6	1996-97	476	3879	35	217	3359
7	1997-98	371	3206	27	253	6459
8	1998-99	460	4693	47	234	3599
9	1999-00	387	3066	24	372	5472
10	2000-01	324	1800	19	N.A	N.A
11	2001-02	290	2586	24	N.A	N.A
12	2002-03	204	14605	36	3055	49320
13	2003-04	129	1426	13	N.A	N.A
14	2004-05	198	3730	26	3655	52092
15	2005-06	90	1223	8	3833	52840
16	2006-07	89	2258	12	3928	57170
17	2007-08	14957	504689	28	3982	70856
18	2008-09	14957	504689	28	4041	75096
19	2009-10	15408	558336	28	4133	81763
20	2010-11	15997	846923	44	4221	84958
21	2011-12	17207	874053	43	4175	83779
22	2012-13	17779	950972	44	4246	97799
23	2013-14*	18406	102163	45	N.A	N.A
24	2014-15	N.A	N.A	N.A	N.A	N.A

Sources: 1.Maharashtra Survey Reports 1991-92 to 2013-14
Note: 1.* Provisional N.A Not Available/Applicable

Progress of Industrial Investment:

Since August, 1991 to October, 2013 in all 18406 industrial projects were approved with a proposed investment of Rs. 1021633 crore were approved. Out of these, 7812 projects (42.4%) with an investment of Rs. 182273 crore (17.8%) were commissioned, generating 9.61 lakh employment and 2061 projects with an investment of Rs. 79406 crore and proposed employment of 2.9 lakh are under implementation.

Foreign Direct Investment (FDI):

Since August, 1991 to March, 2012 in all 4246 FDI projects amounting to Rs. 97799 crore were approved of which 45% were commissioned and 10% are under execution with a share of investment of 51% and 8% respectively. During 2011-12, in all 105 FDI projects an investment of Rs. 5454 crore were approved. The industry (Physical Achievement) group wise approved projects shows the table no.1.4

Table no.1.4

Industry Group approved Foreign Direct Investment projects

(August, 1991 to March, 2012)

Sr. No.	**Industry Group**	**Projects (Number)**	**Investment (Rs.crores)**
1	IT Industry	762	12765

2	Financial Services	667	11858
3	Hotel & Tourism Industry	95	6326
4	Business Management Consultancy	369	4962
5	Transportation	108	4124
6	Cements & Ceramics	58	3727
7	Power & Fuel	39	2841
8	Chemicals & Fertilizers	197	2666
9	Electrical & Electronics	212	1467
10	Paper & Paper Pulp	31	1323
11	Textiles	122	1051
12	Food Processing	173	1039
13	Drugs & Pharmaceuticals	121	1012
14	Automobile	112	895
15	Telecommunication Industry	51	876
16	Industrial Machinery	261	771
17	Plastic & Rubber Goods	27	767
18	Machine Tools/Industrial Instruments	89	717
19	Gems & Jewellery and Glass Industry	58	631
20	Others	694	37981
21	**Total**	4246	97799

Economic Survey of Maharashtra 2013-14 pp.112.

Investment in Mega and Large Projects:

Since 1991-92 to 2013-14(RE) by way of MOU, in all 389 Mega and Large Projects were approved in the State Government of Maharashtra, with an investment of Rs.315010 crore and proposed employment of 3.50 lakh in the state. Otherwise these, 120 projects with an investment of Rs.64009 crore generating 0.90 lakh employment were commissioned and 121 projects with an investment of Rs.92590 crore and estimated employment of 1.14 lakh are under implementation.

Per Capita Consumption of Industrial Electricity Supply of Maharashtra state:

The consumption of electricity by the industrial sector was largest 186.1Unit, followed by commercial 28.2Unit 1991-92. And expected the consumption of electricity by the industrial sector was largest 351Unit, followed by commercial 122.2 Unit 2014-15(BE) respectively.

Table No.1.5

Per Capita Consumption of Electricity Supply of Maharashtra state

Sr.No.	**Year**	**Per Capita Consumption of Electricity** (Unit)	
		Industrial	**Commercial**
1	1991-92	186.1	28.2
2	1992-93	185.7	29.0
3	1993-94	190.6	29.5
4	1994-95	196.6	30.3
5	1995-96	209.2	33.0

6	1996-97	207.4	36.5
7	1997-98	203.2	37.9
8	1998-99	202.0	39.9
9	1999-00	207.0	41.4
10	2000-01	191.2	42.7
11	2001-02	191.2	42.7
12	2002-03	182.0	46.8
13	2003-04	194.0	49.1
14	2004-05	217.5	52.4
15	2005-06	246.8	46.5
16	2006-07	247.2	64.6
17	2007-08	278.4	61.2
18	2008-09	263.02	82.9
19	2009-10	279.4	95.5
20	2010-11	307.2	102.9
21	2011-12	321.3	103.6
22	2012-13	331.2	109.8
23	2013-14	341.1	116.0
24	2014-15*	351.0	122.2
	CGR	**2.85**	**6.97**
	CV	**0.98**	**2.16**

Sources:-Economic Survey of Maharashtra Reports 1991-92 to 2013-14,

Note:1. 1unit = 1 kilowatt hour. 2) *Provisional.

Per Capita Consumption of Industrial Electricity Supply of CGR is 2.85 percent and CV is in this sector 0.98 percent in 1991-92 to 2014-15(BE) respectively. Per Capita Consumption of Commercial Electricity Supply of CGR is 6.97 percent and CV is in this sector 2.16 percent in 1991-92 to 2014-15(BE) respectively.

1. To accelerate the process of industrialization in the state, the state government has undertaken following two important programmes.
2. Establishment of 65 growth centres covering entire state
3. Establishment of mini industrial areas to cover all the talukas in the state.

➢ Industrial development programmes are given below:

I) Maharashtra Industrial Development Corporation (MIDC)

II) Maharashtra Small Scale Industrial Development Corporation (MSSIDC)

III) Maharashtra State Khadi and Village Industries Board (KVI)

IV) Maharashtra Tourism Development Corporation (MTDC)

Financial Assistance to Industries:

The financial assistance by state level as well as central level financed institutions. State level financial institutions like SICOM Ltd., Maharashtra State Financial Corporations and central level institutions like LIC of India, GIC of India, IFCI Ltd., SIDBI, etc. provide financial assistance to industries in the State, the details of financial institutions sanctioned disbursed by Financial Institutions to Industries in State Government of Maharashtra given in table no.1.6

Table no.1.6

Financial Assistance Sanctioned and Disbursed by Financial Institutions to Industries in State Government of Maharashtra

(Rs. In crores)

Sr. No.	Financial Institutions	1991		2001		2011	
		Sanctioned	Disbursed	Sanctioned	Disbursed	Sanctioned	Disbursed
1	IFCI	407.77	251.93	275.60	288.49	3610.00	2987.01
2	SIDBI	306.73	227.24	2081.87	1320.79	N.A	N.A
3	IIBI	33.54	25.54	576.59	560.27	N.A	N.A
4	EXIM Bank	N.A	N.A	N.A	N.A	8362	7235.00
5	LIC	254.55	110.58	5150.65	3919.12	20746.94	19345.27
6	GICI $	108.34	52.25	61.41	88.60	627.40	627.40
7	MSFC	157.97	94.61	68.63	47.12	Nil	Nil
8	SICOM Ltd.	85.40	68.87	593.00	463.00	4947.00	53.40
9	Other #	3391.38	1961.03	61220.09	35886.75	-	-
10	**Total**	**4745.68**	**2812.05**	**70027.84**	**42574.14**	**38293.34**	**35484.68**

Sources:-Economic Survey of Maharashtra Report 2013-14 pp.128

Note:1. IFCI- Industrial Finance Corporation of India Ltd 2.SIDBI- Small Industries Development Bank of Indi 3.IIBI- Industrial Investment Bank of India Ltd.4.EXIM Bank-Export-Import Bank of India,5.LIC- Life Insurance Corporation of India,6.GICI- General Insurance Corporation of India,7.MSFC-Maharashtra State Financial Corporation. 8. # Includes the financial assistance given by ICICI, IDBI, UTI which have stopped giving assistance to industries.9. $ Includes Bonds of Financial Institutions and Government guarantee Bonds.* Provisional N.A. – Not Available/Applicable.

The table no.1.6 depicts that the Financial Assistance Sanctioned and Disbursed by Financial Institutions to Industries in State Government of Maharashtra was total sanctioned Rs.4745.68 crores & total disbursed Rs.2812.05 in1991, total sanctioned Rs.70027.84 crores & total disbursed Rs.42574.14 in12001.whereas, total sanctioned Rs.3893.34 crores & total disbursed Rs.35484.68 in the year 2011 of the state.Its concludes that the for the decadal increase growth in the Financial Assistance Sanctioned and Disbursed by Financial Institutions to Industries in State Government of Maharashtra. Its mean that the sizable share of finance was provided by IFCI,SIDBI, LIC etc.

Division wise Developmental Performance Co-operative Industrial Estates:

The State government of Maharashtra has undertaken a programme of developing industrial estates in areas other than MIDC on a co-operative basis. The State Government is providing contribution to share capital and technical guidance for establishing industries. To meet out the cost of establishing co-operative industrial estates, the funding pattern is 20 per cent

of project cost from the State, 60 per cent guarantee by the State for availing loan from financial institutions and remaining 20 per cent is the contribution of the members of the society as share capital. At the end of December, 2013, in 101 co-operative industrial estates, 7,222 units were in operation with 1.37 lakh employment. The status of co-operative industrial estates in the State is given in Table no.1.7

Table no.1.7

Sr.No.	Year	Maharashtra	India
1	1991-92	17826 (25.47)	69989
2	1992-93	22790 (31.26)	72910
3	1993-94	27540 (31.08)	88622
4	1994-95	30201 (30.96)	97546
5	1995-96	35561 (33.40)	106464
6	1996-97	41357 (35.19)	117525
7	1997-98	43884 (31.12)	141030
8	1998-99	35401 (25)	141604
9	1999-00	40685 (25)	162738
10	2000-01	69474 (30.10)	230809
11	2001-02	73865 (30.10)	244245
12	2002-03	99778 (33.23)	300290
13	2003-04	85916 (24.57)	349617
14	2004-05	193832 (44)	434979
15	2005-06	113700 (25)	454800
16	2006-07	142945 (25)	571779
17	2007-08	172846 (27)	640172
18	2008-09	226794 (27)	839977
19	2009-10	228184 (27)	845125
20	2010-11	308515 (27)	1142649
21	2011-12	394005 (27)	1459280
22	2012-13	417626 (27)	1546766
23	2013-14	288384 (27)	1068089
24	2014-15*	N.A	N.A
	CGR	**15.20**	**15.93**
	CV	**90.46**	**94.34**

Division wise Physical Progress of Co-operative Industrial Estates

(Upto December 2013)

Sr. No.	Division	Sanctioned	Functioning	Industrial units in operations	Share Capital (Rs.crore)	Employment
1	Mumbai	4	3	1248	-	17230
2	Konkan(Excluding Mumbai)	14	12	510	1.01	11155
3	Nashik	33	28	1455	4.92	42295
4	Pune	45	38	3150	7.84	57150
5	Aurangabad	26	13	462	1.03	5260
6	Amravati	10	3	92	0.23	677
7	Nagpur	10	4	305	0.97	3315

8	**Maharashtra**	**142**	**101**	**7222**	**16.00**	**137082**

Source: Economic Survey of Maharashtra 2013-14,pp.115.

Upto December, 2013, total 142 co operative industrial estates were sanctioned, of which 101 are functioning, 7222 industrial units in operations, Co-operative Industrial Estates share capital to Rs.16 crores and 137082 employment in seven division in Maharashtra state such as- Mumbai, Konkan, Nashik, Pune, Aurangabad, Amravati, and Nagpur etc. There is Co-operative Industrial Estates 34 estates are yet to be commissioned and remaining seven is in liquidation. The State has provided financial assistance to 93 co-operative industrial estates.

Industrial Products Exports from Maharashtra and India:

The main industrial products exported from the State Government of Maharashtra are software, textiles, engineering items, drugs & pharmaceuticals readymade garments, gems & jewellery, cotton yarn, metal & metal products, agro-based products, and plastic & plastic items. To recognize the efforts put up by the exporters and to improve the exports, the State is taking initiatives like giving awards based on export performance and implementing space rent subsidy scheme for small scale industries for participation in international exhibitions. Exports from Maharashtra and India are given in table no.1.8

The table no 1.8 reveals that the industrial products exports was to Rs.17826 crores in 1991-92 to increase from Rs.288384 crores in 2013-14 respectively. and export percentage share was 25% in 1991-92 and same percentage share 1998-99,1999-2000, 2005-06 & 2006-07 respectively. Then Exports from Maharashtra percentage share 25% is constant in the years of 2007-08 to 2013-14 respectively.

Table no.1.8

Exports from Maharashtra and India

(Rs.in crores)



Source: Economic Survey of Maharashtra 1991-92 to 2013-14

Note:Figures in brackets indicate percentage to India

The table no 1.8 shows that the industrial products exports of Maharashtra CGR and CV was 15.20% and 90.46% under study period. Otherwise, the industrial products exports of Maharashtra CGR and CV was 15.93% and 94.34% under study period.

Industry Environment Relationship:

"The development of a diversified industrial structure in India based on a combination of large and small-scale industries and growing urban and rural population have produced pressures on the environment as reflected in the growing incidence of air water, and land degradation. Industrial pollution is concentrated in industries like petroleum refineries, textiles, pulp and paper, industrial chemicals, iron and steel, and non-metallic mineral products. Small scale industries, especially foundries, chemical manufacturing, and brick making, are also significant polluters. In the power sector, thermal power, which constitutes the bulk of installed capacity for electricity generation, is an important source of air pollution. Choice of policies and investment has, therefore to be such which encourages more efficient use of resources, substitution away from scarce resources and adoption of technologies and practices that minimize environment impact"[2].(Economic Survey 2012-13,Chapter 9-Industrial Performance,pp.207)

Different Sectors & Specific Policies of State Government of Maharashtra related to Industries:

The State Government has formulated different Sectors are: IT, BT, Agro Processing Industries etc. The Policy presented of state Government of Maharashtra related to Industries and infrastructural developments are as following:

1. Maharashtra state policy for investment in the power generation sector for capacity addition of 500MW and above.
2. Boi-Technology Policy, this was declared policy by the state Government of Maharashtra 2001 aspire to develop the entire chain from farmers to the biotech industry houses by providing infrastructure support, facility, incentive etc the BT policy offers a range of incentives to private BT parks.for example-Two public BT parks are developed in the state atJalna & Hinjewadi (Pune) MIDC
3. Grapes Processing Industry policy, state Government has formulated to supporting grape production and infrastructure for wine parks across the state for example-Nashik & Sangli district (Tasgaon).
4. IT Policy 2009, the state government formulated the IT policy its efforts to attract IT investment and then retain Maharashtra leadership position in this secror. This policy has attracted substantial investment in IT sector and was instrumental in creating IT hubs in cities for example: Private IT park situated in Pune(166), Mumbai (158),Thane (128),Nagpur (5),Nashik (4),Aurangabad(3),and Wardha (1) districts. During 2013-14 total 15 private IT parks were approved in the state government of Maharashtra.
5. New Policy for Power Generation from Non-conventional Energy Source(2008),this policy applies to wind power project more than 2000MW capacity, small hydro projects of 100MW capacity, biomass based power plants of 400MWcapasity & cogeneration power plants of 1000MW capacity in the state.

The state Government of Maharashtra is implementing following important programmes through various schemes:

1. Establishment of mini-industrial areas to cover all the Taluka in the state.
2. To independent policy for Agro-industries.
3. To encourage privatization of government undertakings.
4. Guarantee to provide infrastructural facilities.
5. Promotion to development agro-processing & software industries.

6. To crush programme for export oriented industries & added stress on competitiveness.

Strategies of Industrial Development:

1. Consider Agro-Processing as a thrust sector
2. Leverage state level skill development scheme
3. Offer additional motivation to employment-incentive mega units
4. Support unviable sick units with exist & viable sick units with rehabilitation.
5. Growing innovative and competitive manufacturing industries, small and large once in the state must stimulate the growth of dynamic cluster.
6. Poor infrastructure, especially power, is a major concentrate on competitiveness specially MSMEs.
7. A multiplicity of ministries dealing with different aspect of industry level for example- Commerce, environment science, labour & finance etc.
8. Increase the rate of job creation in all industrial sectors.
9. The Industrial sickness major hurdles in the growth of manufacturing sector leading to the problems like locking up of capital assets, loss of productivity and increase in unemployment.

Suggestions:

1. To achieve manufacturing sector share of 28 % of GSDP. To aim of supporting MSMEs in their endeavour to become competitive in both domestic and international markets.
2. To increase domestic value addition & technological deepness in industry.
3. Industrial products have to respond more rapidly to changing market needs.
4. To support MSMEs implementing lean manufacturing techniques so as to reduce their manufacturing costs trough better personal management, improved space utilization, improve their manufacturing cost competitiveness.
5. The state government to give offer assistance for providing inputs on up-gradation in packaging techniques and technologies as well as for participation in district, taluka and village level fairs.
6. To take up in industrial area many environment- friendly initiatives, common effluent treatment facility.
7. To improving physical infrastructure support. For example- Electric Power, Roads etc.
8. To guarantee sustainable of growth, particularly with consider to the environment.
9. To Emphasis should be given to creation of appropriate skill sets among the rural migrate and urban poor to make growth inclusive.
10. To accelerate creation of employment opportunities overall competitiveness of local industries.
11. To required for development water transport and improving the Railway network in the state.

Concluding Remarks:

Maharashtra is one of the largest states in India. The state continues its leading position an industrial and service sectors. Maharashtra continues to be one of the foremost states in the county. The state investment and economic growth during the period from 2005-06 to 2009-10, the state GSDP grew at a CGR of 16.8% and accounted for 14.7% of the country's GDP in the year 2009-10 respectively.

Total Growth of Secondary Sector CGR was 12.1 percent in the current year. The growth in electricity sector in 2013-14 has also moderated. The growth of GSDP the mining sector in 2012-13 is second revised estimated at Rs.150734 crores in current year 2004-05, whereas, the growth of GSDP the total industry sector (Mining &quarrying, Manufacturing Construction, Electricity, Gas & Water Supply) in 2012-13 is second revised estimated at Rs.362212 crores in current year 2004-05.Whereas, in that year 2011-12, overall industrial performance about the total number of industries are 28217, industries Fixed Capital was Rs.260966 crores, Working Capital was Rs.86932 crores,Weges to workers was Rs.17065 crores, total Output was Rs,1005378 crores, Meterial Consumed was Rs.622906 crores, Total Input was Rs.826156 crores and value Added was Rs. 156766 crores in the state government of Maharashtra.

The Mining & quarrying sector of CGR is 13.63 percent and CV is in this sector 3.6 percent in 1991-92 to 2014-15(BE) respectively.

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Potential of Agro Tourism Around Baramati City

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Introduction:

Now a day's some new trends are emerging in tourism activity, such as agro tourism. In day to days urban life style most of the urban people are unknown about rural environment and the agro base activities practiced in rural. That is why, the curiosity of the high and middle class families living in urban areas promotes the development of agro tourism. Agro-tourism is a way of sustainable tourist development and multi-activity in rural areas through which the visitor has the opportunity to get aware with agricultural areas, agricultural occupations, local products, traditional food and the daily life of the rural people, as well as the cultural elements and traditions. Moreover, this activity brings visitors closer to nature and rural activities in which they can participate, be entertained and feel
the pleasure of touring.

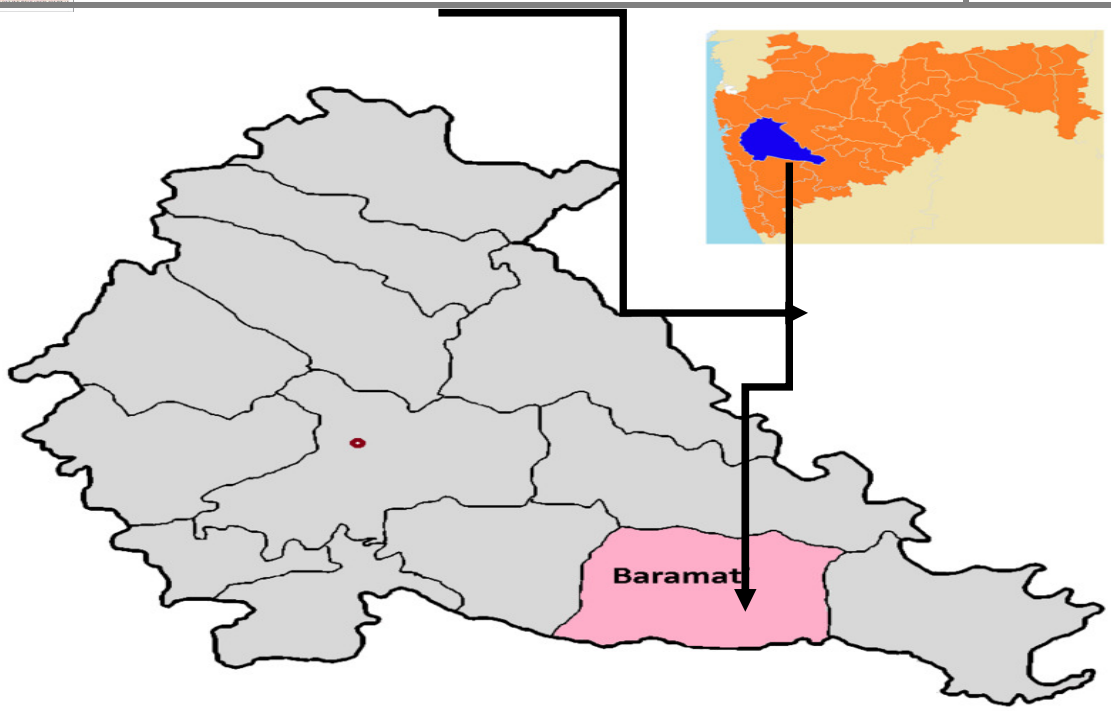
Study Area:

Baramati is located at 18.15°N 74.58°E.[1] It has an average elevation of 538 meters (1765 feet).

Baramati experiences hot summers from March to May and cold, dry winters from November to February. The city receives scant rainfall mainly in June to August approx. 60 cm. Weather in Baramati is dry and hot in summer, winter day temperature goes as low as 25 degree Celsius. Winter night temperature goes as low as 8 Degree Celsius. In summer, it is usual that day temperature crossing 40. C mark. Normally, Baramati has very pleasant climate during November Month.

Study Area: Location Map





Objectives

1. To identify the potential of agro tourism in study area.
2. To highlight the problems in development of agro tourism in study area.

Opportunities of Agro tourism

1. Krushi Vidnyan Kendra, Baramati
2. Agricultural Development trust, Baramati
3. Well irrigated fields of sugarcane
4. Well equipped cattle shades
5. Sugarcane juice centers at out spreading roads from city
6. Agro based industries etc.

Krushi Vidnyan Kendra, Baramati is a district level agro research center in collaboration with Agricultural Research council (ICAR), New Delhi. Krushi Vidnyan Kendra, Baramati is model, Hi-Tech & National award winning KVK of India working for farming community since 24 years for the sustainable development of agriculture.

Agricultural Development trust, Baramati is located at Malegaon village near Baramati. Innovative agriculture techniques are practiced there in support to the needs of farmers of surrounding area.

Irrigated area around Baramati city has a great potential for the development of agro tourism. Agricultural area of this region is located between Neera river and Neera left bank canal.Greenary of the sugarcane fields attracts the people.

Most of the Sugarcane juice centers are located at out spreading roads from city. They provides the fresh juice of sugarcane to the travelers along with these road. Sugarcane juice centers impels them to halt. Agro based industries such as suger factory at Malegaon and Baramati agro are another opportunities to attract tourists.

Problems Of Agro Tourism

1) Lack of perfect knowledge about the agro-tourism.
2) Weak communication skill and lack of commercial approach of the local peoples.
3) Lack of funds to develop basic infrastructure for the agro-tourism.
4) Presence of unorganized sector in the Agro-Tourism industry

Conclusion

Agriculturally rich hinter land of the Baramati has a tremendous potential of agro tourism development. All the aspect with in the area such as Krushi Vidnyan Kendra, Sugarcane cultivation, Agricultural Development trust, Baramati, Well irrigated fields of sugarcane, well equipped cattle shades, Sugarcane juice centers at out spreading roads from city etc. promotes the agro tourism development. But lack of proper planning and infrastructure facility as well as commercial approach agro tourism is not developed though it has large scale potential.

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Ethics of Agriculture

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Introduction:

The values and norms associated with agriculture and the food system-farming, resource management, food processing, distribution, trade, and consumption—is referred to as agricultural ethics. This incorporates elements of philosophical analysis with concerns about particular issue areas that arise in connection with farm practices and the structure of the agri-food system. Social science researchers have applied ethical analysis to agricultural production and use of the natural environment.

Objectives:

To study of ethics, values, issues associated with the production, consumption, and distribution of food, fiber, and natural resources.

Ethics And Issues:

Farm Structure

Farm Structure refers to the general social and economic features of agriculture in a given society. These features include the average size of farms, relative market shares of different-size farms, number of people employed in farming, and whether or not farms are owner-operated. The situation and rights of farmworkers can also be included here.

Animal Ethics

Animal Ethics focuses on the use of animals, the intensive production of meat and poultry, extensive production of feedstuffs for animals, and impacts on the environment due to intensive and concentrated production. The "happiness" or welfare of animals would also be included here.

Food Safety

It is an issue because of modern food production-transportation-processing-marketing chains that expose consumers to chemical additives, microbial pathogens and other human health concerns. Inspection and transparency in how food is produced is included here.

Environmental Impacts

Environmental Impacts are a great concern and raises many questions in how crop agriculture and livestock production is managed: locally, nationally and globally. Areas of concern include chemical residues on food, pesticide exposure on workers, wasteful use of soil and water resources, and untargeted yet obvious impacts on the natural ecosystem and wildlife.

International Trade

It is a question of fairness in how rules are set, who sets the rules and who benefits versus those who are pushed out of the market. The ethical questions revolve around human rights and the equitable distribution of benefits and harms.

Food Security

It is a broad term and covers many aspects of the global food system. The essential question deals with hunger and how to provide sufficient food for all. The ethical debate swirls around the balance of global trade (and food relief) with widespread agricultural development. Bioterrorism is also a concern here.

Agricultural Biotechnology

It is debated in terms of food safety and consumer consent, the broader environmental effects of its use in crop and livestock production, its impact on the structure of agriculture, and its potential to address problems of hunger on a global basis.

These issues and debates are taking place within various forums, ranging from disciplined academics to various farm associations to public advocacy campaigns.

Conclusion:

The nature of ethics as applied to agriculture, discuss briefly how ethical concepts and tools can address several issue areas in the food system, comment on how consideration of agricultural ethics might be institutionalized, and provide a glossary to help those interested in these issues navigate through the topic of ethics as applied to the world of agriculture. The realities of farming practices on the environment and human health have opened the door for discussion about alternative farming practices. The farms have been forced into our cultural impression of a successful capitalist business, to take any means necessary to gain the highest possible profit margins at the expense of all else: health of the land, health of the food, health of the people, and even the health of our modern culture. The industrialization of agriculture not only alters the ways in which agricultural production occurs, but it also impacts the decisions farmers make in important ways. First, constraints created by the economic environment of farming limit what options farmers have available to them. Second, because of these constraints and economic pressures, farmers are facing ethical challenges.

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A Geographical Study of Social Status of Quarry Workers in Darewadi Quarry Area In Kolhapur District (M. S.)

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Abstract:

Since ancient time, quarrying is being practiced as one of the human activities which concerned with the artificial extraction of the natural non metallic resources such as dimensional stones e.g. marble, granite, basalt, sand stone, lime stone, slate, laterite etc. Work of quarry is a collective type work, and specific community doing this work. The social condition at the work time affects on the overall individual and social life of the quarry worker. Therefore there is need to study the social status of workers.

Man is a social animal, he cannot live without society. He is depends on each other for the completion of basic needs. He lives in the variable kinds of diversities in the society. There are number of social factors affects on the development of the human being. In India like country the social system affects on the working type of the man. There is interrelationship between social and economic factors which do the key role to grow the man in the society.

Key Words: Quarrying, Social status, Community etc.

Introduction:

The social structure of the Darewadi village is rigidly based on caste system. The social mobility is very little, i.e., people do not change their caste or religion and occupations easily. In the particular community in the society when there is the problem individually it can leads to become socially sometime which can affect on the group of people. Because of this quarry site the socio structure of this region is changed. Some positive as well as negative impact of this activity is clearly seen on this area.

Objectives:

i) To evaluate the social status of quarry workers in Darewadi quarry.

Database and Methodology:

Hare primary data is used and for the selection of respondents in the study region purposive sampling method has been used. 20 respondents have selected from the Darewadi quarry region for the study of social status of quarry workers.

Study Area:

Darewadi is one of the distinctive village located in Panhala tahasil of Kolhapur district. Actual quarry site is situated in right slope of Panhala Jyotiba hill range. It's located at 16^0 47' North latitude and 74^0 08' East longitude and average height of this area is 596 meters.

Discussion:

The social status depends on various factors such as age, sex, education, marital status, family structure, caste and religion structure etc. In this way the society decides the social status of the person living in. The social status of quarry workers itself represent the difference in the

study region. The mentioned social factors elaborate the overall image of the family. In the study region the typical group is engaged in the particular activity and that work affect on his social status.

Sex-Wise Age and Educational Structure:

In this quarry site researcher has used sex-wise age and educational structure of quarry workers to know their social status. They are given in the below.

Table No 1.1

Sex-Wise Age and Educational Structure of Darewadi Quarry Area

(In percentage)

Sex	Age Group (In Years)					Education				
	Below 15	15-35	36-60	60+	Total	Illiterate	Primary	Secondary	Graduate	Total
Male	00	20	45	00	65	20	15	25	05	65
Female	00	25	10	00	35	20	15	00	00	35
Total	00	45	55	00	100	40	30	25	05	100

Source: Field Work

Above table shows that there are 65 per cent male workers and 35 per cent female workers are working in this site. Among them 20 per cent male workers and 25 per cent female workers are in the group of 15 to 35 years. Whereas 45 per cent male workers and 10 per cent female workers working in the age group of 36 to 60 years. It is found that no any worker working in the age group of above 60 years. Because this type of work needs maximum physical strength which is absent in this age group. In the age group of bellow 15 years no any workers found in this site. In 15 to 35 years age group the percentage of female workers is more than the male because their continuous working efficiency and burden to run the family. But in the age group of 36 to 60 years this picture completely changes reversely. Because male workers sustain the working capacity for long time of age as compare to female workers. It is because of female workers lose their physical capacity in reproduction as well as low quality of diet.

In case of educational structure 60 per cent workers are literate whereas 40 per cent workers are totally illiterate among them 20 per cent male and 20 per cent female workers is illiterate. Whereas 15 per cent both male and female workers have their primary education only and in the higher secondary category only 25 per cent male workers are found and 5 per cent male workers completed their graduation. But no any female worker completes their secondary or degree education. It shows that the low social status of women worker in the family. She is only confined to rare and bear child and to support the family's economic activity that means to do work with husband or family members along with taking the responsibility of house work.

It is found from above table that after the study of sex, age and education it can be said that the social condition of the workers is very low and women are deprived a lot.

Family Background:

In the joint family, the wife and husband, the parents of husband, his brother and sister and also some other relatives live under the same roof. The management of the Joint family is in the hands of head of family who is not always the earning member but generally the most aged.

He is there to supervise and monitoring person. The members of family have equal rights in the Income and property of the family however they may differ in the earning capacity. The food for them is cooked in the same kitchen (Sharma, 2004).

Marriage is one of the oldest socially recognized institution and essential for the process of children and satisfaction of our sexual urges, which admits men and women to family life.

The researcher has used the family background and the marital status for analysis of social status of quarry workers.

Table 1.2

Family Background in Darewadi Quarry area

(In Percentage)

Sr. No.	Marital Status	Type of Family		
		Joint	Nuclear	Total
1.	Married	55	25	80
2.	Unmarried	20	00	20
	Total	75	25	100

Source: Field Work

Above table shows the marital status and structure of family of the respondent in Darewadi quarry site. In this site 80 per cent workers are married whereas 20 per cent are unmarried. The quarrying work is collective in nature. It requires both male and female to break the stone and to dump in the trolley therefore they get marry early in their age. This help to add one person as a labor in quarry activity.

In case of family structure 75 per cent workers from joint family whereas only 25 per cent are from nuclear family. The percentage of joint family is more because the nature of work is collective. Even though all family member including children and old age people helps to work the same.

From above information it is found that there is a tendency among the workers to get marry early and live in joint family because the nature of work is collective and responsibility is divided among them.

Caste-wise Structure:

Table 1.3

Caste-wise Structure in Darewadi Quarry area

(In Percentage)

Caste	Category of Workers			
	Labour	Driver	Quarry owner	Total
Wadar	70	10	00	80
Maratha	00	05	10	15
Others	00	00	05	05
Total	70	15	15	100

Source: Field Work

Above table shows that the caste wise category of workers in Darewadi quarry site. There are 80 per cent workers belongs from Wadar caste and they works as a labor only that means to break the stone and dump it in the trolley. It shows the tradition of work that is to break the stone

is a work of Wadar community. This tradition found in this site. There are 15 per cent respondents belongs from Maratha caste and they are only quarry owners. Out of them 05 per cent are other workers and 10 per cent are mine owners. Because they have their own land which is ideal for quarry or some time they take land on lease to do the same activity. But they are owner and their nature of work is superior. Only 5 per cent respondents are from other caste except Wadar and Maratha. They do the work like driver, crane operator and crusher operator.

From above all information it is indicated that the stone breaking work is the main activity of Wadar community where other supportive activities are done by other caste. This reflect the low social status of Wadar community which working as labor only.

Conclusion:

The social structure of the Darewadi is rigid and it is based on caste system. Agriculture, animal husbandry, fishing and mining etc primary activities are found. After the study the quarry site it is found that the social and economic status is poor.

Due to the need of physical strength the high percentage of males are working on the quarry sites. The percentage of female workers decreases as the age increases because male workers sustain the working capacity for long time of age as compare to female workers.

About 1/3rd part of workers is illiterate in study region. Near about 80 per cent workers are married because this work is collective in nature. It requires both male and female to break the stone and to dump in the trolley therefore they get marry early in their age. This help to add one person as a labor in quarry activity. Therefore the joint family structure is found here.
About 1/4th workers are from joint family structure because they come from outside the study region for work.

Large number of workers belongs from Wadar caste and they works as a labor only. It shows the tradition of work that is to break the stone is a work of Wadar community. This reflect the low social status of Wadar community which working as labor only. Majority of respondents are reported that their whole family is engaged in quarrying activity and this is the tradition of their family.

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Developing Facilities Provided By Sahyadri Co-Operative Sugar Factory, Yashwantnagar, Karad for The Rural Development

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Abstract:

Sugar factory play a major role in the socio-economic development of rural area . In this research work secondary data and annual reports are used. By the detail analysis of this data it can be conclude that Sahyadri Co-operative sugar factory performs an important role in developing the rural part of district and help to planners, policy makers and agricultural scientists to develop the plan for region. Irrigation, Fertilizers, Seed supply, Road, Education, Soil Testing, Training Workshop for farmers, Forestration, Cow breeding, Jalyukt Shivar Scheme etc. are provided by the Sahyadri co-operative sugar factory in operational area and contribute to the socio-economic development of the people of this region.

Key Words: Sugar factory, facilities, rural development, farmers, government.

Introduction:

Agro-based industries are playing important role in economic development of rural India. Sugar industry is one of the leading agro-based industries in our country. These industries are mainly located in the rural areas and can be the most appropriate agents for bringing about rural industrialization and change. Sugar industries are becoming the growth centers of rural development. Maharashtra is one of the leading state in sugar production. The Maharashtra sugar industry has been contributing nearly 40% of India's sugar production.

The Sahyadri co-operative sugar factory is established in a rural area of Karad tahsil. It provides various ancillary activities for the benefit of local farmers and other members of rural society. sugar co-operative provides the basis for organization of other economic activities such as co-operative bank, school, engineering college,etc. and it Arranges some social programs like plantation, blood donation, education for the well being of people.

This research work is focused on facilities provided by Sahyadri Co-operative Sugar factory, Yashwantnagar.

Objective:

To study the facilities provided by Sahyadri co-operative Sugar factory, Yashwantnagar, Karad, Dist- Satara.

Study area:

Sahyadri co-operative sugar factory,yashwantnagar,karad.is situated near karad-masur road ,shiravade railway station,karad district Satara .the study region lies between 17°21'52" latitude and 74°9'57"longitude

Database and Methodology:-

For the study of present research work data had collected through the various secondary sources. This data had thourgly analysed the collected data and observations are made from that analysis.

Developing facilities provided by Sahyadri Sugar factory

Sahyadri Co-operative sugar factory is a well developed sugar industry of Maharashtra. To increase sugar production, factory has implemented various schemes. These schemes are giving much benefit to hard working farmers. Some schemes are available for labours. Sahyadri sugar factory have provided following schemes.

1) Irrigation
2) Fertilizers
3) Seed supply
4) Road
5) Education
6) Soil Testing
7) Training Workshop for farmers
8) Forestration
9) Cow breeding
10) Jalyukt Shivar Scheme

1) Irrigation facilities:

Irrigation is main and important agricultural factor. Productions of crops are mainly depending upon water supply. Sahyadri Sugar factory always trying to give more facilities and it is a main reason this factory becomes a important sugar factory in Satara district. The factory has developed 16 irrigation schemes for 60 villages. This factory provided following irrigation facilities:

i) Arfal left cannel : This scheme covered 25 villages (This include 18 villages of Karad Taluka and 7 villages of Koregaon Taluka)
ii) Tarali irrigation scheme
iii) Tembhu irrigation scheme
iv) Kolhapur based bandharas
v) Drip irrigation

2) Fertilizers:

The sugar factory needs raw material in the form of sugarcane. The sugarcane production depends on the factors like soil fertility, water supply, fertilizers and insecticides. Fertilizer is much important factor because fertilizers help to increase fertileness of soil and P.H. value. By considering the importance of fertilizers the factory starts to create many fertilizers like Vermi compost and compost manure. Factory supplied 270.950 metric tones organic fertilizers to approximately 263 farmers and also supplied 5690 litres liquid fertilizers to 566 farmers in the year 2017-18.

Sr.No	Type of Fertilizer	Members	Fertilizer sale in metric tones

1	Peat compost	100	2327.360
2	Windrow compost	182	5960.110
	Total	282	8257.470

Source: Annual report, Sahyadri Co-operative Sugar factory, 2017-18

3) Seed Supply:

Sahyadri sugar factory provides various schemes regarding with seed supply.

a. Three tier system of seed production: By adopting of three tier seed nursery programme, disease and pest free seed planted on Karkhana seed farm as well as on selected farmer's farm.

b. Certified Seed Distribution: From the seed grown at Karkhana and farmers farm certified seed made available to the farmers for taking seed plots and CO-86032 (34500 seeds) supplied to the farmers under crush seed development program in the year 2017-18.

c. Crash Planting Program : For getting seed multiplication of high sugar content and yielding varieties of cane, high recovery from the high sugar varieties as like COC 671, CO-86032 adopted in crash planting program.

4) Road Scheme:

In sugarcane transport good accessibility and fast transport are very important for this purpose. In many villages panand roads are have coordination for good accessibility and fast sugarcane transportation. Factory developes many road construction works e.g. with the help of government scheme factory constructed bridge at Vathar Kiroli. In the year 2017-18 factory repaired roads in 29 villages and provides RCC pipes and Collars for 67 roads in 32 villages. Factory also contributed in Mukhyamantri Gram Sadak Yojana under this scheme Lakkadwada-Perale- Bhuyachiwadi- Korti road, Konegaon to Shiravade Station road, Pimpari bypass to Antawadi road have conceded with the help of local representatives.

5) Education Scheme:

The management of factory has established independent education society viz. Sahyadri Shikshan Sanstha, Yashwantnagar in year 1986. It provides a secondary educational facility as well as Sahyadri Agriculture College has been started in 2013-14. There are total 162 students admitted in this college in the year 2018-19.

Sakhar Shala of factory has about 30 years history in Maharashtra. The idea of sakhar shala was propagated by late Chief Minister Vasant dada Patil. This school provides education for chidren of seasonally migrated Sugarcane cutters and labors.

6) Soil Testing:

Due to excessive use of water and fertilizers soil may loose its fertility. To improve soil properties first we have to know the present condition of soil productivity status. Sahyadri Co-operative sugar factory provides soil testing facilities for 368 farmers and water testing facilities for 224 samples in operational area of factory in the year 2017-18.

7) Training Workshop for farmers:

With the co-operation of Vasant Dada Sugar Institute, Manjari, Pune workshop had conducted for the new research and new techniques in agriculture.

Arrangement of get together of farmers had also conducted occasionally.

8) Forestration:

Plantation scheme is also successfully implemented in the operational area of the factory. Plants like Mango, Tamarind, Pimpal, Lemon, Custard Apple etc. had planted on 25 hectares of land. Drip Irrigation facility is also provided by the factory for the conservation of these plants.

9) Cow breeding:

Factory also provides artificial insemination service to the cows and buffaloes in co-operation with BAIF Urilicanchan at various centers like Karad,Kashil, Masur, Umbraj, Supane, Vathar, Rahimatpur, Yashwantnagar and Pusesavali.

Sr.No.	Details	Cow	Buffalo	Total
1	Total insemination	80100	137814	217914
2	Foetus Check-up	64315	99006	163221
3	Conception	39976	59121	99097
4	Birth of ox and bull	16322	25914	42236
5	Birth of cow and buffalo	15955	22833	38788

Source: Annual report, Sahyadri Co-operative Sugar factory, 2017-18

10) Jalyukt Shivar Scheme:

Factory provides JCB Machines and Pokland Machines to remove the sediments from water bodies and deepening and broadening of Runnel under the scheme of Jalyukt Shivar of government of Maharashtra and factory also provides financial aid to repair natural lakes.

Pokland Machines:

Sr.No.	Village	Work details	Work hours
1	Rajache Kurle, tal-Khatav	Broadening and deepening of Runnel	102 hrs
2	Belewadi, tal-Koregaon	Broadening and deepening of Runnel	63 hrs
3	Nalawadewadi, tal-Koregaon	Broadening and deepening of Runnel	64 hrs
4	Nagache Kumathe, tal-Khatav	Broadening and deepening of Runnel	57 hrs
5	Khabalwadi, tal-Khatav	Broadening and deepening of Runnel	46 hrs

Source: Annual report, Sahyadri Co-operative Sugar factory, 2017-18

JCB Machines:

Sr.No.	Village	Work details	Work Hours
1	Nalawadewadi, tal-Koregaon	Deep CCT along mountain slopes	26 hrs

Source: Annual report, Sahyadri Co-operative Sugar factory, 2017-18

Other facilities:

i) Computer application training to employees
ii) Export quality extra neutral alcohol plant
iii) Tanks for water collection in drought prone area (Mhasurne village)
iv) Blood Donation camp

Conclusion:-

The sahyadri sugar factory is suited in rural area. Various schemes have adopted by sugar factory for the surrounding rural area development. In which computer training to employee, sugar factory school 'sakhar shala', supply of sugar seeds, supply of vermi compost and some

labor welfare programs etc are included. This factory also helps farmers for increasing their living standard in this area by giving employment to farmers and people

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Study on The Saturation Index of The Carbonates in The Groundwater By Using Lsi and Ri Index in The Villages of Phaltan Teshil

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Abstract:

The Phaltan is historic tehsil of Satara district in state Maharashtra. The majority of villages of this Phaltan dependent on Underground water for drinking, domestic use daily routine business activity and small scale industries. wherein there is an incremental rise in increased well water and bore-well water supply. By the way there have been observations of moderate to high scale formations by the groundwater during domestic heating, and other business activity. The village Nimbhore is very close to the industrial area of Phaltan The present work emphases on calcium carbonate concentration level and the corrosion/scaling coefficients. Four different villages are selected from East west, North and South direction of Phaltan city as a study area for study of various physico-chemical parameters. From same villages the two type of ground water sources like Well water and Bore well water samples are tested for different physico – chemical parameter in directive to estimate scalability and corrosivity of water. Two standard indices, Langelier Saturation Index and Ryzner Saturation Index were used. To predict the groundwater tendencies Wheather it either scale and corrosion formation tendencies. Groundwater sources have some physico-chemical properties which are responsible for corrosive or scaling tendencies of water. Scaling and corrosion are identified most prominent problem of materials that are used in the industries, piping system, process equipment's, heat exchanger, reactors domestic appliances etc. Water mineral are deposited in the form of hard scale of corresponding salts LSI and RSI both these index are based on pH of the saturation of calcium carbonate (pHs) and use the corresponding analytical values of Calcium hardness (expressed as $CaCO_3$), Total alkalinity (expressed as $CaCO_3$), Total dissolved solids (TDS), Temperature (°C) LSI RSI are estimated index gives idea about water quality nature.

Key Words: - LSI, RSI, pHs, Physico-chemical, Calcium carbonate, total alkalinity, scale, Corrosion Ground water, well water, Bore well water

Introduction :

Water use is of fundamental importance for many industrial as well as domestic processes. Water is a useful in various industries for heat exchanges, in boiler as feed water, in cooling tower and no of process in industries. However, as in villages, cities, and industries that are located in dry and water-short areas, where surface water or underground water sources are available. Due to insufficiency of surface water resources for industrial purpose, mandate for groundwater has been increasing day by day in Industrial area of Maharashtra.

Groundwater sources have some physico-chemical properties which are responsible for corrosive or scaling tendencies of water. Scaling and corrosion are identified most prominent problem of materials that are used in the industries, piping system, process equipment's, heat exchanger, reactors domestic appliances etc. Water mineral are deposited in the form of hard scale of corresponding salts i.e. precipitation of minerals.

In fact, the scaling often obstructs the pipeline and decreases the life of the water-treatment equipment, breakdowns in boilers, cooling towers and other water-handling equipment's Scaling is known to be initiated by multivalent cations, usually bivalent cations (Ca2+ and Mg2+). Corrosion is commonly known as the dissolution of a caused material into its component atoms due to chemical reactions with its surroundings Ground water is saturated in calcium carbonate. This is because of insoluble level of carbonate is 10mg/L

Factors causing scale-formation are alkalinity, high calcium concentration, temperature, pH. To evaluate the scale formation and corrosivity potential of water, number of indices are available, but most commonly used Index are Langelier Saturation Index (LSI) and Ryzner Saturation Index (RSI) it may have called $CaCO_3$ saturation indices. LSI predict Wheather water has tendency to precipitate or dissolve $CaCO_3$ and RSI estimates the quantity of the dissolved amount of $CaCO_3$. It is believed that supersaturated waters are scale forming whereas under saturated waters are corrosive

Both these index are based on pH of the saturation of calcium carbonate (pHs) and use the corresponding analytical values of Calcium hardness (expressed as $CaCO_3$), Total alkalinity (expressed as $CaCO_3$), Total dissolved solids (TDS), Temperature (°C)

The LSI index is calculated as follows:

1) LSI = pH – pHs

The RSI index is calculated as follows:

1) RSI = 2 (pH_s) – (pH)

where pH is the actual pH, and pHs is the pH at saturation.

pHs is calculated as follows:

pHs = (9.3 + A+B) – (C+D)
A= $\text{Log}\frac{\text{TDS}-1}{10}$
B = (-13.12) (Log (Temp.^{o}C +273) + 34.55)
C = Log (Calcium Hardness) – 0.4
D = Log of total alkalinity

If LSI value is positive, then water may from scale or water has scaling tendency

If LSI Value is negative, then water may cause corrosion in system

If RSI values less than 6, then water has corrosive tendency and greater than 6 water has scaling tendency

In this paper we consider two type of underground water sources vizely Bore well water and well water from villages of Phaltan tehsil to finding effects of calcium contents of groundwater on scale formation and corrosivity using LSI and RSI indices.

Zone Under Study

Present study Having four different villages from Phaltan tehsil of Satara district of Maharashtra State 1) Upalave, 2) Nimbhore 3) Sarade, 4) Kambaleshwar The following Map showing the Place of these villages in Phaltan tehsil.

These four villages are far away from Phaltan tehsil near about 15 KM up to 35 KM. In this study we take the sample of both the underground source of water Bore well and Well water. The depth of bore well water is more than well water The village Upalave situated in south side of Phaltan tehsil, the distance is near about 35 Km from Phaltan city and is come under dry zone. Nimbhore villages is 12 KM away from west side of Phaltan city, is partially under dry zone and partially under irrigation. Remaining both the Villages Sarade and Kambaleshwar near about 20 Km away from Phaltan and these villages are under irrigation.

Materials And Methodology :

Water samples were collected from each village in winter season in the month January of year 2018. Water samples are taken from the both sources i.e. bore well, well of every village at the time of Morning in plastic bottles. Collected water sample were tested for the physico-chemical parameters pH, Total alkalinity expressed as $CaCO_3$, Calcium hardness expressed Total dissolved solids (TDS), all are ppm unit and Temperature (°C) With Standard method of AHPHA.

Before testing the water sample calibration of pH and TDS meter was done and also titrimetric calibration of used glass wear was done

1) pH- Take 100 ml water sample under test dip the pH meter cell in water sample. Note observed reading on display of meter
2) Total dissolved solids - Take 100 ml water sample under test dip the TDS meter cell in water sample. Note observed reading on display of meter
3) Calcium hardness as $CaCO_3$ - Measure 25 ml water sample under study. Transfer in conical flask add 2 ml of 1N NaOH & 2 gm of Muroxide indicator powder. Titrate against 0.02 M EDTA Standard Solution with end point pink to purple Calculate the calcium hardness as $CaCO_3$

$$\text{calcium hardness as } CaCO_3 = \frac{\text{Titration reading in ml} \times 1000}{\text{ml of sample}}$$

4) Total alkalinity as $CaCO_3$ - Measure 25 ml water sample under study. Transfer in conical flask add 2 ml of phenolphthalein indicator if pink colour appear then titrate against 0.02 N Standard HCL Solution with end point pink to colourless, then add Methyl orange indicator in same sample and continue the titration with same HCL taken in burette Calculate the total alkalinity as $CaCO_3$

$$\text{Total alkalinity as } CaCO_3 = \frac{\text{Titration reading in ml} \times 1000}{\text{ml of sample}}$$

5) Temperature – Take 100 ml water sample under test Observe the temperature in degree Celsius

Results

Table No.1
Assessment of the water quality parameters

Sr. No	Name of village	Source of Underground water	Temp. In (°C)	pH	TDS ppm	Calcium hardness ppm	Total Alkalinity ppm
1	Upalave	Well water	28	7.80	326	136	210
		Bore well water	28	7.25	472	160	250
2	Nimbhore	Well water	28	7.67	548	64	700
		Bore well water	28	7.10	678	80	750
3	Sarade	Well water	28	7.64	456	100	400
		Bore well water	28	7.05	539	144	250
4	Kambaleshwar	Well water	28	7.35	1136	296	450
		Bore well water	28	7.19	1130	320	400

Assessment of numerical compatibility of the assessed water quality parameters:

In order to calculate the LSI, it is necessary to know the total alkalinity (mg/L as $CaCO_3$), the calcium hardness (mg/L as $CaCO_3$), the total dissolved solids (mg/L TDS), the actual pH and the temperature of the water (°C).The necessary water key parameters quality data for four different villages of Phaltan tehsil is estimated and presented in tubular form (Table no 1) The above parameter are used to calculate the value pHs and Calculation of Langelier Saturation Index (LSI): This indicates the driving force for scale formation and growth in terms of pH as a master variable

The LSI and RI index is calculated as follows:

1) LSI = pH – pHs

2) RI = 2pHs - pH

where pH is the actual pH, and pHs is the pH at saturation.

pHs is calculated as follows:

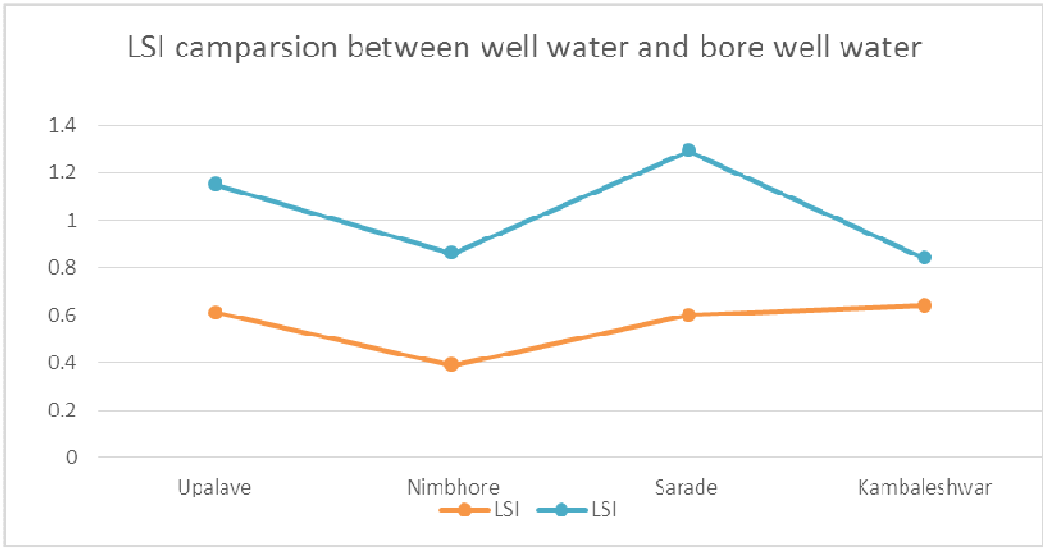
pHs = (9.3 + A+B) – (C+D)
A= $\text{Log}\frac{TDS-1}{10}$
B = (-13.12) (Log (Temp.^{o}C +273) + 34.55)
C = Log (Calcium Hardness) – 0.4
D = Log of total alkalinity

Table No.2
Calculated value of pHs and LSI and RI of well water

Sr. No	Name of village	Well water LSI	Bore well water LSI	pHs	Well water RI	Bore well water RI
1	Upalave	0.61	1.15	8.41	9.01	9.54
2	Nimbhore	0.39	0.86	8.06	8.44	8.82
3	Sarade	0.60	1.29	8.24	8.83	9.64

4	Kambaleshwar	0.64	0.80	7.99	8.64	8.80

Graph No.1



Conclusion :

The carried out study of four villages of Phaltan tehsil is evident that for industry utilization the concentration of calcium carbonate is not only the consideration but also its corrosivity and scale-forming capacities need to be considered. These corrosivity and scaling capacities are because of the physico-chemical parameters. The concentration of these physico-chemical parameter is also depending upon the form which depth under the ground the water is pull away and get utilized at end

In the study zone area, the underground source well having average depth is 25 meters while another underground source bore well are having average depth 100 meters. The tubular from result indicate that fact. Because of high concentration of physico-chemical force the LSI and RI indicate to higher value so these high value represent the water is in scaling tendencies. If this concentration of physico-chemical is low, then value of LSI and RI index are close to zero then it indicates the water has neither scale forming nor corrosive tendencies, but if the value of negative then water having corrosive tendencies

The following chart help to predict the nature of water with LSI and RI value so we can help to guide the industries how to utilize the water and treat with suitable chemical treatment

LSI value	Indication
<0	LSI is less than zero then underground water is unsaturated with respect to calcium carbonate. Then water has a corrosive tendency in pipelines and equipment. LSI may be negative
= 0	Zero LSI indicate water is neither form scale-forming nor corrosion in system

>0	LSI is greater than zero then water is supersaturated with respect to calcium carbonate ($CaCO_3$) and having scale forming tendency
0 to + 0.5	Water in balance condition but slight scaling tendencies
0 to – 0.5	Water in balance condition but slight corrosive tendencies
>.+ 0.5	Water is in scaling tendencies required Suitable chemical treatment
<.- 0.5	Water having highly corrosive tendencies
RSI value	**Indication**
RSI << 6	The scale tendency of water increases as the index decreases
RSI >> 7	The calcium carbonate formation probably does not lead to a protective corrosion inhibitor film

LSI and RSI indicator diagram	
	LSI and RSI indicate water in scaling tendencies. Required some chemical treatment
	LSI and RSI indicate water in neutral tendencies
	LSI and RSI indicate water in corrosive tendencies. Required some chemical treatment

Table No.2
Indicator diagram LSI and RSI in four villages of Phaltan tehsil

Sr. No	Name of village	Well water LSI	Bore well water LSI	pHs	Well water RI	Bore well water RI
1	Upalave	0.61	1.15	8.41	9.01	9.54
2	Nimbhore	0.39	0.86	8.06	8.44	8.82
3	Sarade	0.60	1.29	8.24	8.83	9.64
4	Kambaleshwar	0.64	0.80	7.99	8.64	8.80

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"Spatial Variation in Rural-Urban Sex Ratio of Solapur District (2001-2011)"

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Abstract

Sex ratio is one of the basic demographic characteristics, which is extremely vital for any meaningful demographic analysis. In India, the trend in sex ratio of population is used to denote the number of females per thousand males. The sex ratio reflects the socio-economic and demographic characteristics. An attempt is made to study the temporal variation in rural urban sex ratio of Solapur district in Maharashtra. There have been rural urban sex ratios giving typical trend, urban sex-ratio shows increasing trend and rural sex ratio shows decreasing trend during the period of 2001-2011. This is happening because rural circumstances and adverse condition push the families and females also to migrate towards urban areas.

Keywords :Sex ratio, decreasing trend, increasing trend , demography

Introduction

The Sex-ratio in India is characterised by the difference in its rural urban components, between various religious groups, between various social groups and between various regions. Such as rural urban differentials in the sex-ratio of India is the product of sex-selective migration from rural to urban area in search of job. Sex composition of population is one of the key factors in a development of any country. In India, the sex ratio is generally expressed in terms of number of female per thousand (1000) males in the population (Chandana, R.C. 2004). Optimum population structure is very essential to the development of every country. Development is nothing else without population; every nation is built on the power of its population. The economic status of the region depends on its skilled population and their attitude, education, scientific and technical improvement, capacity of their people. People within the region are utilizing the natural resources and improve their life and economic status. Population growth, density, sex ratio, literacy, birth and death rate, age structure, occupational structure and migration are the important aspect in the study of population regarding the development. Development is close related to the sex-ratio of population.

Study Region

Solapur district is one of the most important districts in Maharashtra. It lies entirely in the Bhima-Sina-Man basins. The shape of the district is like a flying eagle. The district of Solapur is located between $17^0$10' North and $18^0$32' North latitudes and $74^0$42' East and $76^0$15' East longitudes. The relative location of the district is Sangali district to its South-West, Satara district to its West, Pune district to its North-West, Ahamadnagar district to its North-West and Osmanabad district to its north and north east and the Bijapur district lies to its south as well as Gulbarga district in Karnataka State to its east.

The East-West length of the district is about 200 km and North-South extension is about 150 km. The total geographical area of the Solapur district is about 14,878 sq. kms and population of 43,15,527 according to 2011census. The district consists of eleven tahsils.

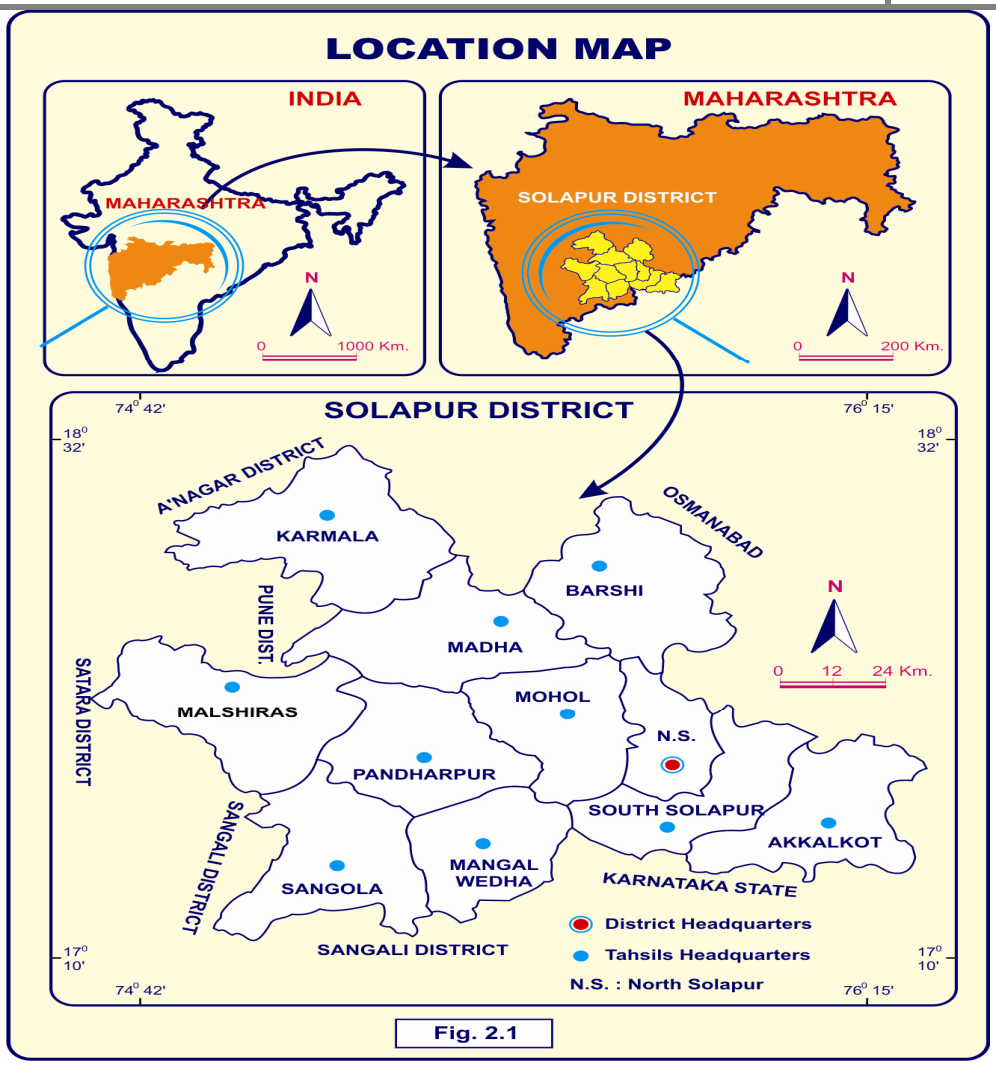


Fig. 2.1

Objective

The general objective of this research paper is to asses and analysis the spatial variation in rural-urban sex ratio in the study region.

Data Base And Methodology

The present study is entirely based on secondary data. Data will be collected mainly based on the Census of India, District Census handbook, District Gazetteer and Statistical Abstract of the district, Socio-Economic survey from 1961 to 2011. The unit of the study would be tahsil level. Some information will also be collected from books, published reports, journals, Published and unpublished reports. For temporal changes in sex ratio that period is selected from 1961 to 2011. The collected data was processed edited and analyzed by applying different quantitative statistical methods, cartographic techniques, maps & diagrams, computer techniques and methods, computer techniques will be used for preparation of maps and diagrams.

Discussion

The sex ratio is generally expressed in terms of number of female per thousand males in the population. Here we can attempt is made to study the spatial variation of rural urban sex-ratio of Solapur district for the period 2001-2011. Such studie highlight the push and pull factors in rural urban flow of population.

The spatial variation of rural urban sex-ratio in 2001 and 2011 is given table, which is shows spatial variation in rural urban sex-ratio in Solapur district.

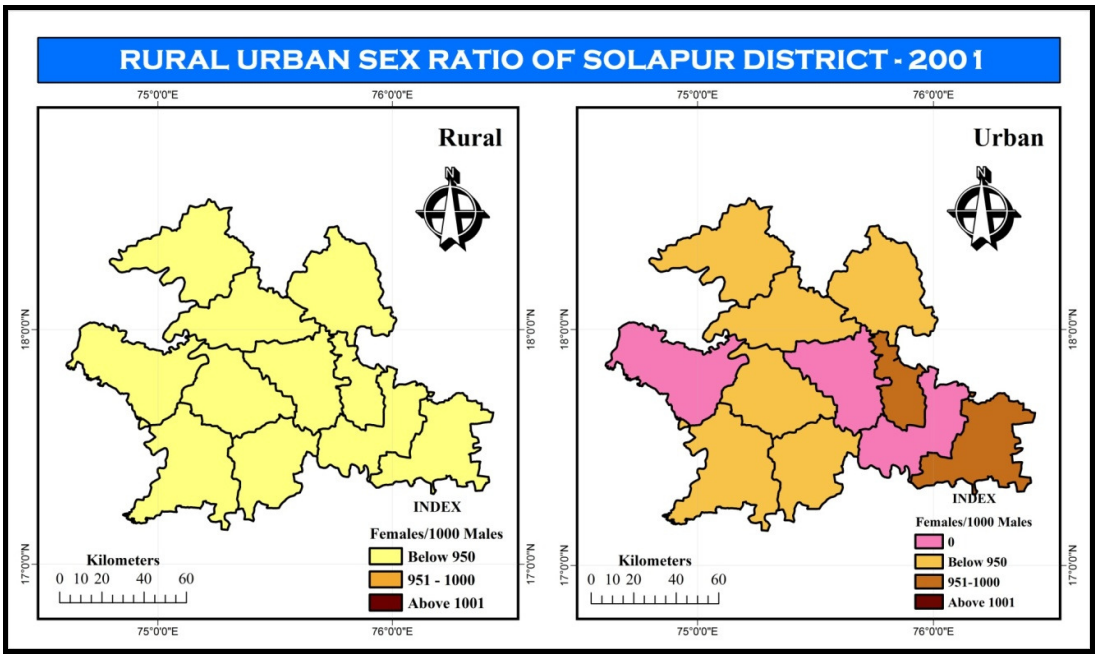
Table 1: Spatial variation in rural urban sex ratio in Solapur district (2001 and 2011)

Sr. No	Tahsil	Total		Rural		Urban	
		2001	2011	2001	2011	2001	2011
1.	Karmala	925	910	924	907	934	947
2.	Madha	922	908	920	904	936	961
3.	Barshi	929	921	921	909	946	948
4.	North Solapur	958	966	925	912	962	972
5.	Mohol	920	914	920	914	-	-
6.	Pandharpur	917	914	912	904	933	948
7.	Malshiras	923	923	923	918	-	-
8.	Sangola	936	932	937	932	930	933
9.	Mangalwedha	917	899	915	892	929	957
10.	South Solapur	933	941	933	941	-	-
11.	Akkalkot	953	944	946	934	975	986
District Total		**936**	**932**	**927**	**916**	**957**	**966**

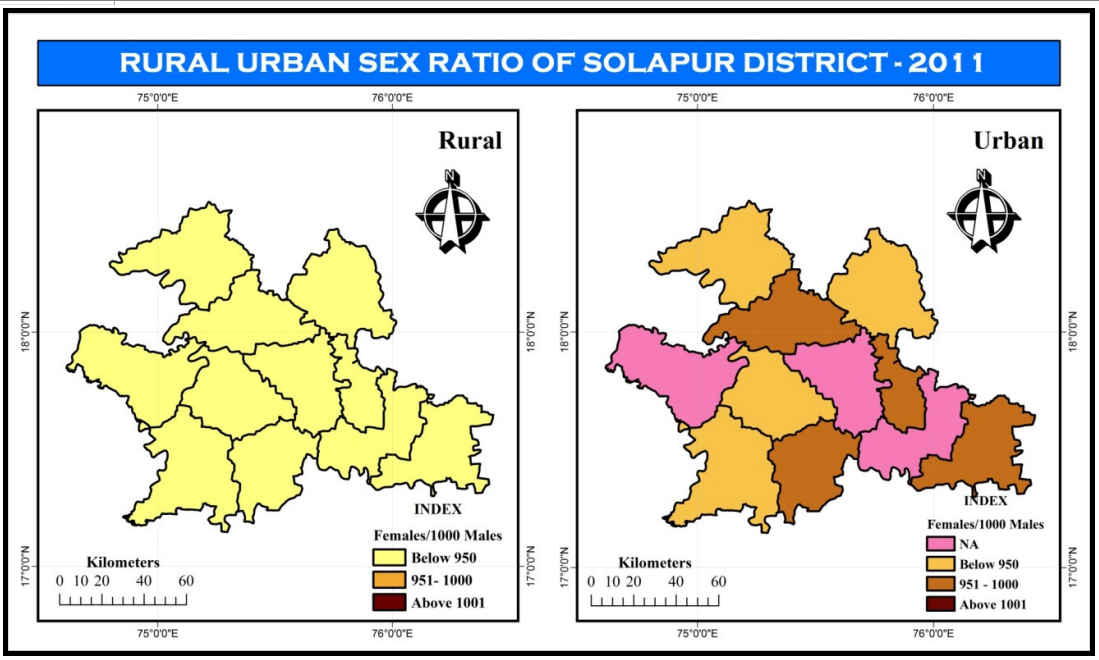
Source : Socio-economic Abstract of Solapur District 2001,2011

Table 1 reveals the spatial variation in rural urban sex-ratio in Solapur district in 2001 and 2011. In 2001 census report shows that the average sex-ratio of Solapur district was 936 in which North-Solapur (958) and Akkalkot (953) have recorded high sex-ratio than average and remaining 9 tahsils in Solapur district have recorded low sex-ratio than average. In 2011, this sex-ratio was decreased up to 932, in which North Solapur (966), Akkalkot (944) and South-Solapur (941) recorded high sex-ratio than average and remaining 8 tahsils recorded low sex-ratio than average.

During 2001 rural sex-ratio of Solapur district was 927, in which Akkalkot (946), Sangola (937) and South-Solapur (933) recorded high rural sex-ratio than average and remaining 8 tahsils recorded low sex-ratio than average. This sex-ratio decreased up to 916 in 2011. In which South-Solapur (941), Akkalkot (934) Sangola (932) and Malshiras (918) recorded high rural sex-ratio than average and remaining 7 tahsils recorded low sex-ratio than average.



(A) Map 1 (B)



(A) Map 2 (B)

As the same time, the urban sex-ratio of Solapur district was recorded 957 in 2001, in which Akkalkot (975) and North-Solapur (962) recorded high urban sex-ratio than average of urban sex ratio in Solapur district. The remaining 6 tahsils have low urban sex-ratio than average of urban sex ratio in Solapur district, but at the same time Mohol, Malshiras and South-Solapur tahsils shows that there is no urban population.

This urban sex ratio of Solapur district was increased up to 966 in 2011 from 957 in 2001. In which North-Solapur (972) and Akkalkot (986) tahsils was showed high sex-ratio than the average urban sex-ratio of Solapur district. In the remaining 6 tahsils have low sex-ratio than the average urban sex-ratio of Solapur district, but at the same time Mohol, Malshiras and South Solapur tahsils was shows there is no urban population.

The above analysis reveals that Mohol, Malshiras and South-Solapur tahsils have entirely rural population and North-Solapur and Akkalkot tahsil have highest urban sex-ratio in the Solapur district.

Map 1 (A) shows the spatial Variation in rural sex-ratio in Solapur district in 2001. It reveals from the map that all tahsils in Solapur district shows low rural sex-ratio (below 950). At the same time it reveals from the second Map 1 (B), that Akkalkot (975) and North-Solapur (962) tahsils was shows moderate urban sex-ratio (951-1000). While Karmala, Madha, Barshi, Pandharpur, Sangola, and Mangalwedha shows low urban sex-ratio (below 950). Malshiras, Mohol and South-Solapur tahsils have entire rural population.

Map 2 (A) shows the spatial Variation in rural sex-ratio in Solapur district in 2011. It reveals from the map that all tahsils in Solapur district shows low rural sex-ratio (below 950). As the same time, it reveals from the second Map 2 (B), that Akkalkot (986) and North-Solapur (972) tahsils shows moderate urban sex-ratio (951-1000). While Karmala, Madha, Barshi, Pandharpur, Sangola, and Mangalwedha shows low urban sex-ratio (below 950). Malshiras, Mohol and South-Solapur tahsils have entire rural population.

Conclusion

It may be concluded that rural urban sex ratio giving typical trend, urban sex-ratio shows increasing trend and rural sex ratio shows decreasing trend during the period of 2001-2011. This is happening because rural circumstances and adverse condition push the families and females also to migrate towards urban areas. There are wide variations as regard to sex ratio within the region under study depending upon the nature of rural and urban population, occupational structure and migration pattern. This is a very bad situation and has created blockages for further development of our society and nation. Hence, it is necessary to sort out this problem very urgently by implementing various policies and programmes, awareness campaigns.

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Baromas by Dr. Sadanand Deshmukh As A Mirror to the Rural and Agricultural Life in India.

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.**Abstract:**

Indian agriculture has long, old and beyond memory history which begins the Indus valley civilization. One of the old water regulating structure in the world is Grand Anicut Kalani dam on river Kaveri (1st-2nd Century CE). Agriculture is an important part in India's economy. Over 70 percent of rural lives depend on agriculture. Agriculture provides employment to over 60 percent of the population. The novel Baromas(Twelve Enduring Months) written by Dr.Sadanand Deshmukh (translated by Dr.Vilas Salunkhe)rightly presents the deplorable condition of farmers and agriculture in Rural India. The rapid spread of Globalization in the 21st Century has brought many changes in the lives of common people living in developing countries like India. No country is free from the positive and negative consequences of this global phenomenon. The present paper depicts reflection of the lives of farmers in Rural India. The fatal impacts of globalization on Agriculture, its production, the government view about it are discussed along with its dreadful effects on the people who are related to the Agriculture. The paper rightly indicates the condition of farmers in the rural India. The aspects of rural life are presented in regional literature of India. Rural life in India is engaged in agrarian work. However culture, traditions, customs, manners and overall lifestyles are related to agrarian aspects of drought prone areas.

Key Words: Farmers, Agrarian Culture, Cultivation, Globalization, Crops, Draught prone area, etc.

Introduction:

Indian agriculture began by 900 BCE as a result of early cultivation of plants and domestication of crops and animals. Settled life soon followed with implements and techniques being developed for agriculture. Double monsoon led to two harvests being reaped in one year. Indian products soon reached the world via existing trading networks and foreign crops introduced to India. Plants and animals- considered essential to their survival by Indians- came to be worshiped and venerated. Despite some stagnation during the later modern era the independent Republic of India was able to develop a comprehensive agricultural program. Indian ranks second Worldwide in Farm outputs. As per 2018, Agriculture employed 50 percent of the Indian workforce and contributed 17-18 percent to country's GDP. Agriculture is demographically the broadest economic sector and plays a significant role in the overall socioeconomic fabric of India.

Problems in Indian Agriculture:

Slow agricultural growth is a concern for policy makers as some 2/3rd of India's people depend on rural employment for living. Current agricultural Practices are neither economically nor environmentally sustainable and India's yields for many agricultural commodities are low. Poorly maintained irrigation systems and almost universal lack of good extension services are

among the factors responsible. Farmers' access to markets is hampered by poor roads, rudimentary market infrastructure, and excessive regulations."- World Bank: "India Country Overview 2008" There is various problems in agriculture in India like Infrastructure, Productivity, Illiteracy, general socio economic backwardness, inconsistent government policy, inadequate irrigation facilities, inadequate finance, farmer's suicides, marketing, and diversion of agricultural land into non agricultural land purpose etc.

Literature is mirror of Society:

Some writers like Mahatma Phule, Dr. B.R. Ambedkar, and Anna Bhau Sathe were writing about the social injustice in Maharashtra. Dr. Sadanand Deshmukh is the post Independent writer who presents the social condition of agrarian society in Maharashtra. Literature is the mirror of society as it re-presents the issues related to the condition of different groups in the society. It can be also treated as an agency for ensuring rights of all human beings because it makes the subaltern to speak, Gives voice to the downtrodden sections of the society. Literature has also paved the way for initiating some political/social movements for the betterment of society for instance Dalit writing, feministic fiction etc. Literature has become a route for accomplishing the human dignity of all human beings. Women's Rights, Children Rights and their Exploitation, Rights of Dalits and Marginalized Sections of the society, Rights of Animals, Rights of Aged people, Pitiable condition of adivasi community, violation of peasants rights, rights of homosexuals like gay and lesbian etc. are depicted in the various forms of literature.

Bio-note on Dr. Sadanand Deshmukh:

Dr. Sadanand Namdev Deshmukh is a Marathi language author. He was awarded with Sahitya Akadami Award in 2004 for his novel Baromas. His other novels include Tahan, Charimera and Bhuiringani. He is born in a highly traditional farmer's family in vidharbh, Maharashtra. He is doctorate in Marathi literature. He teaches at Amadpur as a professor. He wrote various literary genres like short story, novels and poems. He has indulged in occasionally literary writing. His writing primarily deals with farmers and peasants in rural India. Dr. Deshmukh deals with agricultural issues of farmers have to face in contemporary Indian context. He portrays pathetic condition of Indian farmers. His famous short story collections like Lachand, Uthandwan, Mahaloot, Ragadda, Gabhoolgabha, and khundalghaas are milestones in Marathi literature.

Portrayal of Agricultural and Rural life in Baromas:

Dr. Sadanand Deshmukh is the writer of social problems. The novel Baromas is originally written in Marathi by well known Marathi writer Sadanand Deshmukh. Vilas Salunke has translated this novel in English adding the title Twelve Enduring Months. It presents a gripping tale of a farmer's family in contemporary India. Its realism is so convincing, content so genuine and near perfect, form so aesthetically pleasing that it could become one of the best regional novels in World Literature. A representative tale of Indian farming that depends on the erratic rain-god on the one hand and the expectancy of high market returns on the other, both of which rarely come to the farmer's aid, the tale develops a point of no return. Deeply rooted in the Vidarbha soil, Sadanand Deshmukh, a regional novelist of repute in Marathi, captures the tragedy of the honest, god-fearing but hard working Tanpure family. The tragic inevitability of the plot, its down-to-earth characters and its near perfect realism helps reach the novel to a

pinnacle of artistic achievement. He says, "I remained connected to village, agrarian system, rural lives society and its fall and rise and tried to understand it".

Thematic Concerns and Disastrous Effects of Globalization on Agriculture and rural life:

There are various themes in Baromas like farmer's movements, unemployment, farmer's suicide, superstition, dowry, generation gap and rural urban crisis portrays by writer. The rise of globalization has changed every walk of human life. The agrarian culture was not exception to it. Many fatal effects of Globalization are depicted in the novel Baromas, some of them are as following:

Farmers' Movements:

Today, this farming sector in India is not in good condition. Without farming and farmer this country will not survive .Farmers movements in Maharashtra try to give justice and develop the lives of farmers. They believe that nation's happiness comes from the happiness of farmers' lives.

Farmers' Suicide:

Farming is the main occupation in India. Farmer's suicide is an increasing problem in India and in Maharashtra. They face many natural and manmade problems. They are under depression of losing everything which leads them to commit suicide. National crime records bureau of home ministry of India has declared that, 166204 farmers have committed suicide from 1996to 2005 and 40000 farmers in Maharashtra have committed suicide since 1997. In short, Maharashtra's land is graveyard for farmers.

Pollution of Fertile Soil due to Chemical Fertilizers:

The excessive use of chemical fertilizers has proved only short term profitable activity but in long term situation, the fertilizers have destroyed the rich and fertile soil. Nanu, grandfather of Eknath (Central Character of the novel) used to give the example of dying soil like:

"Why do we give liquid chemical to a bull taking part in a race? To make it run faster and win a race. Okey, the bull looks bright for some days, but after the chemical washes out of the body, the bull dies of exhaustion. In the same way, this soil will die of over farming one day. It will not have the strength to give life to the crop". (07)

By giving the example of the feeding chemicals to bull to win the race, Nanu explains how the soil will die due to excessive use of chemical fertilizers.

Increasing production cost of Crops:

With the introduction of Hybrid seeds and Fertilizers, the production cost of farming is increasing. Though the production has been increased, the farmers are not getting any benefit due to the rising cost of production. Sadanand Deshmukh comments on this strange situation of farmers as over the last ten to fifteen years, the soil had certainly yielded good retunes. The new chemical fertilizers worked wonders for the first few years. Modern hybrid seeds too had arrived along with the fertilizers. Pesticides followed to take care of the tender, fresh harvest. As production increased, so did the cost of inputs. It became difficult to make ends meets while covering the expenses of the farm. .... There was no alternative but to sell it to pay off the loan and stanch the creeping interest. (05)

The farmers have to take loan from different banks or money lenders to purchase the chemical fertilizers, hybrid seeds and pesticides. It results in to the increasing cost of production and farmers have to sell the crop in the market immediately after the season of harvest on low prices. As the Globalization changed the cropping pattern, the increasing cost of production drained the real benefits of the farmers.

Adverse effect on family relations:

The broken family relation is the result of growing Globalization. Though the world come together, the relations between family members have been fainted. Mainly the relation between Madhu and his wife Alka are broken. Alka, a city breed girl from a well to do family, finds it very hard for her to adjust in the family of Eknath. She always complains for the poor condition of Eknath's home and finally moves to her parent's home permanently. Even the relations between Alka and Shevantamai (Mother of Eknath) are very harsh. Shevantamai always insults Alka for not co-operating with her regarding family matters. Shevantamai is a typical traditional woman who feels that women has to suffer for the well being of the family. Shevantamai is illiterate and traditional. In one occasion, when Alka burns bamboo for cooking food, Shevantamai shouts:

"Oh, you speaker of the pure language! Don't you understand the sanctity of a household? Do people ever use bamboo for cooking? Don't you know when bamboos are used for burning? The dead body is carried on a bamboo stretcher on its last journey and the bamboos are burned along with the dead..... now you husband and wife had better eat that food. We will not touch it; we will go hungry; we will sleep covering our belly with leaves." (13)

Even, Alka humiliates Shevantamai whenever she gets opportunity. The relations between these two major women characters in the novel are hostile. There is no unity between the two brothers Eknath and Madhu. Madhu is a vagabond and is behind searching hidden treasure by digging graveyards and other desolated places around the village. He does not help her brother Eknath in field work on the other hand wants to have all the excellent facilities in the home.

Curse of Corruption:

The life of simple rustic people was ruined by the corruption and excessive desire of the people for earning more and more money. Eknath who is a well educated, does not get any job as he is unable to pay heavy donation for getting the job of a teacher. The villagers make fun of him saying:

You have given so may exams. Was it of any use? Has it taken the
dust out of your life? ... is you can't make it, just leave it. Forget all
that you have done in your life so far. Forget all your education
and start working on the farm...." (33)

Even the government officers require money to give simple documents to the farmers regarding their bank works. The illiterate and humble farmers are arrogantly treated and harassed by the government officers. Balimama, maternal uncle of Eknath, is exploited by Talathi Kamble for getting bribe of 50 rupees. He visits the office of Talathi for eleven times but does not get the farm documents. Tukaram Farate, friend of Madhu tells him:

Even if you visit fifteen more times, he will have no mercy on you. I've experience it. Give him Rs. 50 and see how quickly he gives you the papers. (79)

Anxious Young Generation:

As the fruits of globalization were snatched by only small proportion of the society who was already in well condition, the restlessness among the education young generation is reflected. Madhu and his gang is the best example of this mentality of young generation. The educated youngsters try to become rich by using shortcuts. They search for hidden treasure in the village locality. Eknath thinks over this strange situation, he feels what is the future of our villages? Farming does not yield a good harvest, and if it is does, agricultural produce doesn't fetch a proper price. You don't actually "see" the money and yet you can't manage without money. ... we know that a man teaches a couple of hours for a salary of Rs. 15000 to Rs. 20000, while another who is equally qualifies, is not able to get even Rs. 15 a day. When I compare, I feel that other man is happy and I'm not... Tejrao Khapke says, "If things go on like this, there will be a revolution in the county, and the mentally deranged people will have caused it.The result will be chaos, violence and bloodshed." (64) The reaction of farmers is found in the agitations of Farmers, Organizations, but the leaders of these organizations were also selfish and used the farmers' movement for their political gain.

Passion for Luxury:

The Globalization presented the wrong picture of happy life in the minds of villagers. The imaginary picture that materialistic development is the sing of happy life is created in the minds of people. Alka, Madhu and his friends, Eknath and other villagers are victims of this mentality. Alka always complains for lack of luxury in the home. Mugutrao, an old farm worker, always watches TV to see the luxurious life presented in the TV. He is the best example of how globalization has affected the mentality of the common people. His crave for watching TV is described as At that moment cam Mugutrao with half a dozen kids from the lane, making a lot of noise. "Eknath bhau, put on the TV, good songs are coming on."

"Arre, go to hell. Don't bother me" "Start it, Eknath Bahu." "Go to other. Why do you keep bothering us." "Your's is a colour Tv, that's why."

It indicates the passion of Mugutrao, an illiterate old villager for the luxurious life. Everyone wants to have more and more money to live luxurious life full of materialistic amenities.

Conclusion:

In this way, Dr. Sadanand Deshmukh has rightly captured the themes and effects of globalization on the calm and tranquil life of rural Indians. The passion for development and desire to earn more and more money has changed the mentality of people. The multinational companies and corrupt politicians are exploiting the simple and ignorant farmers in many ways. This is the present day reality of India.

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Scenario of Country Cow's in Satara District: A Spatio-Temporal Analysis

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Introduction:-

Livestock plays a vital role in the rural Indian economy. After to the agriculture, animal husbandry is the most important economic activity in rural areas of Indian subcontinent. (S. N. Mishra, R. K. Sharma, 1989). Animal husbandry is generally considered as an activity allied to agriculture. In the dairy activity Milch animals as like Cow, Buffaloes and some extend Sheep and Goat plays a crucial role, in an all parts of the Indian subcontinent. In ancient period Number of Animals (GODHAN) is the parameter of measuring a richness of any family or land lords and at the time of Marriage the farmer people giving a number of animals to Son-in-low as a gift. Above mentioned statements remarked the value and importunateness of the animal? Animal husbandry is one of the pillars of the farmer as well as rural development developments. After the Agriculture the animal husbandry is main backbone of the Rural Economy. For this research paper we have used the Tehsil wise Animal Census data of Cow, Buffaloes, Goat and Sheep population for the period of 1992, 2003 and 2012. By using above mentioned dataset we calculate the animal concentration of milch animals of Satara district.

Good breeds of cattle are mostly confined to comparatively dry areas such as Haryana, Punjab, Rajasthan, Gujarat and Madhya Pradesh. Pastures in these areas may qualitatively be enough, but they are often scarce. The uncertainty of rainfall makes it obligatory on the part of the owners to grow crops, the residue of which provides a good supply of fodder for cattle. In humid climate, a very poor type of cattle is found. India possesses 27 acknowledged indigenous breeds of cattle and seven breeds of buffaloes. These well-defined breeds are found in the dry parts of the country. Other types of breed are nondescript and do not belong to any defined breed.

Especially in Maharashtra these cows are mostly confined Western Maharashtra, likely Sangli, Satara and Solapur Districts. In Satara Man, Khatav and Eastern Koregaon and Phaltan tehsils.

Study Area:-

The study region Satara district is one of the district of Maharashtra state, it is situated in South part of Maharashtra State. The shape of the region is quite circular compact type and it comes under in Bhīma (Khandala, Man and Phaltan) and Krishna river system and lies between north latitudes 17° 05' and 18° 11' and east longitude 73 ° 33' and 74° 54'(figure1.1).

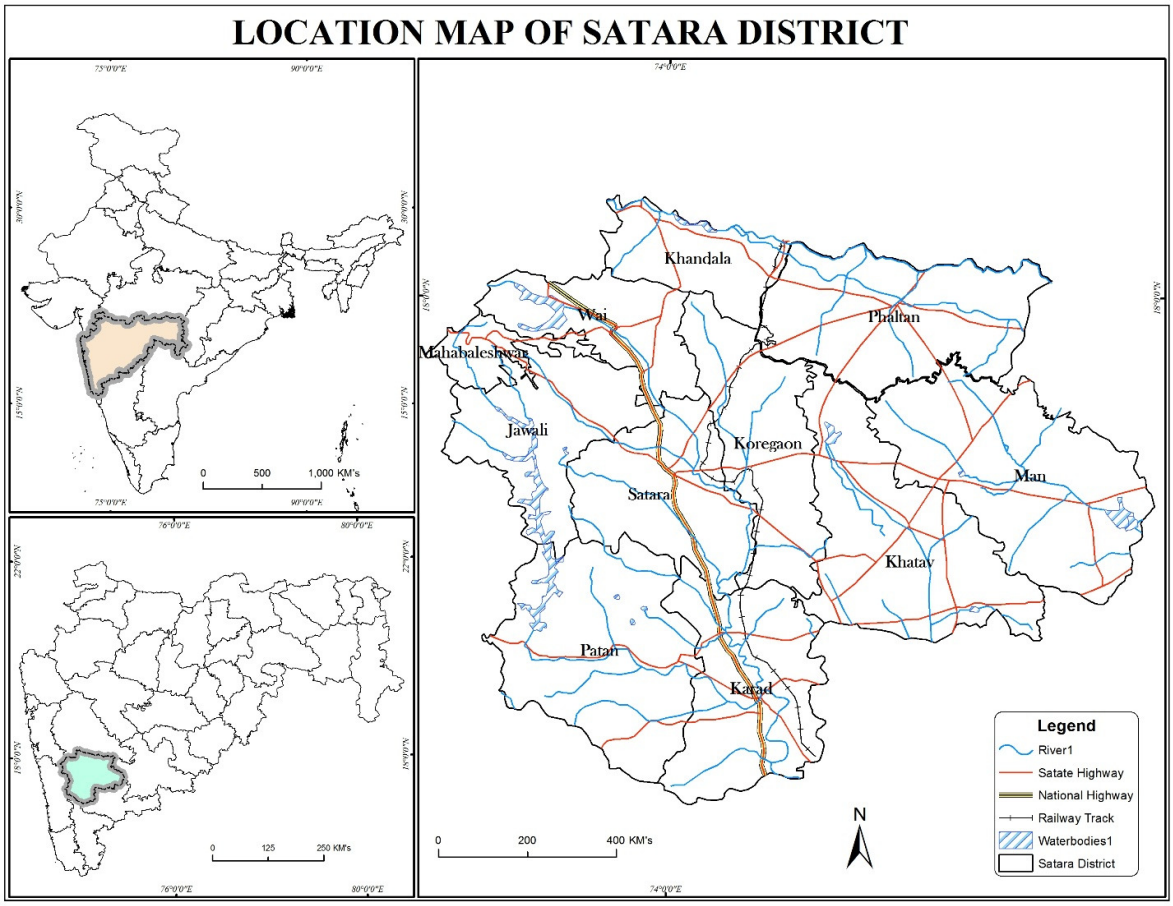


Fig No. 01 Location Map of Study Area

The total area of the district is 10480 sq. km (2011). Which is 3.40 percent of the Maharashtra state, among the 35 district of the state, Satara ranks 12 in terms of area. There are 11 Panchyat Sammittee's in the district. The study region administratively consist 11 tehsils which are Jawali, Khandala, Khatav, Karad, Koregaon, Mahabaleshwar, Man, Phaltan, Patan, Satara and Wai. The Satara town located on the Pune- Bangalore national highway no 4 with station of the south central railway.

The district has an east-west stretch of about 144kms and north-south about 120 km's. Administratively it is bounded by the Pune district on the whole of the north side, by the Solapur district on the east side, by the Sangli district on the south-east side and south and by the Ratanagiri district on the west, only over the length of about 25 km's the Raigarh district borders on the north-west side.

The main Sahyadri range on the west and south-west, and the Shikhar Shinganapur section of the Mahadeo hills on the east to of demarcate to some extent the land of Solapur district. For administrative purpose the district is divided in to four sub- divisions Koregaon, Satara, Phaltan and Wai.

Objective:-

To Study the Spatio-Temporal scenario of Country Cows in Satara District.

Database And Methodology:-

For the studied patterns of animal utilization, distribution pattern is made by using secondary sources of Animal census of India, 1992, 2003 and 2012 years. In order to determine the tehsil-wise Distribution of Country Cow's we used for calculation of Distribution Simple Percentage. For calculating Density we applied simple Density formula and following formula are used to determine the growth of Country cows.

$$Distribution\ of\ Country\ Cow's = \frac{Selected\ tehsils\ number\ of\ Country\ Cow's}{Total\ number\ of\ Country\ Cow's\ of\ District} \times 100 \ldots.1$$

$$Density\ of\ Country\ Cow's = \frac{Selected\ tehsils\ number\ of\ Country\ Cow's}{Total\ Geographical\ area\ of\ the\ Selected\ Tehsil} \ldots\ldots\ldots\ldots\ldots\ldots.2$$

$$\text{Growth Rate of milch animal population} = \frac{(P2-P1)}{P1} \times 100 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.3$$

Where,

P1……Animal Population of Previous Years

P2……. Animal Population of Current Years

By using above mentioned formulas out comes are classified in various classes like Distribution in Low (Below 7.00), Moderate (7.01 to 11.00) and High (Above 11.00) Distribution. Density are classified in the Low (Below 20.00), Moderate (21.00 to 40.00) and High (Above 41.00) Density. Growth rate are categorized in Positive, Low Negative, Moderate Negative and High Negative growth. All Data/graphs are predicted by appropriate Cartographical techniques. All graphs are made by Using GIS Software.

Discussion:-

Above mentioned table no 01 are deals with Distribution, Density and Growth of country cows of Satara district in 1992, 2003 and 2012.

Distribution of Country Cow's:-

The term of distribution deals with the how much population of cows are occupied to the total population of the district. It is calculated by using simple percent formula. This distribution calculated in 1992, 2003 and 2012 census years.

5.1.1 1992:-

The highest distribution of country cows are shared by Patan tehsil and lowest are shared by Mahabaleshwar tehsil.

Mahabaleshwar and Khandala tehsils are marked position in low distribution class. Both are shared 5.56 percent population of the district. Koregaon, Wai, Jawali, Karad, Satara and Phaltan tehsil are marked position in moderate class of distribution. This all tehsils are summarized more than 50 percent country cows population of Satara District. Man, Khatav and Phaltan tehsils are marked position in High distribution class. They are occupied 42 percent population of Satara district.

5.1.2 2003:-

Khatav tehsil are shared highest country cows population and Mahabaleshwar tehsil are shared lowest population of the district.

Mahabaleshwar and Khandala tehsil are maintained and continued previous census years position in same class in this current year. Both are marked in low distribution class with help of 5 percent population. Wai, Satara, Koregaon and Jawali tehsils are marks position in moderate

class of distribution. All tehsil are previously maintained in same class. Karad, Phaltan, Man, Patan and Khatav tehsils are marked position in high distribution class.

Table No 01 Scenario of Country Cow's

Content	Distribution			Growth			Density		
Tehsil	1992	2003	2012	1992-03	2003-12	1992-12	1992	2003	2012
Wai	7.18	3.93	3.33	-66.21	-35.60	-78.24	57	19	12
Khandala	3.66	2.32	3.17	-60.68	3.34	-59.37	33	13	13
Satara	9.79	5.85	6.40	-63.03	-17.04	-69.33	50	19	15
Phaltan	10.55	13.68	11.71	-19.88	-35.02	-47.93	42	34	22
Koregaon	7.13	5.93	5.32	-48.59	-31.90	-64.99	35	18	39
Man	12.50	14.65	25.64	-27.53	32.87	-3.72	41	29	12
Khatav	13.00	15.89	12.07	-24.44	-42.35	-56.44	46	35	20
Karad	9.53	13.46	10.28	-12.64	-42.04	-49.36	42	37	22
Patan	17.17	15.65	12.93	-43.63	-37.32	-64.67	60	34	21
Jawali	7.59	6.42	3.03	-47.71	-64.16	-81.26	40	21	7
M.Shwar	1.90	2.23	6.12	-27.59	108.75	51.16	39	29	60
Average	**100.00**	**100.00**	**100.00**	**-64.16**	**-100.00**	**-100.00**	**45**	**28**	**21**

Source: Based on animal Census of India, 1992, 2003 and 2012, compiled by Author.

5.1.3 2012:-

Jawali tehsil are marked lowest population and Man tehsil occupies the highest country cow's population of Satara district.

There are six tehsils are marked position in low distribution class, those are Jawali, Khandala, Wai, Koregaon, Mahabaleshwar and Satara tehsils. They are shared 27 percent population of district. As compare to previous census years all are maintained previous position in a current year with newly addition of Khandala and Mahabaleshwar tehsil. There are no one tehsil are marked position in moderate class of distribution. Karad, Phaltan, Patan and Man tehsils are marked position in High Distribution Class. They are shared more than 70 percent population of the district. As compare to previous census condition they all are maintained same class position in current year.

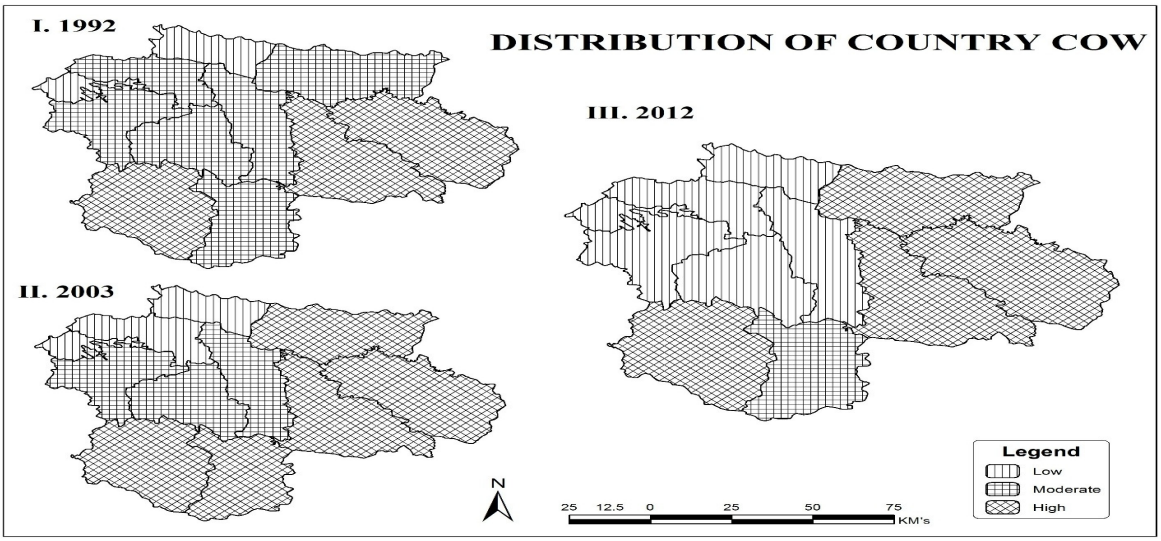


Fig No 02 Distribution of Country Cow's

5.2 Density of Country Cows:-

The term density deals with ratio between land and animal of the correspond region. For this paper we calculated the tehsil wise density of country cows. This is calculated per Square mails area.

5.2.1 1991:-

The district average density are marked 45 cows in per Sq. Mail area. The highest density marked by Patan tehsil and Lowest are marked by Khandala tehsil

There are no one tehsil are marked in position in low density area class of the district. Khandala, Koregaon, Mahabaleshwar, and Jawali tehsil are marked position in moderate density area class. The average density of this four tehsils are come 37. Man, Phaltan, Karad, Khatav, Satara, Wai and Patan tehsils are marked position in high density area class. The average density of this class are comes to 48.

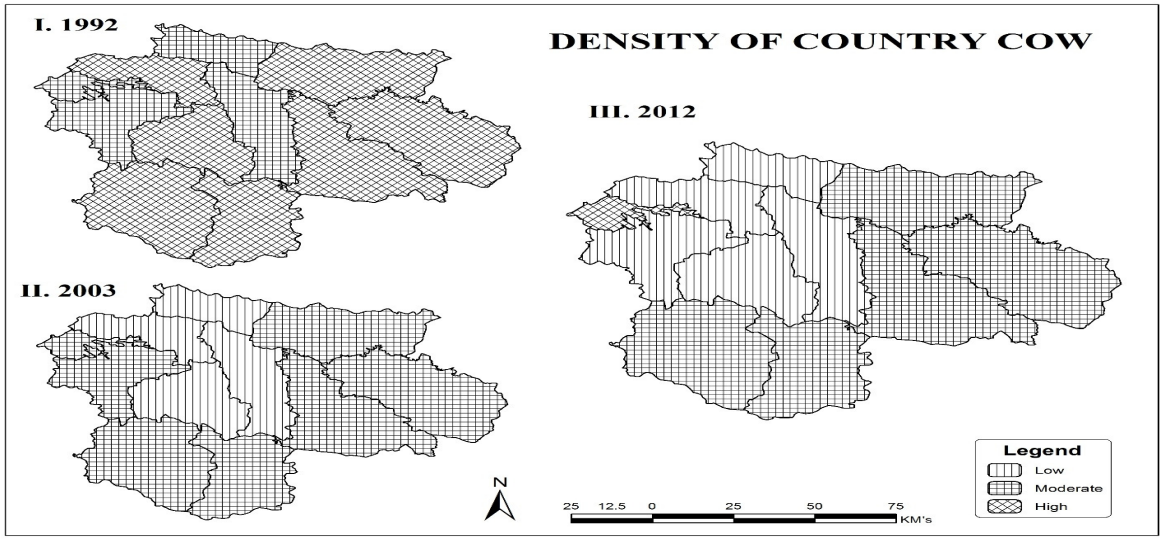


Fig No 03 Density of Country Cow's

5.3.2 2003:-

The district average are marked 28. As compare to previous year density are decreased with remarkable speed. The highest density are recorded by Karad tehsil and lowest are Khandala tehsil.

Khandala, Koregaon, Satara and Wai tehsils are marked low density area class. The average density of the group are 17. Jawali, Mahabaleshwar, Man, Phaltan, Patan, Khatav and Karad tehsils are marked position moderate density class area. The average density of the group are marked 31. As compare to previous year, Jawali and Mahabaleshwar are maintained same class and reaming are adding newly. There are no one tehsil are marked position in high density class of density.

5.3.3 2012:-

The average density of country cows are gradually decreased and it's come up to 21. As compare to previous year it decreased by 7. The lowest density are marked by Jawali and highest are marked by Mahabaleshwar. Jawali, Wai, Man, Khandala, Satara and Khatav tehsil are

marked position in low density area class. The average density of class are 13. Patan, Karad, Phaltan and Koregaon tehsils are marked position in moderate class of density. The average density of the class are 26. Only Mahabaleshwar tehsil are marked position in high density class.

Growth of Country Cows:-

The term growth indicated the change of any kind of entity are positively or negatively in terms of Qualitative as well as quantitative content. The growth of indigenous cows are calculate for 1992 to 2003, 2003 to 2012 and 1992 to 2012 census years. The average growth of the district -53 .07 percent means all tehsils are marked negative growth of country cows.

5.3.1 1992-2003:-

The district average growth are marked -38.17 percent and highest negative growth are marked by Wai and lowest are marked by Karad tehsil. It means near about 40 percent country cows population are decreased from 1992 to 2003 this decadal year.

Karad and Phaltan tehsil are occupies the position in the low negative growth rate class. Khatav, Man and Mahabaleshwar tehsil are marked position in moderate negative class. Patan, Jawali, Koregaon, Khandala, Satara and Wai tehsil are marked position in high negative class of growth rate.

5.3.2 2003-2012:-

The average growth rate of the district are recorded -24.11. As compare to previous decade it quite good in decreasing number. But some tehsil are marking the positive sign of population.

Khandala, Man and Mahabaleshwar tehsil are marked position of positive growth class. Satara, Koregaon, Phaltan, Wai and Patan tehsils are marked position in a low negative growth rate class. Karad, Khatav and Jawali tehsil are marked position in the high negative growth arte class.

5.3.3 1992-2012:-

The average growth of district -53.07 percent. It means 50 percent of country cow's population are going out from Animal Shed and it replaced by crossbred, Exotic cows.

Mahabaleshwar tehsil are mark position in positive growth rate class. Man tehsil are marked position in the low negative class of growth. Remaining tehsil are maintained position in the high negative growth rate class.

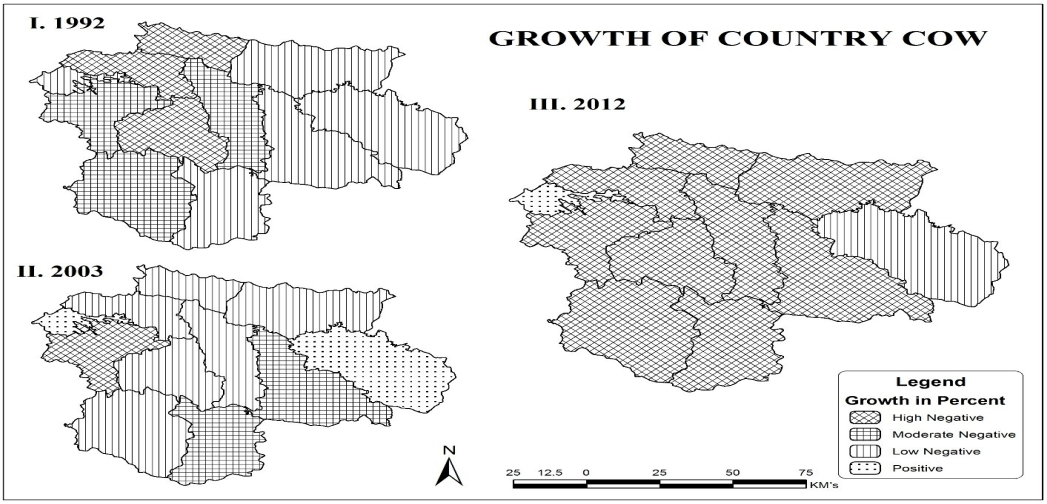


Fig No 04 Growth of Country Cow's

Conclusion:-

Draught prone region are suitable and favorable for country cows means mostly confined to comparatively dry areas such as Man, Khatav, Phaltan and Karad tehsils are mainly considered high drought prone areas of the district. More than half of the cows are settled this tehsils. The availability of Fodder, Drinking as well as agricultural Water and other technical support is less than the other areas. In the other tehsils it continuously decreasing as compare to drought regions because of the availability of Fodder, Drinking water and other agriculture sub fodder like Sugarcane and its bran. The main region of continuous decreasing population of these cows are the other high breed cows are existed, they have high in quantity of milk as well as lactation period is lesser than the country cows. The period of reproduction is lesser than the country cows. Last the main appeal to we people, please save cow save country.

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Annexure

Tehsil	**1992**	**2003**	**2012**
Wai	13000	4393	2829
Khandala	6615	2601	2688
Satara	17711	6548	5432
Phaltan	19099	15302	9944
Man	22615	16388	21774
Koregaon	12904	6634	4518
Khatav	23529	17778	10249
Karad	17245	15066	8733
Patan	31065	17512	10976
Jawali	13733	7181	2574
M.Shwar	3440	2491	5200
District	**180956**	**111894**	**84917**

An Economic Study of Banana Farming in Jalgaon District

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Introduction:-

Jalgaon district is famous as Capital of Banana in Maharashtra as it stands first in production & productivity in India. As per one report published in Indian express newspaper Jalgaon district is world seventh largest producer of banana, which is more than other countries in world. Many farmers are cultivating banana since last 35-40 years. Therefore banana farming is not only helping them to increase their income but also it helps to develop the area itself. But as geographically Jalgaon district is not suitable for banana crop. As it has high temperature & comparatively lower rain than other area. Though the factors are major constraints for the production, farmers are produce more & more banana production using modern technology & techniques. Therefore this research paper is focusing on development of Jalgaon district through banana farming practices. The social, economical, educational development of the area is highly impacted by banana crop.

Objective Of Study:-

1) To study banana cultivation practices by farmers in Jalgaon District.
2) To study socio-economical characteristics of farmers in Jalgaon district.
3) To study the agro-biological-environmental problems faced by farmers in Jalgaon district.
4) To study impacts of banana production on environment & rural development.

Review Of Literature:-

1) Latha Bastine and Radhakrishnan (1988) from study of 100 banana growing farm families in Kerala, revealed that cost of cultivation of banana per hectare worked out to Rs.45068 and the net income worked out to Rs.8819 on cost 'C' basis and at cost excluding rental value of land it was Rs.17833. The farm business income, family labour income and farm investment income amounted to Rs.20439, Rs.11061 and Rs.18197 per hectare respectively. Thus, banana cultivation found to be highly profitable.
2) Waghmare and Pathak (1988) evaluated impact of commercial crops on farm income and employment using primary data collected undtr cost of cultivation scheme during 1983-84 in respect of 13 clusters of Solapur district (130 holdings). The economics of crop production under irrigated condition revealed that the farmers growing commercial crop inclusive of sugarcane crop secured the highest net income (Rs.2814/ha) followed by those growing commercial crops exclusive of sugarcane (Rs.554/ha) and those growing no commercial crop (Rs.218/ha). The study suggested that depending upon the availability of surface or groundwater, the area under commercial crops should be increased.
3) Kale (1992) indicated importance of banana in Maharashtra as it tops in both area and production in the country. The key role of Jalgaon district in banana production of the state shown by its contribution towards area under banana 69 per cent and production 61

per cent of the state with an estimated turnover of Rs.150 crores per year. Banana occupies the land for about 16 to 18 months, mostly followed by relay crops like wheat or summer groundnut which provides tremendous employment opportunities to the rural population, almost all the year round. Besides post harvest operations like loading/unloading of bunches, transportation and marketing operations provide sizeable employment to both rural and urban population.

Methodology:-

This research study is based on both primary & secondary data. Primary data is collected with the help of well structured questionnaire from banana growing farmers. Secondary data was collected from government report, magazines, newspaper.

The selection of farmers in specific farmer were done by in the ratio of total area cultivated under banana in tahsil. Sample of respondent (banana farmers) were selected from jalgaon district were as follows -

Sr. No.	Tahsil	Farmers Approached	Farmers Selected
1	Erandol	5	5
2	Dharangaon	6	6
3	Parola	2	2
4	Amalner	2	2
5	Chalisgaon	4	4
6	Bhadgaon	6	6
7	Pachora	10	10
8	Jamner	8	8
9	Bodvad	2	2
10	Bhusawal	7	7
11	Jalgaon	47	46
12	Chopda	49	46
13	Muktainagar	51	46
14	Yawal	107	100
15	Raver	194	182
	Total	500	472

Results & Findings:-

1) **Socio Economic Characteristics:-**

i) **Social Category:-**

Open	O.B.C.	S.C.	S.T.	V.J./N.T.	S.B.C.	Total
143	171	52	18	32	56	472

36% of total numbers of farmers are from O.B.C. category.

ii) **Age group (In years)**

15 -29	30-39	40-49	50-59	Above 60	Total
92	58	110	116	96	472

48% of total numbers of farmers are in between 40 to 59 years old.

iii) **Educational Qualification:-**

SSC	HSC	Diploma	Graduate	Post Graduate	Other	Total
34	33	53	78	163	111	472

35% of total farmers are post graduated from colleges /universities.

iv) Experience in Agriculture (in Years):-

0 -2 yrs.	2 – 5yrs	5 – 10 yrs	10-20 yrs	Above 20 yrs	Total
92	58	109	108	105	472

45% of the farmers have above 10 years experience in agriculture.

2) Agricultural characteristics:-

i) Types of irrigation facility:-

Tubewell	Well	Canal	River	Dam	Total
244	161	22	16	29	472

52% of farmers have using tubewell for water resources. Which is sign of danger in near time future.

ii) Types of banana planted:-

Tissue culture plants	Traditional sucker/tissue plant	Both	Total
351	72	49	472

74% of farmers are using modern tissue culture plant for cultivation.

3) Problems of banana farmers(Agri-Biological-Environmental Problems)

Sr. No.	Problems	Agree	No opinion	Disagree	Total
1	Severity of diseases	251	128	93	472
2	Severity of pests	223	205	44	472
3	Soil type & productivity	286	96	90	472
4	Scale of rain	244	108	120	472
5	Climate	281	16	175	472
6	Natural calamities	367	21	84	472
7	Severity of winds	275	34	163	462
	Total	1927	608	769	3304

Most of the farmers are facing problems relating to natural calamities.

Suggestions:-

1) Banana is high water consuming crop hence it is required to manage water resources with the use of modern techniques.
2) The use of chemical fertilizers are necessary for increase in productivity of banana crop. But it damages the environment chain & quality of soil. Hence it is require to increase in awareness in farmers for using organic fertilizers.

3) Even though Traditional banana plant yields lower than modern plant , it helps to control unnecessary expenses of farmers which helps to increase profit share of farmers.
4) As a draught is common climatic problem now a day's, banana farmers need to adapt policy. Therefore it required to create a policy for overcome the draught.
5) There should be policy for change in cultivating crop pattern by farmers.
6) There should be a system for proper climate forecast for farmers.
7) There should be a active insurance protection for loss by natural calamities.

Conclusion:-

It may be concluded that, banana is major cash or profit generating crop therefore many farmers are cultivating it. But to generate extra income farmers need to be innovative & technically updated. Most of the farmers are facing environmental problems regularly therefore there should be a policy for cropping pattern. Many research centers are trying to aware of diseases, pests or protecting methods but last five years banana farmers are being hammered by natural calamities. So for better results farmers require to get extra information for protecting their crop.

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Agriculture Marketing in India-Problems and Prospects

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Abstract:

Agriculture Marketing system is an efficient way by which the farmers can dispose their surplus produce at a fair and reasonable price. Improvement in the condition of farmers and their agriculture depends to a large extent on the elaborate arrangements of agricultural marketing. Agricultural Marketing comprises all operations involved in the movement of farm produce from the producer to the ultimate consumer. Thus agricultural marketing includes the operations like collecting, grading, processing, transportation and financing.

India is an agricultural country and one third population depends on the agricultural sector directly and indirectly. Agriculture remains as the main stray of the Indian economy since times immemorial. Indian agriculture contribution to the national gross domestic product GDP is about 25% with food being the crowing need of mankind ¸much emphasis has been on commercializing agricultural production. For this reason, adequate production and even distribution of food has of late become a high priority global concern.

In the present scenario various problems faced by agriculture marketing in rural India. So Researcher tried to find out problems of agriculture marketing in rural India. In this paper researcher has focused on conceptual study of agriculture marketing , types of agriculture marketing, role of government for agriculture marketing in India problems faced by agriculture marketing in rural India and suggest some remedies / prospects on it.

Key words: Agriculture Marketing, price fluctuation, Integrated value chain

Introduction:

Agricultural marketing continues to be the mainstay of life for majority of the Indian population. It contributes around 25% of the GDP and employs 65% of the workforce in the country. The government of India under the Ministry of agriculture has also set up specific commodity Boards and export promotion council for monitoring and boosting the production, consumption, marketing and export of various agricultural commodities. Some of these organisations are Cotton Corporation of India (JCI), Tea Board, National Horticulture Board and agricultural products are taken into consideration. National agricultural marketing Federation (NAFED) and Agricultural products Export Development Authority etc. agriculture marketing is the process of determining consumer demand for a product or service, motivating its sale and distributing it into ultimate consumption at a profit. Agriculture marketing is a process where entire gamut activities that direct the flow of goods and services from the primary producer to ultimate consumer. It is the study of all the activities, agencies and policies involved in the procurement of farm inputs by the farmer and the movement of agricultural products from the farmers to the consumers. It includes organization of agricultural raw materials supply to processing industries.

Objectives of the Study:-

1. To study new trends in Agriculture Marketing.
2. To know problems of Agriculture Marketing in rural India.
3. To Suggest Remedies/Prospects on problems of Agriculture Marketing

Research Methodology:

Present research is of descriptive in nature. The study is based on secondary data which is collected from published reports, newspapers, journals, reference books & websites etc.

Meaning of Agriculture Marketing:

Agriculture Marketing is the smooth supply chain management from production point to the end consumer. It leads to efficiency in processing, storage and transportation.

Definition: "Agricultural Marketing is an effort to estimate demand for farm inputs and to ensure regular supply of those to dispose farm product to a proper consumption point."

"Agricultural Marketing is a process which starts with a decision to produce a saleable farm commodity and it involves all aspects of market structure or system both functional and institutional based in technical and economic consideration and includes pre and post-harvest operations."-National Commission on Agriculture;

New trends in Agricultural Marketing:

Direct Marketing and contract farming is a new trend in modern era -

Direct marketing encourages farmers to undertake grading of farm produce at the farm gate and avoids the necessity to take the produce to regulated market for sale. At the same time it provides incentive to large scale marketing companies to increase their purchases directly from producing areas. This has been experimented by farmers in the country through ApniMandis in Punjab and Haryana.

Under contract farming, there is an agreement made between the farmers and the company. The latter contributes directly to the management of the farm through input supply as well as technical guidance and also marketing the produce. The main feature is that selected crops are grown by the farmers under a buy back agreement. This is common in the production o high value crops like fruits, vegetables, tea, coffee etc.

Marketing surplus:

It is quantity of produce which can be made available to the non-farm population to the country. It is residual left with the farmers after meeting family consumption farm requirements and social-religious payments.

Marketing surplus (MS) = Total Production - Requirement of farmer consumption

Diversification of Agriculture:

Agriculture is not only meeting the demand for food grains but also other needs of development. In recent years agricultural sector has been diversified to produce commercial crops and horticultural crops viz. fruits, vegetables, spices, cashew, coconut and various floricultural products. Liberalisation of the economy has created ample scope for the development sector both in terms of increased production and trade.

Agricultural exports:

Another important emerging trend of agriculture under liberlisation is the increasing volume of agricultural exports and its increasing prospects in near future under the WTO regime. India is favorably placed in respect of agricultural exports as the agricultural exports as the agricultural marketing sector is subjected to low import content, low cost of labour, favorable climatic conditions, and low unit cost of inputs.

Agricultural exports are playing an important role in expanding the activities of Agricultural sector with generating increasing number of employment opportunities.

Problems of Agriculture Marketing in rural India:

1. Inadequate transportation facilities
2. Malpractices in Mandis
3. Lack of credit
4. Lack of market information
5. Unregulated weights and measures
6. Lack of standardization and grading
7. excess market charges
8. lack of storage facility
9. Adulteration
10. Unfavorable condition
11. Levies and other market charges: The levies and other market charges vary widely in the states. statutory levies/mandi tax, VAT etc. are a major source of market distortions.12 non-transparent and use of political power – As per the economic survey 2015-16. The APMCs of the states levy multiples fees of substantial magnitude which are non-transparent and hence work as a source of political power. The functioning of the APMCs have always been a matter of debate among experts and policymakers.
12. Inelastic demand
13. Lack of awareness of market policy
14. corrupt policies of the Mandis
15. Lot of Intermediates

Remedial Measures/ Prospects:

For all the above problems of India's Agricultural marketing system the farmer does not get affair deal from the market. The present system measures may be taken to improve the present system of agricultural marketing in India.

1. To establish regulated markets with a view to eliminating unhealthy and unethical trade prices.
2. Supported by a corresponding expansion of ancillary facilities in the various existing markets and setting up new markets.
3. It is needed to set up co-operative marketing societies for some progress has been achieved in this direction.
4. Rural transport has been given emphasis in the five year plans and quite some progress has been made in this direction.

5. Prompt supply of market information through published document and TV programmes, standardization and grading to ensure quality to consumers and better prices to producers.
6. In order to promote development of a common national market for Agricultural commodities through e-platforms, the department has approved Rs. 200 crore.
7. Provide loans to the farmer at low rate of interest so that they will be freed from the clutches of local moneylenders who squeeze them

Conclusion:

Agricultural Marketing plays an important role not only in stimulating production and consumption, but in accelerating the pace of economic development. Its dynamic functions are of primary importance in promoting economic development.

Agricultural Marketing needs to be conducted within a supportive policy, legal, institutional, macro-economic, infrastructural and bureaucratic environment. Governments have at some stage made efforts to promote agriculture marketing improvements and strict rules and regulations in case of agriculture marketing. With the help of these rules and regulations these problems will be solved and agriculture marketing sector become corrupt less. So it is beneficial to the farmers and agriculture market.

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Farm Mechanization in Kolhapur District

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Abstract:

Agricultural mechanization is the process whereby equipment, machineries and implements are utilized to boost agricultural and food production. It is the application of implements in the day to day farm activities to increase marginal output in food production and poverty eradication. It also helps in the conservation of the produce and byproducts from qualitative and quantitative damages; enables value addition and establishment of agro processing enterprises for additional income and employment generation from farm produce. It is one of the important inputs to lead in all round development in the rural in Kolhapur district.

Introduction-

Farm mechanization has been helpful to bring about a significant improvement in agricultural productivity. Thus, there is strong need for mechanization of agricultural operations. This study seeks to examine the micro-regional variation in the spatial distribution of agricultural implement & machinery in Kolhapur district.

The traditional animal operated wooden & iron plough although give low output and require higher number of field operations are still being used by majority of the farmers. Improved implements such as oil engines with pump for irrigation, electric pumps for irrigation & tractor being more efficient, have been adopted. The growth in the number of sprayers and dusters for plant protection equipments has also been significant.

Objective-

i) To study spatio–temporal characteristics of agricultural implements in Kolhapur district. during the 1991-2010.

Methodology:

The study is based on data collected from primary and secondary sources. The collected data from different sources were processed and represented by employing different statistical and quantitative techniques like percentage change. Most of secondary sources of data collected from reports published by institutions like Directorate of Economics and statistics, Department of agriculture and co-operation, Ministry of agriculture, Government of India, National sample survey, State Statistical Abstracts, Gazetteer of Kolhapur district etc.

The Region-

The Kolhapur district is one of the southernmost districts of Maharashtra state. The district's courtiers a total area of 7,685 sq. kms. It lies between 16° 0' 0"N to 17° 0' 0" North latitude and 74° 0' 0" to 75° 0'0" East longitude. The length of the district south to north is 160 Kms. and east to west is 60 Kms. The Sahyadri ranges to the west and Warna river to the north, the river Krishna and Belgaum district to the south and east, forms the natural boundaries of the district. The region receives average rainfall 1900 mm. Total population in Kolhapur district is 3876001. Out of the total Kolhapur population for 2011, 31.73% lives in urban regions of district. In total 1230009 people lives in urban area of which males are 631843 & females are

598166. The district is consisting of 12 revenue tehsil's namely Shahuwadi, Panhala, Hatkanangale, Shirol, Karvir, Gaganbavada, Radhanagri, Chandgad, Ajra, Gadhinglaj, Kagal, and Bhudhargad.

Farm Tools-

Implement are broadly divided under four categories on the basis of utilization & economic status of farmers. First man operated implement, second animal operated implement, third power operated implement and the last is tractor operated implement.

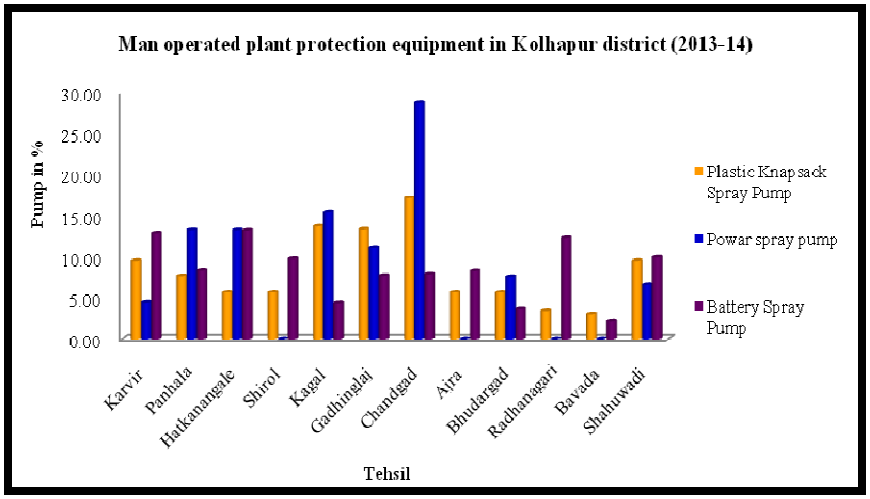
Man Operated Implement-

Man Operated Plant Protection Equipment-

Man operated plant protection equipment in Kolhapur district (2013-14)

Tehsil	Plastic knapsack spray Pump	Powar spray pump	Battery spray pump
Karvir	9.51	4.41	12.83
Panhala	7.60	13.22	8.27
Hatkanangale	5.70	13.22	13.17
Shirol	5.70	0.00	9.75
Kagal	13.69	15.42	4.33
Gadhinglaj	13.31	11.01	7.64
Chandgad	17.11	28.63	7.81
Ajra	5.70	0.00	8.21
Bhudargad	5.70	7.49	3.65
Radhanagari	3.42	0.00	12.31
Gaganbavada	3.04	0.00	2.11
Shahuwadi	9.51	6.61	9.92
Total	100.00	100.00	100.00

Source-Zilla Parishad Kolhapur District,(2013-14)



Maximum plastic knapsack spray pump and power spray pump used in Chandgad. Battery spray pump highly used in Hatkanangale and Karvir. The details distribution of plant protection equipments in Kolhapur district are shown in above table and graph.

Animal operated implement-

Animal operated implements are several e.g. wooden plough and iron plough etc.

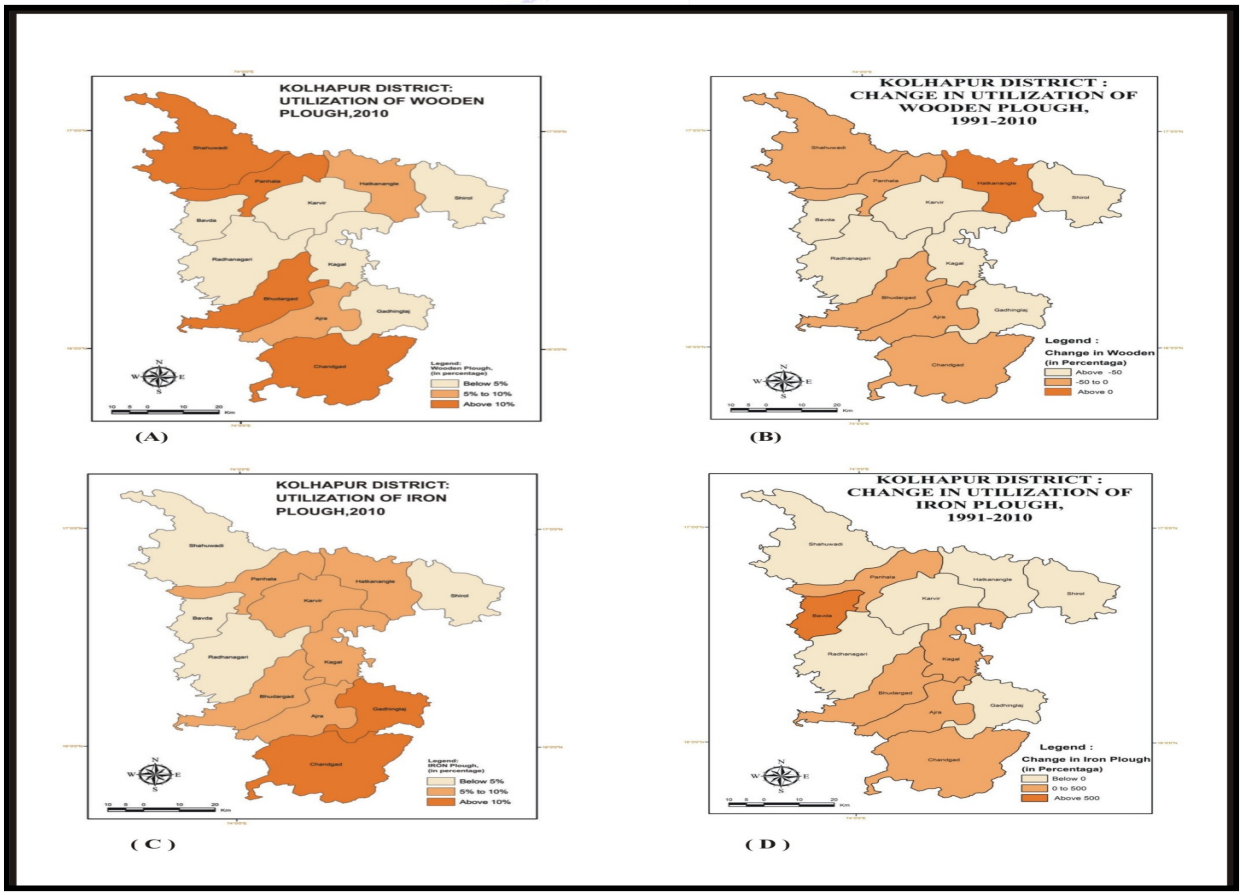
Wooden plough-

Wooden plough is a traditional implement which is widely used by the farmers in the Shahuwadi, Bhudargad, Chandgad and Panhala tehsils, due to its availability and suitability for the poor farmer and is traditional.The use of wooden plough is low in the Karvir, Kagal, Gadhinglaj, Radhanagari, Gaganbavada and Shirol tehsils of the study region.

There is a significant decrease in the number of wooden plough of cultivated land in Kolhapur district from 89514 in the year 1991, to 45007 in the year 2010. Very high i.e. above 0 % of proportion to the cultivated land is significantly noted in the eastern part of the region .i.e. Hatkanangale tehsils. The high declines in proportion are observed in Bhudargad, Panhala, Shahuwadi, Ajra and Chandgad. The very low in Shirol, Kagal, Karvir, Gadhinglaj,Radhanagari and Gaganbavada tehsils of cultivated area. This is due to increase in the adoption of modern implement by the farmers. The increase in wooden plough is noted exceptionally in Hatkanangale tehsil.

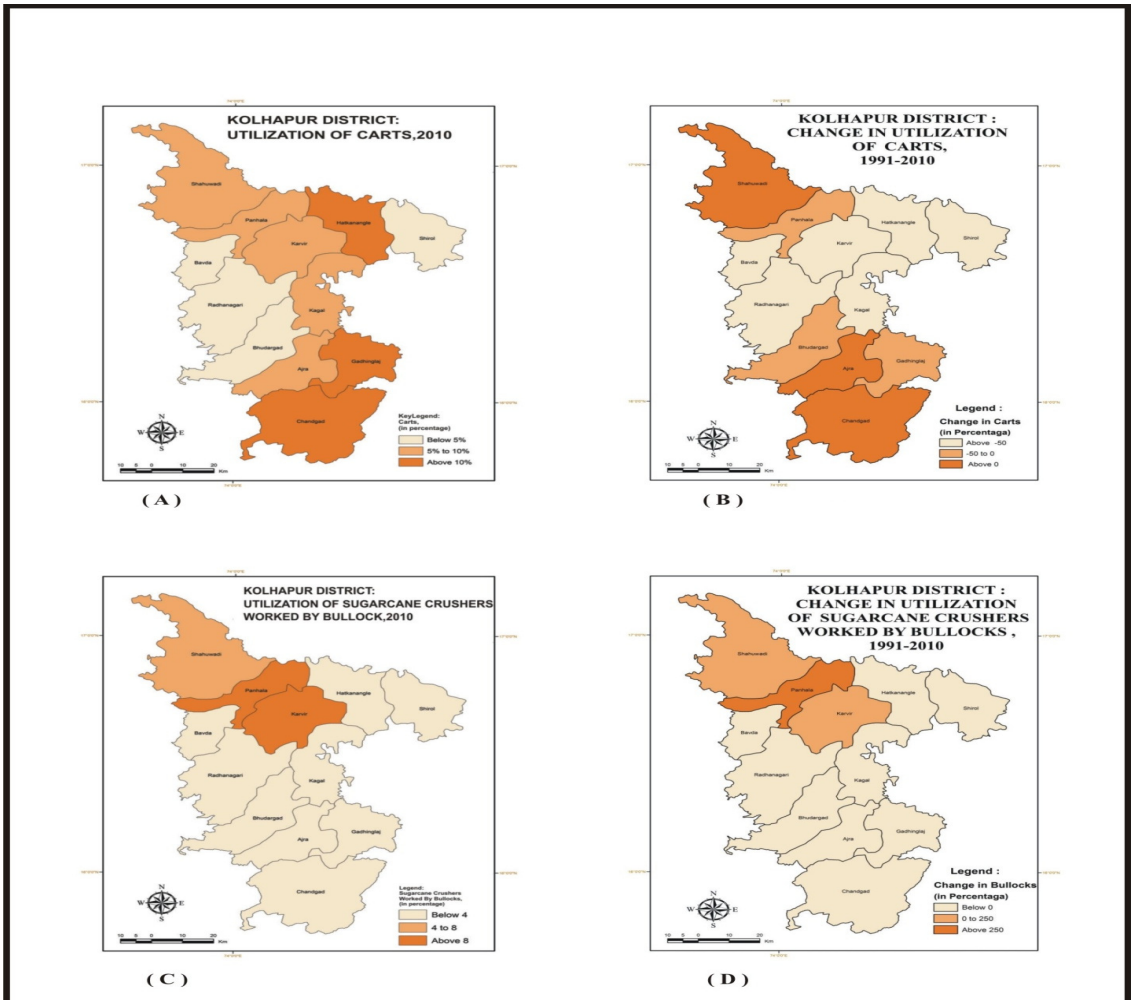
Iron plough-

In 2010 high proportion (Above10%) of iron plough use is recorded in the Chandgad and Gadhinglaj can be attributed to the improved steel made iron plough drawn by bullocks, and hence increasing its durability. The moderate proportion (5 % to 10%) of iron plough use is recorded in Panhala, Karvir, Hatkanangale, Kagal, Bhudargad, and Ajra. Low proportion of iron plough (below 5 %) use is found in Radhanagari,Shahuwadi, Gaganbavada and Shirol tehsils.



The remaining tehsils show average proportion of iron plough use in the region. The

Tehsil	Change	Ploughs		Carts	Sugarcane Crushers		Oil Engines (with pump for irrigation purpose)	Electric pump (for irrigation purpose)	Tractors (used for agricultural purposes only)
		Wooden	Iron		worked by power	worked by bullocks			
Karvir	1991	7474	2282	6459	318	58	1270	946	1163
	2010	2104	1361	1934	137	181	629	2528	1609
	Change	**-71.85**	**-40.36**	**-70.06**	**-56.92**	**212.07**	**-50.47**	**167.23**	**38.35**
Panhala	1991	8694	1439	4497	73	5	839	1932	382
	2010	6576	1847	2579	91	22	778	2235	846
	Change	**-24.36**	**28.35**	**-42.65**	**24.66**	**340.00**	**-7.27**	**15.68**	**121.47**
Hatkanangale	1991	2022	3068	5597	15	6	455	3139	589
	2010	2520	1957	2782	134	0	193	2376	489
	Change	**24.63**	**-36.21**	**-50.29**	**793.33**	**-100.00**	**-57.58**	**-24.31**	**-16.98**
Shirol	1991	1384	4171	5289	2	0	34	4645	740
	2010	648	905	1238	42	1	118	1461	571
	Change	**-53.18**	**-78.30**	**-76.59**	**2000.00**	**0.00**	**247.06**	**-68.55**	**-22.84**
Kagal	1991	6722	1958	5085	2	0	1228	1813	189
	2010	2054	2011	2355	30	0	962	2132	890
	Change	**-69.44**	**2.71**	**-53.69**	**1400.00**	**0.00**	**-21.66**	**17.60**	**370.90**
Gadhinglaj	1991	7598	3988	5134	1	125	859	3613	153
	2010	1922	2960	3176	37	3	517	7239	386
	Change	**-74.70**	**-25.78**	**-38.14**	**3600.00**	**-97.60**	**-39.81**	**100.36**	**152.29**
Chandgad	1991	10416	5796	4146	122	0	2557	1116	101
	2010	6133	6907	5230	158	9	2077	2156	469
	Change	**-41.12**	**19.17**	**26.15**	**29.51**	**0.00**	**-18.77**	**93.19**	**364.36**
Ajra	1991	6411	1188	2059	0	0	707	814	38
	2010	3824	1825	2083	142	0	737	617	84
	Change	**-40.35**	**53.62**	**1.17**	**0.00**	**0.00**	**4.24**	**-24.20**	**121.05**
Bhudargad	1991	10436	724	2028	0	0	279	405	53
	2010	7651	1480	1448	0	1	1025	1144	151
	Change	**-26.69**	**104.42**	**-28.60**	**0.00**	**0.00**	**267.38**	**182.47**	**184.91**
Radhanagari	1991	12481	1627	3013	7	0	607	1226	242
	2010	1546	863	474	207	0	170	162	53
	Change	**-87.61**	**-46.96**	**-84.27**	**2857.14**	**0.00**	**-71.99**	**-86.79**	**-78.10**
Gaganbavada	1991	2936	6	724	11	0	14	281	23
	2010	1157	104	120	0	0	166	357	52
	Change	**-60.59**	**1633.33**	**-83.43**	**-100.00**	**0.00**	**1085.71**	**27.05**	**126.09**
Shahuwadi	1991	12940	1022	1924	84	4	850	1049	126
	2010	8872	398	2418	56	13	690	1091	332
	Change	**-31.44**	**-61.06**	**25.68**	**-33.33**	**225.00**	**-18.82**	**4.00**	**163.49**
Total	1991	89514	27269	68873.6	635	198	9699	20979	3799
	2010	45007	22618	25837	1034	230	8062	23498	5932
	Change	**-49.72**	**-17.06**	**-62.49**	**62.83**	**16.16**	**-16.88**	**12.01**	**56.15**



Carts-

Significant variations in the distribution of carts are discernible in Kolhapur district. There are about 25837 carts in the study area. The distribution of carts varies from tehsil to tehsil. The above table shows that spatio temporal change in Kolhapur district

Sugarcane crusher worked by Bullocks-

Spatial distribution of sugarcane crusher worked by bullock in Karvir Panhala. The distribution of moderate crusher worked by bullock in Shahuwadi. The low distribution of sugarcane crusher worked by bullock in Shirol. Gadhinglaj, Kagal, Bhudargad, Hatkanangale, Radhanagari Ajra ,Chandgad and Gaganbavada. Because low centre. The above table and figure shows that spatio temporal change in Kolhapur district during 1991-2010.

Power operated implement-

Electric pumps:

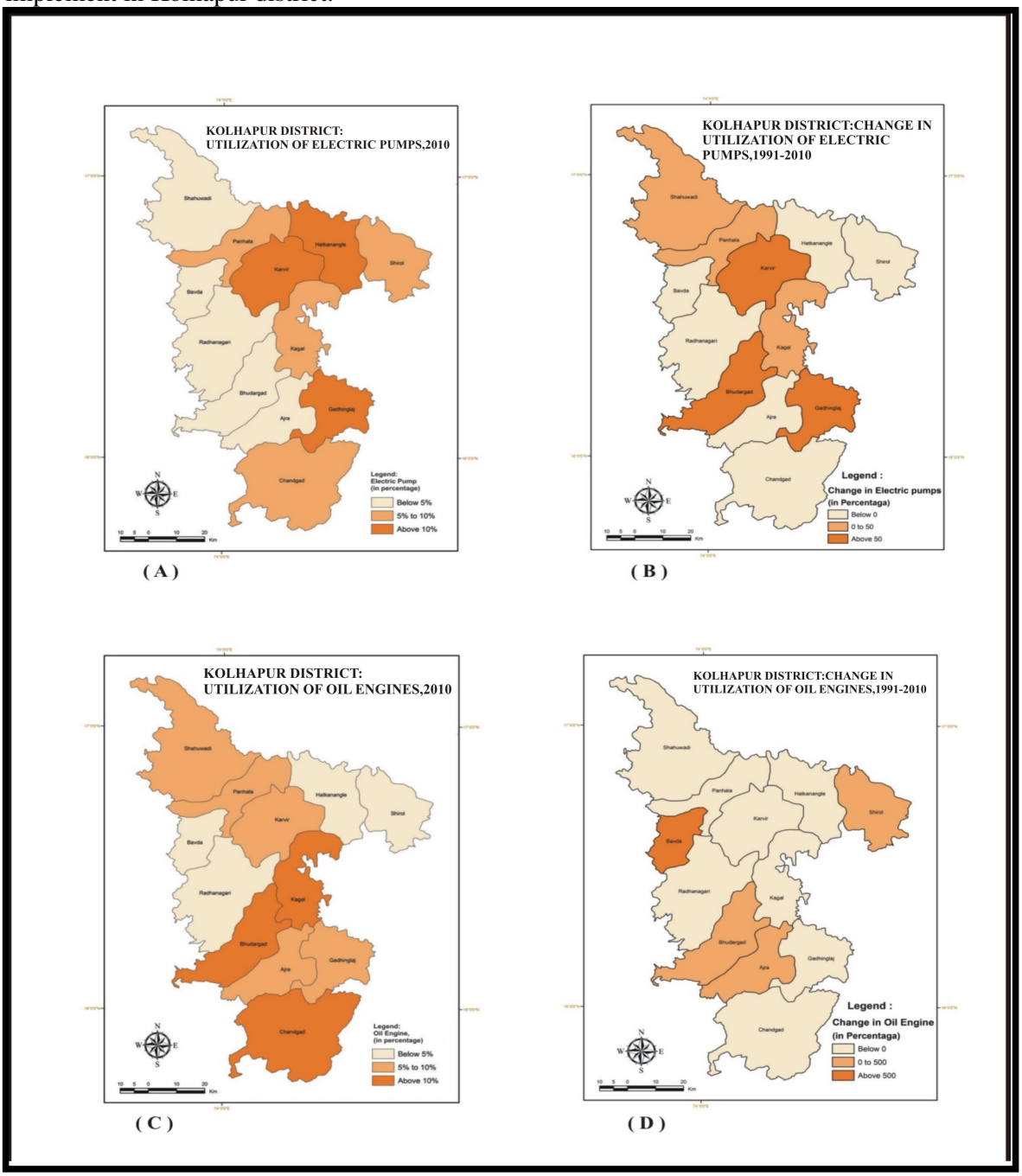
Spatial distribution of electric pump is varied. The high distribution of electric pump (above10 %) in Gadhinglaj, Karvir and Hatkanangale. The moderate distribution of electric pump (5 to 10 %) in Panhala, Chandgad, Kagal and Shirol . The low distribution of electric pump (0 to 5 %) in Bhudargad, Shahuwadi, Ajra, Gaganbavada, and Radhanagri.

Above table shows that the great variation in electric pumps in Kolhapur district.

Oil engines with pumps:

The high spatial distribution of oil engines with pump (above 10 %) in Chandgad, Bhudargad and Kagal. The low spatial distribution of oil engines with pump (0 to 5 %) in Hatkanangale, Radhanagari,Gaganbavada and Shirol because electric pump are widely used.

The great varaition high distribution of oil engines with pump (above 500 %) in Gaganbavada. The moderate distribution of oil engines with pump (0 to 500 %) in Ajra, Shirol and Bhudargad.The below figure shows that spatio temporal change in power operated implement in Kolhapur district.



Sugarcane crusher worked by power:

These sugarcane crushers mainly used to extract liquid or juice from sugarcane. Significant variation in the distribution of sugarcane crusher shows above figure.

Tractor:

Significant variation in the distribution of tractors shows above figure. There is a significant increase in the number of tractor of cultivated land in Kolhapur district from 3799 in the year 1991 to 5932, an increase of about 2133 tractors in 2 decades.

Conclusion-

Agricultural mechanization implies the use of different power sources and improved farm tools, tractors, with a view to decrease the labor of the human beings and enhances the cropping intensity, accuracy and timelines of efficiency of utilization of various crop inputs and reduces the losses at different stages of crop production. Farm mechanization is to enhance the overall production and productivity with the lowest cost of production. The proper utilization of basic inputs like water, seeds and fertilizers will be possible only when proper farm implements are used. Irrigation facility is basic factor and it encourages other important factors like implementation of modern technology in agriculture use of chemical fertilizer, pesticides, HYV seeds etc.

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Spatio-Temporal Analysis in Agricultural Cropping Pattern of Indapur Tahsil, Pune District (Maharashtra)

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Abstract:

Agricultural land use means cultivation of crops during the agricultural year on a certain piece of land. The present study is related to the changing agricultural land use in Indapur Tahsil, Pune district. The Indapur Tahsil is one of the Tahsil in Pune district which consist of 143 villages. Geographically, this area extents from 17° 53´ to 18° 15´north latitudes and 74° 35´ to 75° 8´east longitude. Indapur Tahsil lies in southeast of Pune district with geographical area of 1,569.76 square kilometers.

The Spatio-temporal analysis of ten selected crops has been studied in Indapur tahsil. In study area sugarcane, corn and fodder crops have increased, reason behind it the sugarcane are main commercial crop now day's sugar, Gur factories as well as Dairy farmers purchasing it for the Making a Sugar, Gur, and Animal Fodder. The share of Jowar, Sugarcane and Some extent fodder crops are growing fast because it supported Animal husbandry. But jowar, wheat, bajara, fruits, oilseed and pulses have declined percent in this tahsil during the study period. Sugarcane is first ranking crop occupying 38.89 percent to net sown area. Sugarcane was cultivated on 22.60 percent in 2001 which is increased by 16.29 percent in 2016

Keywords: Land use pattern, cropping pattern, Agricultural land use, Spatio-temporal variation.

Introduction:

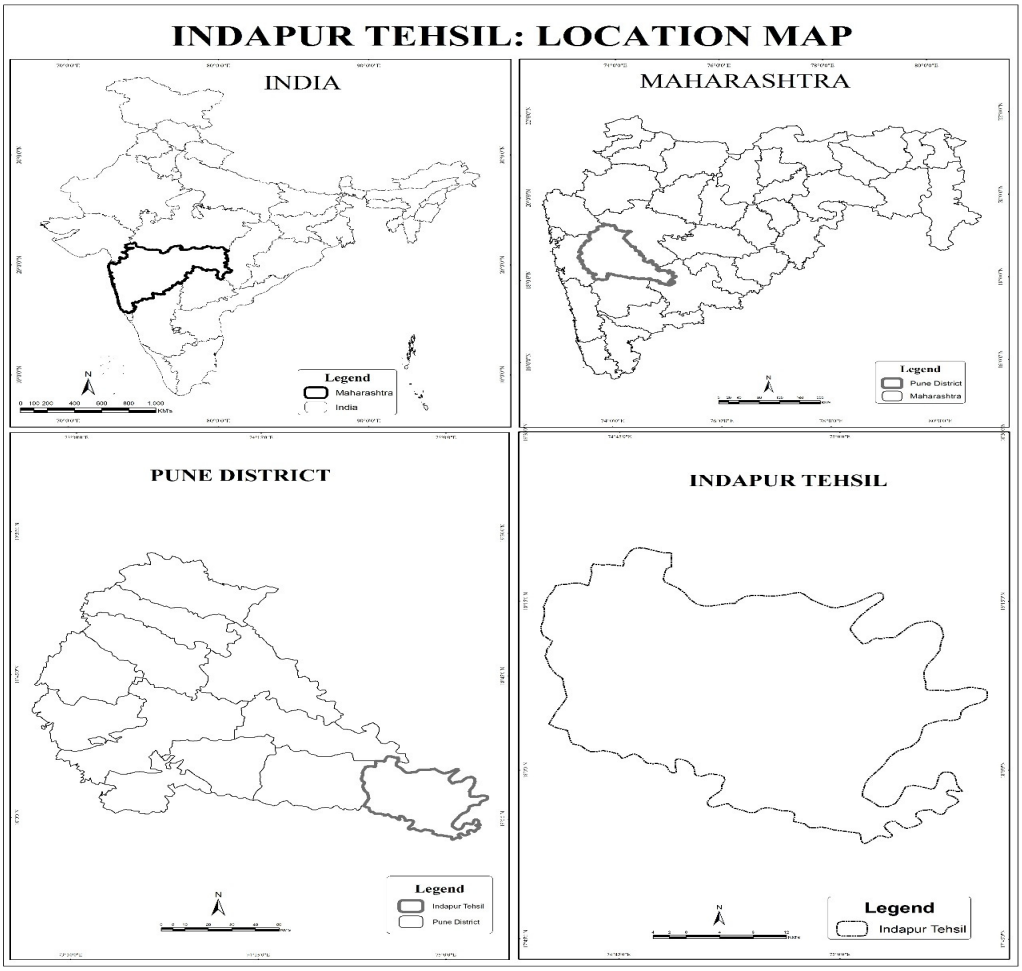
Agriculture is the basic occupation of the people. Agriculture provides food grains to human beings and fodder for animals. There is rapid growth of industry and service sector in modern India. But agriculture is still an important economic activity. The rural economy is still based on agriculture. The present study focuses on spatio-temporal distribution of agricultural crops in Indapur Tahsil.

The spatial distribution and their temporal variations have been studied for the period from 2001-2016. The data regarding crops of 143 villages collected from agriculture office, Indapur. The collected data converted into percentage to net sown area. After that, these crops percentage were arranged into different groups and finally, spatial distribution was studied for ten crops in study area. The study of temporal variation of crops in study region was computed for 16 years (2001-2016).

Study Area:

Indapur Tahsil is selected for the study. The Indapur Tahsil is one of the Tahsil in Pune district including of 143 villages. Geographically, extent of study area is from 17° 53´ to 18° 15´north latitudes and 74° 35´ to 75° 8´east longitudes. The area of Indapur Tahsil is drained by Bhima on north and east sides and the Nira River in south side. The study area lies in southeast of Pune district, it is surrounded by Baramati Tahsil in west side, Daund Tahsil in northwest side, Satara in southwest side and Solapur district belongs to east, south and north side. The geographical area of Indapur is 1,569.76^2 km.

Climate of the study area is semi-arid type. April, May and June are the hottest months. Mean maximum temperature is 40° centigrade. Minimum temperature records in the months of December and January with mean minimum Temperature 12° centigrade. Soil of the area is medium black to deep black. Sugarcane, Jowar, Bajara, Wheat, Fruits, Vegetables etc. crops are cultivated in the study area. According to the 2011 census population of the area is 357,668 among this 185,549 are males and 172,119 are females.



Objectives:

1) To study the agricultural land use in study area
2) To study spatio-temporal changes in Agricultural Cropping Pattern of Indapur Tahsil

Data Sources:

The present study is based on the secondary data. This data is taken from the Agriculture Office, Indapur. The spatial distribution and their temporal variations has been studied for the period from 2001-2016. The data regarding crops have collected for 143 villages from Agriculture Office of the Indapur tahsil. Spatial distribution of ten crops has studied only for one year that is 2015-2016. Spatial distribution of ten crops has studied only for one year that is 2015-2016. Indapur tahsil having a lot of crops but we selected only top ten remarkable crops for study. We applied the simple percentage method for calculating land use and its variation of crops. The results are predicted by using appropriate graphical techniques.

Temporal Variations in Agricultural Land use Pattern:

The cropping pattern in any region cannot remain static. It is a result of rainfall, irrigation, use of high yielding variety seeds, technical knowledge and availability of agricultural inputs viz. capital, fertilizer, pesticides etc. Table No.1 display temporal variations of ten crops in study region from 2001 to 2016. The cropping pattern undergoes changes in response to the changing physical and cultural environment.

Table No.1: Temporal Variations in Agricultural Land use Pattern

Sr. No.	Crops	Years			
		2001	2006	2011	2016
1	Jowar	40.57	30.85	26.62	27.04
2	Wheat	6.98	11.90	8.83	8.08
3	Corn	5.71	7.58	9.44	13.33
4	Bajara	9.67	8.02	5.74	1.67
5	Sugarcane	22.60	25.00	30.94	38.89
6	Pulses	3.24	2.80	1.28	2.20
7	Oil Seed	3.05	3.63	1.46	0.14
8	Fodder Crops	5.24	6.95	4.93	6.64
9	Vegetables	2.63	2.04	1.68	1.68
10	Fruits	0.31	1.23	9.10	0.29

Source: Agriculture Office, Indapur

Note: Area in percent

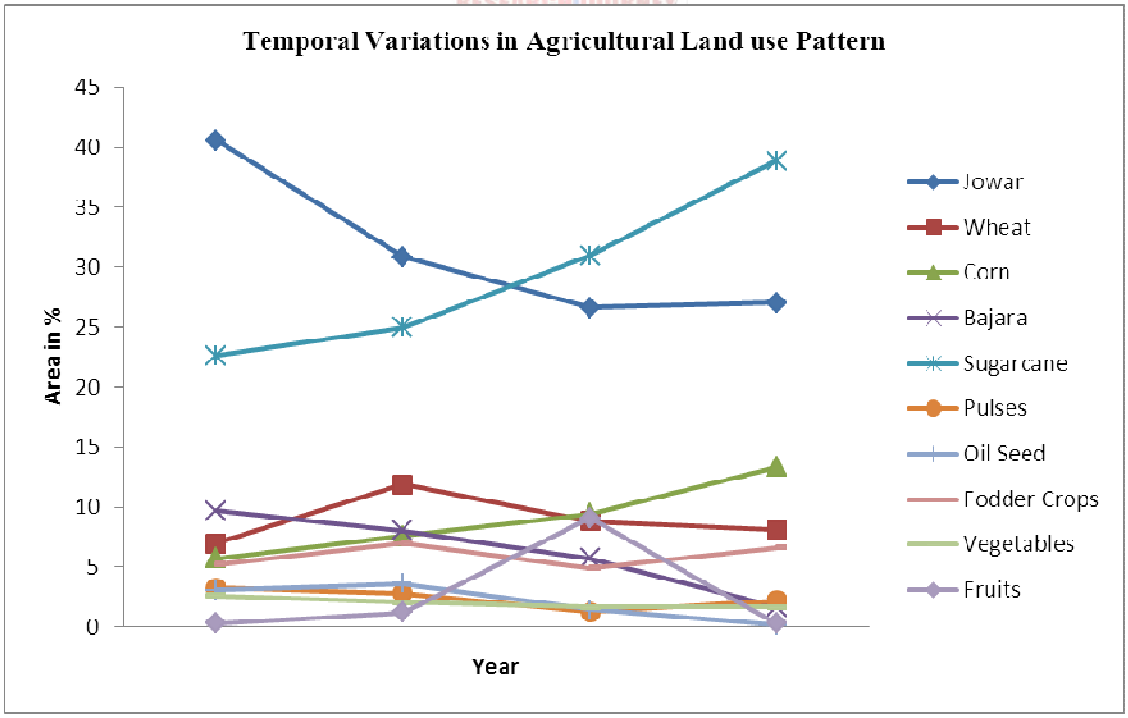


Fig. 1, Temporal Variations in Agricultural Land use Pattern

The total area under jowar in 2000-2001 was 40.57 percent of the net sown area. In 2015-16 jowar accounted for 27.04 percent. The trend of jowar crop during the study period has been steadily declined. Sugarcane is cash crop covers 38.89 percent to net sown area. Due to irrigation facility the area of sugarcane is increasing in study region. Wheat is cultivated in Rabbi Season and it requires four months for its maturity. Wheat occupies 6.98 percent net sown area in study region and it is increased by 4.92 percent in 2006. After that the area under the cultivation of wheat is decreased, it was 8.08 percent in 2016. The sugarcane has shown a steadily increasing trend during the study period. The total increase in sugarcane is 16.29 percent. There is a significant variation in the volume of change in sugarcane. Sugarcane, corn and fodder crops have shown increasing trend during the study period. Increasing irrigation facility is the main cause of this variation. Bajara, oilseeds and pulses are slightly decreasing in Indapur Tahsil.

Spatial Distribution of Agricultural Land use:

The agricultural land use means the cultivation of crops on a certain piece of land during agricultural year. Agricultural land use is thus, the reflection of physical, social, economic and climatic condition in study area.

This study has attempted to assess the spatial distribution of agricultural crops in study area. Jowar, wheat, corn, bajara, oil seeds, sugarcane, fodder crops, pulses, fruits, vegetables these crops are mainly grown in study region.

Table No.2: Agricultural Land use in 2015-16

Sr. No.	Crops	Area in hectares	Area in percent
1	Jowar	22110	27.04
2	Wheat	6611	8.08
3	Corn	10900	13.33
4	Bajara	1362	1.67
5	Sugarcane	31800	38.89
6	Pulses	1804	2.20
7	Oil Seed	115	0.14
8	Fodder Crops	5428	6.64
9	Vegetables	1379	1.68
10	Fruits	240	0.29

Source: Agriculture Office, Indapur

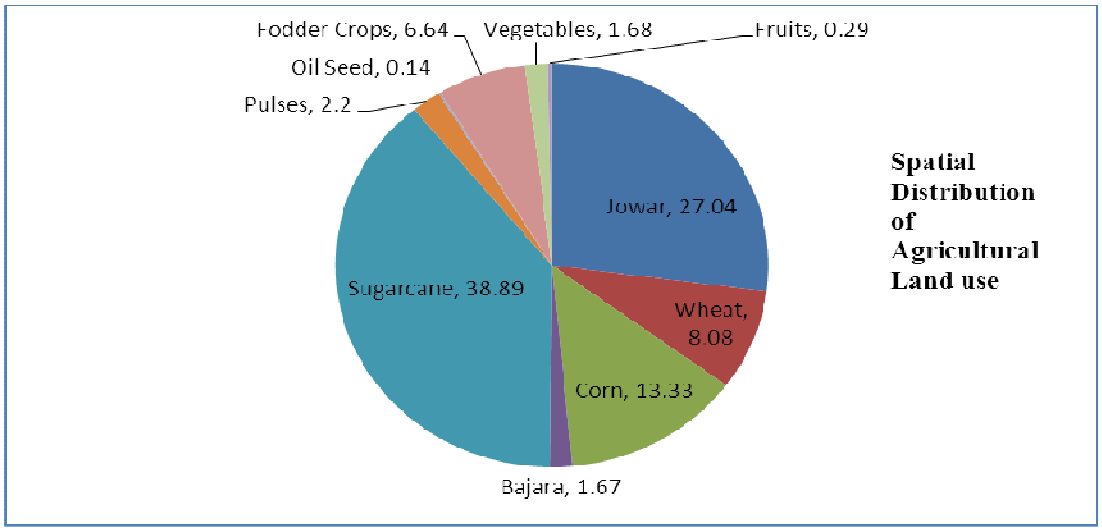


Fig. 2 Spatial Distribution of Agricultural Land use, 2015-16

Sugarcane is first ranking crop. It is a perennial crop, cultivated on the soil which is clay to loam. Phosphorus and Calcium rich soil is suitable for the cultivation of sugarcane. This crop requires temperature between 20^0C to 26^0C. This crop is grown on 31800 hectares in study area. In twenty five villages the area under the sugarcane is more than 50 percent. 30 to 40 percent area of sugarcane is found in twenty two villages which are in isolation and patchy nature. The villages which are in central and west parts in study region have 20 to 30 percent area under the sugarcane.

Jowar is second ranking crop after sugarcane which occupies 27.04 percent area in 2015-16. It is a food crop growing in both Kharip and Rabbi Seasons throughout the study region. More than 50 percent area under Jowar crop is in eleven villages in study area. Twenty villages have 30 to 40 percent area. In thirty five villages, there is an inadequate rainfall and irrigation facility, so the area under the jowar is less than 10 percent.

Though the corn is food crop in some areas, in Indapur it is grown as a cash crop. It occupies 13.33 percent area in Indapur taluka. In Galandwadi No. 2 have highest corn area and lowest is at village Taratgaon. These villages located North and East part of Indapur Tahsil respectively.

After sugarcane, jowar and corn wheat occupies fourth position in the crop pattern. It is main food crop. This cereal crop is cultuvated in Rabbi Season and requires fertile black to deep soil with irrigation facilities. In 2015-16 wheat covers 6611 hectare area in the study region. The highest area under wheat is occupied in north part of study region and the lowest in south part of the study area.

Fodder crops include corn or maize, kadwal and other green grass. The area under the fodder crops is 5428 hectares (6.64 percent) in the study region. These fodder crops are grown with the other crops like jowar, bajara, wheat etc. North and west part of Indapur tahsil is dominating for dairy farming so there found more land under the fodder crops. In seventy villages have area under the fodder crops is less than five percent which are distributed throughout the study region.

Conclusion:

The Spatio-temporal analysis of ten selected crops has been studied in Indapur tahsil. In study area sugarcane, corn and fodder crops have increased, reason behind it the sugarcane are main commercial crop now day's sugar, Gur factories as well as Dairy farmers purchasing it for the Making a Sugar, Gur, and Animal Fodder. The share of Jowar, Sugarcane and Some extent fodder crops are growing fast because it supported Animal husbandry. But jowar, wheat, bajara, fruits, oilseed and pulses have declined percent in this tahsil during the study period. Sugarcane is first ranking crop occupying 38.89 percent to net sown area. Sugarcane was cultivated on 22.60 percent in 2001 which is increased by 16.29 percent in 2016. Corn is grown as a cash crop which covers 13.33 percent area. Area under the crops like bajara, vegetables, oilseed and fruits gradually decreased because the area under the sugarcane, wheat and corn is increasing. Oilseeds cultivated in less area because of larger area under the sugarcane, corn and jowar in the study area. Till 2011 the area under the fruits crops is increased but after that in 2016 it decreased because of increase in the land area under the sugarcane and corn which are the cash crops.

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A Study of Correlation Between Literacy & Sex Ratio in Vita City of Sangli District

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Abstract:

This paper attempts to be analyzing the 'Correlation between Literacy and Sex Ratio in Vita city of Sangli District. Education is generally predictable as a major component of human development. As such, certain minimum level of literacy seems to be essential for a population to break out the vicious of poverty. The relationship between educational achievements and awareness of cleanliness improvement in family health, children and standard of living is well established. Literacy affected on the various qualities of the population such as fertility, mortality, migration and also sex ratio. The knowledge of sex ratio is important for the understanding condition of women in society. A decline or low number of female population in the total population is strongly suggestive of the neglect of girl children, sex selective abortions and traditional attitudes of society. Thus, the analysis of literacy and sex ratio is huge important. According to 2011 census, the total population of Vita city of Sangli District is 48,289, the sex ratio is 956 and the literacy rate is 87.27 %.

Keywords: Education, Population, Literacy, Sex-Ratio,

Introduction:

Literacy is one of the most significant indicators of social development. Literacy is the heart of basic education for all and important for destroying, poverty decrease, mortality, curbing population growth, achieving gender equality and ensuring sustainable development peace and democracy. 'Literacy has been defined as the ability both to read and write with understanding in any language of children.' India is one of the least literate societies in the world. According to the census of 2011, in Maharashtra, the literacy rate was 82.34 per cent. It has impressive growth in literacy rate. In Vita city, the literacy rate was recorded as 87.27 per cent. There are wide disparities from Ward to Ward in literacy rate. The highest literacy was found in ward no.-0015 and the lowest in ward no.-0005 i.e. 84.97 per cent and 66.84 per cent respectively. The sex composition is also significant demographic element for the human development. The sex composition of a population is usually expressed in terms of sex ratio i.e. number of female per thousand males. According to the observation of population Division, all over the world, the male population is more than female population. Sex composition is considered an important indicator of inequality between males and females in a society. In Maharashtra, sex ratio was lowest than the national average, it was recorded sex ratio of 925. In Sangli district has sex ratio is 966 and Vita city has Sex Ratio is 956 which is more than national average and Maharashtra.

But in Vita city also differs from Ward to Ward i.e. Ward No.-0004 was highest sex ratio of 1103 and ward No.-0007 have lowest sex ratio of 903.

Study Area:

Vita is Municipal Council city situated in Khanapur tahsil of Sangli district. The present study deals with the geographical perspectives of the gold refineries and power looms concentration in Vita city of Sangli district. The Vita city is situated in western part of Sangli district. Vita is a town in Maharashtra in Sangli District. It is nicknamed "City of Gold". The First CM of Maharashtra Shree Yashwantraoji Chavan completed his primary education here.The Vita city is extended between 17°16′16″N 74°32′16″E.

The total geographical area covered by Vita city is 55.3 km^2 / 21.4 sq. km with 23 wards; According to Census of 2011 the total population of Vita city is 48,289. This city comes under Sangli Administrative Division. The village of Gardi bounds it to the north, Bhalavani bounds it to the West, Karve to the south, and Renavi to the east. The underline basalt on disintegration and decomposition brought varieties agencies had yielded two kinds of soils viz. medium deep & shallow soils. Average rainfall of the vita city is less than 500 mm. and is always uncertain with bimodal situation. The rains commence in the month of June and dry spell of two to six weeks are observed during July-August. About 40 % rains are received in the month of September. The maximum temperature of the Vita city is recorded as 42°3°C while minimum is 15°5°C.

The Vita city is divided into 23 wards for which elections are held every 5 years. As per the Population Census 2011, there are total 10,328 families residing in the Vita city. The **total population of Vita is 48,289** out of which 24,692 are males and 23,597 are females thus the **Average Sex Ratio of Vita is 956** According to the census of 2011, the literacy rate was 87.27 per cent as it was less than the Sangli district and Maharashtra i.e. 86.24 and 82.34 per cent respectively. In study area was sex ratio of 956.

Objectives:

1. To study the spatial pattern of literacy rate in study area.
2. To examine the spatial pattern of sex ratio in the study area.
3. To analyze the correlation between spatial pattern of literacy and sex ratio in the study area.

Database And Methodology:

The paper is based on secondary data sources. To fulfill these objectives data regarding area of literacy and sex ratio of Vita city is obtained from Vita Municipal Corporation, Vita (2011).The data regarding climate and physiography is collected from Gazetteer of Sangli district. The collected data are processed to analyze the pattern of literacy rate and sex ratio in Vita city. The wards of Vita city are grouped into three categories i.e. high, moderate and low literacy on the basis of simple statistical method. To analyze spatial pattern of sex ratio, the same technique is applied on the basis of these statistical techniques. The Spearman's Rank Difference method is used for analyzes the correlation of literacy and sex ratio. The conclusions are drawn.

Spatial Pattern Of Literacy Rate:

The Vita city as a whole have 87.27 per cent literacy rate during 2011. But ward level literacy rate is various from ward to ward rage from 66.84 per cent to 84.97 per cent. All 23 wards of Vita city are divided into three categories as following

High Literacy Rate:

The tahsils which have literacy above mean plus one standard deviation are included in this category during 2001. High literacy rate was recorded in the wards of 8,9,10,12,13,15 and 18, due to high number of educational institute and high urbanization, good development of transportation and communication facilities and so on.

Table No.1 Vita city: Sex Ratio and Percentage of Literacy Rate, 2011.

S.R. No.	Ward	Literacy Rate	Sex Ratio
1	Ward No.-1	76.77%	925
2	Ward No.-2	79.21%	923
3	Ward No.-3	78.66%	974
4	Ward No.-4	68.85%	1103
5	Ward No.-5	66.84%	976
6	Ward No.-6	79.57%	940
7	Ward No.-7	79.1%	903
8	Ward No.-8	84.41%	954
9	Ward No.-9	80.61%	975
10	Ward No.-10	80.97%	908
11	Ward No.-11	79.44%	960
12	Ward No.-12	82.3%	908
13	Ward No.-13	84.7%	944
14	Ward No.-14	76.09%	920
15	Ward No.-15	84.97%	985
16	Ward No.-16	74.92%	1020
17	Ward No.-17	78.07%	963
18	Ward No.-18	84.7%	950
19	Ward No.-19	83.45%	912
20	Ward No.-20	76.63%	942
21	Ward No.-21	70.15%	969
22	Ward No.-22	70.58%	976
23	Ward No.-23	71.8%	978

Moderate Literacy Rate:

The tahsils which have literacy moderate mean plus minus one standard deviation are included in this category. Moderate literacy rate was recorded in the wards of1, 2,3,6,7,11,14,17 and 20.

Low Literacy Rate:

The tahsils which have literacy low mean minus one standard deviation are included in this category. Low literacy rate was recorded in the wards of 4, 5,16,21,22 and 23.

Spatial Pattern Of Sex Ratio:

The Vita city as a whole has 956 number of females per thousand males population during 2011. But ward level sex ratio is various from ward to ward rage from 903 to 1103. All 23 wards of Vita city are divided into three categories as following

High Sex Ratio:

The wards which have sex ratio above mean plus one standard deviation are included in this category during 2011. Highest sex ratio was recorded in the wards of 4,15 and 16 due to well degree of literacy and high degree of urbanization, good status of women's in society and so on.

Moderate Sex Ratio:

The tahsils which have literacy rate moderate mean plus minus one standard deviation are included in this category. Moderate sex ratio was recorded in the wards of 3, 5, 8, 9, 11, 17, 18, 21,22and 23. While increasing recourse to sex selective abortions degrade it.

Low Sex Ratio:

The wards which have sex ratio low mean minus one standard deviation are included in this category. Lowest sex ratio was found in the wards of 1, 2,6,7,10,12,13,14,19 and 20 i.e. below 945 females per thousands of male population as it was less than the average of Vita city, some of the important reasons as given below. 1. Neglect of the girl child 2.High maternal mortality 3. Sex selective 4. Female infanticide

With small family norms, many young couples do not for a second child happens to be a male. Higher female life expectancy is likely to initiate a new trend and tilt the scale in favor result in sex ratio.

Correlation Between Literacy Rate And Sex Ratio:

The Spearman's Rank Difference method is used for the calculation of the correlation of literacy and sex ratio in Vita city. It observed that there is rather moderate and positive correlation i.e. p=0.33 between the literacy and sex ratio in Vita city of Sangli district.

Conclusion:

There are wide disparities in the literacy rate and sex ratio of Vita city of Sangli district. In Vita city least proportion of literacy rate and sex ratio but correlation between literacy and sex ratio found in moderate degree and positive angle i.e. p=0.33. It means high literacy rate, high sex ratio. It was observed that the high literacy rate, the sex ratio also high e.g. ward no.15.

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An Overview of Agrarian Distress in India

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Abstract: -

India is known as an agricultural country of villages. India's one third population directly and indirectly depends on agricultural sector and agriculture plays significant role in Indian economy. But present scenario shows that the Indian agricultural passing through difficult phase all over country. Due to the environmental and social factors the life of Indian farmers never has been easy. There are several problems had created crises on the Indian agriculture. The gamble of monsoon, crop diseases, low yield, inadequate irrigation, costly agricultural inputs, exploitation by merchants and insufficient and ineffective implementation of government policies are marked about them. The agrarian crises have been changing their nature with changing policies, environmental and social condition. Therefore this paper focused the distress of Indian agriculture to marked and an attempted to debating on tragedy of Indian agriculture. To resolve these issue there are necessities of agricultural transformation through policy maker in India.

Key Words: agricultural distress, tragedy, agrarian crises, climate change.

Introduction:-

Today, Indian economy known as developing economy and more depend on the agricultural sector. Therefore, we usually say agriculture is back bone of Indian economy. India having second largest population in the world and majority of population lived in villages all over the country. Agriculture is prime sector to supply sufficient food and employment of Indian people. Agriculture sector supplied not only food for increasing population but also raw material for the agro based industries. But the growths of industries are more than double than the agriculture sector. Today the agricultural sector provides 62 % direct and indirect employment and the 38 % by industrial sector. It is clearly shows that the rate of supply of employment by agriculture sector is more than double than the industrial sector. But day by day the role of agriculture sector in national income marked decreasing trend, due to the agricultural crises in India. There is another factor indicates the tragedy of agriculture. That is, day by day cost of agricultural production increase but price of agriculture out puts not increased. Besides these, there are several problems had created crises on the Indian agriculture. The gamble of monsoon, crop diseases, low yield, inadequate irrigation, costly agricultural inputs, exploitation by merchants and insufficient and ineffective implementation of government policies are marked about them. The agrarian crises have been changing their nature with changing policies, environmental and social condition. With the increasing the small families the size of land holding decreases. India is having out of total 82 % of small and marginal land holding farmers. All above discussion shows that the Indian agricultural passing through difficult phase all over country.

Objective:-

The present study identify to the valuable importance of Indian agriculture and its distress as a tragedy of farmers.

Data Base and Methodology:-

The present study is based secondary data and observation method. The Secondary data obtained from report of national agriculture department, various journals and different websites

Nature of Agricultural Distress:-

The term Agricultural Distress refers to the larger issues of the agitation of farmers turn into burden suicides of farmers. Today Indian agricultural has passing through difficult phase all over country. The farmers are anxiety from the failure to successfully cultivate land which is distress to farmers. This has resulted to act of suicide in some cases. Today the policy maker neglect the seriousness about agricultural investment and decline in agricultural investment resulted in agrarian distress. The agricultural sector has witnessed declined in investment between years 2003-04 to 2011-12. It has recorded 2.4 % per year. The agricultural distress turns into the suicides of farmers. This had marked in the drought prone area and most agricultural productive area also. The poor earning signaled agriculture business is very risky to the farmers. All these trends indicates that agricultural distress adversely effects on the not only farmers but also on the food supply, food prices, health and national economy also. This agricultural distress had covering majority of the people and the country as a whole. All over discussion clearly shows that the agriculture sector is under stress.

Historical Background of Agricultural Distress:-

The Indian farmers historically largely affected by agricultural distress. Historically the process of agrarian distress is known as Jamindari and Rayatwari systems. In the empire of Mughals, Nijams and many other local Sardar and Jamindars pressured to collect shetsara (tax) from agricultural sector. These entire collectors worked as a capitalist to agricultural sector in India. At that time Indian agricultural sector suffering cashless economy. Then the British rule reaching acute crises on agricultural economy. In the British rule Indian inhabitants burdened by high taxes known as Lagan. Some time inhabitants unable to pay tax due to losses by a prolonged drought. Indian agricultural witnessed the Bhoodan movement. The initial objective of this movement was to secure voluntary donations of land for the landless. This movement is putting sufficient pressure on the landlords. But this movement marked number of questions to distribution of land to landless. The Chipko movement was forest conservation movement resulted sufficient amount of distress. After independence Indian sector witnessed the landlords and land agents can deal with agricultural sector a number of ways, resulted distress on the agricultural sector. Today the cashless economy of agricultural sector busted and reflected into the lot of agricultural crisis in India.

Causes of Agricultural Distress :-

Today Indian agricultural sector has to suffering serious problems. The decreasing in rate of agricultural growth witnessed increasing unemployment as well as insecurity of food grain. The present agrarian distress attributed by various reasons. This has resulted the farmers are committing suicide due to the capital needed farming turn into the low production. The causes of agrarian distress are discussed by following ways.

Increasing Expenditure of Farming:-

Farmers have depended on the production of farm by all the expenses. For the marriage, education of children and all other daily expenses, farmers are more pressured on his farms. Farmers are suffering more problems, due to the increasing prices of everything in the market.

Import of Agricultural Products:-

The year 1991 witnessed economic reforms in India. Indian Govt. started new policies of Globalization, Liberalization and Privatization. These policies had creating import and export agreement with the World Trade Organization. This has resulted to import of food, food grain, fruits and other agricultural products in the Indian markets. Due to the drastic reduction in the prices in the market farmers have distressed.

Increasing Farm Debt:-

The nature of land use turns into the food grain to cash crops. Modern agricultural methods require sufficient technology, irrigation, seeds, and pesticides etc. All these require higher capital intensive investments. The sufficient difference between production cost and market price are contributing significantly to farm debt.

The High Cost of Production:-

The Indian farmers face combination of high cost production. The higher cost laboures and higher input prices, low market prices and non availability of easy credit contributed to debt burden on the farmers.

Private Debt Burden:-

The personal and social needs like marriage and education of children compounded to take debt by private money lenders. This crises becomes acute, when farmers exhausting their credit with the banks. The private money lenders charge usurious rates of up to 25 % per month.

Reduction in Government Investment and Subsidy:-

It has been marked that the government not attention towards agricultural sector. The lower investment in this sector indicates reduction in manner. Near about 75 % Indian farmers are poor and government can not supply enough subsidies to the farmers. This has resulted to distress of farmers.

Small Size Farmers:-

The size of farms is comparatively small in all over India. Therefore the modern equipment's and technology can not apply by farmers to increase their agricultural production.

Low Quality of Agricultural Inputs:-

The problem of low quality agricultural inputs increasing volume of drawbacks farmers' strategy. The low quality and duplicate seeds, fertilizers and pesticides get less benefit from this sector. After doing hard work farmers face the loss and turn into the loan trap.

Insufficient Minimum Prices:-

The government supply minimum support prices of some crops. And other hand lot of crops is remaining this list. However the farmers do not get sufficient amount of income in his production. Therefore have loss their capacity of hard work in the proper way.

Debt Policy of The Banks:-

Modern cash crops required highly cash requirement and most of farmers are poor in nature. The banking policies are not ready to provide loans to the small and poor farmers. This had resulted to lack of capital.

Mentality Consumers and Unprofitable Prices:-

The free economic policy has increased competition in agricultural products. Today rich people are not ready to pay fair price of agricultural products. Due to more alternative choice are given to consumers by import policy. Some time due to the consumer's demand farmers have sell his products at lowest prices and farmers have put great loss. Finally there is no fixed price and do not proper income from agriculture sector.

Shortage of Labours:-

The shortage of labour is important cause to agricultural distress in India. The industrial sector provides better wages and status as compare to the agriculture sector. The policies are provides by government to industry, generated new opportunities to labour sector. This had resulted laboures turn his attention towards industrial sector. Hence, due to the shortage of labour agriculture is becoming the occupation of woman.

Physical Factors:-

Indian agriculture is gamble of monsoon. Due to the floods, droughts, crop diseases and climatic changes agricultural have becoming failure to security of proper income. These are made more distress on the agricultural sector.

Farmers Suicide:-

The agricultural crises reflected in suicide of farmers. The suicide of farmers related to the lower income, higher production cost, debt, less profit, adverse government policy, lack of subsidy and lack of infrastructure requires to the agriculture. Such factors burdened on the farmers turn his attention to suicide. The statistics shows that near about 25000 farmers committed suicide every year. There are certain states in list of suicide trap affected. But Maharashtra, Andhra Pradesh, Karnataka, Madhya Pradesh and Chhattisgarh are marked more suicide affected states in India. The following table clearly shows that the farmers of Maharashtra trapped in badly suicide case.

Table No. 1

Farmers Suicide in Maharashtra (2009-2018)

Sr. No.	Years	No. of Farmers
1	2009	1605
2	2010	1741
3	2011	1518
4	2012	1473
5	2013	1296
6	2014	1981
7	2015	3263
8	2016	3063
9	2017	2971
10	2018	2761

Source: Record of government of Maharashtra

Farmers Suicide in Maharashtra (2009-2018)

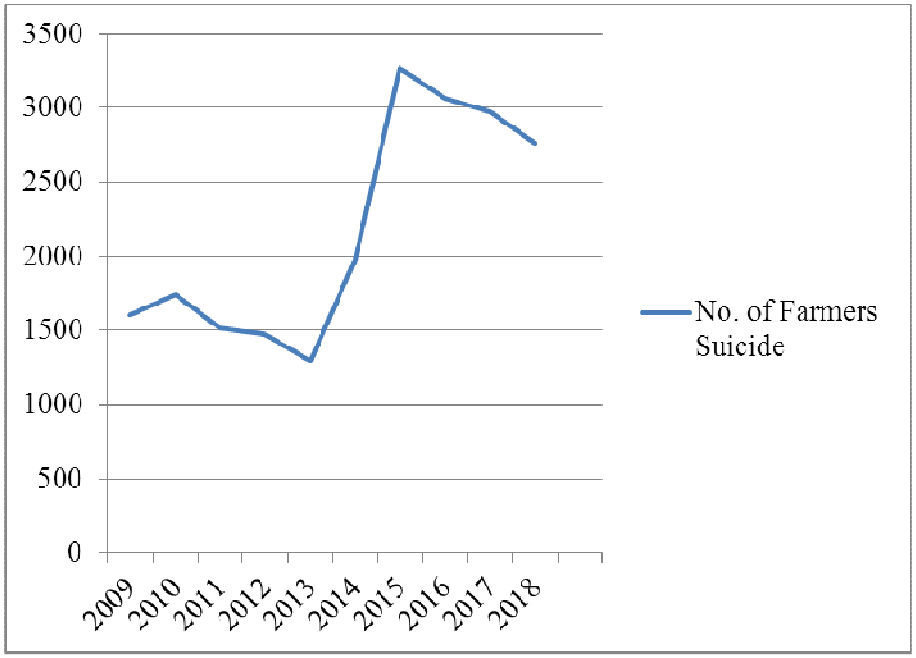


Fig. No. 1

The Table No. 1 and Fig No. 1 clearly show that the farmers are trapped in suicide.

Recommendations to Reduce of Agricultural Distress:-

There is variation in number of farmer's suicide in different states in India. To mitigate the present crises the following recommendations are suggested.

1) To increasing income of farmer's government improve technology at grass root level. This will requires several things like as agricultural diversification, developing market centers without middleman and developing in the minimum support prices.
2) Today agricultural sector becoming an alternative occupation. There are need to generate great opportunities for youth population with the help of agro-processing, self employment groups and agro tourism centers.
3) The government should apply sufficient subsidy to reduce risk in agricultural sector.
4) To reduce the leakage government create action plan for effective implementation of insurance and minimum support prices.
5) The government should contribute to the efforts in developing agricultural infrastructure like as markets, agro-processing units, cold storage units and seed banks with the help of private sector.
6) There in necessity to improve quality of rural life and purchasing power. The government should provide basic amenities like as sanitation, drinking water, health centers and schools for better improvement of rural life.
7) The banking sector should supply debt at low interest rates and the easy to credit process.
8) There should be a proper system to provide adequate irrigation and water scarcity.

9) The government motivate to the farmers from inorganic farming to organic farming.
10) The government should increase annually agricultural budget.

Conclusion:-

Today Indian agriculture has suffering difficult phase and this sector requires huge support and investment. Due to the distress of agricultural sector farmers has trapped in the badly suicide case. Therefore, there are necessities to taken significant steps to motivate farmers especially youth. By using education of agriculture we grow status of farmers. To achieve the goal there are need to develop agricultural sector more attractive. Government help them in finding their passion the suicide will not help them in the next economic crisis and we don't know when the next crisis will hit the nation.

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An Analysis of Development of Floriculture

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Abstract:

Floriculture is a fast emerging venture in the world especially as a potential of foreign exchange reserve for developing countries. Many flowers and ornamental plants are being grown for domestic use as well as for export market and it would be provide more returns as compared to other horticulture crop. Gestation period of flower crop is very less as compared to other crops. In recent days floriculture refers to the production of high value cutflowers such as Rose, Gladiolus, Carnation, Orchids, Tuberose, Antherium, Lilium, Gerbera etc. The mostly preferred cut flowers in the international market are Roses, Tulip, Chrysanthemum, Gerbera, Orchids and Gypsophilla. Area and production of flowers under both green house and open field cultivation observed increasing trends in India. The Government of India has identified floriculture as high export potential. Due to favorable climatic condition, India can supply fresh flowers. Government of India gives incentives to floriculture. Thus, this business can grow rapidly

Key words: Flowers, Development, Roduction

Introduction:

Consumption and demand of flowers is raising world over. There are 140 countries (Bhattacharji) growing flowers. However, European countries have developed their flora business very early but they could not produce enough quantity. However, new production centres have been developing in Asian countries. Even though, Latin America and African countries have increasing their production of flowers. Recently India and other Asian countries have emerged as development centres of floriculture. The present research paper has been considered analytical study regarding development of floriculture in India.

Objectives of the research paper

1. To know the world scenario of floriculture.
2. To analyze the development of floriculture in India.

Data collection:

To accomplish the objectives of the research paper, data was collected from Government reports, reference books, journals and e-sources as secondary data

World Scenario of Floriculture

There has been a rapid growth in demand and consumption of floriculture products in recent decades. Cultivation and consumption of flowers have been part of tradition in world over. It indicates that Netherlands, Italy, Germany and Japan have strong tradition of growing and consuming flowers. The expansions in area and production of flowers in non-traditional regions have been one of the noticeable features. Recently, new production centres are developing in Latin America, Africa and Asia to meet the increasing demand of importing countries and to expand their domestic market. Columbia, Costa Rica Chile, Kenya, Rhodesia, Morocco, South Africa, Israel, India, China and Shri Lanka these are the new floriculture centres. The floriculture

market has concentrated in Western Europe, North America and Japan. Western Europe accounts for half of the world's cut flower production and consumption of the product. Flower council of Holland has projected a European consumption of cut flowers to the tune of US $ 16.6 billion in 2008. The new markets emerging in Europe are Poland, Hungary, Slovakia and Ireland. The mostly preferred cut flowers in the international market are roses, tulip, chrysanthemum, gerbera, orchids and gypsophilla. The world statistic of floriculture is presented in Table 1.1

Table 1.1Major flower-producing countries

Sr.No.	Name of the Country	Share of flower production
1	Netherlands	33%
2	Japan	24%
3	U.S.A.	12%
4	Italy	11%
5	Thailand	10%
6	Others	10%

(Source: APEDA 2012-13)

Table 1.2 Country-wise area under green house flowers

Sr.No.	Name of the Country	Area (ha)
1	Netherlands	5556
2	U.S.A.	4532
3	Italy	4402
4	Germany	2765
5	Spain	2369
6	France	1747
7	U.K.	999
8	Belgium	542
9	Denmark	330

(Source: APEDA 2012-13)

Tale 1.3 Major cut flower exporting countries

Sr.No.	Name of the Country	Share of world Export
1	Netherlands	59%
2	Columbia	10%
3	Italy	6%
4	Israel	4%
5	Spain	2%
6	Kenya	1%
7	Others	18%

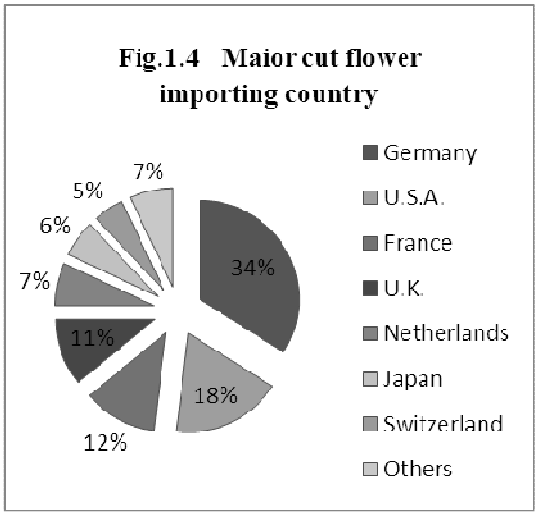
(Source: APEDA 2012-13)

1.4 Major cut flower-importing countries

Sr.No.	Name of the Country	Share of world Import
1	Germany	34%
2	U.S.A.	18%
3	France	12%
4	U.K.	11%

5	Netherlands	7%
6	Japan	6%
7	Switzerland	5%
8	Others	7%

(Source: APEDA 2012-13)



It is evident from the above Tables (1.1, 1.2,1.3,1.4.) that Netherlands and Japan both are leading flower producing countries with 57 per cent. As far as concern to holding of area under green house floriculture, it concentrates in Netherlands, U.S.A, Italy, Germany and Spain. Netherlands has the dominating contributor as area and production, export and import. Especially, Netherlands has obtained command position in export.

It is need to explain that the other exporters, those are Ecuador, Zimbabwe, Thailand, Belgium, France, Germany, Mexico, Costa-Rica, New Zealand, U.S.A., Turkey, Canada, Australia, South Africa, Zambia, Singapore, India, etc.

Indian Scenario of Floriculture

Area and production of flowers under both green house and open field cultivation observed increasing trends in India. It is interesting to look at the figures of area and production in India over the period of time. Details of the period 1997-98 to 2006-2007 is presented in Table 1.5

Table 1.5 Area and production of flowers in India

Sr.No.	Year	Area('000'ha)	Production	
			Loose Flowers (000, M.T.)	Cut Flowers (Million Nos.)
1	1997 98	74 (100)	419 (100)	622(100)
2	2001-02	106(43)	735(43)	2565(76)
3	2005-06	126(70)	694(40)	2762(77)
4	2011-12	144(94)	880(52)	371(83)

(Figures in bracket indicate percentage to respective year to base year
(All figures are rounded)
(Electronic Source: www nhb.gov.in, (2012-13)
Indian Horticulture database, Ministry of Agriculture Government of India, Gurgaon)

It shows in Table 1.5 that the area under cultivation of flowers, continuously increased. It increased rapidly from year 2000-2001, area under cultivation of flowers increased by 42 per cent in the year 2001-2002. The production of loose and cut flowers showed increasing trends over a period of time. However, as compare to loose flower, it shows that, cut flower production increasing rapidly as compare to base year (1997-98), the production of loose and cut flowers increased by 40 and 77 per cent respectively in the year 2005/06.

Export of Floriculture

The Government of India has identified floriculture as high export potential. It was proposed that export of floriculture should be increased Rs.100 Crore per annum in eighth plan period. For this purpose, National Commission on Agriculture set a target to bring five lakh hectares of land should be under floriculture up to 2000 A.D. due to planning with target and facilities given by supporting agencies, export of floriculture has been increasing year by year. At the beginning of current decade, India's flower export to world market was of about $ 50 billion crore per annum which less than 0.1 per cent, it was definitely negligible.

World floriculture trade in 1995 was US $6946161 thousands. Recently the global market for cut flowers is growing at the rate of 15 per cent per annum. India's growth rate was 13 per cent in year 2005-06.

Table1.6 Export of floriculture from India

Sr.No.	Country	2013-14	
		Qty(Mt)	Value(Ts-Lakh)
1	Usa	5178.70	8459.38
2	Netherland	1983.51	6615.28
3	Germany	2841.16	5928.94
4	Uk	2583.87	5512.57
5	U-Arab	1026.07	1701.07
6	Japan	727.07	1621.35
7	Canada	567.78	1365.31
8	Italy	682.75	1332.93
9	Australia	270.35	996.34
10	China P Rp	515.43	951.67
	Total	16356.67	34484.84

(SOURCE: DGCIS Annual Report)

Table 1.6 shows that the export of floriculture product has been raising tremendously. The export of flowers from India in 2013-14 fetched a foreign exchange of Rs.34484 lakhs, If we observed carefully, it indicates that, major imported country is USA

Conclusion

Asian countries are involved in cultivation of floriculture crops recently. New production centre's Colombia, Israel, Thailand, Kenya and India, which specialize in the export of cut flower, has emerged. In the later 1991 and early 2001 Zimbabwe, Morocco, and Ecuador, Costa Rica, Malaysia and India have emerged as significant producers and exporters of cut flowers.

Presently India's share in global floriculture is 0.61 percent. West Bengal is the topper in India in terms of area, and Tamil Nadu is largest loose flower producer and Karnataka is largest cut flower producer India is comparatively well place with regard to floriculture business

because being a large tropical country and able to produce variety of flowers all round the year recently. Due to favorable climatic condition, India can supply fresh flowers. Government of India gives incentives to floriculture. Thus, this business can grow rapidly. Pune, Bangalore, Gurgaon, Hyderabad and other major metro cities are the major floriculture centres today and everyday new floriculture ventures are being set-up.

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Spatio-Temporal Analysis of Land Holdings in Osmanabad District (Maharashtra)

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Abstract:

In agricultural economies like India, land is the most significant asset and also the basic factor of agricultural production. Agriculture has been a way of life for the vast majority of the rural masses in India and who cultivates land is as important as who owns it. Land has gained the primary importance in the Indian agriculture not only because it is an important factor of production but also it is the most important productive asset for the rural people. Land is also closely associated with power and prestige in the agrarian society. Distribution of operational holdings and area operated by 5 major size groups in 8 tahshils in Osmanabad district, for the period of 2001 – 2011. table 3 deals with the changes in the number of holdings. Changes in the area of holding is analyzed in table 5.

Introduction:

As India is often characterized as an agrarian economy. Land being the primary requirement draws special attention among the different variables in the agricultural production. The production and productivity in the agricultural sector depend to some extent on the pattern of land distribution. The experience of the last five decades in India suggests that for effective growth of agricultural production, the composition of growth is as important as the rate of growth. Agriculture has been a way of life for the vast majority of the rural masses in India and who cultivates land is as important as who owns it. Therefore, as part of analysis of agrarian structure we discuss the distribution of operational holdings. Land of different sizes and shapes are held or owned by the people under different types of land tenure which leads to the emergence of a particular landholding structure in a region (Das, 1995). The term 'landholding' simply means the total of all land held by an owner. The all -India Report on Agricultural census (1975) recognized five classes of holding: marginal (less than 1 ha), small (1 - 2 ha), semi-medium (2-4 ha), medium (4 - 10 ha) and large (10 ha and above). Structure of the landholdings is the indicator of the nature and standard of development of an area with its different natural attributes and farming system (Morgan and Munton, 1971). Various socio-economic and cultural constraints accompanied with many social taboos govern the magnitudes and extent of landholding structure (Majid Husain, 1979).

Key words: Landholdings, Marginal

Study Region:

The district of Osmanabad is the southern most districts in Aurangabad division of Maharashtra State. It is situated between 17°37'N latitude to 18°42' N latitudes and 75°17' E longitude to 76°47' E longitudes. The district has an area of 7484 Km^2. As far as area is

concerned the district ranks 24th in the state of Maharashtra. Its East-West extension is 280 Km. and north-south extension is only 240 Kilometers. It is bounded by Solapur district to south-west, on the north-west Ahmednagar district, on the north by Beed district, on north-east and east by Latur district and south by Bidar and Gulbarga district of Karnataka State.

According to the 2011 census, there were 735 habited villages in the district. The district has 08 towns administered by Municipal Council. For administrative purpose the district is divided into eight administrative units called tahasil. The drainage of the study area is of the ordinary dendritic pattern because rivers and streams have developed a branch like system. Balaghat is a range an offshoot of sahyadri and forms a major water divider between Krishna and Godawari River in peninsular India.

Fig. 1. Location of Study Region

Objective:

The main objective of the present paper is to analysis the tashilwise change in the agrarian structure in Omanabad district epically land holing.

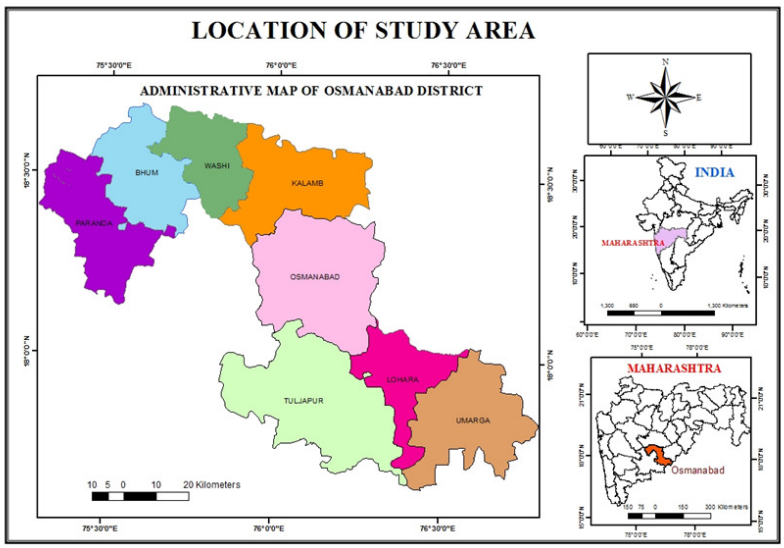
Database and Methodology:

Combinations of simple statistical and cartographical techniques are used to achieve specific objectives, using tabulated data from the Agriculture Census of 2001 and 2011 by the Ministry of Agriculture, Government of India.

Discussion and Result:

The distribution of operational holding has close link principally with the distribution and density of population. The thickly populated area generally possess relatively large number if holdings.

Table No. 1 Number of Holdings in Osmanabad District, 2001



Sr. No.	Name Of The Tahshil	MARGINAL	SMALL	SEMI MEDIUM	MEDIUM	LARGE	ALL CLASSES
1	TULJAPUR	10230 (20.94)	16234 (33.23)	13297 (27.22)	7878 (16.13)	1211 (2.48)	48850 (16.76)

2	UMERGA	9013 (21.83)	16830 (40.76)	10359 (25.09)	4711 (11.41)	374 (0.91)	41287 (14.16)
3	OSMANABAD	13724 (26.87)	18076 (34.60)	13482 (25.80)	6357 (12.17)	609 (1.17)	52248 (17.92)
4	WASHI	6048 (27.97)	6749 (31.22)	5590 (25.85)	2872 (13.28)	362 (1.67)	21621 (7.42)
5	PARANDA	10611 (28.27)	12740 (33.94)	10275 (27.37)	3659 (9.75)	254 (0.68)	37539 (12.88)
6	LOHARA	3757 (19.55)	6908 (35.95)	5510 (28.67)	2807 (14.61)	235 (1.22)	19217 (6.59)
7	KALAM	11617 (29.90)	13015 (33.50)	9663 (24.87)	4300 (11.07)	259 (0.67)	38854 (13.33)
8	BHOOM	9185 (78.28)	9414 (29.50)	8362 (26.20)	4520 (14.16)	436 (1.37)	31917 (10.95)
District		**74185 (25.45)**	**99966 (34.29)**	**76538 (26.25)**	**37104 (12.73)**	**3740 (1.28)**	**291533**

Source: Agricultural Census, India 2001

(Figures in t he brackets indicate percentage to total)

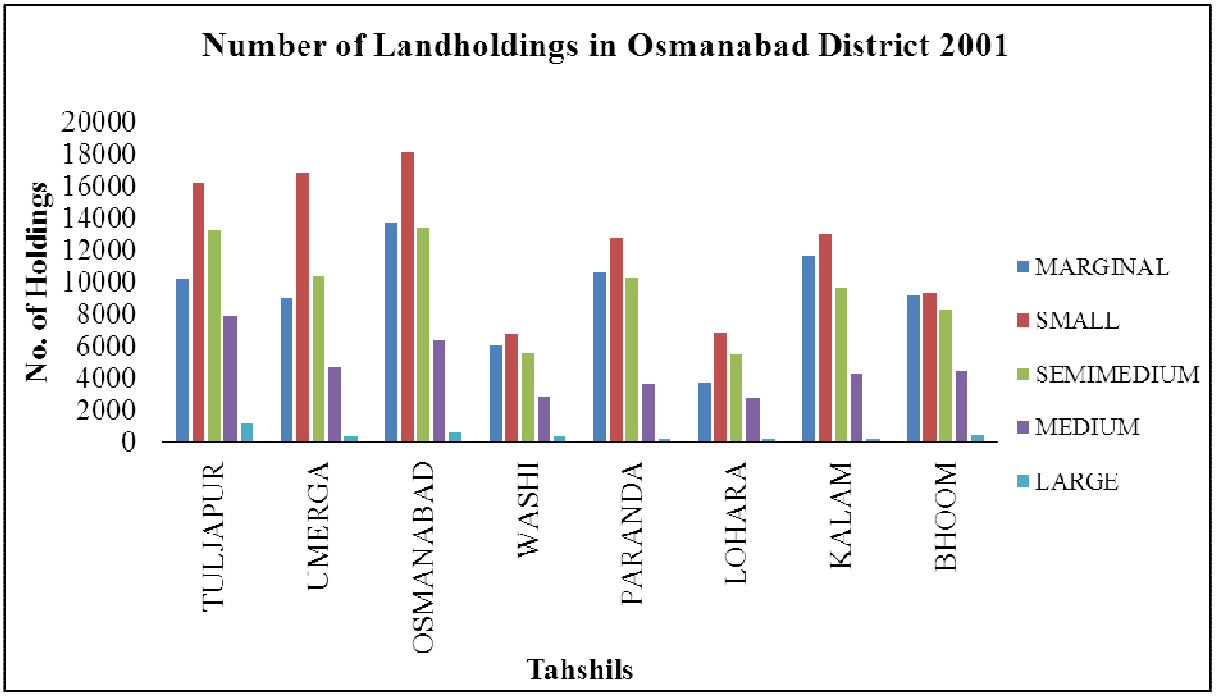


Fig. 1 No. of landholdings in Osmanabad District, 2001

Table No. 2 Number of Holdings in Osmanabad District, 2011

Sr. No.	Name of the Tahshil	Marginal	Small	Semi medium	Medium	Large	All Classes
1	TULJAPUR	15298 (25.23)	22031 (36.34)	15169 (25.02)	7316 (12.07)	810 (1.34)	60624 (17.00)
2	UMERGA	12690 (27.14)	19178 (41.01)	10544 (22.55)	4023 (8.60)	330 (0.71)	46765 (13.11)
3	OSMANABAD	20476	23809	13327	5415	443	63470

		(32.26)	(37.51)	(21.00)	(8.53)	(0.70)	(17.80)
4	WASHI	9763 (35.11)	8850 (31.83)	6128 (22.04)	2800 (10.07)	266 (0.96)	27807 (7.80)
5	PARANDA	16445 (35.78)	15971 (34.75)	10547 (22.95)	2808 (6.11)	193 (0.42)	45964 (12.89)
6	LOHARA	5475 (24.31)	8498 (37.73)	5885 (26.13)	2499 (11.10)	164 (0.73)	22521 (6.32)
7	KALAM	18960 (36.42)	19727 (37.89)	9935 (19.08)	3258 (6.26)	178 (0.34)	52058 (14.60)
8	BHOOM	12087 (32.34)	11958 (32.00)	8656 (23.16)	4287 (11.47)	382 (1.02)	37370 (10.48)
	District	**111194 (31.18)**	**130022 (36.46)**	**80191 (22.49)**	**32406 (9.09)**	**2766 (0.78)**	**356579**

Source: Agricultural Census, India 2011

(Figures in the brackets indicate percentage to total)

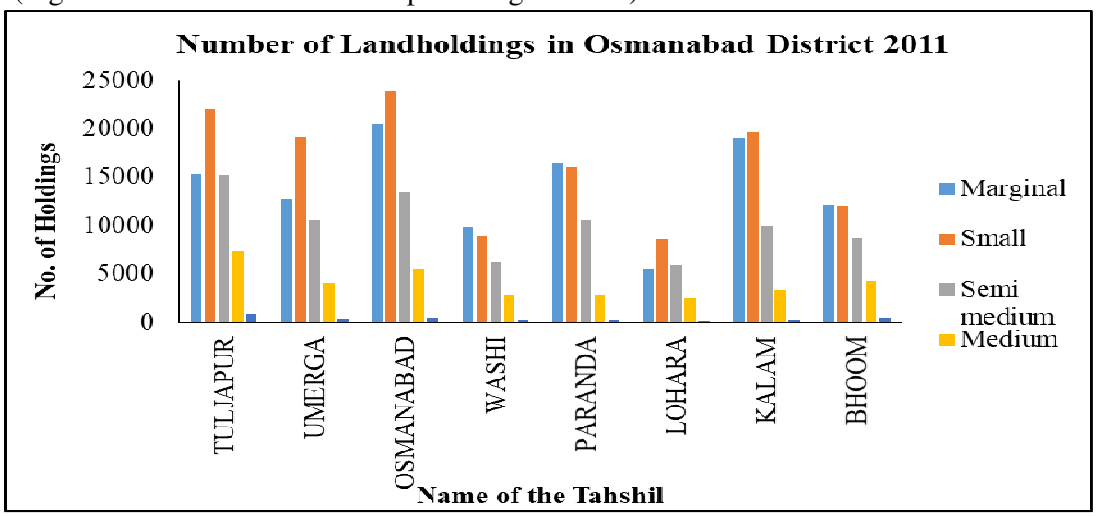


Fig. 2 No. of landholdings in Osmanabad District, 2011

Table No. 3 Change in Number of Holdings in Osmanabad District, 2001-2011

Sr. No.	Name of the Tahshil	Marginal	Small	Semi medium	Medium	Large	All Classes
1	TULJAPUR	5068	5797	1872	-562	-401	11774 (18.10)
2	UMERGA	3677	2348	185	-688	-44	5478 (8.42)
3	OSMANABAD	6752	5733	-155	-942	-166	11222 (17.25)
4	WASHI	3715	2101	538	-72	-96	6186 (9.51)
5	PARANDA	5834	3231	272	-851	-61	8425 (12.95)
6	LOHARA	1718	1590	375	-308	-71	3304 (5.08)
7	KALAM	7343	6712	272	-1042	-81	13204 (20.30)
8	BHOOM	2902	2544	294	-233	-54	5453

							(8.38)
District		37009	30056	3653	-4698	-974	65046

Source: compiled by researchers

Area of Holdings:

The landholding structure of any agrarian country is generally complex and dynamic and its degree of dynamism primarily depends on the country's socio-cultural and political system. Small and marginal holdings agriculture is important for raising agriculture growth, food security and to improve the economy in India. These holdings contribute to 80% of Indian agriculture.

Table No.4 Area of Holdings in Osmanabad District, 2001

Sr. No.	Name of the Tahshil	MARGINAL	SMALL	SEMI MEDIUM	MEDIUM	LARGE	ALL CLASSES
1	TULJAPUR	5243 (4.12)	17832 (14.00)	33154 (26.03)	45303 (35.57)	25847 (20.29)	127379 (19.55)
2	UMERGA	6289 (7.37)	20950 (24.55)	26998 (31.64)	26096 (30.58)	5005 (5.86)	85338 (13.10)
3	OSMANABAD	6543 (5.93)	24054 (21.78)	34162 (30.94)	36255 (32.83)	9414 (8.56)	110428 (16.95)
4	WASHI	3318 (6.37)	9747 (18.71)	15253 (29.28)	17286 (33.18)	6495 (12.47)	52099 (8.00)
5	PARANDA	6027 (8.06)	17481 (23.39)	26989 (36.10)	20195 (27.02)	4061 (5.43)	74753 (11.47)
6	LOHARA	2543 (5.41)	9873 (21.02)	15226 (32.42)	15997 (34.06)	3332 (7.09)	46971 (7.21)
7	KALAM	7187 (8.80)	20096 (24.61)	26494 (32.44)	24129 (29.55)	3755 (4.60)	81661 (12.53)
8	BHOOM	4814 (6.60)	13320 (18.25)	22528 (30.87)	26049 (35.69)	6276 (8.60)	72987 (11.20)
District		41964 (6.44)	133353 (20.46)	200804 (30.82)	211310 (32.43)	64185 (9.85)	651616

Source: Agricultural Census, India

(Figures in the brackets indicate percentage to total)

Table No. 5 Area of Holdings in Osmanbad District, 2011

Sr. No.	Name of the Tahshil	MARGINAL	SMALL	SEMI MEDIUM	MEDIUM	LARGE	ALL CLASSES
1	TULJAPUR	9211 (6.75)	31744 (23.26)	40343 (29.56)	42522 (31.16)	12637 (9.26)	136457 (19.68)
2	UMERGA	8326 (9.11)	27447 (30.04)	28319 (30.99)	22654 (24.79)	4633 (5.07)	91379 (13.18)
3	OSMANABAD	12469 (10.45)	33928 (28.44)	35778 (29.99)	30684 (25.72)	6432 (5.39)	119291 (17.20)
4	WASHI	5263 (9.66)	12778 (23.45)	16744 (30.73)	15915 (29.21)	3794 (6.96)	54494 (7.86)
5	PARANDA	9516 (12.02)	22975 (29.01)	28267 (35.69)	15309 (19.33)	3129 (3.95)	79196 (11.42)
6	LOHARA	3541 (7.35)	12265 (25.46)	16008 (33.22)	14130 (29.33)	2238 (5.64)	48182 (6.95)

7	KALAM	11256 (13.00)	28228 (32.59)	26547 (30.65)	18124 (20.92)	2462 (2.84)	86617 (12.49)
8	BHOOM	6756 (8.67)	17330 (22.25)	23579 (30.27)	24840 (31.89)	5395 (6.93)	77900 (11.23)
District		66338 (9.57)	186695 (26.92)	215585 (31.09)	184178 (26.56)	40720 (5.85)	693516

Source: Agricultural Census, India
(Figures in the brackets indicate percentage to total)

Table No. 6 Change in Area of Holdings in Osmanabad District, 2001 – 2011

Sr. No.	Name of the Tahshil	MARGINAL	SMALL	SEMI MEDIUM	MEDIUM	LARGE	ALL CLASSES
1	TULJAPUR	3968 (2.63)	13912 (9.26)	7189 (3.54)	-2781 (- 4.40)	-13210 (-11.0)	9078
2	UMERGA	2037 (1.74)	6497 (5.49)	1321 (-0.65)	-3442 (- 5.79)	-372 (-0.79)	6041
3	OSMANABAD	5926 (4.53)	9874 (6.66)	1616 (- 0.94)	-5571 (- 7.11)	-2982 (-3.13)	8863
4	WASHI	1945 (3.29)	3031 (4.74)	1491 (1.45)	-1371 (- 3.97)	-2701 (- 5.50)	2395
5	PARANDA	3489 (3.95)	5494 (5.63)	1278 (- 0.41)	-4886 (- 7.69)	-932 (- 1.48)	4443
6	LOHARA	998 (1.94)	2392 (4.44)	782 (0.81)	-1867 (- 4.73)	-1094 (-2.45)	1211
7	KALAM	4069 (4.19)	8132 (7.98)	53 (- 1.80)	-6005 (- 8.62)	-1293 (-1.76)	4956
8	BHOOM	1942 (2.08)	4010 (4.00)	1051 (- 0.60)	-1209 (- 3.80)	-881 (-1.67)	4913
District		24374 (3.13)	53342 (6.46)	14781 (0.270	-27132 (- 5.87)	-23465 (-3.98)	41900

Source: Compiled by researcher

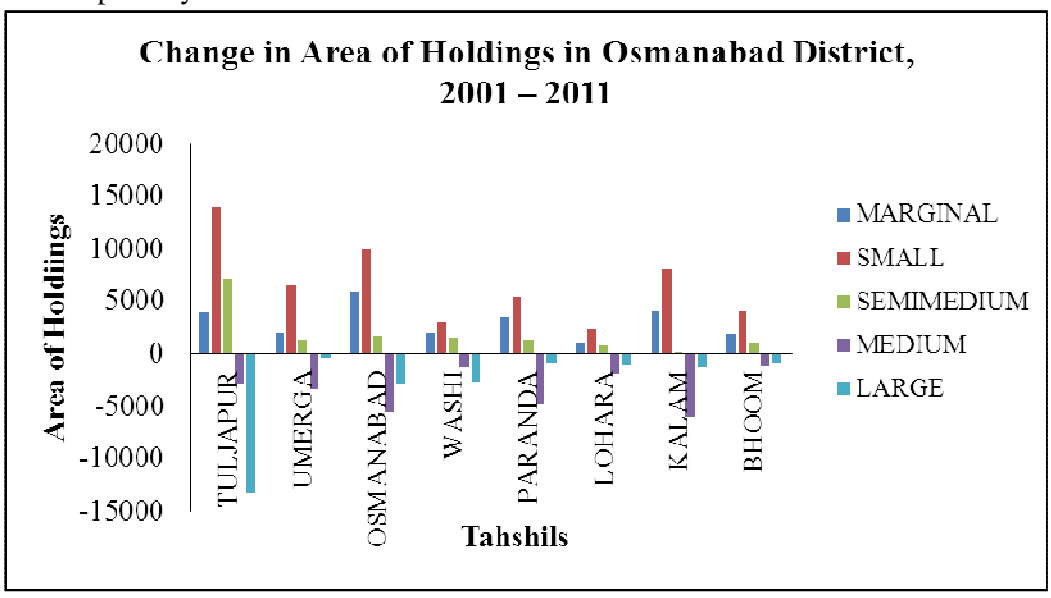


Fig. 3 Change in Area of landholdings in Osmanabad District, 2001- 2011

Distribution of operational land holdings in Osmanabad District:

Table 1 and figure No. 1 provides the in distribution of land holdings for the year 2001 at district level, the highest number of operational holdings has been recorded in Osmanabad tahshil (17.92 percent) and lowest in Lohara tahshil (7.42 perncet). On the other hand the situation of 2011, is same highest in Osmanabad tahshil (17.80 percent) and lowest in Lohara tahshil (7.80 percent). The table No. 3 shows that the region has experienced an overall spatio-temporal change in all the categories of landholding during 2001 - 2011. Over the decade 2001-11, the district has registered 56.90 per cent increase of number of marginal holdings. It appears from the data that growth of marginal and small holdings as a consequence of fragmentation of medium and large holdings. Even though he district averages indicate the decline in large (-1.50 percent) and medium holdings (- 7.22 percent), across tahshils the trends are mixed. Osmanabad tahshil has the decline in semi medium, medium and large farm holdings. There is 69.25 per cent increase of marginal holding in Paranda tahshils followed by Umarga which has registered 67.12 percent increase over this period.

Table 4 shows the distribution of area of holdings in 2001 which indicates that Tuljapur tahshil have shown highest (19.55 percent) area in all holdings on the other hand Lohara tahshil shows lowest (7.21 percent) are in all holdings. The table 5 shows that the region has experienced an overall spatio-temporal change in all the categories in area of landholding during 2001 - 2011. Over the period of time the district has registered increase of area of marginal holdings (3.13 per cent) and small holdings (6.46 percent) while area of medium landholdings and large holdings are decreased by 5.87 percent and 3.98 percent respectively. This is due to the fragmentation of land from large and medium holdings to marginal and small holdings. Putting all categories together, all the tahshils have shown increase in area under marginal and category of farm holding and decrease in area under medium and large categories. Area of marginal landholdings are increased by 80 percent in the tahshils of Kalam, Bhoom and Washi on the other hand area of large holdings are decreased more than 100 percent in Tuljapur and Lohara.

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Dairy Industries Leads To Rural Development In Sangli District (Maharashtra)

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Abstract:

Dairy farming is one of the growing industries. It offers multiple opportunities to people and leave a sustainable impact on society, environment and economy. Dairy farming have been supported to the improvement of economic condition and the small and marginal farmers. Dairy sector has been instrumental in bringing socio-economic transformation. There exist a symbiotic relationship between agriculture and livestock farming. Dairying provides livelihood of farmers and generates additional income of families in the countryside.

In present research paper we discuss about its reach and establishment in rural areas and how this industry can play an instrumental role in rural development.

Key Words : Livelihood, Agriculture, Livestock etc.

Introduction :

In India, the dairy sector plays an important role in the country's socioeconomic development and constitutes an important segment of the rural economy. Dairying has been considered as one of the activities aimed at alleviating the poverty and unemployment especially in the rural areas in the rain-fed and drought-prone regions. In India, about three-fourth of the population live in rural areas and about 38 percent of them are poor. The progress in this sector will result in a more balanced development of the rural economy.

Objectives :

1) To study the development of dairy farming in Sangli district.
2) To study the distribution of dudh sangh and co-operative diary societies in Sangli district.
3) To highlight the role of dairy industries in rural development of the study area.

Data Collection And Methodology :

The researcher has collected the related information from the primary and secondary source of data. The primary data, pertaining to milk production has been collected through fieldwork by using different interview techniques wherever necessary. The secondary source of data is collected from reference books, internet, news paper and annual report published by the milk unions etc. The study material is also collected from district census hand book, socio-economic reviews, district gazetteers, animal census and available published and unpublished materials. The appropriate statistical methods and technique such as tables, graphs were used wherever necessary in the present work.

Study Area :

Sangli district is one of the parts of the famous 'Deccan Plateau' it lies in the southern part of Maharashtra. It is situated between 16˚43' and 17˚38' north lattitude and 73˚ 41' and 75˚41' east longitude and has an area of 8,572 sq. Km. and population of 28, 20, 575 according to the 2011 census. There are 735 villages and 07 urban locations in Sangli district.

Sangli district is situated in the river basin of Warna and Krishna. The physical setting of Sangli district shows a contrast of immense dimensions and reveals a variety of landscapes influenced by relief, climate and vegetation. The climate ranges from the rainiest in the Chandoli (Shirala) region, which has an average annual of all over 4,000 mm. to the driest in Atpadi and Jath tehsils where the average annual rainfall is about 500 mm. The vegetal cover too varies from the typical monsoon forest in the western parts to scrubs and poor grass in the eastern parts.

Dairy Industries :

The dairy development has a notable share in the economy of the Sangli district. The purpose of dairy farming is to provide hygienically processed milk to people at reasonable rate and also to provide a subsidiary occupation to the farmers.

The table no. 1 reveals that the out of 37 dudh sangh highest number of dudh sangh was found in Miraj tahsil with 15 followed by Walwa tahsil with five dudh sangh. It is clearly shows that near about 54 percent dudh sangh are located in two talukas namely Miraj (40.5 percent) and Walwa (13.5 percent) tahsil. 17 dudh sangh (46 percent) are located in remaining eight tahsil. Palus, Kavathemahankal and Jath tahsil have each three dudh sangh, Kadegaon, Tasgaon and Shirala tahsil have each two dudh sangh while, Atpadi and Khanapur had each one dudh sangh in the year 2014.

Table No. 1

Tahsilwise Distribution of Dudh Sangh and Cold Storage in Sangli District (2014)

Sr. No.	Name of Tahsil	Dudh Sangh		Cold Storage	
		Number	Percentage	Number	Percentage
1	Miraj	15	40.5	-	-
2	Tasgaon	02	5.3	01	6.25
3	Khanapur	01	2.7	01	6.25
4	Atpadi	01	2.7	01	6.25
5	Jath	03	8.1	02	12.5
6	Kavathemahankal	03	8.1	04	25
7	Walwa	05	13.5	02	12.5
8	Shirala	02	5.4	02	12.5
9	Kadegaon	02	5.4	02	12.5
10	Palus	03	8.1	01	6.25
	District Total	37	100	16	100

Source : District Milk Development Office Miraj, 2014

There were only two chilling plants at Kadegaon and Jath talukas of govt. sector one mini chilling plant at karanjwade in Walwa tahsil started functioning in 1980-81. It has increased to 16 chilling plants with four in Kavathemahankal tahsil, each two in Kadegaon, Shirala, Walwa and Jath tahsil and each one in Tasgaon, Palus, Khanapur and Atpadi tahsils in the year 2014.

Table no. 2 shows that, the distribution of milk co-operative societies and collection of milk per day in the year 2014, 840 co-operative dairy sangh have been collecting milk from entire Sangli district. Out of the total 840 co operative dairy societies Walwa tahsil has highest no. of dairy societies with 273 (32.5 percent). Followed by Shirala tahsil have 161 (19.17 percent) co-operative dairy societies Jath, Atpadi and Miraj tahsils has 87 (10.36 percent), 76 (9.05 percent) and 70 (8.33 percent) co-operative dairy societies respectively. Kavathemahankal tahsil have very less no. of co-operative dairy societies with 15 (1.78 percent) in the year 2014.

Table No. 2

Co-Operative Dairy Societies, Per Day Milk Collection And Workers of Sangli Districts (2014)

Sr. No.	Name of Tahsil	Co. Opp. Dairy Societies		Per Day Milk Collection		No. of Workers	
		No.	%	Liters (000)	%	Dudh Sangh	Co-op. Dairy Society
1	Miraj	70	8.33	161	11.75	478	140
2	Tasgaon	46	5.48	157	11.46	112	90
3	Khanapur	30	3.57	124	9.05	60	58
4	Atpadi	76	9.5	100	7.30	60	154
5	Jath	87	10.36	109	7.96	68	172
6	Kavathemahankal	15	1.78	136	9.93	45	86
7	Walwa	273	32.5	260	18.98	660	532
8	Shirala	161	19.17	108	7.88	90	322
9	Kadegaon	51	6.07	72	5.26	68	96
10	Palus	31	3.69	143	10.43	140	62
	District Total	**840**	**100**	**1370**	**100**	**1,781**	**1,712**

Source : District Milk Development Office Miraj, 2014

In 1980-81, the dairy sangh and govt. dairy Miraj had collected over 460 lakh liters of milk. Which is increased upto 5005 lakh litres of milk in the year 2014. It means the collection of milk is increased nearly ten times during this period. Walwa tahsil has highest per day milk collection with 2,60,000 litre (18.98 percent) followed by Miraj tahsil with 161,000 litre milk collection per day. Tasgaon. Palus and Kavathemahankal tahsil have 11.46 percent, 10.46 percent and 9.93 percent milk collection per day respectively. While Kadegaon, Atpadi and Shirala tahsil have less collection of milk per day with 5.26 percent, 7.30 percent and 7.88 percent respectively in the year 2014.

With the help of dairy activities the employment opportunity to youth has provided in the study region and created a large scale of employment. There are 37 dudh sangh which provided employment opportunity to 1,781 people. Whereas, 840 co-operative dairy societies have provided employment opportunity to 1,712 peoples in 2014.

Sangli District : Number of Workers in Dudh Sangh and Co–Operative Dairy Societies (2014)

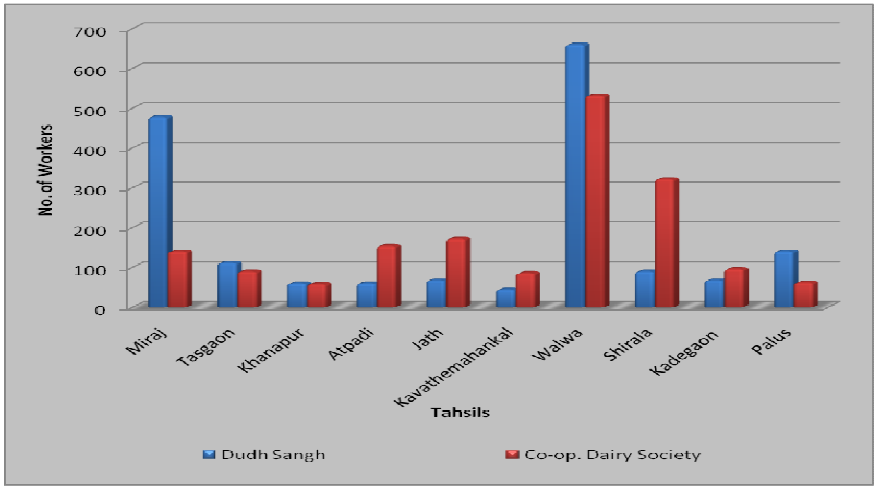


Fig. 1

The number of workers are increased with increasing number of dudh sangh and co-operative dairy societies. Which is positive relationship between dudh sangh, co-operative dairy societies and employment opportunity.

Conclusion :

Globalization and Liberalization are the Mantras of the new economy today, which is now on the fast track. Industrial production is rapidly moving forward. The dairy industry is no exception. Dairy helps to solve the problem of unemployment by providing supplementary employment and regular source of income to the rural landless, small and marginal farmers.

In Sangli district, thirty seven dudh Sangh and Sixteen cold storage, with the help of dairy activities the employment opportunity to youth has provided in the study region and create large scale employments. There are 37 dudh sangh and 840 co-operative dairy societies are provided employment opportunity to 3,493 peoples in the study region. Most of the employer are come from surrounding rural area and it helps the reduction of rural poverty.

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A Study of Potentials of Ecotourism in Wai Tehsil of Satara District

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Abstract:

Tourism is an important economic activity in the present era. The Developing countries like India have potential of Ecotourism due to their tropical and variable climates. Ecotourism in India is emerging to develop the area of tourism. Wai tehsil in Satara District of Maharashtra have the ideal location in relation to the eastern slope of Western Ghats region. The ecotourist destinations in this tehsil are in the potential state. To delineate the potentiality it is calculated through Development Index. As a result it is the potential place for Ecotourism. This tehsil have variety of ecotourist attraction i.e., Hill forts, caves and trekking trails. These destinations need the proper development plans and capital.

Keywords: Hill forts, Caves, Ecotourism etc.

Introduction:

Tourism is an important economic activity in the present era. Tourism have recognised as a worldwide phenomenon. The nature based tourism is growing vastly which can become the important channel to utilise wisely the biodiversity and wildlife. Ecotourism is a new approach in tourism. It was introduced in Africa with legalization of hunting in Africa in 1950. The term ecotourism is given by Hector Ceballos-Lascurian in 1983. Recently, the growth of ecotourism and tourism industry compared and the result was that 20 to 35 per cent growth recorded by Ecotourism as compared to the growth by tourism recorded merely 4 to 5 per cent annually. The Developing countries like India have potential of Ecotourism due to their tropical and variable climates.

There are various types of tourism area where tourist attracts in India. India has been launched the Ecotourism concept in the wild areas of National Parks, Wildlife Sanctuary and cultural areas. Ecotourism is accepted by Government of Maharashtra. Wai tehsil in Satara District of Maharashtra have the ideal location in relation to the eastern slope of Western Ghats region. The ecotourist destinations in this tehsil are in the potential state.

Ecotourism Destination types:

Hill Forts:

Ecotourism includes the cultural heritage places as a destination. The forts are the architectures which have considered as a distinguished cultural and historical property. Maharashtra state have hill forts, Water forts, and earth forts too. Western Ghats is the platform for the Hill forts due to the common feature of flat top or table land type of hills all around. There are total 15 hill forts in Satara District. These hill forts have rich history and culture of kingdom of Marathas. Therefore they can become the important ecotourism destination from the cultural point of view.

Caves:

Caves are very important spots for Ecotourism in India. India was known for the religion of Buddhism after Gotam Buddha. Some centuries later from Buddha, this religion was spread in India and Asia. But the Varna system was refused this religion and tried to destroy it from India. The caves carved in to the hills all-round the Maharashtra are still in good condition. But majority of them are converted into the Hindu temples. These caves are not maintained well by Archaeological department and local government. Except under preservation of Archaeological department, the caves in Maharashtra are ignored a lot. The period of formation of caves may be same as of Hindus architectures. This period ranges from 1st century A.D. to 5th century A.D. In the caves, Stupa (Vihara), Meditation centre, rest room, Hall for study is found at many places. In Maharashtra State, Ajanta and Ellora caves are very famous international tourist places. Karjat, Junnar, Rajmachi, Rajpuri, Yerphale, Agashiv, Malavli etc. are known to the tourist. These are purely Buddhist caves. Due to the cultural differences the people use to change the structure of historical caves by establishing the Hindu idols. Archaeological department is also ignoring the cave sites in Maharashtra state.

Trek Trails:

Trekking is the part of Ecotourism. In this activity the tourist can enjoy the nature by his bare eyes and touch the natural features. This type of tourism is flourished recently. In spite of tourism, ecotourism use to get this type of activity on large scale. The National parks and Sanctuary, Mountains, ice covered area, desert etc. are the areas where the ecotourist use to experience the nature with observations of flora and fauna. This group is generally included as Solo ecotourist, who use to walk alone and wanted the different type of accommodation and foods in the nature. School groups or scientific groups visit the ecotourism place for study or do the research. The Study region have multiple number of areas where trek trails are in use. Some areas are also the potential trek trails.

Objective:

To study the potentials of Ecotourism in Wai tehsil of Satara District.

Material and Methods:

For the present work the data is collected from secondary source. The secondary data is collected from the Govt. offices (Grampanchayat, Talathi, Forest Department), District Census Handbook, Statistical Abstract, Gazetteer of districts, internet etc. The collected data has been analyzed to get the Development Index for checking the Potentiality of Ecotourism. With this statistical and cartographic techniques are used as per the availability of data. The collected information finally interpreted and conclusion has been drawn.

Study Area:

Wai tehsil is located in north-west part of Satara district of Maharashtra state. Wai tehsil is extended from 17° 47' to 18° 03' North latitude and 73° 39' to 74° 02' East Longitude. The west part of tehsil is surrounded by foot hill zone of main range of Western Ghats in Mahabaleshwar. The north part of tehsil is bounded by east running Mandhardevi sub-range of Western Ghats. The eastern area is bounded by Krishna river basin.



Source:
https://www.google.com/maps/place/Wai+Taluka,+Maharashtra/@17.9258083,73.8690693,11.5z/data=!4m5!3m4!1s0x3bc25d4df4d48319:0xca3da3912ff53873!8m2!3d17.9590493!4d73.9124674

Figure 1.1

Location Map of Wai Tehsil

Delineation of Potentiality of Ecotourism:

To get the information of ecotourist centre by potential or developed type, the researcher has used the Development Index. For getting the result of potentiality of Ecotourism in tourist places various criteria are used. They are as follows;

Criteria used to check the Potentiality in tourism:

1. Population at Destination
2. Area in Hectare
3. No. of Tourist visited per year
4. Forest area in Percentage
5. Road Accessibility
6. No. of Hotels/ Lodge
7. Transport Facility
8. No. of Attractions
9. Food Facility
10. Local People Participation
11. Number of Websites

The entire above criterion are used to get the potential and developed places in the Study Region. Criteria of population are used from the sum total of population of all tourist destinations. Area is used from the sum of all the destinations. Number of tourist arrival is counted for per year. Forest area is acquired out of the total area in percentage. The accessibility of road is measured in respect of distance of tourist destination from nearest National Highway.

Numbers of hotels/lodges are counted from the tourist destinations. The transport facility is used as facility of road, bus facility, railway, and Airport near to the tourist destinations. The criterion of number of attraction is used to get total number of attractions at the tourist destination. Food facility is also counted in respect of number of restaurants and hotels. Local people participation is counted in respect of contribution in tertiary activity. And lastly, number of websites are counted for the tourist destination in respect of number of websites advertising by respective Government, Tourism department, concerned local authority etc. the Development Index is calculated with the help of all the above criteria and the result is given in the following table.

Development Index of Tourism Destinations:

To distinguish the Tourism destinations, Development Index is given for study area. The index is measured in two type of answers i.e.,

i) 0.51 to 1.00 = Developed Tourism Destination

ii) 0.01 to 0.50 = Potential Ecotourism Destination

As per the above index values, Developed Tourism Destination or Potential Ecotourism Destination can be explained. Wai tourism Destination has 0.48 index value, which is less than 0.50. Therefore this destination comes in Potential category.

Ecotourism Destinations in Wai Tehsil:

Hill Forts:

a) Ghera-Kenjalgad Fort:

Ghera-Kenjalgad lies between 18° 01' 30.23" North Latitude and 73° 44' 44.33" East Longitude. It is situated on 1268 m. height from MSL. It comes in Wai Tehsil. It is the part of Mandhardev spur spread eastward from Mahabaleshwar plateau. This range separates the Satara and Pune district. River Krishna on the south and River Nira on the north of this range flow eastward. Due to the long visibility from this fort, Maratha kingdom was able to watch the enemy clearly. Therefore, this fort was doing the duty of 'watchtower' for Maratha Empire in the history. Before the Coronation ceremony, Chha. Shivaji Maharaj captured this fort. This fort is 78 km away from Pune, 30 km from Wai and 65 km from Satara District Head Quarter.

Kenjalgad is famous for trek trails during the winter season. It is easy for climbing. tank of water, small caves on the way and circular rocky structure are the main attractions on this fort. One can reach up to Titeghar and start his trekking up to the fort. Rough road is available to reach shortly to this fort from south slope to the north and then upward to the fort. After that rock cut stairs takes up to the fort. On one side of these steps vertical wall of fort makes hard to climb. There are lots of locations to watch good scenery from this fort. A very scenic view is towards the south-east i.e. Dhom dam's back water area. On the all sides, there are mixed valleys and hilly areas which give the ultimate experience with Mahabaleshwar like chilled climate during winter season. There is no accommodation facility round the fort due to the remoteness. Medical facility is also required at this place. The rock cut structure like Raigad fort on its sides is very interesting view for visitors.

b) Vairatgad Fort:

This fort is located in the eastern part of study region near Panchwad on Asian Highway No. 47 (NH-04). It lies between 17° 52' 41.28" North Latitude and 73° 55' 06.17" East Longitude. The height of this fort is 1181 m. from MSL. It comes in Wai Tehsil. This fort is 29 km away from Satara District Head Quarter, 8 km from Panchwad and 95 km from Pune by

road. The fort top is very small. There are more than five Cisterns for water storage from the historical period. Two out of these are carved out into the cave which are very different. The bastion of this fort on the entrance is tumble-down. In the other area it is in good condition. One temple of Lord Hanuman can be found on the fort. The idol of the god is outside of the temple at this fort.

This fort is located west to Panchwad village. One can see directly this fort from National highway. Road condition is very bad to reach on the fort. Somewhere steps are broken down, so the climbing becomes very hard. Due to the location near river plain the valley views are common from this fort. Some graffiti wall writings are found on the fortification by the visitors. Yet this fort is famous for trekking during winter season due to the proximity to the National highway No. 4 (Asian Highway No. 47).

c) Pandavgad Fort:

Pandavgad Fort is located at 17° 59' 54.63" North Latitude and 73° 51' 48.82" East Longitude. The height of this fort is 1253 m. from MSL. This fort is very close to Wai Tehsil place of Satara district. It is the extended spur of Mandhardev goes southward and ends at this fort. The crest of the fort has square area. The bastion has built on very acute escarpment around the fort. The distance of Pandavgad from Wai is 10 km, from Satara 47 km and from Pune it is 95 km around. The easy way to go to this fort is by Manewadi road by taking right turn to Pandewadi. From Pandewadi one can starts walking northward and reach to the fort. After that, rock cut stairs you can start up to the fort. Except the north wall with gate, no bastion remains in well condition. There are 18 ponds on the fort. But out of those only 3 ponds have water. Only Temple of Pandjaidevi exists with collapsed sides. A grinding wheel with its circular track is found on this fort which may be used to mix the building material. A very scenic view of Wai can be seen at the south east part of fort. On the south-west direction, a huge storage of Dhom project gives thrilling experience.

Caves of Pandavgad:

Pandavgad Caves are located on the north-east part of the fort. Instead of going the fort one can walk to the Dhawadi village by footpath. In this cave, there is a Chaitya with large space for teaching class. Another cave with approximately 2 m. of height has arch shape entry. On the east of this cave, there is a residential cave with 8 small rooms and precious hall at the centre. This place can become the Cultural Heritage of Buddhist caves. Tourist visits this place after the fort.

The trek trails are available from south slope and goes to the fort. They proceed to the caves on the northern side and ends at Dhawadi village. This place is more beautiful in late monsoon period with greenery and flowering on the slopes. Though this fort is located in the eastern part of Western Ghats region it reveals quite nice experience to the visitors. Accommodation is available at Wai at the base of the fort. There is no facility of drinking water on the fort. Bushes are spread on the hill except the dense forest in the main range of Western Ghats.

Religious Centre:

a) Mandhardevi Temple:

This place is located at 18° 02' 48.40" North Latitude and 73° 52' 33.57" East Longitude. The height of this place is 1361 m. from MSL. This religious place is famous in Maharashtra. Devotees from all over Maharashtra come here throughout the year. Kalubai temple at this place is 20 km north from Wai Tehsil place. This temple is constructed 400 years ago. Gurav family is taking care of the temple. In the month of January fair of 10 days takes place. But on the full moon day, main festival takes place with sacrificing the animal. In 2005, about 340 devotees reported to be dead during the rush. This temple is located on maximum height therefore the cold breeze and Purandar fort in the north gives very different experience.

Conclusion:

Wai tehsil in Satara district have development Index in potential category in relation to Ecotourism. The Western Ghats hill ranges affect positively on Ecotourism development. The nature during monsoon season in this tehsil is attractive. All the sub-ranges of Western Ghats are favourable for ecotourism development at their apex. Ghera-Kenjalgad, Vairatgad and Pandavgad are favourable for trek trails. Mandhardevi temple area have flat top hills with similar climate to Mahabaleshwar. After the positive feedback from govt. this area can develop as a hill station. Wai tehsil have potential for the future development of Ecotourism.

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Concentration of Sugarcane Crop in Satara District: A Geographical Approach

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Abstract-

In India, sugarcane is an important commercial crop. The sugarcane plant is a tropical plant and has been known in India from earliest times. India is the fourth major sugar producing country in the world. Indian sugar industry has in accelerating industrialization process and bringing socio-economic changes in under developed rural areas. About 4.5 crore farmers are busy in sugarcane cultivation in India. Sugar factory (Co-operative, Private and Public) has been helpful in initiating a number of commercial activities in rural India. In Maharashtra 9.18 lakh hectares area is under sugarcane cultivation (2017-18). In Satara District 43694 hectares area is under sugarcane cultivation. Increase in sugarcane cultivated area and growth of sugar industry has manifold effects on socio-economic situation in Satara District.

Key Words- Cultivation, Factory, Area, Concentration, Index

Introduction

In India, sugarcane is an important commercial crop. The sugarcane plant is a tropical plant and has been known in India from earliest times. India is the fourth major sugar producing country in the world. Indian sugar industry has in accelerating industrialization process and bringing socio-economic changes in under developed rural areas. About 4.5 crore farmers are busy in sugarcane cultivation in India. Sugar factory (Co-operative, private and public) has been helpful in initiating a number of commercial activities in rural India. In Maharashtra 9.18 lakh hectares area is under sugarcane cultivation (2017-18). In Satara District 43694 hectares area is under sugarcane cultivation and 26 sugar factories are present (2017-18) in the district. Increase in sugar cultivated area and growth of sugar industry has manifold effects on socio-economic situation in the Taluka.

Study Region

The Satara district is located in west part in Maharashtra State. This district consist eleven Talukas covering 1739 villages. The total geographical area is of 10,480 sq. km. extending from 17^0 5' N to 18^0 11' North latitudes and 73^0 33'E to 74^0 54' East longitudes. The climate ranges from the rainiest to drought prone region. In Mahabaleshwar region an average annual rainfall is over 6000 mm. While eastern drought prone region receive less than 500 mm rainfall.

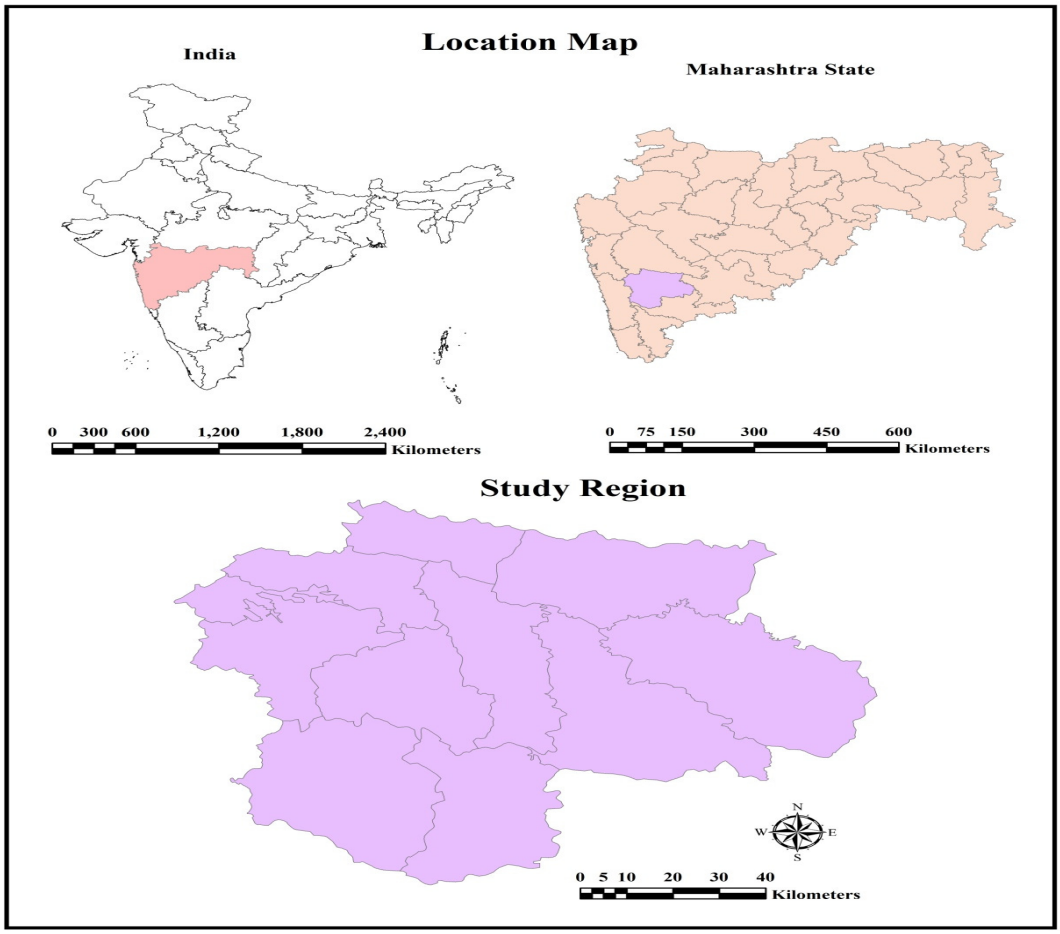


Fig.1

Objectives

The present study is carryout with the following

1. To study temporal changes in area under sugarcane cultivation.
2. To study taluka wise sugarcane concentration.

Data Base and Methodology

The present study is based on secondary data collected from Socio-economic Review of Satara District. Bhatia's (1965) method is used for the calculation of the Location Quotient.

Result and Discussions

Satara District is leading in sugarcane cultivation in Maharashtra. 8.94 per cent area under sugarcane in Maharashtra is in Satara District. In the Satara District area under sugarcane cultivation is more in Karad, Patan, Satara, Wai, Koregoan Talukas. The crop concentration pattern differentiates the areas of high and low density of individual crop in the different parts of the region. Location Quotient measures the degree to which a specific region contains more or less than its briefly indicating a ratio's (Location Quotient = X / Y), (Gupta and Hiran, 1973, Das, 1990). In order to determine the taluka-wise concentration of crops Bhatia's method is used for the calculation of the Location Quotient. The following formula is used to work out the concentration of sugarcane cultivation in Satara district.

$$LQi = \frac{Xij \div Xj}{Yi \div Y}$$

Where,

LQi = Location Quotient of sugarcane cultivation in the Karad Taluka

Xij = Area under sugarcane in the Taluka

Xj = Total cropped in the Taluka

Yi = Total Circle area under sugarcane cultivation in the Karad Taluka

Y = Total cropped area of the Karad Taluka

1991-92

In Satara district during 1991-92, Karad and Patan Taluka shows the very high concentration of area under sugarcane cultivation, Phaltan Taluka shows high concentration index. While in Wai, Khanadala, Satara and Koregoan Talukas modrate concentration index is recorded.

2001-02

In Satara district during 2001-02, Jaoli, Satara and Karad Taluka show the very high concentration of area under sugarcane cultivation while Phaltan Taluka Shows high concentration index. Koregoan and Patan talukas shows Modrate concentration index. (Fig.2).

2011-12

During 2011-12, Karad and Phaltan Taluka shows very high concentration of area under sugarcane cultivation while Wai, Satara and Koregoan Talukas Shows high concentration index. Patan, Man and Khatav Talukas shows Modrate concentration index. In Man and Khatav talukas increase in area under sugarcane cultivation is mainly because of Urmodi canal irrigation. (Fig.2).

In Mahabaleshwar talukas maximum area is covered by hilly region. This area is not suitable for sugarcane crop. Sugarcane is planted either by traditional method in furrow or in trenches. Karad, Phaltan, Satara, Wai and Koregaon talukas are leading talukas in area under sugarcane. In these talukas soil is fertile and irrigation facilities are well developed.

Table: 1 Taluka Wise Sugar cane crop Concentration (Area in Hectare)

Taluka	1991-92			2001-02			2011-12		
	Sugar cane	Gross Crop Area	Index Value	Sugar cane	Gross Crop Area	Index Value	Sugar cane	Gross Crop Area	Index Value
Satara	1697	66542	0.56	9924	75909	2.18	4689	73663	0.78
Wai	1438	36541	0.87	1100	41688	0.44	1952	30880	0.77
Khandala	682	38256	0.39	506	45910	0.18	548	29920	0.22
Koregoan	1470	72479	0.45	3241	75909	0.71	4348	54956	0.97
Phaltan	6548	93956	1.54	4341	88742	0.82	4637	41063	1.38
Man	643	86572	0.16	730	72077	0.17	2291	40084	0.70
Khatav	690	118882	0.13	419	115801	0.06	3540	65529	0.66
Karad	12641	79454	3.52	14315	79780	2.99	15534	80930	2.35
Patan	2530	6392	8.76	2472	76385	0.54	4909	82556	0.73
Javali	465	36638	0.28	6559	51977	2.11	1246	31429	0.48
Mahabaleshware	0	1706	0	0	3582	0.00	0	3249	0.00

Total	28804	637418.00	---	43607	727760	---	43694	534259	---

Source: Socio-economic Review of Satara District (1991-92, 2001-02 and 2011-12)

Conclusion

Sugarcane cultivation is largely controlled by the physiosocio- economic conditions prevailing in the district. Regional disparity in the proportion of sugarcane area to total cropped area is mainly related to the availability of consistent supply of water. The area under sugarcane cultivation is dependent on availability of water, yield, cost of cultivation, vagaries monsoon, uneven rainfall distribution, supporting price etc. In Man and Khatav talukas area under sugarcane is increased because of technological innovations like sprinkler and drip irrigation, high yielding tonnage sugarcane. The sugarcane cultivating farmers faced various problems like poor quality fertilizers, shortage of fertilizers, manures, weeding, leveling of pot, sugarcane cutting and labor problems especially at the crushing time.

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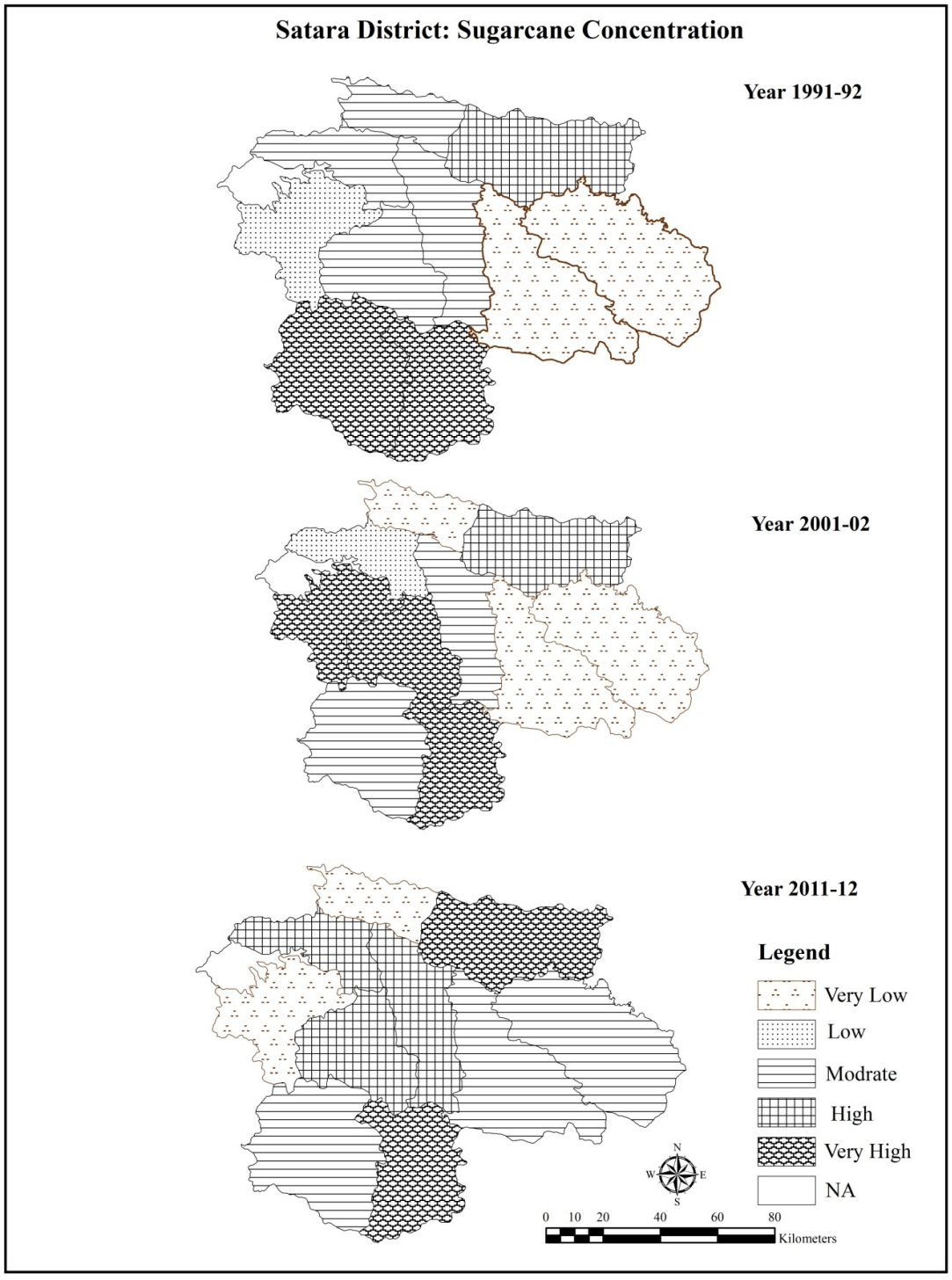

Satara District: Sugarcane Concentration
Year 1991-92
Year 2001-02
Year 2011-12
Legend
Very Low
Low
Modrate
High
Very High
NA
N
W
E
S
0 10 20 40 60 80
Kilometers

Fig.2

Socio-Economic Growth of Tourism Need for Sustainable Development in Ratnagiri District: A Geographical Analysis.

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Abstract:

Tourism is one of the largest global industries with much of the growing market focused around pristine natural as well as cultural environments. It includes coastal and marine areas, forts, forests, wildlife sanctuaries, temples, ecotourism is also a major source of income and employment which is made it one of major industries in the world. This Industry has grown quickly and change at an incredibly fast rate. In contrast, sustainable tourism is consciously planned to benefit local residents, respect local culture, conserve natural resources, direct more of the profits to the local community and Government, and educate both tourists and local residents about the importance of conservation. However, tourism can also threaten the resources by destroying habitat, disturbing wildlife, affecting water quality, and threaten communities by over-development, crowding, and disruption of local culture. In addition, conventional tourism often does not benefit the local community when tourist revenue "leaks" to outside operators (World Tourism Organization). Ratnagiri is a District in along Western Coastline of Arabian Sea. But the not more tourism development in the district so need for sustainable tourism development (STD) in Ratnagiri district for growth of socio-economic benefits.

Key Words: Sustainable Tourism Development (STD), Socio-Economic Growth, Tourism

Introduction:

Sustainable tourism is the concept of visiting a place as a tourist and trying to make only a positive impact on the environment, society and economy. Tourism can involve primary transportation to the general location, local transportation, accommodations, entertainment, recreation, nourishment and shopping. It can be related to travel for leisure, business and what is called VFR (visiting friends and relatives).There is now broad consensus that tourism development should be sustainable; however, the question of how to achieve this remains an object of debate. Without travel there is no tourism, so the concept of sustainable tourism is tightly linked to a concept of sustainable mobility. Two relevant considerations are tourism's reliance on fossil fuels and tourism's effect on climate change. 72 percent of tourism's CO_2 come from transportation, 24 percent from accommodations, and 4 percent from local activities. Aviation accounts for 55% of that transportation CO_2 emissions (or 40% of tourism's total). However, when considering the impact of all greenhouse gas emissions from tourism and that aviation emissions are made at high altitude where their effect on climate is amplified, aviation alone accounts for 75% of tourism's climate impact.

Study Area:

Ratnagiri is a coastal district of Maharashtra state, situated in the western coast of India. It has north-south length of about 180 km and average east-west extension of about 64 km. This

district comes between 16.30 to 18.04 north latitudes and 73.02 to 73.53 east longitude. Over 85% of the land surface in Ratnagiri district is hilly. All rivers in the district originate in the Sahyadri ranges and flow from east to west and merge in Arabian Sea.It has 167 km long sea coast which contains many beaches, pats, and forts. 180 km long Sahyadri hill range contains hills, hill forts, wild life and many places of scenic beauty. Number of creeks-ideal and safe for water sports, boating, fishing, swimming, camping etc.Hills, sea shores, creeks, rivers, hot water springs, forests, waterfalls, religious places attract tourists pilgrims from great distance.Alphonsa Mangoes [Hapus], Cashewnut, Kokum, Coconut etc. are famous for their quality and taste. Characteristic Konkan cuisine, especially non-vegetarian dishes of fish, prawns and seafood are mouth-watering.

Location Map of Ratnagiri District

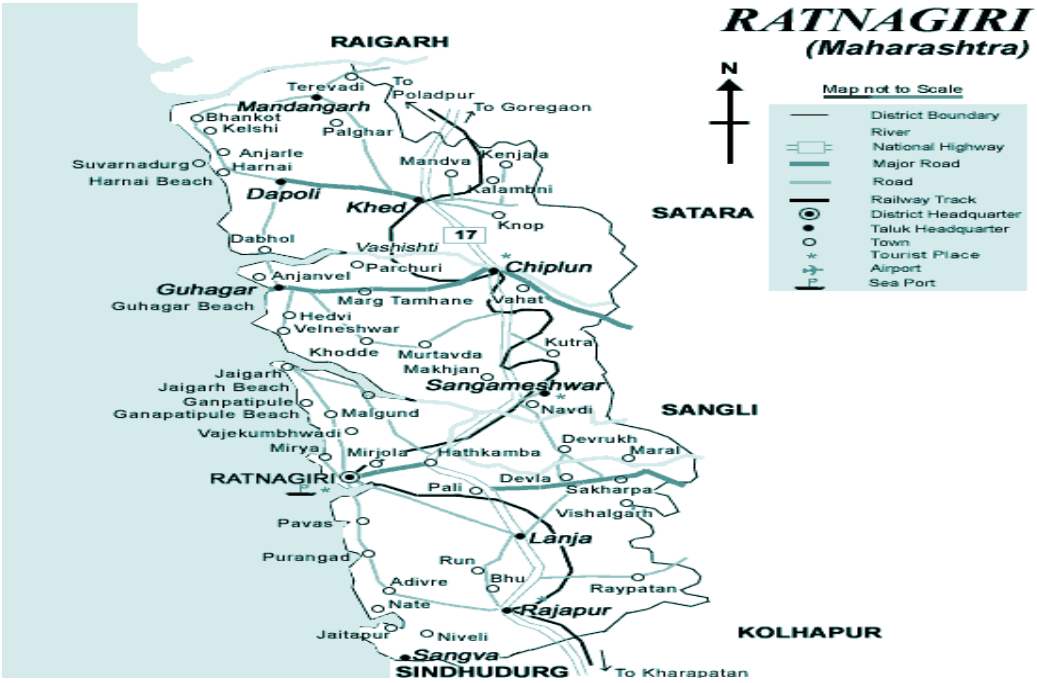


Fig. 1- Map of Ratnagiri District

Objectives:

1. To the Socio-Eco Growth of Tourism Development in the Study area.
2. To Suggestion the Sustainable Development in Study area.
3. To Recommendations for Sustainable Tourism Development.(STD)

Database and Methodology:

The Present Study is based on Secondary data. it has been collected from website of Maharashtra Tourism development, Ratnagiri district tourism development departments, Published, unpublished, various Research papers, District census handbook of Ratnagiri and district information office.

Result and Discussion:

A. **Socio-Eco Growth of Tourism Development in Ratnagiri District:**

The coastal district of Ratnagiri represents an economically backward district where a tourism-led development strategy was emphasized for regional development.The identification of tourism mega projects; industry status to tourism and the provision of myriad incentives to

private investors include other strategies for fostering tourism development in Ratnagiri. In District tourism developments has taken in some extent only and this is not sustainable. The various beaches, forts, temples, caves and waterfalls are main attraction of the tourists in district. The following given below of some tourism development of Ratnagiri district.

A. 1) Beach

1. Ganpati pule Beach: Ganpatipule is 48 kms to the East of Ratnagiri. to its north is a creek, across which is Malgund village. The Ganpatipule Beach is noted for its rocky terrain, clean sand and refreshing natural ambience near also temple of Mahaganpati

2. Anjarle Beach: is one of the finest beaches in the Konkon region. An unspoiled virgin beach covered with white sand and surrounded by palms is just the ideal destination for a long and refreshing weekend. The beach is also popular for the 'Kadyawarcha Ganpati' temple located on a cliff.

3. Ladghar Beach: is a blissful marriage of idyllic settings and modern amenities. Contemporary convenience and fittings, relaxed landscapes & stunning location are the perfect triad that makes it a coveted leisure spot in Dapoli.

4. Velneshwar Beach: one of the beaches lying on the Konkan stretch is located in the middle of Guhagar and Ganpatipule towns. The beach experiences stable waves throughout the year. Located on the seashore, the beach is ideal for sunbathing and is rock free.

A. 2) Waterfall

1. Dhareshwar Waterfall, Marleshwar: The Sanagmeshwar Taluka of Ratnagiri is nestled in the arms of the Sahyadris. The beautiful Dhareshwar waterfall is in the vicinity of Shree Marleshwar temple which is situated at a distance of 18 km from Devrukh in the hilly area. As the water keeps flowing in continuous streams, it is known as the Dhareshwar Waterfall.

2. Ranpat Waterfall, Ukshi, Ratnagiri: The Ranpat Waterfall, in particular, can be seen from the railway grill windows in the last few stretches of the journey while travelling from Mumbai to Ratnagiri, but of course with the magnificent `Konkan Queen` of the Konkan Railway. The Ranpat village lies off the Mumbai – Goa highway leading to Ukshi village from Sangameshwar taluka.

3. Sawatsada Waterfall, Chiplun: The Sawatsada cliff, from where the waterfall actually emerges is just 5 kilometers from Chiplun. One can watch this huge waterfall from the Mumbai-Chiplun road. The waterfall is thronged with tourists, especially on the weekends. There is ample water from July to October. In the rainy season, the fall of water is strong and one needs to be careful near this waterfall, as it could turn out to be dangerous.

A. 3) Caves

1. Panhalekaji Caves: The beautiful invention of the Panhalekaji caves can be found in the hilly ranges of the Dapoli district, 20 kms from the Dapoli-Dabhol road, near the Nante village. These are a group of 29 caves of the Hinayan, Buddist, Ganpateya and the Nath sects situated on the confluence of the Kotjai and the Dhakti rivers, which have sustained their natural glory for many centuries. It is so believed that the construction and carvings of these caves began in the 2nd or the 3rd century and continued for many centuries to come.

2. Khed Caves: The caves found in any area of the world are the representatives of the past era. You can understand the history of the different periods such as the Pandava period, Buddhist period and the Hinayan period from these caves. These caves of Khed are similar to the Buddhist sculptures and located very close to the Khed bus stand in the Khed taluka.

A. 4) Temple

1. Mahaganpati Temple Ganpati: Shree Kshetra Ganpatipule is considered to be the most famous and leading holy place in entire Maharashtra. This beautiful place is situated on the sea coast at a distance of 25 kms from Ratnagiri. This pilgrimage is known as the protector deity, a 'Dwar devata' of India's western region. It is as if the great silver ocean calms down after touching the feet of the protector, Shree Mahaganapti.

2. Dhootapapeshwar Temple Rajapur: is situated in the numerous waterfalls of the Mrudani River, in dense green forests, just 3 to 4 km from the Rajapur bus station. The area of the temple is truly beautiful. The road to the temple, away from air pollution, passes through dense forest. In rainy season, the Mrudani river flowing from the hills generates a chain of waterfalls beside the temple.

3. Karneshwar Temple, Sangameshwar: The Alaknanda, Varuna and the Shastri rivers meet at Sangameshwar. This ancient Hemadpanti style temple, has been situated for centuries at the confluence of these rivers, in the area of Sangameshwar. It is so believed that Raja Karna from the Karvir dynasty established this temple almost 1600 years ago. The Karneshwar temple is said to be one of the most beautiful temples amongst all of Konkan region.

4. Shree Kshetra Parshuram, Chiplun: According to the Indian mythology, of the seven Chiranjeevs (those who can never die), Parshuram is Lord Vishnu's sixth avatar (incarnation) and it is so believed that he is residing on the Konkan coast as a protector of the West. Shri Parshuram, who donated the earth to Kashyap Rishi and pushed back the entire ocean for himself is the creator of the great land of Konkan.

A. 5) Fort

1. Ratnadurga Fort: The Ratnadurga or Bhagawati fort which was built in the 12th century is situated near the Ratnagiri docks. This huge fort is spread over 120 acres of land and is almost 1211 meters in length and 917 meters wide. It is located just 1 km to the west of Ratnagiri. The small fort has 9 bastions whereas the entire fort has a total of 29 bastions. Ratnadurga fort is divided in to three parts of Peth, the small fort, and the lighthouse.

2. Mandangad Fort, Mandangad

The Mandangad fort is situated at a distance of 4-5kms from the Mandangad S.T. stand. This fort is described as one of the oldest fort in Ratnagiri. There is a good concrete road which allows you to travel by your vehicle to the top of the fort. This fort was built during the reign of Panhala's King Bhoj in the 12th century.

3. Rasalgad, Khed: Many forts are nestled on top of the remote areas of Sahyadris for hundreds of years. Especially the Khed region in Ratnagiri is known to be comfortably nestling in the Sahyadris. Therefore, there are many mountain forts near Khed and in the places around it. The Rasalgad fort is the most beautiful during the rainy season.

4. Govalkot or Govindgad, Chiplun: The beautiful Govalkot or the Govindgad is situated at a distance of hardly 2-3 kms from Chiplun on the edge of the Vashishthi creek. The Karanjeshwari temple is situated at the base of the fort and the fort is engulfed by the Vashishthi River from the north and the Vatoli River from the south. The Govalkot fort is surrounded by water from three sides and the Govalkot harbour is just nearby.

B. Suggestion the Sustainable Development

Tourism is an important industry for many areas in the Ratnagiri is also one that can developed based on local resources and has aided the development many areas. Ratnagiri district has the flowing main point suggestion for development of tourism.

- Development of Kokon railway is also a positive factor for the development of sustainable tourism in the faultily.
- Numbers of beaches and other coastal landforms are developed along the Arabian coast that many attract to the tourists.
- Numbers of waterfalls are developed in the region due to physiographic and have abundance water during rainy season.
- Outmigration towards metropolitan cities like Mumbai, Pune, and Belgavi from the region is also a constraint for the development of sustainable tourism.
- In District were as Culture, residence, hotels, various type of meal is also asset and not is available in the region.
- In this area totally low of quality human resources
- Local transport facilities are cannot time management.
- There is an immense scope for the development of historical tourism, co-tourism, coastal tourism adventure tourism, heath tourism, winter tourism etc.

C. Recommendations for Sustainable Tourism Development (STD).

1. Tourism Training Programme:

Ratnagiri districts have the lack of trained qualitative human resources and it is harmful for the sustainable tourism development and training communications skills in mother tongues as well as foreign languages must be give the tourists. Short term training course for sustainable in undeveloped area.

2. Tourism Advanced Technological Information System. (TATIS)

Tourism industry in with planning for Tourism advanced technological information system in Ratnagiri district. Providing information of physiological, economic. Social Point etc.for suggestion to the sustainable tourism development.

3. Public Awareness for STD.

It is important point in sustainable development for Tourism Industry in undeveloped area. This tourism opportunity for business or employment and provide all facilities as well as co-operation.

4. Food and Small Industries Processing Training Programme:

In this district area as food and small industries processing with block wise training give the local people for more attraction from tourist people at some important of tourism point. For Example: region wise Mango, Cashew nut, etc. fruit on processing to output for Kokani marketing, food Products.

Conclusion:

Ratnagiri district is Beautiful Tourism places for beaches, waterfall, fort, temples and naturally some places. But not more of sustainable tourism development in the area because undeveloped and hilly area and after not more economic benefits of the output process. What do more suggestion and recommendation of the sustainable tourism development for more attraction to tourism place from out of tourist people that is explained of we can see the Socio-Economic Growth of Tourism need for Sustainable Development in Ratnagiri District about this research paper.

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Contribution of Sugar Factories in Agricultural Transformation in Kadegaon Tehsil

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Abstract:

Sugar factory plays a major role in the agricultural development of rural areas in Maharashtra. It solves the problem of unemployment by providing employment for rural youth. Sonhira Sahakari Sakhar Karkhana and Cane Energy India Ltd (Cane Agro) are two different sectors sugar factories working in Kadegaon Tehisl. Kadegaon Tehisl is located in drought prone area of Sangli district but Sugar factories in the region are engaged overall development of region. Agriculture is prime occupation in the region considering this fact sugar factories weighted on the development of agriculture sector. After the establishment of sugar factories entire cropping pattern has transformed.

Key word: Agriculture, cropping pattern, transformation.

Introduction:

Sugar industry develops in the source area of sugar cane. The Kadegaon tehsil has a cornucopia of sugarcane, therefore, sugar factory has expanded their crushing capacity within a short period of time. Presently private and co-operative factories are working with its full capacity. Sugar industries are providing various schemes to farmers, especially cane cultivator which directly gets the benefit while some non-cane cultivator gets an indirect benefit. As the result, the picture of the entire region has been changed. Agriculture is the main occupation of people in the Kadegaon tehsil. The term agriculture transformation denotes a successive change in the agricultural component. The present paper focuses on the agricultural change that has been taken placed with the help of sugar factories.

Objectives:

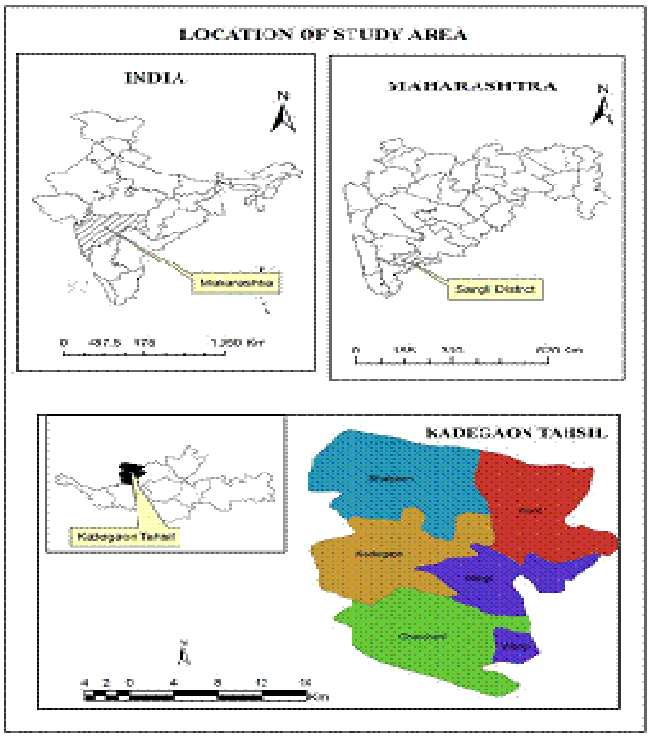
1) To study the cropping pattern before and after the establishment of sugar factories.
2) To study the role of sugar factories in transformation process.

Database:

The present paper based on primary and secondary sources of data. Primary data has been collected through the questioner and interviews. The secondary source of data has been collected through the Tehsil Agriculture office, Village Talathi Office, Agricultural Department of Sugar Factories, Published factory booklets etc.

Methodology:

The stratified random sampling method used for the selection of the Sample village. Total twenty sample villages are selected. Ten villages selected under the command area of each sugar factory. The selection of ten villages is based on the distance of Sugar Industry. Five villages selected under five km and next five villages selected under above ten km from each sugar factory. Size of land holding is considered at the time of fill the questioner. Three categories of land holding have been marked. i.e. Small (2.47 acre land) medium (up to 5 acre land) large(above 5 acre land) Ten percent of respondents form each village has been selected to fill the questionnaire.



Study Region:

Kadegaon tehsil lies in Sangli district with consisting 56 villages. It is covered by North-western part of the district. Geographically, Kadegaon tehsil lies between 17° 7' 18" to 17° 25'8" N latitude and 74° 15' 26" E to 75° 30' 45" E longitude. It acquired 593.72 sq.km area of Sangli district. North and north-west boundary has touch to Satara district, south at Palus tehsil in Sangli district, and east at Khanapur tehsils of Sangli district. As per 2011 census, 144311 populations have been recorded with in 72252 male and 68025 female populations. In summer season, maximum average temperature recorded 34° c to 39°c while minimum average temperature 22.6^{o} c has been record. In winter season it recorded maximum average 17.2 ^{o} c to and minimum average 13.2 ^{o} c.

Result and Discussion:

Sonhira Sahakari Sakhar Karakhan (SSSK) established in the year 1999 while Cane Energy India Ltd.(CEIL) converted into the private sector in 2007. The year 1990 is considered agricultural base year. The area under sugarcane crop increased rapidly after the establishment of sugar factories in the region.

Wheat, Sorgham, Bajara are the major cereal crops in the Kadegaon tahsil while Sugarcane, cotton, Soyabean, Pulses, Orchards are the profitable crops. The proportion of area under cultivation of cereal crop started to decreasing very highly because the market value of cereal crop was less as compare sugar cane crop. After the establishment of sugar factory in region farmers got assurance about crushing the cane as well as FRP rate. Therefore farmers started the cultivation of cane in the region. As compare to the sugarcane and others profitable crops in the region, the change in area under cultivation in sugarcane crop has increased very rapidly.

Table No: 2

Change in area under different crops

Sr. No	Crops	Kadegaon		Shalgaon		Wangi		Chinchanin		Nevari	
		2000	2010	2000	2010	2000	2010	2000	2010	2000	2010
1	R	-0.32	-0.59	-0.42	-0.47	-0.6	-1.29	-0.58	-0.42	-0.54	-0.6
2	W	-4.99	-2.2	-3.26	-7.64	-6.06	-8.18	-0.57	-6.04	-6.83	-6.82
3	S	-4.37	-5.14	-10.33	-1.64	-6.7	-10.81	-2.77	-6.12	-8.47	-3.31
4	B	0.53	-11.69	-1.42	-6.83	-0.38	-5.59	-1.7	-7.06	0.74	-5.79
5	M	-1.31	-5.44	0.88	-6.79	-1.59	3.84	-1.46	-5.51	1.05	-7.42
6	**Su**	**9.05**	**15.93**	**9.52**	**16.8**	**11.9**	**20.92**	**8.58**	**7.08**	**9.99**	**14.2**
7	C	0.93	-2.78	-3.3	-5.69	-2.91	-5.52	-1.27	-1.84	-2.15	-1.7
8	**So**	**0.77**	**4.26**	**1.71**	**4.44**	**2.45**	**4.31**	**0.53**	**6.45**	**1.97**	**1.94**
9	**P**	**0.74**	**1.39**	**2.11**	**2.89**	**1.35**	**1.21**	**-0.02**	**4.72**	**0.69**	**5.43**
10	**Gn**	**0.21**	**6.23**	**3.03**	**3.38**	**1.45**	**7.64**	**-0.81**	**7.73**	**3.05**	**3.21**
11	**O**	**0.22**	**0.34**	**0.24**	**0.7**	**0.31**	**0.95**	**0.07**	**1.01**	**0.5**	**0.17**

Source: Tehsil Agriculture Office 1990, 2000, 2010.

Note: The represented latter indicates:- R-Rice; W-Wheat; S-Sorghum; B-Bajara; M-Maize; Sc-Sugarcane; C-Cotton; Sy-Soyabean; P-Pulses; Gn-Groundnut; O- Orchards

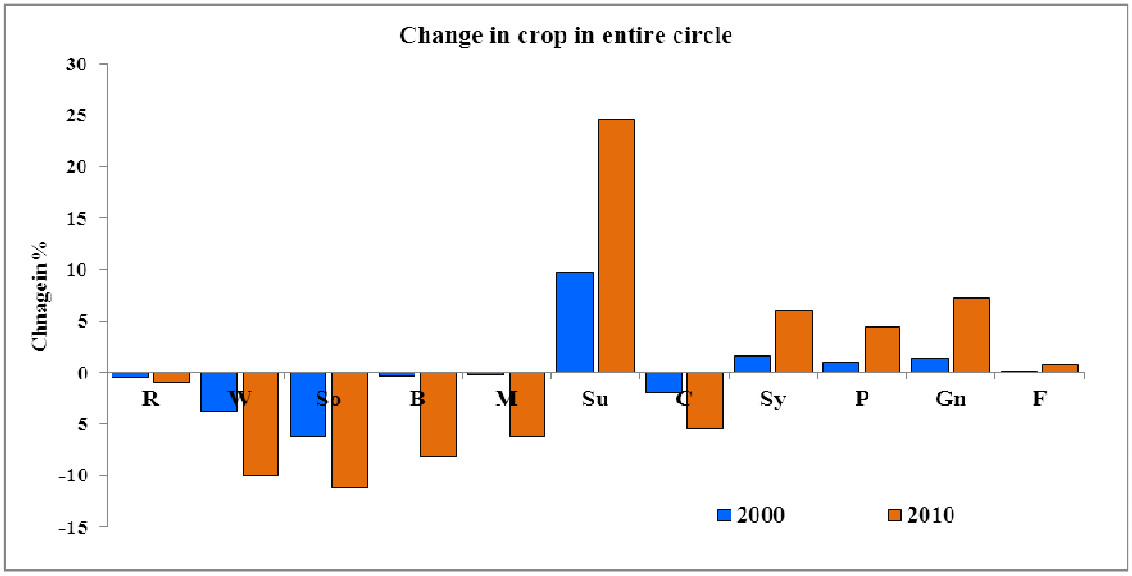


Fig. No:1

Contribution of Sugar factory in Transformation process:

Agricultural department of sugar factories are engaged in develops the approach of farmers by organizing various programmes like a drip of irrigation, new seed, etc. Sugar factory provides facility like seed supply, soil test, fertilizers etc. therefore farmers are attracted towards cane cultivation

A) Transformation in agriculture type:

Canal irrigation is a major source of water in Kadegaon tehsil. So many sites of sub-canal had an incomplete condition in the tehsil. Considering this fact, Sonhira sugar factory takes the effort to complete the sub-canal work. Since the inception of Sonhira sugar factory has expended 21.50 crores rupees for completion of Tembhu sub-canal while 23.05 crores for completion of Takari sub-canal. It has irrigated 2800 hectors and 13500 hectors area respectively. As the result, a type of irrigated farming has been increased by 21.02 per cent in the Kadegaon tehsil.

B) Transformation in method of tillage:

The use of oxen pair is the traditional method for tillage. In the study region, 30.12 per cent farmers have using merely tractor for tillage in the farm. It indicates that transformed the means of tillage in Kadegaon tehsil. 350 tractor owners out of 1152 respondent have registered. Sonhira SSK had assisted to 80 farmers for purchase the tractors while Cane agro had assisted to 14 farmers. Therefore the use of tractor in the farm has been increased.

C) Transformation in method of sugarcane cultivation:

The agricultural department of sugar factory has been work to develop the outlook of farmers. Factories are organizing a workshop on the sugarcane related activities, therefore, farmers in the region are attracting towards a modern method of sugarcane cultivation. As the result, 46.69 per cent farmers in the region have started to cultivate sugarcane by strip method. Sugar factory has allotted drip technology to the farmers. It is most useful for strip method only. 176 farmers have got benefit of drip technology by Sonhira SSK while 163 farmers have got by Cane agro sugar factory out of total 1152 respondent farmers.

D) Means of Irrigation:

Sugarcane is yearly crop therefore it requires the water throughout the year. The diesel engine is a tradition mean of irrigation. The proportion of use of Diesel engine is remarkably changed. At the time of canal water rotation, 16.67 per cent increase observed in using a diesel engine and electric motor as a mean for irrigation. 27.93 per cent increase observed in using the electric motor as a mean of irrigation. It means 44.6 per cent change has recorded in the mean of irrigation in the Kadegaon tahsil.

Table No: 2

Transformation in selective indicators

Sr. No	Transformation Indicators	No of farmers in %		Volume change in %
		1990	2015	
A	**Type of Agriculture**			
	Rainfead farming	58.07	11.89	- 46.18
	Irrigated farming	16.92	37.94	21.02
	Both type of farming	25.00	50.17	25.17

B	**Method of tillage**			
	Oxen Pair	33.94	17.10	-16.84
	Tractor	28.99	59.11	30.12
	Both	37.06	23.78	-13.28
C	**Method of sugarcane cultivation**			
	Traditional Method	100	53.31	- 46.69
	Strip Method	00	46.69	46.69
D	**Means of Irrigation**			
	Diesel engine	24	00	-24
	Electric motor	41.18	69.11	27.93
	Diesel and Electric motor	2.16	18.33	16.67
	Solar pump	00	0.66	0.66
	No means of irrigation	32.66	11.89	-20.77
E	**Average annual use of fertilizer (per Acre in Kg)**			
	Urea	70	150	80
	DAP	55	100	45
	10:26:26	50	100	50
	Other	30	100	70

Source: Compiled by Researcher based on field visit.

E) Transformation in use of fertilizer:

Sugar factory allots the chemical fertilizer to cane growers on concessional rate. Urea, DAP and 10:26: 26 etc. fertilizers allotted by factory. It provides facility to pay a bill of fertilizers through the final cane bill. Therefore the use of chemical fertilizer has been increased rapidly. More than 50 per cent use of each fertilizer has been increased in the study region.

Conclusion:

Sugar factories are playing a major role in the agricultural society of India. After the establishment of sugar industry in any region, they can change the picture of rural areas. Farmers in the study region have got the assurance of crushing the cane and bill of cane therefore the proportion of sugarcane has been increased rapidly while the proportion of cereal crops recorded in negative state. Sugar factories in Kadegaon tahisl has provided many facilities like construction sub-canal, providing drip technology, providing chemical fertilizers etc. Farmers in the study region have started to get the benefits of such facilities. It reflected into various parameters taken into consider, as the result the picture of rural area has totally changed in Kadegaon tehsil.

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Reconstruction of Urban Core Is Need of Urban Development- A Case Study of Ahmednagar City Gaonthan During 1999-2002

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Abstract:

The towns and cities of India have played a major role in the emergence of India as an important industrial & political power in the world. They have acted as focal points in the cultural landscape of India. With the advent of various cultural streams dating back since the Indus valley culture, different types of structure or morphology has came to exist in Indian cities. Specially there are tremendous morphological changes are found in urban core. Therefore the study of morphological changes of urban related to reconstruction is important.

Key words-: Landscape, Morphology, Reconstruction.

Introduction

The characteristics features of a city are the result of the combination of various factors like topography, climate, history, economy, culture etc. These characteristics vary every city is unique & has certain distinctive characteristics. These urban characteristics are however, never static. They change both time & space.

With the development of the economy other factors like population growth, urbanization & improved technology have a combine effect on urban settlement, which grow bigger & more complex. The study of the internal structure of cities by urban geography is study of the structural & demographical variation of urban settlement.

The city-core has always been a spatial location of significance though its characteristic qualities have varied considerably both specially and temporarily. This area is "The heart, the brain and the soul of the entire urban organism".

Traditional central area is the most important part of city. The main special context within which our fears and expectations about contemporary process at work will be manifest". Since the city core is the nucleus of the city, it is a dominant element of urban structure.

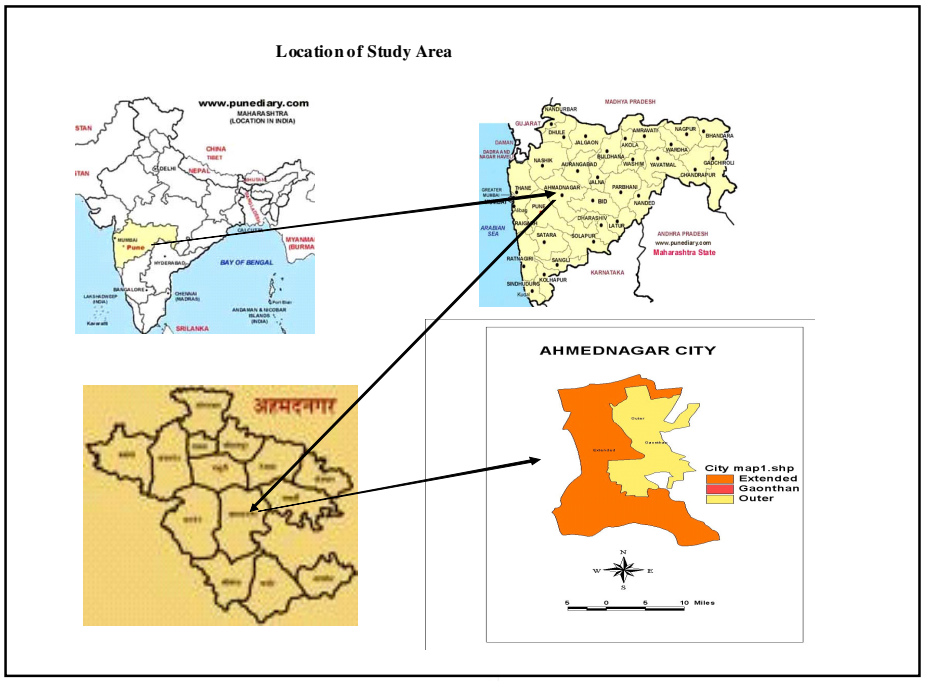
Urban core is the functional zone which has office buildings, department's commercial centers, stores & theatres reached maturity. Recently there are large amount of urban renovation took place to accommodate a higher level of economic activities. So recently increasing the urban renovation rapidly in core area.

A recent study undertaken by me focus on "City Core of Ahmednagar Town". It is experienced that there is substantial decline in residential population in the inter-city area, though standing out as the most crowed area are losing its population. The major area on which enquiry would be focused are change in building structure and composition of population consequential change in land use, change in structure of buildings, pattern and use of buildings from residential to commercial use along with services and amenities available in the city.

Study Area

On topographical map Ahmednagar city spread on the two toposheets namely the East 47 I/12 and to the west of 47 I/16. It covers approximately an area of 84 sq.km. with the help of

toposheets location of Ahmednagar city is situated between latitude 19^0 4' N. to 19^0 8' N. and longitude 74^0 44' E. to 74^0 46' E. Ahmednagar is largest city in district. It is situated on the contour of 600 mt. altitude



Objectivities:

1. To understand rate of reconstruction and renovation in the Ahmednagar city core.
2. To understand structural changes of Ahmednagar city core.

Source of Data:

Basically study is based on various secondary sources of data.

1. Renovation permission registers of Ahmednagar Corporation – 2004-2005.
2 Planning Publication Ahmednagar Corporation Reports.
4. Ahmednagar District Gazetteer

Methodology:

Research work is mainly based on secondary source of data from town planning office.
Renovation permission data were collected, from **'Survey Sheet Number-Wise Map'** same tabulating with the help of Choropleth method. It is represented changing land-use pattern of city core. Demographical data are collected from district census gazetteer and analyzed. Analyses data represents help of diagrams.

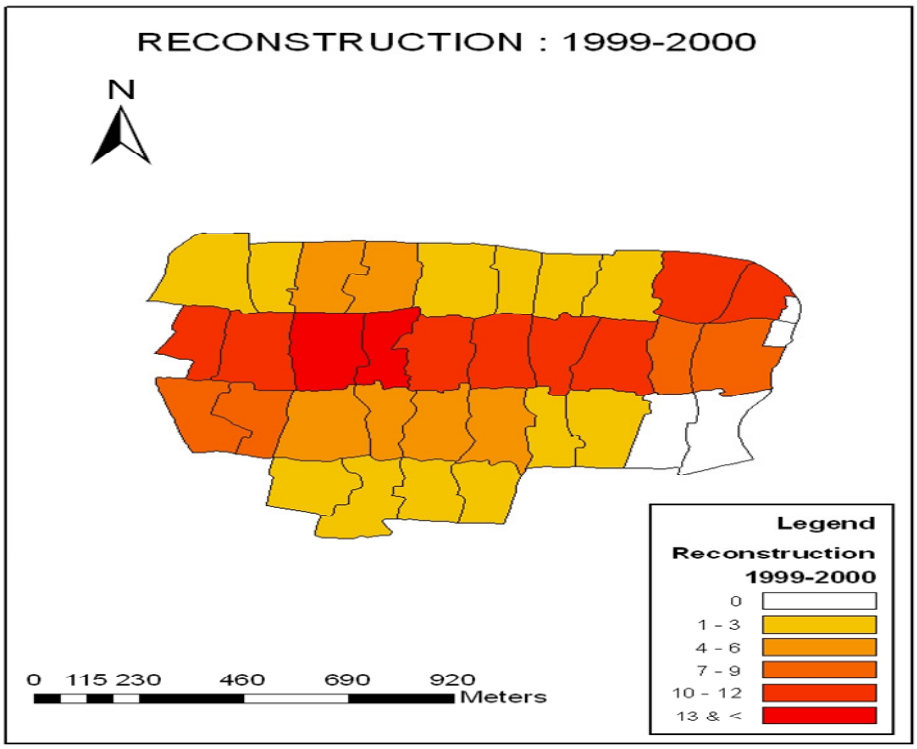
Reconstruction of urban core:

Reconstructed Buildings During 1 April 1999 To 31 March 2000:

RECONSTRUCTION – 1999-2000:

TABLE – RECONSTRUCTED BUILDINGS DURING 1ST APRIL TO 31ST MARCH 2000

Sr.No.	Sheet No.	Inc. Survey No.	No of Reconstructed Buildings
1.	1, 1A	1-167	02
2.	2, 2A	168-567	04
3.	3, 3A	568-929	02
4.	4, 4A	930-1393	02
5.	5, 5A	1394-1849	09
6.	6	1850-1859	00
7.	7	1860-1883	00
8.	9, 9A	1884-2310	08
9.	9, 9A	2311-2405	00
10.	11, 11A	2406-2672	01
11.	12, 12A	2673-3292	09
12.	13, 13A	2393-3656	10
13.	14, 14A	3657-4039	05
14.	15, 15A	4040-4502	01
15.	16, 16A	4503-4770	02
16.	18, 18A	4771-4977	06
17.	19, 19A	4978-5196	04
18.	20, 20A	5197-5800	15
19.	21, 21A	5801-6300	10



Reconstruction between 1999-2000 coropleth map of reconstruction of building in Ahmednagar city shows that in the Ahmednagar city gaothan reconstruction is more in inner part. All outer survey seat number shows less reconstruction.

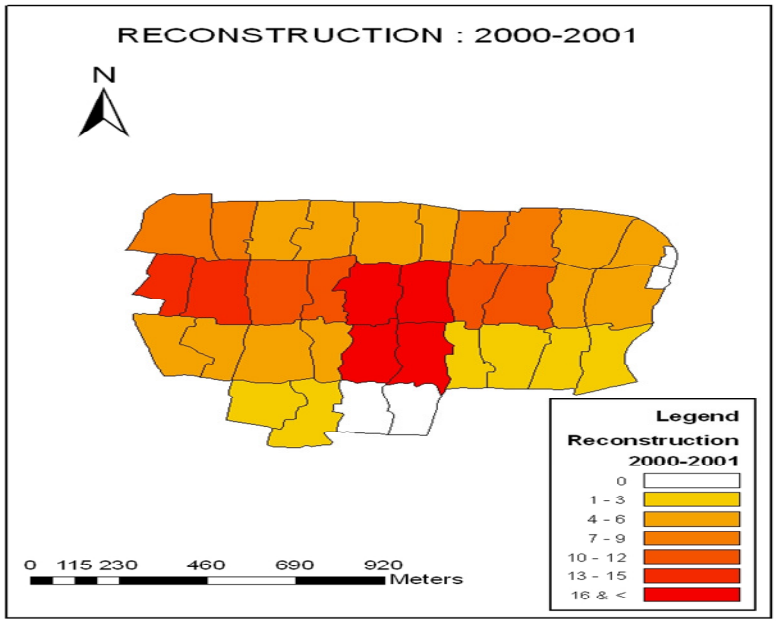
On the basis of sector-wise number of buildings reconstruction marginal sectors no. 1, 3, 4, 6, 7, 9, 11, 15, 16 and there subgroups shows only 1-3 reconstruction's in this year. Towards core sectors no. 2, 14, 18, 19 and there subgroups shows reconstruction between 4, 6 buildings

sectors 5, 8 and 12 situated to the east shows moderate reconstruction between 7 to 9 buildings, sector no. 13, 21 & there subgroups shows more construction between 10-12 buildings. Centrally located sector no. 20 and 20A shows highest reconstruction of buildings above 13 I year 1999-2000. It is renovation of core area.

Reconstructed Buildings During 1 April 2000 To 31 March 2001:

RECONSTRUCTION 2000-2001:
TABLE-RECONSTRUCTED BUILDINGS DURING 1 APRIL, 2000 TO 31 MARCH 2001

Sr. No.	Sheet No.	Inc. Survey No.	No. of Reconstructed buildings
1.	1, 1A	1-167	09
2.	2, 2A	168-567	04
3.	3, 3A	568-929	06
4.	4, 4A	930-1393	07
5.	5, 5A	1394-1849	04
6.	6	1850-1859	00
7.	7	1860-1883	00
8.	8, 8A	1884-2310	04
9.	9, 9A	2311-2405	01
10.	11, 11A	2406-2672	03
11.	12, 12A	2673-3292	11
12.	13, 13A	3293-3656	18
13.	14, 14A	3657-4039	17
14.	15, 15A	4040-4502	00
15.	16, 16A	4503-4770	02
16.	18, 18A	4771-4977	05
17.	19, 19A	4978-5196	04
18.	20, 20A	5197-5800	11
19.	21, 21A	5801-6300	13



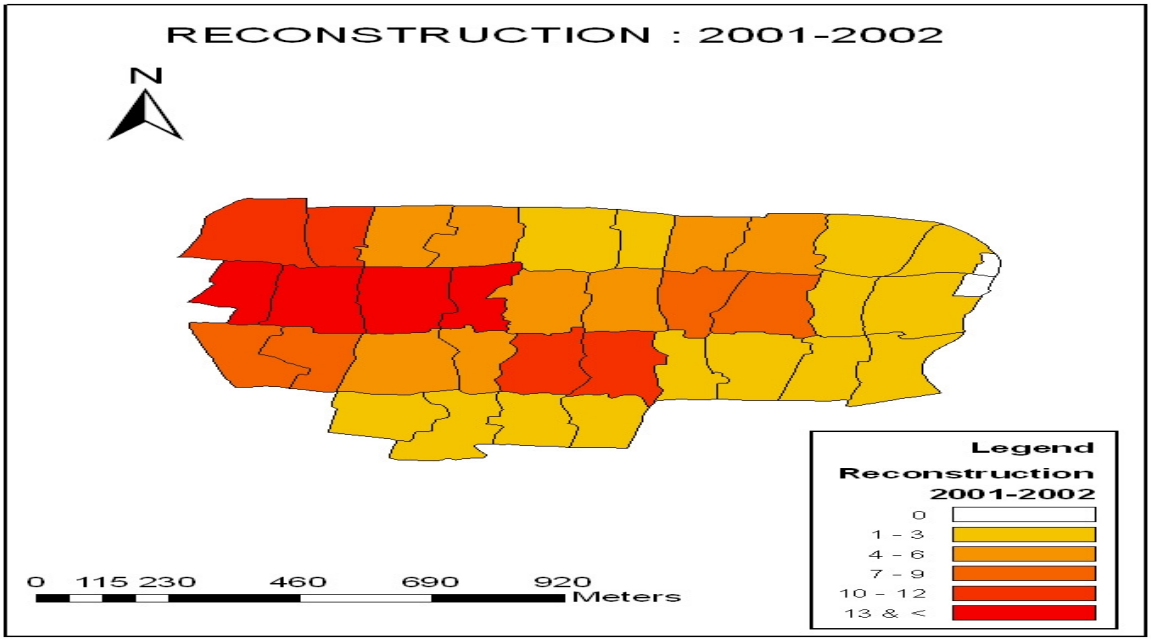
Similar conditions are followed in this year also, but reconstruction is more in this year. Comparatively sector no. 6, 7, 9, 11,15, 16 & their subgroups shows less reconstruction between 1 to 3 buildings. Sector no. 2, 5, 8, 19, and 18 and there subgroups shows reconstruction between 4-6 buildings some marginal sectors no. 1, 3, and 4 to the North shows moderate reconstruction between 7 to 9 buildings.

Reconstruction is highest in the central zone sector no. 12, 20 and their subgroups shows reconstruction between 12 to 15 buildings. Sectors no. 21 and 21A shows more reconstruction between 12 to 15 buildings. It is highest in centrally located sectors no. 13, 13A, 14, 14A again it represent that reconstruction is highest in Ahmednagar city centers compared with outer area.

Reconstructed Buildings During 1 April 2001 To 31 March 2002:

RECONSTRUCTION 2001-2002:
TABLE-RECONSTRUCTED BUILDINGS DURING 1 APRIL, 2001 TO 31 MARCH 2002.

Sr. No.	Sheet No.	Inc. Survey No.	No. of Reconstructed buildings
1.	1, 1A	1-167	09
2.	2, 2A	168-567	05
3.	3, 3A	568-929	02
4.	4, 4A	930-1393	05
5.	5, 5A	1394-1849	03
6.	6	1850-1859	00
7.	7	1860-1883	00
8.	8, 8A	1884-2310	03
9.	9, 9A	2311-2405	01
10.	11, 11A	2406-2672	01
11.	12, 12A	2673-3292	07
12.	13, 13A	3293-3656	06
13.	14, 14A	3657-4039	10
14.	15, 15A	4040-4502	01
15.	16, 16A	4503-4770	01
16.	18, 18A	4771-4977	07
17.	19, 19A	4978-5196	05
18.	20, 20A	5197-5800	14
19.	21, 21A	5801-6300	15



Over look of 2001-2002 map shows that renovation is highest I the internal area and comparatively it decreases towards outer area. Sector no. 3, 5, 6, 7, 9, 11, 15, 16 and its subgroups shows minimum reconstruction of 1-3 buildings. Reconstruction of 4-6 buildings is observing between 2, 8, 13, 18, and 19 number sectors. Sector no. 1 only indicates moderate reconstruction between 7-9 buildings. Sectors 12-14 only indicates high reconstruction of 10-12 buildings.

Here again like 1999-2000 we find highest reconstruction in sector 20 along with 21 and its subgroups.

We find highest renovation in core area compared with periphery area.

Conclusion & findings:

1. According to reconstruction data provided we found rate of reconstruction is highest in interior part of city.
2. Rate of reconstruction in outer area is increased as compare to previous year.
3. Proportion of houses is highest in the western part of Ahmednagar city .So we found highest agglomeration of houses in this area.
4. Rate of reconstruction varies spatio-temporary it is not same for all years.
5. Rate of reconstruction decreases with increase distance from core this is because of comparatively outer area is new than the inner old core.

Suggestions:

As Nagar City has long history of urbanization, cluster of population is found in urban core area. To solve problems in cluster we have suggest following points

1. Rudimentary (Wada) structure is monuments it should be protected.
2. To replace housing cluster corporation should produce land in low cost for proper urban development.
3. Municipality should provide better facilitates and amenities to extended area.

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Levels of Development in Drought Prone Area of Eastern Sangli District: A Comparative Analysis

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Introduction:

Drought is one of the climatic as well as natural disaster common all over the world. Droughts have disastrous impact on the economy and can affect the largest segment of the society, which may last for months and in some cases several years. Drought is a temporary, recurring natural disaster, which originates from the lack of precipitation and brings significant economic losses. It creates an atmosphere of doom and despair. Water scarcity can be said as the cause and effect of drought. Drought occurs whenever the links in the hydrological cycle is broken or is destabilized. Drought is a poison, no one knows when it creeps in, it can last any number of days and its severity cannot be predicted. It has extensive spatial dimension and thus can have serious implication on the socio-economic stability of an entire region. It is not possible to avoid droughts. But drought preparedness can be developed and drought impacts can be managed. The success of both depends, amongst the others, on how well the droughts are defined and drought characteristics quantified (Smakhtin et. al., 2004) India is predominantly an agrarian country as more than 70% of its population is dependent on agriculture. Due to the vagaries of rainfall, more than 68% of the net sown area in the country is drought prone, out of which 50% is severe in nature. The country experiences drought every 2 to 3 years in one part or other part.

Development of any area is depending on the how climatic condition is found there, locational impact and other human factors are also responsible for that. The simple definition of the development is qualitative improvement of the previous condition or change in desire direction with desire speed is nothing but the development. Eastern part of Sangli district comes under the drought prone region because of scarcity of water is main problem due to the less rainfall therefore such types of are regions are remains behind in development category so need to some study on this region

Study Area:

The present study is focused on levels of development in eastern part of Sangli district. The Sangli district is located at the extreme south of the state and bordering between the states of Maharashtra and Karnataka. The district is surrounded by Satara and Solapur district in the north, Ratnagiri district in the North West and Kolhapur district in the west Belgaum and Bijapur district of Karnataka. Therefore, the district is having the culture of two states. The district is divided to in 10 tehsils with an area of 8591.3 kilometers. Geographically the district is divided into three zones, viz. western zone, central zone and eastern zone, in that Jat, Kavathe-Mahankal and Atpadi tehsils are selected for the study region of eastern zone. Total area of study region is 3792.4 kilometer.

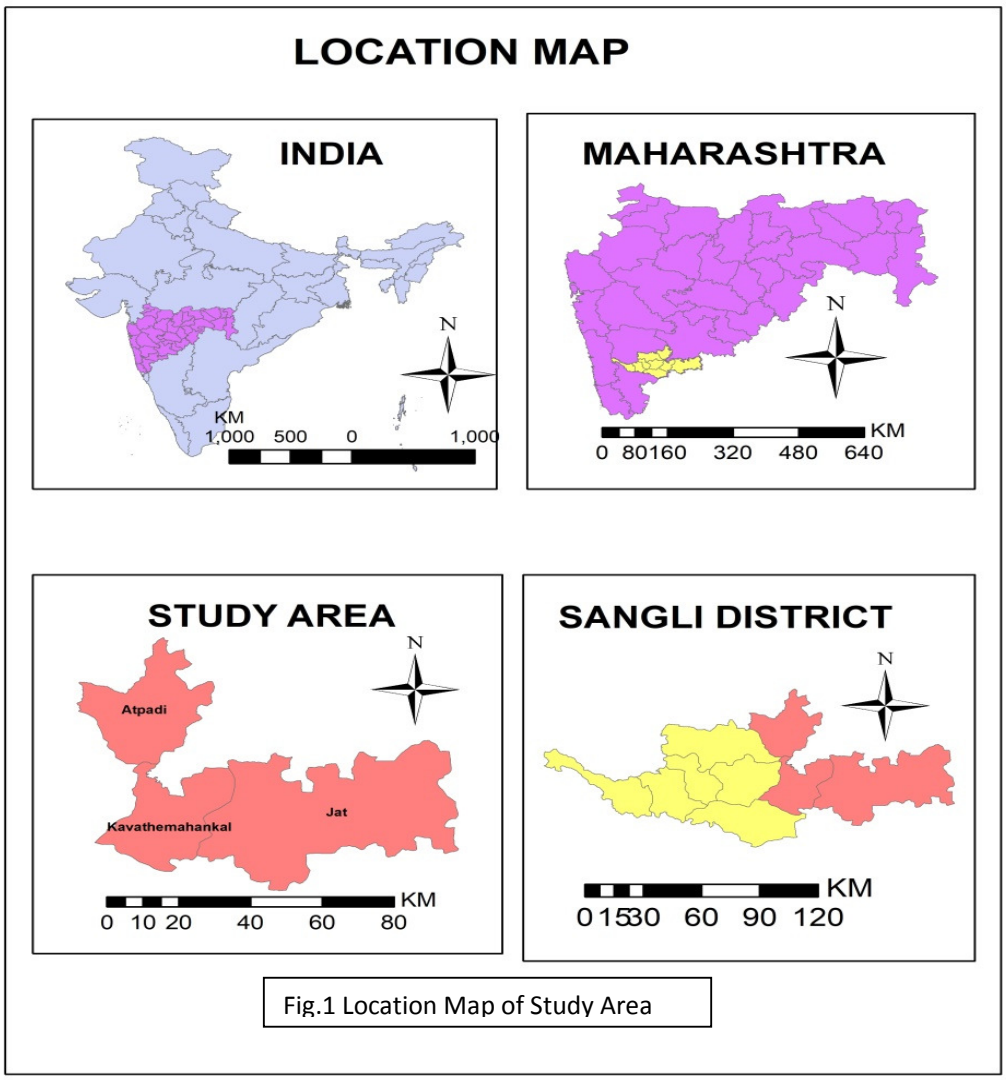


Fig.1 Location Map of Study Area

Objectives

- To Find Out Levels of Development in Study Area.

Database And Methodology

Primary Data

The present study is based on both primary and secondary sources of data. The primary data are collected through field survey, wherein they tested interview method; household schedule was used in the 6 selected villages of study region.

Secondary Data

The secondary data is collected from the Census reports published by the Government of India for 2001 and 2011, Socio-economic Review and District Statistical Abstract of Sangli district, Primary Census Abstract of Maharashtra state 2001-2011, Dissertations, Books, Journals, and Articles etc.

Methodology

In order to meet this objective the study is mainly based on both primary and secondary sources of data. Primary data, which have been collected by conducting the intensive fieldwork in the selected six villages in eastern part of Sangli district of Maharashtra. Three Sample villages are selected near to the tehsil headquarter and three villages are selected rural region of the tehsils. Total 120 houses were surveyed in sample villages. It has helped us to understand the overall development of study region. However, secondary data has also been used for looking into their distribution pattern, growth rate, literacy status, occupational structure and overall development in study area. Systematic sampling technique was applied for the collection of primary data, every third house is considered for data collection.

Levels of development were measured at tehsil and village level as well. For the tehsil level, the 2001 and 2011 censuses, and the village level their socio-economic development was based on systematic sample survey data collected during 2017-18. At tehsil level the composite indexes of development for the years 2001 and 2011 are based on five socio-economic indicators, Literacy rate, Female literacy, work participation rate, Percentage of workers in non-agricultural sector and Sex ratio (i.e., females per 1000 of male population).

Following twelve socio-economic indicators for village level development, Literacy rate, Female literacy, Percentage of population working in non-agricultural sector., Per capita income (in Rs), Percentage household having 3 or more room house, Percentage household having two-wheeler, Percentage household having radio & tape recorder, Percentage household having TV (Television), Percentage household having pucca & RCC house and Percentage household having latrine facilities. For the calculation of development composite index are used.

Data Analysis

Levels Of Development (2001)

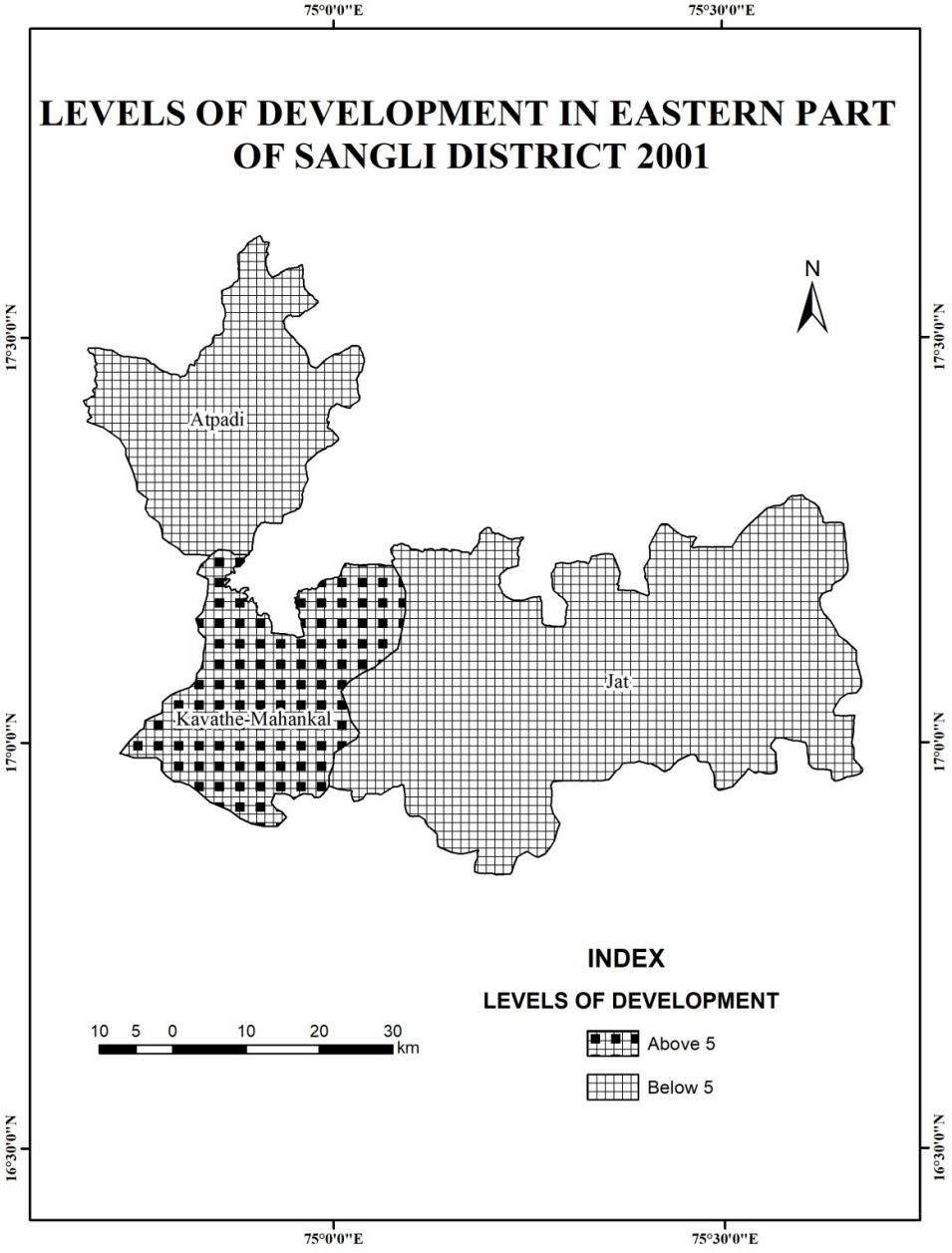
As per the 2001 census eastern part of Sangli district means Jat, Kavathe-Mahankal and Atpadi tehsils are comes under the drought prone region because of less rainfall and high temperature. Comparatively Kavathe-Mahankal tehsil was highly developed in three tehsils of study region. the main reason was behind that is some irrigational project are taken into hands so some part the Kavathe-Mahankal tehsil was in good condition, literacy rate, work participation ratio and workers in non-agricultural sector was better off. Atpadi tehsil also facing drought condition every four or five year because of this tehsil are comes in rain shadow zone so rainfall was less occurred in this site. Literacy rate and sex ratio of this tehsil was good but the work participation rate and workers in non-agricultural sector were less therefore this indicator was pulling behind in development category. In the Jat tehsil which is largest tehsil in Sangli district as per the area so this tehsil are lagging behind in development category comparing to Atpadi and Kavathe-Mahankal tehsil of eastern part of Sangli district. Jat tehsil are located in east part of the district the shape of this tehsil is horizontal in nature therefore the climatic condition was similar in whole the tehsil, high temperature and less rainfall is common phenomena of this tehsil. Work Participation rate and workers in non-agricultural sector percentage in Jat tehsil was very less results levels of development in this tehsil was very low. Average composite values of Kavathe-Mahankal tehsil was 5.09, Atpadi 4.82 and Jat tehsil having 4.52 index values. Average composite value of eastern part of Sangli district was 4.81 which denote very backward development of this region.

Table 1

Levels of Development, 2001

Sr. No.	Tehsil	Composite Index
1	Kavathe-Mahankal	5.09
2	Atpadi	4.82
3	Jat	4.52
	Average	**4.81**

Source: Census of India 2001, & District Census Handbook, Sangli District.



Levels Of Development (2011)

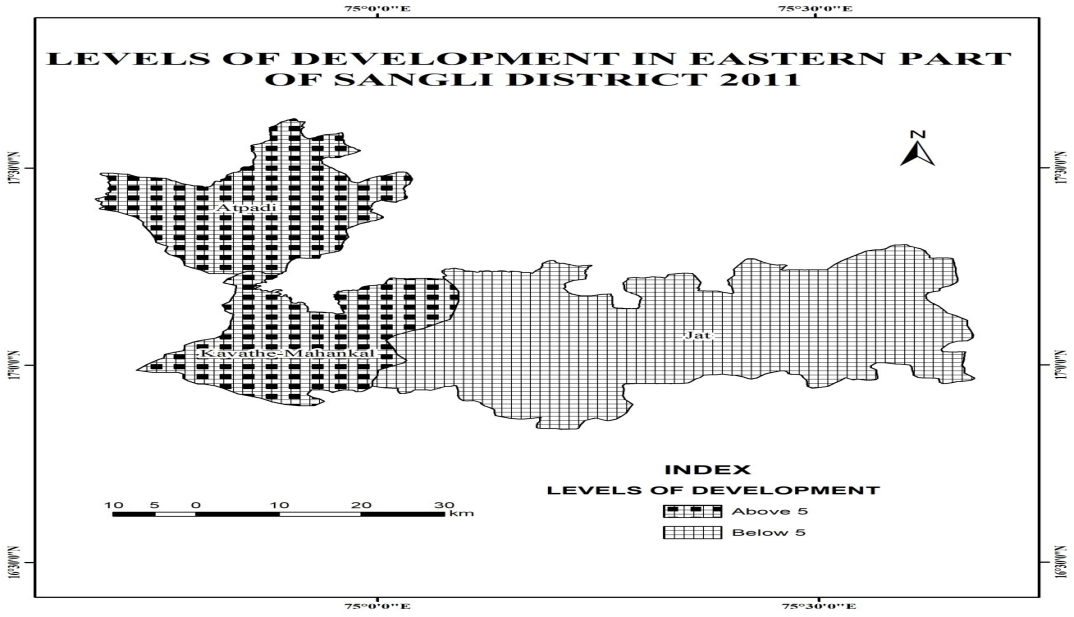
According to 2011 census eastern part of Sangli district comparatively Kavathe-Mahankal tehsil was highly developed after that Atpadi tehsil are come and Jat tehsil remain backward same as 2001 census, in three tehsils of study region. In Kavathe-Mahankal tehsil agricultural development is observed in last five-six years because of irrigational project. Literacy rate, work participation ratio and workers in non-agricultural sector were improved in their last decade results therefore this tehsil comes in better off condition. Atpadi tehsil also improve their last condition of development but workers in non-agricultural sector and work participation rate pulls back. Literacy rate and sex ratio of this tehsil was increased but the work participation rate and workers in non-agricultural sector were less improved therefore this indicator was pulling behind in development category and remain same position in development category. In Jat tehsil Work Participation rate and workers in non-agricultural sector, female literacy rate was very less compare to the Kavathe-Mahankal and Atpadi tehsil results levels of development in this tehsil was very low. Average composite values of Kavathe-Mahankal tehsil was 5.29, Atpadi 5.27 and Jat tehsil having 4.79 index values. Average composite value of eastern part of Sangli district as per the 2011 census was 5.12 which denote very backward development of this region compares to the other regions of Sangli district. Map shows the above 5 and below 5 composite index as per the 2011 census Atpadi and Kavathe-Mahankal tehsils comes in developed category and Jat tehsil falls in backward development category.

Table 2

Levels of Development, 2011

Sr. No.	Tehsil	Composite Index
6	Kavathe-Mahankal	5.29
8	Atpadi	5.27
9	Jat	4.79
	Average	**5.12**

Source: Census of India 2011, & District Census Handbook, Sangli District.



Levels Of Development In Sample Villages (2017-18)

In Sample villages of eastern part of Sangli district Kavathe-Mahankal tehsil having highest development in that Kokale village of this tehsil was highest composite index 14.08 and lowest was in Madgule village of Atpadi tehsil 11.09 composite indexes. In Madgule village maximum peoples are living in kutcha and semi pucca houses, household assets are very less in this village few households are observed as houseless, land area is minimum, and agricultural development was absent therefore Madgule village found as weaker village in all sample villages. But in other side Kokale village of Kavathe-Mahankal tehsil having highest levels of development observed because of the location of this village is favorable for development this village is near to the main road, water was available, agricultural development was in good stage, work participation rate was high, maximum peoples in government services therefore economic condition was good its result composite value was 14.08 higher than remaining sample villages. The villages Dafalapur of Jat tehsil having 13.21 composite indexes, following that Walekhindi 13.13, Shiradhon 12.26, Awalai 11.68 and Madgule village of Atpadi tehsil having 11.09 composite index values it means the whole region facing the same drought problem because the variation between six villages was not maximum. As per the field survey Kavathe-Mahankal tehsil having highest development after that Jat tehsil comes in medium category of development and remaining Atpadi tehsil was lowest levels of development observed.

Table 3

Levels of Development in Sample Villages, 2017-18

Sr. No.	Village	Tehsil	Composite Index
1	Dafalapur	Jat	13.21
2	Walekhindi	Jat	13.13
3	Shiradhon	Kavathe-Mahankal	12.26
4	Kokale	Kavathe-Mahankal	14.08
5	Madgule	Atpadi	11.09
6	Awalai	Atpadi	11.68
Average			**12.57**

Source: Fieldwork 2017-18.

Conclusions:

It is evident from table 1 clearly denotes the levels of development as per the 2001 census Kavathe-Mahankal tehsil having highest levels of development after that Atpadi tehsil are come and lastly Jat tehsil was observed in backward development category. After the ten years the levels of development in study region are remain same only the numbers are changes. Drought condition is the main cause where levels of development were affected it is also evident from the results the work participation ratio and workers in non-agricultural sector these two indicators are largely impact on the development. Results clearly shows the where the work participation ratio was maximum levels of development also in good condition.

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Suitable Geographical Sites for Constructing Surface Rainwater Harvesting Structures in Satara District of Maharashtra

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Abstract:

Surface rainwater harvesting practiced very widely in the drought prone tahsils of Satara district. It is found many percolation tanks constructed a post-independence of India, are still in use. We find that the surface rainwater harvesting structures are more prevalent in area covered with basalt hard rock in the region. Surface rainwater harvesting is justified by the nature of rainfall in semi-arid areas. If not managed, it quickly evaporates or runs as flash floods into saline sinks. Thus, the starting point of rainwater harvesting is to capture rainwater where it fall for purposes of meeting the water needs of that area. Any excess can then be transferred for use in downstream areas. The main objective of this study is measures three type of surface rainwater harvesting potential in rural area; one is runoff rainwater harvesting potential in hilly area, second is recharge and storage of rainwater harvesting potential in plateau area and third is artificial ground water recharge through rainwater harvesting potential. We also suggest suitable sites of the rainwater harvesting structures with the help of physiography of the area and also estimated rainwater harvesting potential in the region.

Keywords: Rainwater Harvesting, Potential, Artificial Recharge, Physiography etc.

Introduction:

Last few years Maharashtra state is facing scarcity of water due to uneven rainfall accompanied by mismanagement of water. The severity of problem is increasing day by day. It is a challenging task to supply water for the vast population along with agriculture and industrial area. The scanty and irregular pattern of rainfall adversely effects on the agriculture system practiced in drought prone regions that abate development of all aspect in the region. Today there is need to planning of area which is not sufficient water to human being needs. Especially Man, Khatav and Phaltan tahsils have come under rain shadow area or drought prone area considering to Satara district. In this tahsils agriculture problem arises due to irregular and uncertain rainfall. In the present year end of monsoon until now no rainfall or no any positive condition lies in this region. That's why this region is in need to constructing highest numbers of surface rainwater harvesting structures. This modern technology applied to helping recharge underground water level.

Objectives

1. To Study the physiographic and climatic condition of the area
2. To suggest suitable geographical sites for constructing surface rainwater harvesting structures.
3. To measures the rainwater harvesting potential in the area.

Data Source and Methodology

The main objective of this study is measures three type of surface rainwater harvesting potential in rural area; one is runoff rainwater harvesting potential in hilly area, second is recharge and storage of rainwater harvesting potential in plateau area and third is artificial ground water recharge through rainwater harvesting potential. We also suggest suitable sites of the rainwater harvesting structures with the help of physiography of the area and also estimated rainwater harvesting potential in the region.

The Study Area

Satara district is in the western part of Maharashtra state. Its location lies between 17° 5´ and 18° 11´ north latitude and 73° 33´ and 74° 54´ east longitudes. It is located entirely in the Krishna and the Nira basins. It has a compact shape with east-west stretch of about 144 km and North–South extent of about 120 km. Thus the area of the district is 10484 sq.km (3.41% of State are). The district comprises of 11 tahsils namely Satara, Koregaon, Jaoli, Wai, Khandala, Mahableshwar, Patan, Karad, Phaltan, Khatav and Man. Satara city is the administrative headquarter of the district (Gazette, 1984).

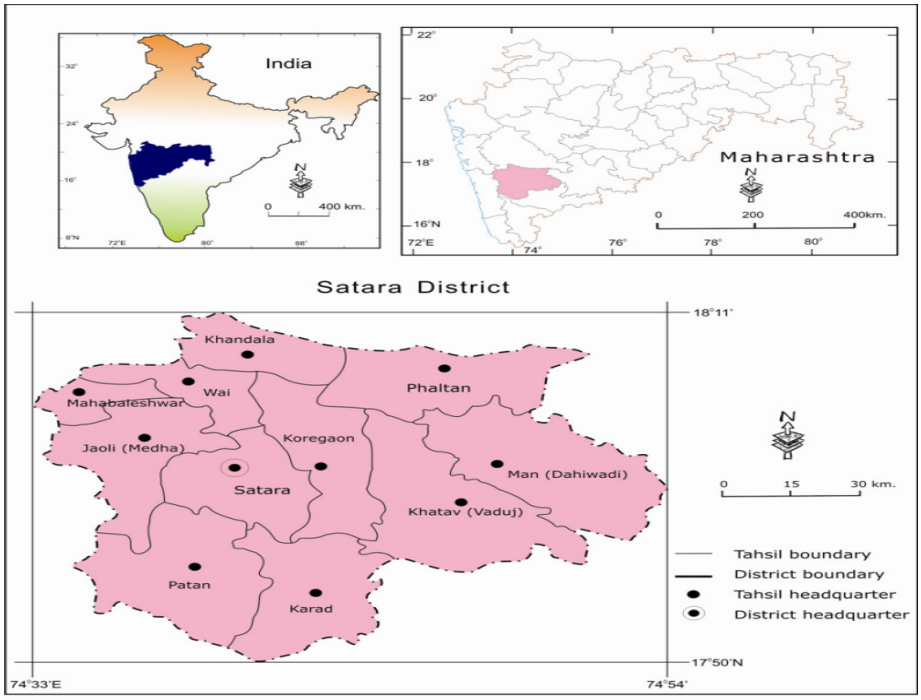


Fig. 1.1 : Location of Study Area

The physical settings of Satara shows a contrast of immense dimensions and reveals a variety of landscapes influenced by relief, climate and vegetation. The variation in relief ranges from the pinnacles and high plateaus of main Sahyadrians range having height over 4500 feet above mean sea level to the subdued basin of the Nira river in Phaltan tahsils with the average height of about 1700 feet above mean sea level. The western climate ranges from the rainiest in the Mahabaleshwar and Jaoli tahsil, which has an average annual rainfall, is 1277 mm but annually suffers from shortage of drinking water. This is because the rainwater is not conserved and allowed to drain away. Eastern part of rain shadow region (Man and Phaltan tahsils) where the average annual rainfall is about 500 mm. This is because the most of the rainfall is lost as runoff or as evapo-transpiration. (Gazetter, 1984).

As a matter of fact, the right solution to overcome water scarcity and be self-sufficient for water needs is to save the precious drops falling from the sky. It is necessary to give much more importance in harvesting the rainfall to meet the increasing needs for water, thereby achieving a better balance between surface and ground water.

Runoff RWH Structures Suitable in Hilly Area

These are normally multi-purpose measures, mutually complementary and conducive to soil and water conservation, afforestation and increased agricultural productivity. They are suitable in areas receiving low to moderate rainfall mostly during a single monsoon season and having little or no scope for transfer of water from other areas. In the highest elevation zone different measures applicable as based on slope and rainfall. Suitable structures commonly used are bench terracing, contour bunds, gully plugs, nalabunds in this zone.

In Western Ghats Development Programme (WGDP) drinking water and irrigation facilities have been given highest priority. However, the measures for rain water harvesting and water conservation in Western Ghats areas fall in Mahabaleswar, Jaoli and Patan tahsils are suggested to be taken up as under: (Government of India, Planning Commission, 2008).

1. To collect rainwater for drinking and other purpose by adopting roof top rainwater harvesting on all the public, private buildings in town and cities.
2. To construct storage tanks in the hill areas of villages.
3. To improve impounding of water in existing structure through measures such as desilting and deepening of tanks/wells, check dams, etc.

i) Continuous Contour Trenching (CCT) or Contour Bunds

- **Main Objectives and Application -** The trenches break the slope at intervals and reduce the velocity of surface runoff. The water retained in the trench will help in conserving the soil moisture and ground water recharge (Ministry of Drinking Water and Sanitation Govt. of India, 2007). Suggested contour bunds can be used for growing crops, trees and grass. Their most common application is for recharge ground water and improves soil moisture.
- **Site Selection Criteria -** Contour trenches are rainwater harvesting structures, which can be constructed on hill slopes as well as on degraded and barren waste lands in both high- and low- rainfall areas. Suitable site for the construction of various types of contour bonds has based on slope of the region.
- **Design and Potential of Structure -** Table 1 shows the slope wise suitable design and potential of the CCT. The CCT constructing at 4 to 8 per cent sloping sites of hilly area is harvesting about 0.27 to 0.318 TCM rainwater in per hectare area.

ii) Loose Boulder Structures or Stone Bunds

- **Main Objectives and Application** -The main objectives for these structures are to control channel erosion along the gully bed and to stop waterfall erosion by stabilizing gully heads. Loose boulder or stone bunds are used to stabilize the incipient and small gullies and the branch gullies of a continuous gully or gully network (FAO (ed) 1986).
- **Site Selection Criteria-** Loose boulder structures made of relatively small rocks are placed across the gully. The length of the gully channel is not more than 100 metres and the gully catchment area is two hectares or less. The geological formation of the Deccan trap is suitable for constructing loose boulder structures in all parts of the study region.

- **Design and Potential of Structure -** Table 1 shows the technical measurement and more suitable sites for constructing loose boulder structures in the region.

iii) Nala Bunds or Earthen Structures

- **Main Objectives and Application -** These are soil and water retaining structures built across gullies in hilly areas. These are built with locally available materials like stone boulders, earth, brushwood etc. the nala bed should have soils with adequate permeability and good fracture development to facilitate good groundwater recharge.
- **Site Selection Criteria -** These structures are constructed across gullies, nala or streams to check the flow of surface water in the stream channel and to retain water for longer durations in the previous soil or rock surface. The rainfall in the catchments should be less than 1000 mm/annum. The Nala bunds should be preferably located in area where contour or graded bondings of lands have been carried out.

Table 1

Dimensions of Runoff Harvesting Structures

Sr.No.	Type of RWH Structures	Designed dimensions (m)				Cross sectional area of storage (m3)	Reduction in storage capacity due to siltation (%)
		Top width	Bottom width	Height	Length		
1	CCT	0.8	0.6	0.3	270	0.21	31.6
2	LBS	0.6	2	1.2	20-30	1.56	9.5
3	ENB	1.1	9.3	4.2	30-50	21.84	21
4	CNB	1.2	2.3	2.6	30-50	4.55	5

Source : National Rainfed Area Authority, Planning Commission, Government of India, New Delhi, November, 2011

- **Design and Potential of Structure -**Site should be in relatively flatter nala reaches, the slope of the nala should not be more than two per cent. The catchment area of the nala bund should not be less than 40 ha. The total catchment area of the stream should normally be between 40 and 100 ha. Nala bunds are normally 10 to 15 m long, 1 to 3 m wide and 2 to 3 m high, generally constructed in a trapezoidal form. It is estimated harvesting 1 to 2 Thousand Cubic Metre (TCM) rainwater per annum.

Table 2

Suitable Sites for constructing Runoff RWH Structures in Hilly area

Suitable Structures	Sites in First Priority Zone	Sites in Second Priority Zone	Sites in Third Priority Zone
I) CCT ii) Loose Bolders iv) Nala Bund	Mahimangad, Varugadh, Shikhar-Shingnapur,Tathavada, Kulakjai, and Jire-Pathar (Man)Shitabai, Mhaskoba and Mahadev hills (Phaltan)Solaknath, Bhushangad, Vardhangad, Bapsha etc.(Khatav)	Pandavgad,Khambatki hills (Khandala), Bhairavgad, Jaigad, Dategad, Gunvantgad, Chandoli (Patan), Harneswar,Chavneswar, Jaranda, Nandgiri and Chandan(Koregaon),Ajinkyatara, Yavateswar,Sajjangad and Pateswar (Satara)	Mandhardevi, Pasarni,Vairatgad etc.(Wai),Pal, Sadashivgad and Vasantgad,AgashivaDongar (Karad),Makarandgad (Jaoli)

Source : Based on RWH Structure Design and Geographical Location

Recharge and Storage RWH Structures in Plateau Area

i) Gabion Structures or Small Bandharas -

- **Main Objectives and Application** - The excess water over flows this structure storing some water to serve as source of recharge. The silt content of stream water in due course is deposited in the interstices of the boulders in due course and with growth of vegetation, the bund becomes quite impermeable and helps in retaining surface water run off for sufficient time after rains to recharge the ground water body.
- **Site Selection Criteria -** Gabion is low height structure, commonly constructed across small stream to conserve stream flow with practically no submergence beyond stream course. The boulders locally available are stored in a steel wire mesh and put across the stream channel as a small dam by anchoring it to the stream side.
- **Design and Potential of Structure -** The height of such structure is 0.5 metres and is normally used in 10-15 metres wide streams. Every gabion structures have harvest two TCM rainwater in per hectare area of the catchment.
- **Suitable Sites in the Region -**The hard basaltic rock structure has suitable for constructing gabion structures in the drought prone region of the study region.

ii) Cement Check Dam

- **Main Objectives and Application –** This is permanent structures constructed using stones, brick and cement. This is the most prevalent form of traditional water harvesting system. It facilitates water for domestic and irrigation purpose also. It also helps to overcome the seasonal nature of rainfall and create availability of water for agriculture. In order to avoid scouring from excess run off, water cushions are provided at downstream side. To harness the maximum run off in the stream, series of such check dams can be constructed to have recharge on regional scale (CGWB, 2000). To reduce runoff velocity thereby minimizing erosion and increasing recharge to the wells located downstream. These are usually built by the State Government agencies like the departments of Irrigation/ Water Resources, Agriculture and Forests. These are the modified and improved versions of the traditional temporary or semi-permanent structures that people in the villages usually build across natural streams or drainage channels.

- **Site Selection Criteria -** Check dams are constructed across small streams having gentle slope and are feasible both in hard rock as well as alluvial formation. The site selected for check dam should have sufficient thickness of permeable bed or weathered formation to facilitate recharge of stored water within short span of time. Check dams are constructed across bigger nalas of second order streams in areas having gentler slopes. A check dam acts like a mini percolation tank.
- **Design and Potential of Structure -** Normally the dimensions of the Check dam are; length 10 to 15 metres, height 2 to 3 metres and width 1 to 3 metres, generally constructed in a trapezoidal form. If the bedrock is highly fractured, cement grouting is done to make the foundation leakage free. Per check dam water storage capacity is 2-3 TCM. These are designed based on stream width and excess water is allowed to flow over the wall. In order to avoid scouring from excess runoff, water cushions are provided on the downstream side. Check dams are low cost dams (approximately below one lakh rupees), which are built across streams to prevent rain water from flowing away into the sea. Check dams serves mainly two purposes: the first is to provide direct irrigation when rain fails, and the second is to facilitate the recharging of surrounding wells through percolation of water. Additionally, check dams provide water for other uses also.

iii) Percolation Tank

- **Main Objective -**
  1. These are built mainly to impound monsoon runoff over a large area to augment ground water recharge.
  2. A percolation tank can be defined as an artificially created surface water body submerging a highly permeable land area so that the surface runoff is made to percolate and recharge the ground water storage.
- **Site selection criteria**
  1. Moderate to high porosity of soil and/ or underlying rocky strata is the main criteria for the choice of percolation tanks.
  2. The soils in the catchment area of the tank should be sandy to avoid silting up of the tank bed.
  3. In the States of Maharashtra, the percolation tanks have been constructed in basaltic lava flows and crystalline rocks.
  4. Normally constructed on second or third order streams, as the catchment area of such streams would be of optimum size.
  5. The location of tank and its submergence area should be in non-cultivable land and in natural depressions requiring lesser land acquisition (GoI, CPCB, 2001).

Suitable Sites in the region

The location of the tank should preferably be downstream of runoff zone or in the upper part of the transition zone, with a land slope gradient of 3 to 5%.

The adjoining foot hills sites of eastern plateau region as an elevation of 400 to 700 metre is highly suitable for constructing percolation tank. The topography of this area is undulating and rocky strata belong to the first priority zone of the study region. The drought prone tahsil are Khatav, Man and Phaltan is the highest need of constructing percolation tanks for mitigating the water scarcity problems in this zone. Some part of tahsil of Khandala, Koregaon, Patan and

Satara is the moderate favorable for constructing percolation tanks in second priority zone. In the third priority zone some part of located at foot hill sites are the suitable for constructing percolation tanks.

Advantages

There should be adequate area suitable for irrigation and sufficient number of ground water abstraction structures within the command of the percolation tank to fully utilize the additional recharge. The area benefited should have a productive phreatic aquifer with lateral continuity up to the percolation tank. The depth to water level in the area should remain more than 3 m below ground level during post-monsoon period. (GoI, CGWB, 2007)

Design and Potential of Percolation Tank

Ponding is achieved in much the same way as is done in case of check dams except that the height of the bund is low but the length is large. The design aims at filling the pond as many times as possible during the rainy season in such a way that most of the water impounded during one spell of rain percolates into the ground before the next spell starts. In actual field conditions, however, thisideal operation is rarely achieved. These are also built by the government agencies since these require special skills in hydrogeology.

Selection of the size of a percolation tank should be governed by the percolation capacity of the strata rather than the yield of the catchment. In order to avoid wastage of water through evaporation, larger capacity tanks should be constructed only if percolation capacity is proven to be good. If percolation rates are low to moderate, tanks of smaller capacity may be constructed. Percolation tanks are normally designed for storage capacities of 8 to 20 M cft (2.26 to 5.66 M Cu m).

More than 7000 percolation tanks have been built in Maharashtra after the severe drought of 1971-72. All such small catchments of percolation tanks have been converted into green patches. A study conducted by Central Ground Water Board on the effectiveness of 12 percolation tanks is lost as evaporation, 40% as seepage and 50% recharges ground water. The study indicated that the recharge to ground water can go up to 70% by selecting the site and designing the tank properly.

iv) Farm Pond

Main Objective –

Farm ponds are small size excavations on a farm, positioned to collect runoff or drainage water with the intention of utilizing it for supplementary irrigation or for augmenting groundwater reserves through percolation (Athavale, 2003). If any watershed management programme farm ponds are an important component and useful in storing water for irrigation. They also retard sediment and flood flow to the downstream river system. Provide drinking water for livestock and human beings in arid areas.

Site Selection Criteria –

In a relatively flat terrain (Slope is 3%) with good soil cover, a farm pond has an earth section with usually 3:1 side slopes on the waterside and 2:1 side slope on the downstream face. The site for the earthen bund should be a narrow gorge with a fan shaped valley above so that a small amount of earthwork provides large storage. Areas having flat topography and locations with rocks and soils of low permeability, free from structures such as faults, joints/fractures.

Design and Potential of Structure –

Per farm pond about 2.19 TCM capacity for an individual farmer should preferably by built in near our farm in an open area of about 30 m x 30 m size. Since the rainwater from this area is to be collected in the pond, the area should be such that agriculture and cattle grazing may be prevented during the monsoon season to prevent pollution of water.

For calculating the runoff potential of the farm pond for specific region, use the following formula

R = KPA / 10

Where

R = Total Runoff Potential in Cu.m

K = Runoff (in per cent) available based on average rainfall and soil type (Assumed K is Fertile Soil – 8 to 10 %, Red Soil – 20%, Mediam fertile soil – 10 to 15%)K=10%

P = Annual Average Rainfall in mm (P=500 mm)

A = Watershed Area in hectare (A= 4 ha)

Example : R = KPA / 10
= 10 x 500 x 4 / 10
= 2000 cu.m

Runoff has available in above calculation is 2000 cu.m., but we assumed only 50% runoff available for direct use, so it is 1000 cu.m., runoff available of this farm pond. Based on this formula following table shows the size and storage capacity of the farm pond in applicable for western Maharashtra.

Table 5.11
Design and Storage Capacity of the Farm Pond

Farm Pond Size in m	Storage Capacity in TCM
15 x 15 x 3	0.441
20 x 15 x 3	0.621
20 x 20 x 3	0.876
25 x 20 x 3	1.131
25 x 25 x 3	1.461
30 x 25 x 3	1.791
30 x 30 x 3	2.196

Source : Department of Agriculture Government of Maharashtra, 2010

Suitable Sites in the Study Region –

The ponds are located in a horizontal line to allow the trench to act as conducting channels for water. The junction of two drainage channels or large natural depression should be preferred for constructing farm pond. Average rainfall is not more than 1000 mm. In the study region Man, Khatav, Phaltan and Khandala tahsil has highly suitable for constructing farm pond.

Conclusions

Through the development of surface water harvesting system, the natural sites should be utilized to store the rainfall water through surface runoff. Thus a chain of small percolating tanks will be fruitful at foothill zones of the Western ghat, Tathavada, Sitabai donger, Varugad and Mogralaghat region.

This part of the region comprises the areas of Wai, Karad, Mahableswar and Jaoli tahsils with 26 per cent of area 32.46 per cent Population having 10 per cent rainfall variability. This

zone is facilitating by water through major rivers named Krishna, Koyna and Tarali which has minimized the priority of this zone.

A study of surface rainwater harvesting methods, all information shows that the smaller the catchment area of the micro water harvesting structures like contour bunds, farm ponds, percolation tanks are the more efficient is the runoff collection.

Surface water harvesting may improve moisture and recharge in the downstream areas of water scarcity villages in drought prone area of the district. When rainwater is harvested it percolates into the ground, raises the level of the water table, making it available for agricultural and domestic use.

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Educational and Medical Facilities in Mahabaleshwar Taluka of Satara District (M.S)

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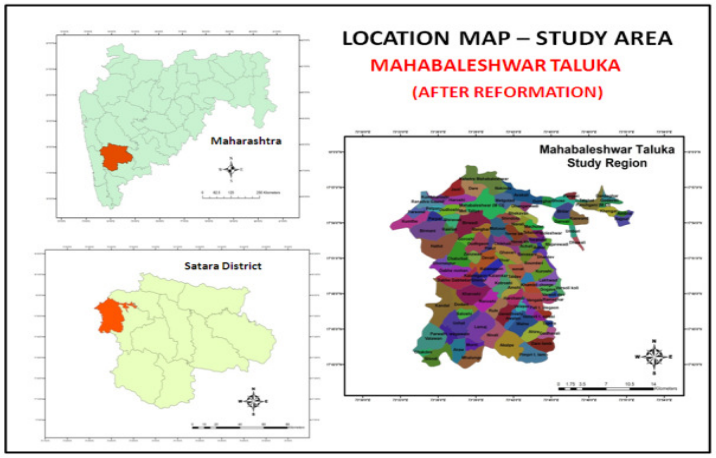
Abstact:

Education is an engine for the growth and development of any society. It not only imparts knowledge, skill and inculcates values, but is also responsible for building human capital which breeds, drives and sets technological innovations and economic growth. Healthcare is the right of every individual. Healthcare is the diagnosis, treatment and prevention of diseases, illness and other physical and mental impairments in human beings. Mahabaleshwar taluka is located between 17^0 42' North to 18^0 60' North latitude and 73^0 21' East to 73^0 51' East longitude in Satara district of West Maharashtra. The main objective of present research paper is to study educational and medical facilities available in Mahabaleshwar taluka and suggest some remedial measures for better development of the same facilities. The study reveals that, there is urgent need of improvement in educational and medical facility for socio-economic development of this taluka.

Keywords: Education, Progress, Healthcare, Development, Innovations, Economic growth etc.

Introduction:

The importance and the relevance of education in today's modern fast growing a human society across the countries. Education had been acknowledging and recognizes as an essential and relevant source an agent of change and development, especially for the deprived classes. Education is worldwide accepted as a development indicator (Fussell et al. 2010). Education is a crucial determinant of economic wellbeing for both individuals and places as well. Educated people are more flexible to accept new ideas and trends in the society (Shepherd et al. 2017). The purpose of education is not just making a student literate but adds rational thinking, knowledge ability and self sufficiency. Healthcare is the right of every individual. Healthcare is the diagnosis, treatment and prevention of diseases, illness and other physical and mental impairments in human beings. Health care is conventionally regarded as an important determinant in promoting the general, physical and mental health and well being of people in the country. The present research paper highlighted the educational and medical facilities available in Mahabaleshwar taluka and suggests essential remedies for better development in same facilities.



Study Area:

Mahabaleshwar taluka is having very distinct physical character. It is located between 170 42" North to 180 60" North latitude and 730 21" East to 730 51" East longitudes in Satara district of West Maharashtra. The taluka is bounded in North West by Raigad district, in West by Ratnagiri district, in South by Patan taluka and in East by Satara and in North East by Wai taluka. The total geographical area of Mahabaleshwar taluka is 495.50 Sq km.The total taluka is surrounded by Sahyadri Mountains, and having a famous hill station Mahabaleshwar located at 1436 m above msl.

Data Collection & Methodology

Geography is a science, based on empirical studies, which requires data collection from various sources. This present study is based on the reliable and accurate primary and secondary data. This study is carried out at village level.

A.Primary Data sources:

The required primary data has been collected by personal discussion, survey and field observation methods etc.

B. Secondary Data Sources: The required secondary data has been collected from the following sources.

1) District census handbook of Satara District.
2) Socio- Economic Abstracts of Satara District.
3) Records of Zilla Parishad Panchayat Samiti, Talathi offices.
4) District Gazetteer of Satara.
5) News paper cuttings and articles.
6) World Wide Websites (Internet).

The map and diagrams are prepared by employing various cartographic techniques for better comprehension. The study related to educational and Medical facilities in Mahabaleshwar taluka has been done from 1971 to 2005, because before 21 March 2006, there were 55 villages in this taluka but after 21 March 2006, 55 villages from Jaoli taluka were added to this taluka. The total number of villages in this taluka reached at 110. So, to avoid great difference in data the data from 1971 to 2005 has been taken into consideration for study.

Discussion:-

A) Educational Facilities In Mahabaleshwar Taluka

Table 1: Educational facilities in Mahabaleshwar taluka
(1970-71 to 2004-05)

Sr. No.	Particulars	Primary School		Secondary School		Junior College		Senior College	
		1970-71	2004-05	1970-71	2004-05	1970-71	2004-05	1970-71	2004-05
1	Institutions	54	70	13	24	00	11	00	02
2	Students Enrollments								
I	Boys	2250	3738	540	4892	----	1344	----	307
II	Girls	1629	3688	336	2225	----	844	----	355
	Total	**3879**	**7426**	**876**	**7117**	**----**	**2188**	**----**	**725**
III	Teacher	148	474	34	169	----	66	-----	26

Source – Based on Socio-Economic Abstract of Satara (1971 and 2005)

Educational facilities in Mahabaleshwar taluka (1970-71-2004-05)

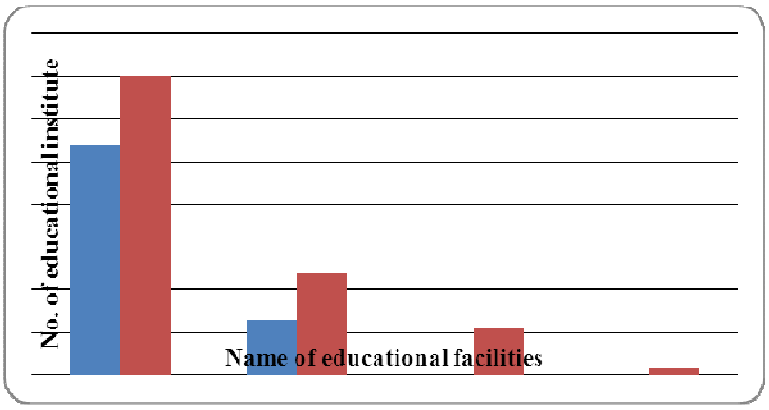


Fig. 01.

The above table No.1 and fig. No 1 shows the change in educational facilities in Mahabaleshwar taluka from 1971 to 2005. The detailed information regarding education development in this taluka is given below.

Primary School

Primary school is the foundation for further education. Primary education is includes balwasies and from 1st to 7th standard. The primary school in Mahabaleshwar taluka is under control of Zilla Parishad Satara and Panchayat Samiti Mahabaleshwar. In 1971 there were 54 primary school in this taluka is observed which is increased upto 70 in 2005. In 1971 the total student's enrollments in primary school was 3879 students but in 2005 it increased upto 7426 students. The total no. of teachers was 148 in 1971, which is increased upto 474 in 2005. The teacher- student's ratio is 26 students per teacher in 1971 which is decreased upto 16 students per teacher in 2005. In rural area of this taluka, out of 55 villages 53 villages having primary schooling facilities except Parpar and Petpar village.

Secondary School

Secondary or high - school education is very important and essential to students. It helps students to identify their own skill to select their future outline where they have to go according to their talents and skills. The secondary education in Mahabaleshwar taluka is under the control of Zilla Parishad of Satara. The total no. of secondary school in this taluka in 1971 was 13 which are increased upto 24 in 2005. The total student enrollments in secondary school are 876 in 1971 which is increased upto 7117 in 2005. The total no. of teacher is 34 in 1971 which is increased upto 169 in 2005. The teacher- student's ratio is 26 students per teachers in 1971, which increased upto 43 students per teacher in 2005. At present in this taluka out of 55 villages, 06 villages provide secondary educational facilities to rural areas students. The name of these 06 villages is Metgutad, Kumbharoshi, Shirvali, Godavali, Taldev and Bhilar.

The higher secondary school

The higher secondary education is being a feeder stage of education. This stage is also a terminal stage of education that's way this stage got its own significance. In this taluka in 1971, no any junior college is found but in 2005 in this taluka 11 junior colleges provide educational facilities to students of this taluka as well as students from different part of India because

Panchagani is one of the most important educational centers located in this taluka. In 2005, the total no. of students was 2188. The total no. of teachers is 66 and teacher - student ratio is 33 students per teacher. In rural area of this taluka only 1 village provide higher secondary education to the rural students. The name of this village is Taldev. The other students of rural area have to go to Mahabaleshwar and Panchagani for their higher secondary education.

Higher education

Higher education is comes after higher secondary education. Through attending college we get higher degree of education. Higher education gives us the chance to study subject of interested and boost the career prospects and earning of potential. In 1971, in Mahabaleshwar taluka no any senior college providing higher education facility. But in 2004-05, 2 senior collages provide higher education facilities to students of this taluka. The total 725 student got higher education from these two colleges in 2004-05**.** The no. of teachers is 26 and teacher pupil ratio is 28 students per teacher in this same year. The students of rural area have to go to Mahabaleshwar and Panchagani for higher education which is not available anywhere in rural area of this taluka.

B) Medical And Public Health Care Facilities

Healthcare is the right of every individual. Healthcare is the diagnosis, treatment and prevention of diseases, illness and other physical and mental impairments in human beings. Health care is conventionally regarded as an important determinant in promoting the general, physical and mental health and well being of people in the country. The table No.2 and Fig No.2 shows the medical and health care facilities in Mahabaleshwar taluka as follows.

Table No.2: Medical and Public Health Care Facilities in Mahabaleshwar Taluka (1970-71 to 2004-2005)

Sr. No.	Health Care Centers	1970 - 71	2004 – 05	Volume of change	No. of heath facilities per village	
					1970-71	2004-05
1	Rural Hospital	01	01	00	0.01	0.01
2	Primary Health Center	01	03	+ 2	0.01	0.05
3	Primary Health Sub center	04	10	+ 6	0.07	0.18
5	Family Planning Center	00	01	+ 1	00	0.01
6	No. of Doctors	07	10	+ 3	0.12	0.18
7	No. of Nurses	20	28	+ 8	0.36	0.50

Source: - Based on Socio-Economic Abstract of Satara District.
(1970-71 and 2004 - 05).

Medical and Public Health Care Facilities in Mahabaleshwar Taluka (1970-71-2004-05)

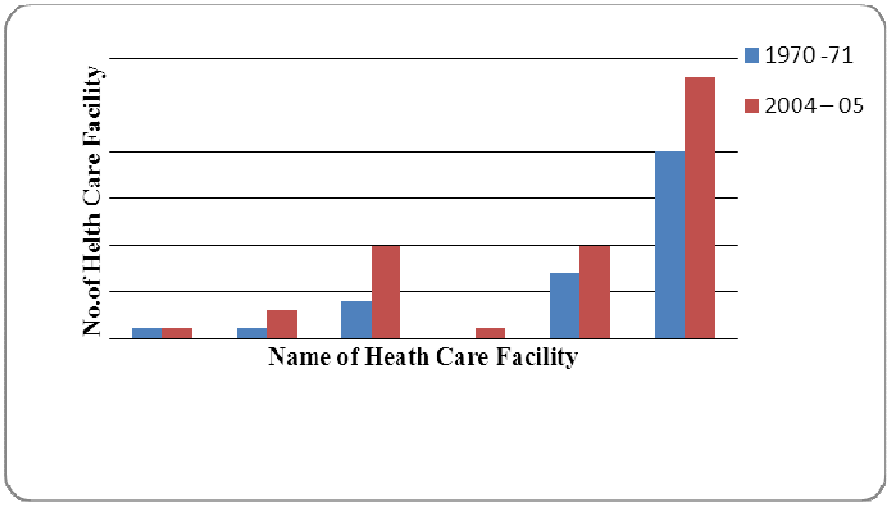


Fig. 2

The above table No.2 and figure No.2 shows the medical and public health care facilities in Mahabaleshwar taluka from 1970-71 to 2004-2005. The detailed information regarding medical and public health care facilities in Mahabaleshwar taluka is given below.

Rural Hospital

In 1970 – 71 the total no. of rural hospital in Mahabaleshwar taluka was only 01, which is same in 2004 – 05. There is no change in no. of rural hospitals are found in this taluka. This rural hospital is located in Mahabaleshwar, which is headquartering place. The name of this hospital is Morarji Gokuldas rural hospital, Mahabaleshwar. This hospital provides medical and public health care facilities to 0.01 per villages in 1970-71, it is same in 2004-05 also in this taluka.

Primary Health care center

In 1970 – 71 the total no. of primary health care centers in this taluka is only 01. In 2004 – 05 the total no. of primary health care centers was increased upto 03. From 1970-71 to 2004-05 only 02 primary health care centers is increased in this taluka. These three primary health care centers are located in Panchagani, Bhilar and Taldev village and provide medical and health care facilities to the people. These primary health care centers provide health care facilities to per 0.01 villages in 1970-71 which is increased 0.05 villages in 2004-05.

Primary Health Care Sub Center

In 1970 -71, in this taluka 04 primary health care sub center are found, but the no. of primary health care sub center is increased upto 10 in 2004 – 05. From 1970-71 to 2004-05, 06 primary health care sub centers is increased in this taluka. This primary health care sub centers is located in 10 villages. The name of these villages is Bhilar, Khingar, Machutar, Chikhali, Parut, Kumbharoshi - I, Kumbharoshi - II, Dudhgaon, Kasrud, and Parpar. These primary health care sub centers provide health care facilities to per 0.07 villages in 1970-71 which is increased 0.18 villages in 2004-05.

Family Planning Center

In 1970 – 71, family planning center is not found in this taluka but in 2004 – 05, only 01 family planning center is found in this taluka. From 1970-71 to 2004-05, only 01 family Planning Center is increased in this taluka. This family planning center is located in

Mahabaleshwar. These family Planning centers provide health care facilities to per 0.01 villages in 1970-71in 2004-05.

No. of Doctors

The total no. of doctors in 1970 – 71 is 07, which is increase upto 10 in 2004 – 05. From 1970-71 to 2004-05 only 03 doctors is increased in this taluka. These doctors provide health care facilities to 0.12 per villages in 1970-71 which increased upto 0.18 per villages is in 2004-05.

No. of Nurses

The total no. of nurses is 20 in 1970 – 71, which is increase upto 28 in 2004 – 05. From 1970-71 to 2004-05 only 08 nurses is increased in this taluka. These nurses provide health care facilities to 0.36 per villages in 1970-71 which increased upto 0.50 per villages is in 2004-05.

Conclusion:

It is cleared with the above information that educational facilities in rural area of Mahabaleshwar taluka have not been developed in a satisfied way. Particularly the development in education facilities is concentrated at Mahabaleshwar and Panchagani town and the surrounding villages of these two hill stations due to its high heritage and healthy atmosphere. Recently in this two town's and its surrounding villages English medium and CBSC pattern international school with excellent hostel facilities is found, but in rural area of this taluka students can't take education from this school because it is not affordable to them. Many students in rural area are away from education due to lack of transports facilities and economical backwardness. The facilities regarding good and developed education should be made available to solve these problems in this taluka mostly in rural area with providing hotel management courses, technical education courses, agriculture related courses, computer education and higher education to the student in this taluka. It is observed from above information that is these taluka prominently in rural areas, medical and public health care facilities have not been developed satisfactorily. In the rural area surrounded by Mahabaleshwar and Panchagani hill stations these facilities have been developed in a satisfied manner. But the people living in villages which are away from these hill stations have to go to taluka places for these kinds of facilities. In case of critical health situation, these people have to go Mumbai, Pune, Satara, Wai cities. Prominently, in rural area of these taluka these facilities are necessary to be developed to solve these problems. Government hospital which will be capable to provide all medical and public health care facilities should be raised in Mahabaleshwar which is taluka place, so that the problems regarding health of the people in this taluka will be solved.

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Mah"Major Role of Swarnjayanti Gram Swarojgar Yojana (Sgsy) in Women Empowerment: A Case Study of South East Villages of Walwa Tehasil , Sangli District Arashtra

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Abstact:

Women empowerment is an important consideration in activities targeted at world – wide development. In India after independence Government launched many programme for the women development. Government launched Swarnjayanti Gram Swarojgar Yojna in 1999. Self Help Groups (SHGs) are one of the ways to developed women's life The present problem is study the impact of geographical disparities and socio- economic diversity on the implementation of the Swarnjayanti Gram Swarojgar Yojana (SGSY) in some villages of Walwa Tahasil and also helping to women empowerment.

Key Words: SGSY, SHGs , BPL, APL

Introduction.-

Women empowerment is an important consideration in activities targeted at world – wide development. In India after independence Government launched many programme for the women development. Government launched Swarnjayanti Gram Swarojgar Yojna in 1999. Self Help Groups are one of the ways to developed women's life. Swarnajayanti Gram Swaojgar Yojana is conceived as a holistic programme of micro enterprises covering all aspects of self-employment. Swaranjayanti Gram Swarojgar Yojana focuses on organization of the poor at grassroots level through a process of social mobilization for poverty eradication. Self Help Groups are emerging as powerful tool of socio-economic empowerment of the women

From ancient period women are not involved in any development process because of her illiteracy, unemployment and socio- economic backwardness. The popular slogan should come in hand "Educate a men and you educate an individual; educate a woman and you educate a family". In 21st century education is compulsory for all the children. After independence Government is also focus on women development but today the women's problem are incised. The condition of women's undevelopment need to be changed for availing the existing opportunities. Self Help Groups are play an important role in socially, economically and politically development of women. That's why there is a need to study the implementation and impact of Self Help Groups and the role of SHGs in women empowerment all over India. So it is the need of such type of research.

The present problem is study the impact of geographical disparities and socio- economic diversity on the implementation of the Swarnjayanti Gram Swarojgar Yojana (SGSY) in Walwa Tahasil and also helping to women empowerment.

Objectives –

The main objective of the present paper is to study the role of Self Help Groups in women empowerment and to study the socio- economic profile of the beneficiaries of Self Help Groups.

Methodology And Database

The present study is carried out with primary data which compiled by the researcher and secondary sources of data, like books, journals, magazine, internet etc. and analysis this data by various tools and techniques.

Study Area

Sangli district is divided in to 10 tehasil. Walwa tehasil is a most important tehasil of sangli district. So we selected the four villages of walwa tehasil for case study. At the foot of the hill, the plateau area, the national highway, the industrial area and the bank of the river these physical and social factors are considered in the selection of the villages. In these villages collect the primary data with the help of Interview, Questionnaire and Schedules

Socio-Economic Profile Of The Beneficiaries Of Self Help Groups

In this paper the information was collected from 4437 beneficiaries who had received benefits under Self Help Groups and an attempt has been done to analyze the general particular and present socio- economic profile of the beneficiaries selected for the study.

Koregaon

Village Koregaon is situated in Walwa tahsil at the bank of river warana, some 32 km. south east of Islampur town. The Village Panchayat was established on 06-05-1955. The population of this village is 5273 (2011 census); this includes 2690 males and 2583 females. SC population is 737 including 362 males and 375 females; ST population is 14, which include 8 males and 6 females. The average sex ratio of this village is 960 and the literacy rate is 88.10 %. In Chikurde Male literacy is 92.97% while female literacy rate is 83.04%.

Total number of families in the village is 840. Out of which 171 families are Below Poverty Line. These BPL families include 38 from BC and 133 from open categories. The village Koregaon has one primary schools and one secondary school, in addition to this there are three nursery schools, one secondary school for handicap student. The village has one health subcenter run by Zilla Parishad and five privete dispensaories.

The village has well organized drinking water supply scheme Jalswarajya. There are many facilities like irrigation, co-operative primary milk societies and co-operative credit society. There is a branch of Sangli District Central Co-operative Bank , HDFC Bank and Rajarambapu Bank. In this village there is one ledy selected for Sarpanch, one is selected deputy Sarpanch, and five women members in Grampanchayat body..

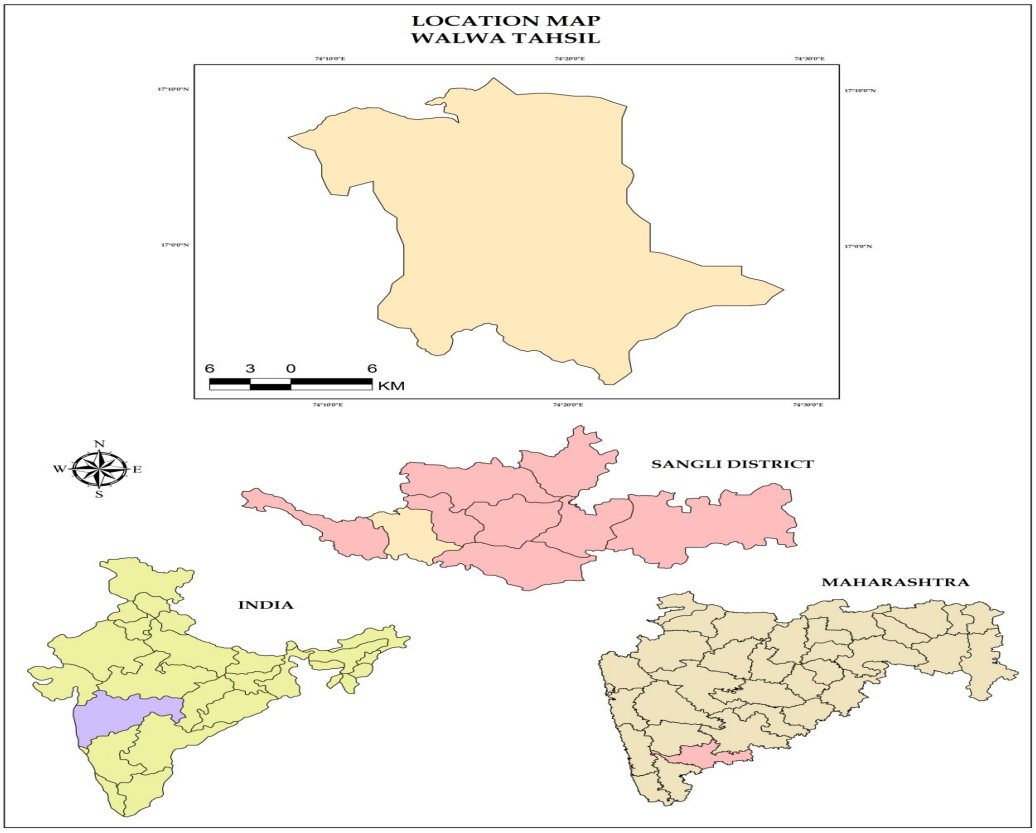
Total area of this village is 679.48 hectares. Out of which 584.3 hectares area is irrigated and 72.18 hectors unirrigated area. Irrigation is through mainly private wells and through warana Irrigation Scheme, which lift water from river warana. The major crops are jawar, groundnut, rice, soyabeen, wheat, turmaric and sugar cane.

Total no of Self Help Groups and Beneficiaries in Koregaon

Sr. No.	Years	Self-Help Groups		Total No of Benificiaries
		BPL	APL	
1	2010-2011	6	65	846

2	2011-2012	2	17	226
3	2012-2013	1	11	143
4	2013-2014	2	06	94
5	2014-2015	3	09	141
6	**Total**	**14**	**108**	**1450**

Source: Compiled by the researcher from the record of grampanchayat office Koregaon.



One hundred twenty two Self Help Groups have been established in the village Chikurde under Swarn-Jayanti Gram Swarojagar Yojana. Out of which 14 Self Help Groups are of the women Below Poverty Line, and 108 are of the women Above Poverty Line Self Help Groups. Women from these Gats have become economically strong. Women from four APL SHGs took 2.20 lakh lone from DCC bank. They have deposited Rs. 1.50 lakh as savings in bank and put out the loan of Rs. 2.20 lakh. There is 100% recovery of bank lone. This has checked the private money lending in the village Women from BPL Self Help Groups are saving their money in bank, and disbursed for their day-to-day needs. One Self Help Groups is starting the sanitary napkin project and one group is opening the grindier mill.

Gatadwadi:

Village Gatadwadi is situated in Walwa tahsil at the plane region, some 10 km. south east of Islampur town. The Village Panchayat was established on 01-12-1966. The population of this village is 1586 (2011 census); this includes 847 males

and 739 females. SC population is 19 including 9 males and 10 females; there is no ST population in village. The average sex ratio of this village is 872 and the literacy rate is 84.71 %. In Kameri Male literacy is 91.92% while female literacy rate is 76.72 %.

Total number of families in the village is 335. Out of which 55 families are Below Poverty Line. These BPL families include 4 from BC and 51 from open categories. The village Gatadwadi has two primary schools and one secondary school. The village has no health center run by Zilla Parishad but one privete dispensary.

The village has well organized drinking water supply scheme. There are no irrigation facilities. There are one primary milk co-operative societies. There is no bank facility. In this village there is one ledy selected in Panchayat Samitee member, a lady Sarpanch and five women members in Grampanchayat body.

Total area of this village is 563 hectares. Out of which majority area is unirrigated area.. The major crops are jawar, groundnut.

Total no of Self Help Groups and Beneficiaries in Gatadwadi

Sr. No.	Years	Self-Help Groups		Total No of Benificiaries
		BPL	APL	
1	2010-2011	1	3	56
2	2011-2012	1	2	41
3	2012-2013	0	1	15
4	2013-2014	0	0	00
5	2014-2015	1	1	26
6	**Total**	**03**	**07**	**138**

Source: Compiled by the researcher from the record of Grampanchayat office Gatadwadi

Ten Self Help Groups have been established in the village Gatadwadi under Swarn-Jayanti Gram Swarojagar Yojana. Out of which 3 Self Help Groups are of the women Below Poverty Line and 07 are of the women Above Poverty Line Self Help Groups. Women from these Groups have become economically strong. Women from BPL SHGs have improved their traditional occupations. They have deposited their savings in bank and put out the loan. This has checked the private money lending in the village.

Ashta :

Town Ashta is situated in Walwa tahsil on the Islampur-Sangali road, some 20 km. south east of Islampur town. The municipalty was established on 1853. The population of this town is 37105 (2011 census); this includes 19171 males and 17934 females. SC population is 5750 including 2886 males and 2864 females; ST population is 519 including 242 males and 277 females. The average sex ratio of this village is 935 and the literacy rate is 83.60 %. In Ashta Male literacy is 89.52% while female literacy rate is 77.32%.

Total number of families in the village is 8500 Out of which 2260 families are Below Poverty Line. These BPL families include 1735 from BC and 525 from open categories. The town Ashta has four primary schools and three secondary

schools, one college and one ITI college. The town has one health center run by Government, and privete dispensaries.

The town has well organized drinking water supply scheme. There are many facilities like irrigation, co-operative primary milk societies and co-operative credit society. There are nine banks in town. In this town there is one ledy selected as lady Nagaradhyaksha and six women members.

Total area of this village is 5763.72 hectares. Out of which 5387.72 hectares area is irrigated, 396 hector unirrigated area. Irrigation is through mainly private wells and through Rajarambapu Irrigation Scheme, which lift water from river Krishna. The major crops are jawar, soysbeen, groundnut, wheat, rice and sugar cane.

Total no of Self Help Groups and Beneficiaries in Ashta

Sr. No.	Years	Self-Help Groups		Total No of Benificiaries
		BPL	APL	
1	2010-2011	28	86	1398
2	2011-2012	13	27	481
3	2012-2013	07	12	226
4	2013-2014	03	22	316
5	2014-2015	08	20	340
6	**Total**	**59**	**167**	**2761**

Source: Compiled by the researcher from the record of munsipalty office Ashta.

Two hundred twenty six Self Help Groups have been established in the munsipalty Ashta under Swarn-Jayanti Gram Swarojagar Yojana. Out of which 59 Self Help Groups are of the women Below Poverty Line, in which 2 Male Self Help Groups and 167 are of the women Above Poverty Line Self Help Groups. Panchayat Samitee has given training to the Self Help Groups like making Purses, washing powder, indigo and phenel. Some Bachat Gats are manufacturing incense-sticks and ornaments. These Gats also arrange fairs. Women from these Groups have become economically strong. Women from BPL SHGs have improved their traditional occupations like broom making, rope making etc. They have deposited Rs. 1,63,000 as savings in bank and put out the loan of Rs. 3,00,000. This has checked the private money lending in this area. Women from APL Self Help Groups are saving 14, 40,570 Rs. and are disbursed with Rs. 12,00,000 for their day-to-day needs. The womens of this SHGs are started various small occupations like making Papad, Shevaya, Vefarse, stationary shop, milk center etc.

Phalakewadi

Village Phalakewadi is situated in Walwa tahsil at the plane region, some 20 km. south east of Islampur town. The Village Panchayat was established on 1968. The population of this village is 1598 (2011 census); this includes 807 males and 791 females. SC population is only 6 including 4 males and 2 females; ST population is only 8, which include 7 males and 1 females.. The average sex ratio of

this village is 980 and the literacy rate is 87.26 %. In Sakharale Male literacy is 93.10% while female literacy rate is 81.37%.

Total number of families in the village is 330. Out of which 55 families are Below Poverty Line. These BPL families include 30 from BC and 25 from open categories. The village Dhagewadi has three primary school and nursery. In the village there has no health facility.

The village has well organized drinking water supply scheme. There are no irrigation facilities. There are two milk societies. There are no banking facilities. In this village there is one ledy selected as lady Sarpanch and five women members in Grampanchayat body. Total area of this village is 343 hectares. Out of this most of the area is unirrigated area. The major crops are jawar, groundnut, sugarcane and soyabeen.

Total no of Self Help Groups and Beneficiaries in Phalakewadi

Sr. No.	Years	Self-Help Groups		Total No of Benificiaries
		BPL	APL	
1	2010-2011	1	2	41
2	2011-2012	0	1	15
3	2012-2013	0	2	30
4	2013-2014	0	0	00
5	2014-2015	0	1	15
6	**Total**	**1**	**6**	**101**

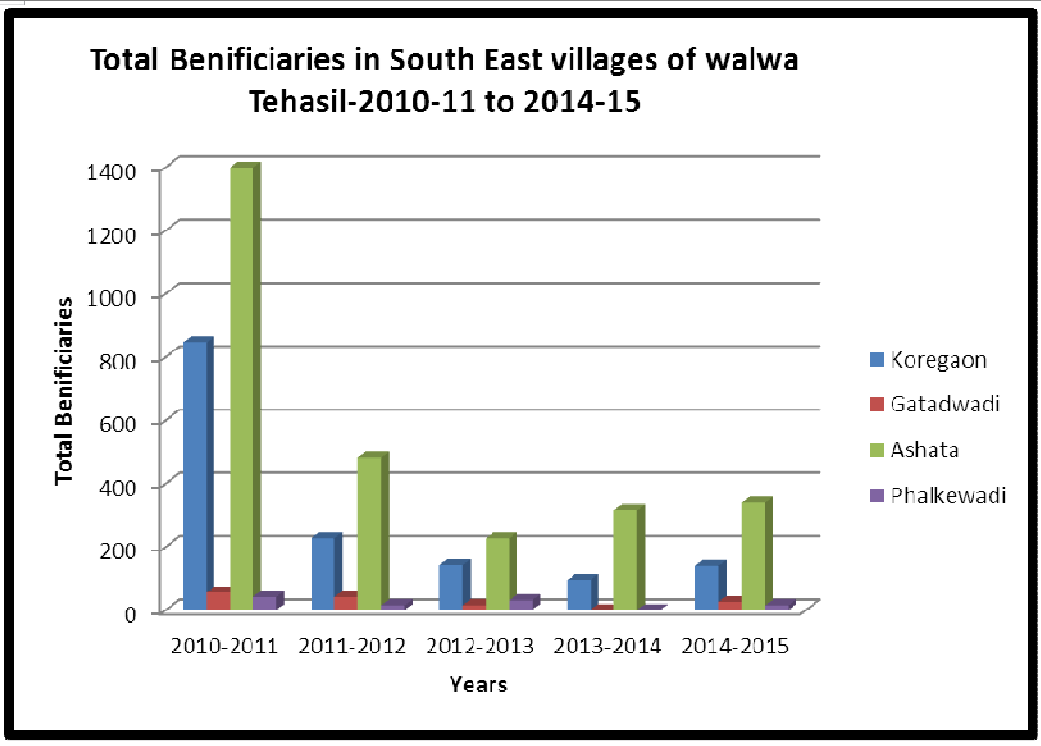
Source: Compiled by the researcher from the record of Grampanchayat office Phalakewadi

Seven Self Help Groups have been established in the village Phalakewadi under Swarn-Jayanti Gram Swarojagar Yojana. Out of which one Self Help Groups are of the women Below Poverty Line and six are of the women Above Poverty Line Self Help Groups. There is no banking, traveling and any other facilities in the village. The womens of this village are not interested in the SHGs. They are not engaged in any buiesness. They have deposited their savings to their secretary and put out the loan for their day-to-day needs.

Total no of Beneficiaries in selected villages (2010 to 2015)

Sr. No.	Years	Total No of Benificiaries			
		Koregaon	Gatadwadi	Ashata	Phalkewadi
1	2010-2011	846	56	1398	41
2	2011-2012	226	41	481	15
3	2012-2013	143	15	226	30
4	2013-2014	94	00	316	00
5	2014-2015	141	26	340	15
6	**Total**	**1450**	**138**	**2761**	**101**

Source: Compiled by the researcher from the record of Grampanchayat office



Source: Compiled by the researcher from the record of Grampanchayats

Findings And Suggetions:

On the basis of field survey and observations an insight is obtained in the implementation of the Swarnajayanti Gram Swarojgar Yojana (SGSY). The major findings and suggestions of the present study are listed below

1) Study of the sample villages in the district reveals that the women in the selected villages have participated to a grater extent in the Swarnajayanti Gram Swarojgar Yojana (SGSY), sponsored by the State and the central Government.

2) In the 4 selected villages there are total 4450 beneficiaries who are benefited from the Swarnajayanti Gram Swarojgar Yojana (SGSY).

3) It was found from the case study, majority that is 100 percent of beneficiaries who participated in this schemes were females.

4) In the selected villages 365 Self Help Groups were established in under Swarnajayanti Gram Swarojgar Yojana and some 4450 beneficiaries involved in it. There are 288 below poverty line Self Help Groups and77 above poverty line Self Help Groups.

5) In the selected village the participation of women in SHGs are very less at the foot of the hill village. The plateau area the participation of women in SHGs are moderate . The bank of the river and the industrial area are very developed in participation of women in SGSY.

6) The important problem found in all the selected villages is of identification of BPL families. Therefore, it is suggested that fool proof procedure of identifying BPL families should be adopted so that the benefits of the programme should go to the real poor and deserving families.

7) In hilly region due to ignorance and illiteracy of beneficiaries the poor people were unaware of Self Help Groups. It is essential that rural people must be made aware of the schemes

which aims at women empowerment..

8) The BPL beneficiaries are unable to repay the loan amount so the SHGs are closed. The banks have not taken the SHGs in gradation because of this the beneficiaries do not get the loan amount and subsidy. Therefore, it is suggested that the BDO and Bank Officers should give the detail information about the scheme to illiterate women. So they should keep the record of the SHGs up-to-date.

9) The amount of the loan disbursed is not sufficient to carry on the business activities profitably. Generally the additional income instead of saving and reinvesting is used for domestic needs and they have no money left for repayment of the loans.

10) In the selected villages some are located in the hilly area. There are no transport and communication facilities from the villages to the tehsil Head Quarter or the District Head Quarter. To overcome this problem it is suggested that the BDOs should visit the hilly area at regular intervals. They should also provide advisory facilities about the RDPs to the needy families. This step can save time and money of the families especially in villages in hilly region.

11) It is clear from the sample studies that in hilly as well as remote areas the participation of women in Swarnajayanti Gram Swarojgar Yojana (SGSY) is not satisfactory. Without womens participation the success can not be achieved. Therefore it is suggested that the Government Organizations and Non Government Organizations so also the Voluntary Organizations should take up programmes to increase the participation of the women in the Swarnajayanti Gram Swarojgar Yojana (SGSY).

12) Under Swarnajayanti Gram Swarojgar Yojana (SGSY) schemes government gives funds and subsidy to the beneficiaries for their economic activities. The women start a business and manufacture many products however due to lack of marketing facilities and lack of periodical markets they are not able to sell the goods. For selling their goods and services they have to travel from villages to villages and from the villages to the urban markets. This is a major hurdle in the progress of Swarnajayanti Gram Swarojgar Yojana (SGSY).Therefore, it is suggested that the consumer marketing facilities should be provide by the Panchayat Samitte and Zilla Parishad.

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A Study of Per Capita Net Sown Area in Parbhani District

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Abstract :-

There is a basic difference between land classification and land capability survey in land classification, and is divided in to various classes largely on the basis of existing fertility and productivity at the current level of technological development in land capability survey there are many factors that are taken into Account to assess the capacity of land, existing and potential, for production of crops for example, location, which wile include degree of slope, aspect, and drainage, climate, The physical and chemical characteristics of soil. A part from these, certain social and economic factors are also taken into consideration, for example,
Rent and Rules, social and economic conditions of the region and the facilities that are available for the disposal of the products.

This area means the Actual cultivated area during the agriculture year. It is known as net cropped area or Net sown area. The above use categories or classification and definitions have been accepted by all the states leading to the transformation and trends for 10 years of these categories of land use are shown in tables and discussed in the subcategories.

Keywords :- per capita net sown area.

Introduction:-

Land use is the surface from all developed and vacant land on a specific point at a given time and space. This leads one back to the village farm and the famers in the fields gardens, pastures, fallow land forces and to the isolated farmstead. The entire land area of Earth surface is 57 million 58 miles sq 14 billon hectares but a large area of the earth is uninhabited and in the percent circumstance, there no chance for habitation again as big chink of the earth is hilly where there are mountains plateaus and Rocks this cannot be brought under cultivation.

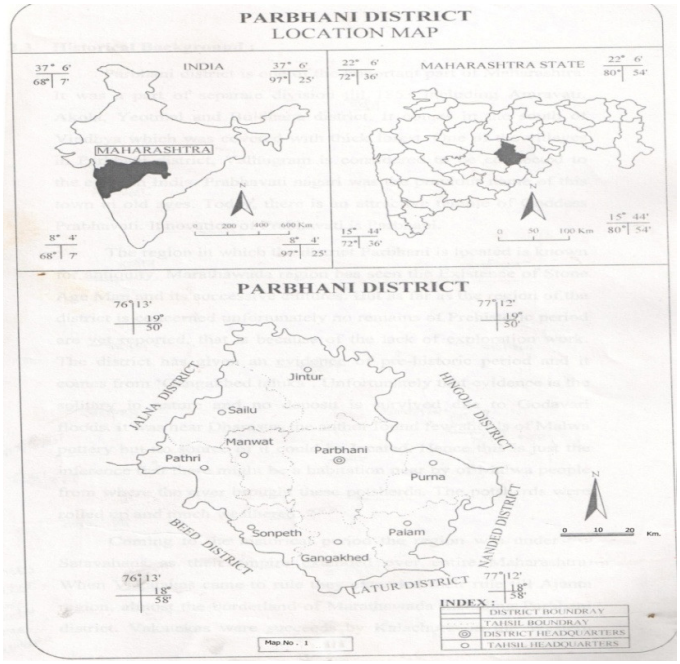
Land is the basic resource of human society. Its utilization shown a reciprocal between the prevailing ecological conditions of as Regional and man. The term land use is employed for varied surface and dynamic uses of the land and soil survey eig land under cultivation, pasture barmen, orchard, fallow waste culturable waste, settlement forest, water bodies etc. on varied terrain conditions and soil types land in Rotation of crops would means those crops that in rotational system land use study can play its significant role in the direction of conservation of soil where the effort is being made in various states in India what types of land should be conserved. It depends upon the productivity and fertility of the soil.

Study Area :

Parbhani district is situated at south east part of Maharashtra and lies between 18°58' north to 19°50' north latitude and 76°13' east to 77°12' east longitudes.

It is bounded on north by Buldhana and Akola districts, on the east by Hingoli and Nanded, Latur and Beed are bounded on southern boundary and Jalna district is bounded by west. For the administrative purpose the District divided into nine tahsils i.e Parbhani, Gangakhed, Palam, Sonpeth, Jintur, Pathri, Manvat, Purna and Sailu.

The total geographical area of Parbhani district is 6511 sq. km. Our of the total geographical area of Maharashtra it covers 2.39 per cent.



Aims and objectives:-

Following are the main aims and objectives of the present research paper.

1) To study of per capita net sown area in parbhani district in 2001.
2) To study of per capita net sown area in parbhani district in 2011.
3) To find out the results and conclusion.

Source of data :

For the period 2001 to 2011The data collected from various secondary sources. The data is assembled from secondary sources were processed and presented by statistical and cartographic techniques not only basis of secondary data but with the help of various statistical and cartographic methods and techniques.

Secondary data from socio economic review district census handbooks gazetteers agricultural epitomes season and crop report published by department of the agricultural the present research work author.

Discussion:-

Tahsil wise per capital net sown area in parbhani District.

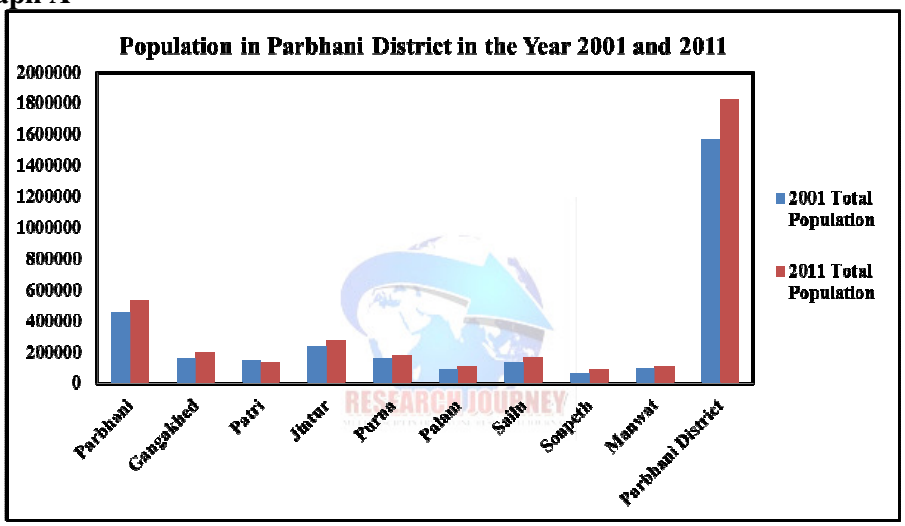
There is very close association between population has increased per capita net sown area. Population has been growing in parbhani District from 2001 to 2011 and per capita net sown area is increased. The highest per capital net sown area has been recorded in sailu (0.38 hectare) tahsil while be the lowest per capita net sown are was observed in manwat and parbhani (0.20 hectares) tahsil during the period 2001 in 2011 the maximum per capita net sown area was recorded in palm (0.38 hectares) tahsil and the lowest per capita net sown area was found in parbhani (0.21 hectares) tahsil the parbhani district average per capital net sown area was recorded 0.21 hectors in 2001 In 2011 the parbhani District average per capita net sown area was increased (0.28 hectares) tahsil wise per capita net sown area was recorded in purna and sonpeth (0.22 hectares) pathri (0.25 hectare), gangakhed (0.27 hectare), palam (0.28 hectare), jintur (0.31 hecter) tahsils in the during period 2001 in 2011 tahsil wise per capita net sown area was found in gangakhed (0.22 hectares) jintur (0.28 hecters) purna (0.32 hectares) manwath (0.33 hectares) , pathri (0.34 hectares) , sailu (0.35 hectares) and sonpeth (0.36 hectares) in the study area.

Table No 1.1 Population, net sown area, per capita in parbhani District.

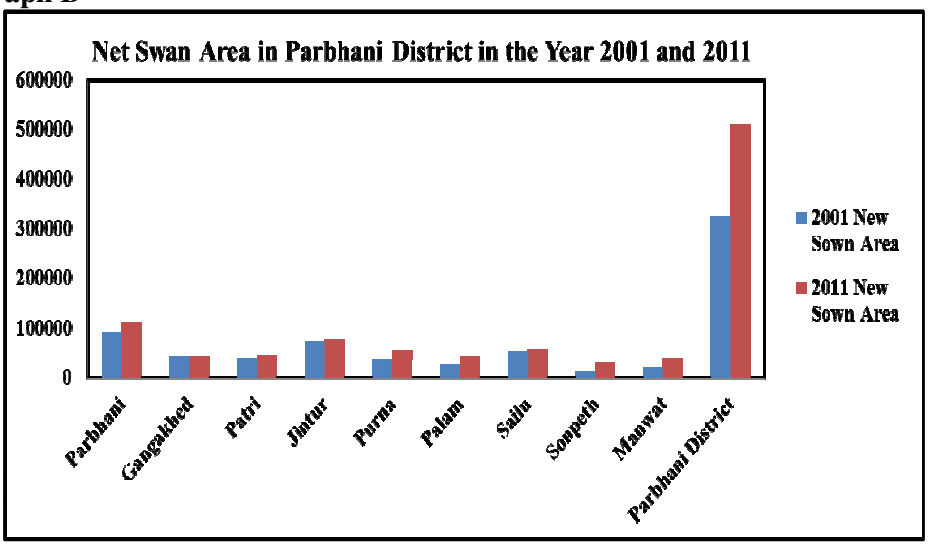
Name of tahsil	2001			2011		
	Total population	Net sown Area	Per capita Net sown Are	Total population	Net sown Area	Per capita Net sown Are
Parbhani	460000	93400	0.20	537000	110600	0.21
Gangakhed	164000	43800	0.27	202000	45200	0.22
Pathri	155000	38700	0.25	139000	46900	0.34
Jintur	234000	73400	0.31	282000	77800	0.28
Purna	162000	36200	0.22	182000	57500	0.32
Palam	92000	25800	0.28	115000	43800	0.38
Sailu	139000	53000	0.38	169000	58500	0.35
Sonpeth	66000	14200	0.22	89000	31600	0.36
Manwath	97000	19900	0.20	116000	38100	0.33
Parbhani District	**1569000**	**325100**	**0.21**	**1831000**	**510000**	**0.28**

Source : Computed by the Author

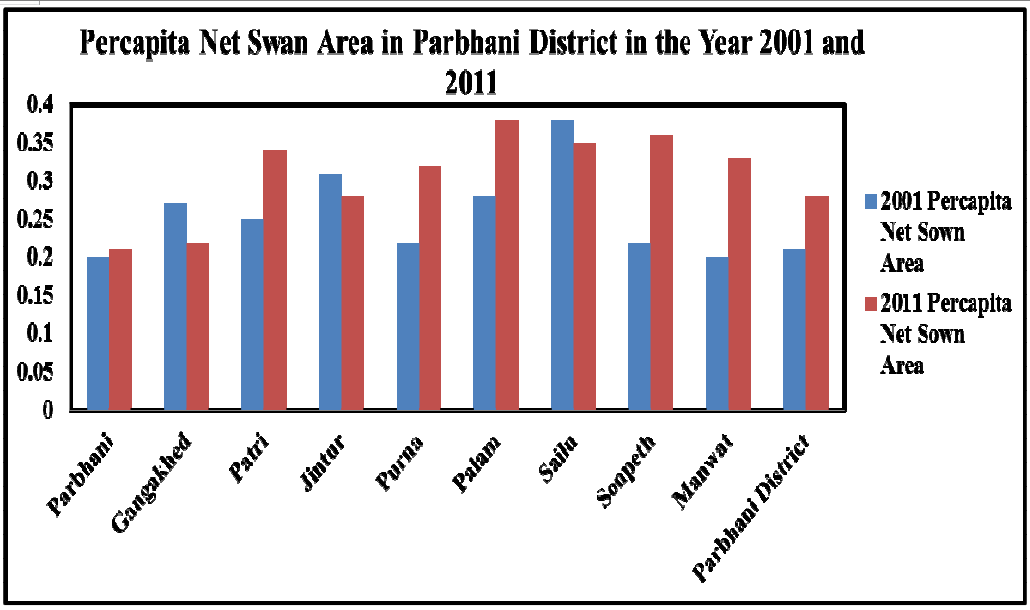
Graph A



Graph B



Graph C



Conclusion:-

Table No 1.1 indicates the tahsil wise per capita net area in parbhani District during the period 2001-2011. The highest per capita net sown area was found in sailu tahsil and the lowest per capita net sown area was recorded in parbhani and manwat tahsil during the period 2001. In 2011 the highest per capita net sown area was observed in palam tahsil and the lowest per capita net sown area was found in parbhani tahsil. The parbhani district average per capita net sown area increased was 0.21 hectare in 2001 in 0.28 hectare in 2011. Tahsil wise per capita net sown area has increased was found in parbhani, pathri, purna, palam, sonpeth and manwath tahsils during 2001 to 2011 tahsil wise per capita net sown area has decreased was recorded in Gangakhed, jintur and sailu tahsils in the study area.

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Study of Changing Cropping Pattern of Pune District Maharashtra; A Case Study of Baramati and Purandar Tahsil

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Abstract-

The study of Cropping Pattern Constitutes a significant aspect within the spatial dimension of agriculture as it provides a good base for regional planning (Ali 1985). The cropping pattern in India underwent several changes with the advent of modern agriculture technology, especially during the period of the Green Revolution in the late sixties and early seventies. There is a continuous surge for diverfication agriculture in terms of crops, primarily on economic considerations. The cropping pattern changes however are the outcomes of the interactive effect of many factors which can be studied. The predominance of food grains group together with the fact that a significant proportion of agricultural production is concentrated in small farms, lead one to conclude that much of the cultivation is for self consumption.

Key Words-Cropping Pattern, Regional Planning, Diversification

Introduction-

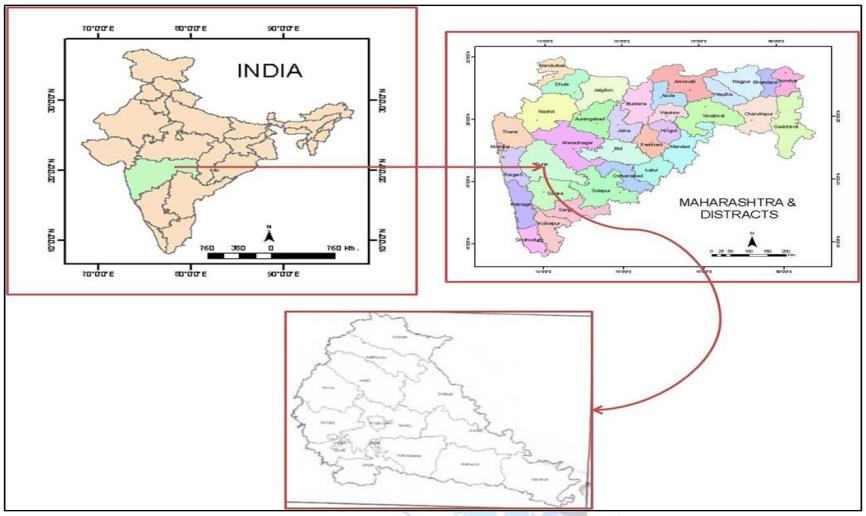
The history of agriculture in India started in the Indus civilization and even before this in the southern parte of India.In farm outputs India ranks second in the world.India ranks first in net cropped area. The economic contribution of agricultureto Indias GDP is declining constantly. The agriculture face of the third world of which India is a part ,has changed and is still changing because of the diffusion of green revolution technology but not changed at a balanced scale. Whereas the level of agricultural performance in the country are observed at differential rates The characteristics of rainfall in India audits spatial variation due to orthographic conditions make water scarcity. Though rainfall is not a reliable source of supply of water throughout the year ,it requires constant supply for irrigation works through tanks lakes wells etc. Irrigation has been the principal pre occupation with the Indians. The importance of canal irrigation has also developed .Wilson and Swarthy (1927) they explained the relation between rainfall, irrigation and drainage and the changes in the water –table.

Pune is the second largest district of Maharashtra State in respect of area. The geographical area of the district is 15642 sq.km, which is 5.08% of the total area of State. It is situated in the western part of the State and lies between north latitude 17°54' and 19°24' and east longitudes 73°29' and 75°10'. It is bounded by Ahmednagar district in the north and east. Sholapur and Satara districts in south and south east respectively and Thane and Raigarh districts in North West and west respectively. For administrative convenience it is divided in 14 talukas namely Pune City, Haveli, Khed, Ambegaon, Junnar, Shirur, Daund, Indapur, Baramati, Purandhar, Bhor, Velhe, Mulshi and Maval. The population of the district is 72, 33,000 as per 2001 census with density of 462 persons/sq.km. There are 25 towns and 1866 villages in the district, out of which 18 villages are not habited. The district has 13 Panchayat Samitis, 11 Nagar Parishads, 2 Municipal Corporation and 1407 Gram Panchayats. As per land use details (2010-

11) the district has an area of 1720 sq.km occupied by forest. The gross cultivable area of district is 10150 sq.km whereas net sown area is 9920 sq.km.

Study Area

Pune is the second largest district of Maharashtra State in respect of area. The geographical area of the district is 15642 sq.km. This is 5.08% of the total area of State. It is situated in the western part of the State and lies between north latitude 17°54' and 19°24' and east longitudes 73°29' and 75°10'. It is bounded by Ahmednagar district in the north and east. Sholapur and Satara districts in south and south east respectively and Thane and Raigarh districts in North West and west respectively. The study area selected is Baramati and Purandar tahesil.



Objectives-

1) To study the e cropping Pattern of the area.
2) To analyze the percentage of different crops

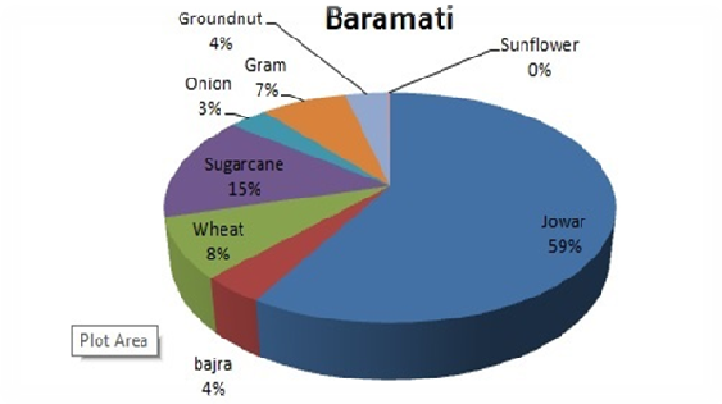
Methodology-

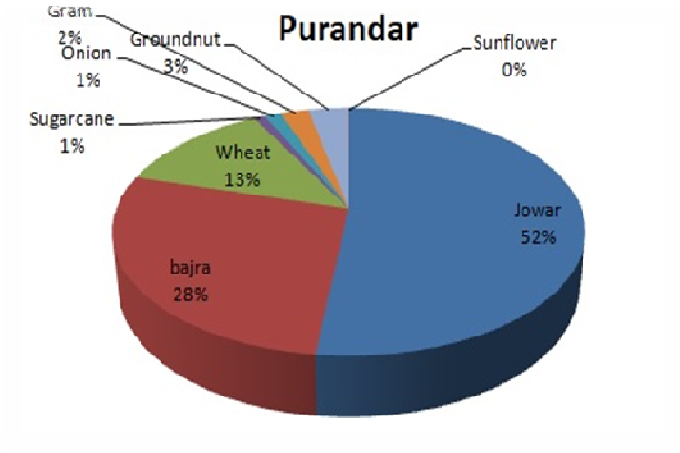
Data has been collected by referring different statistical abstracts, Agriculture Department of Pune,Maharashtra ,district gazetteers statistical information. The Secondary data was also collected from various Government offices and Institutions and Maharashtra Economic survey. The collected data was processed, edited and analyzed by applying Pie Diagram and bar diagram using the formula.Representated the methods through tables, maps and diagram.

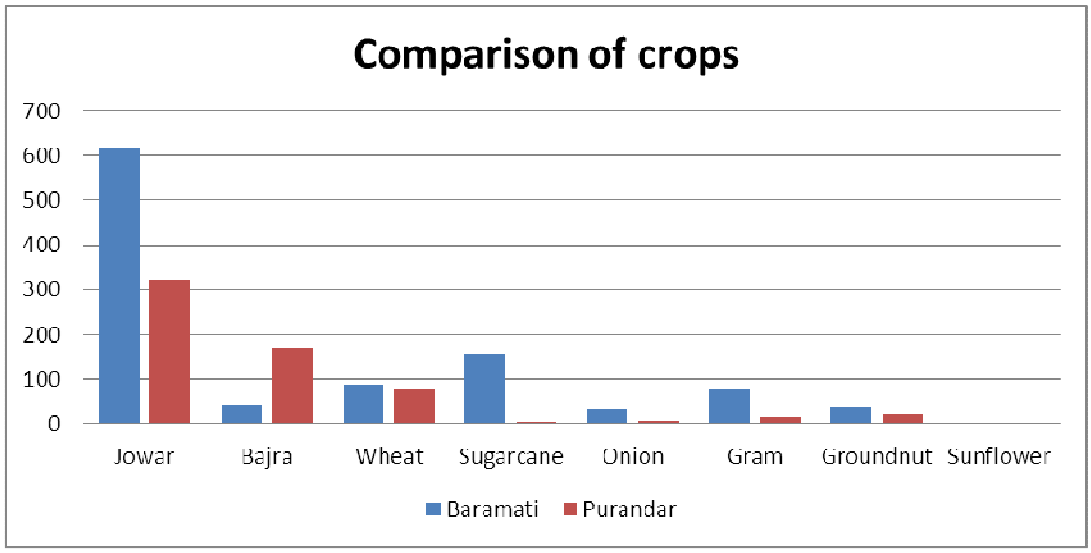
Area under Principle crops, Baramati and Purandar (ha) (2011-12)

Taluka	Jowar	Bajra	Wheat	Sugarcane	Onion	Gram	Groundnut	Sunflower
Baramati	617.91	40.79	88.8	155.3	35.08	77.91	39.08	1.9
Purandar	321.88	170.98	78.83	5.62	8.31	14.25	20.23	0.44

Source-Superintendent of Land Record, Commissioner of Agriculture, Pune


Baramati
Groundnut 4%
Gram 7%
Onion 3%
Sugarcane 15%
Wheat 8%
bajra 4%
Sunflower 0%
Jowar 59%
Plot Area


Purandar
Gram 2%
Onion 1%
Groundnut 3%
Sugarcane 1%
Wheat 13%
bajra 28%
Sunflower 0%
Jowar 52%


Comparison of crops
700
600
500
400
300
200
100
0
Jowar
Bajra
Wheat
Sugarcane
Onion
Gram
Groundnut
Sunflower
Baramati
Purandar

Result and Discussion

The agricultural distribution of crops does not follow traditional pattern as cash crops like sugarcane and fruits like grapes, custard apple, pomegranate etc. are becoming popular. Jowar and Bajra are grown in areas where irrigation water availability is less. The ground water based irrigation caters to the major area i.e., 71.52 sq.km. (8.35% of net sown area) in Purandar taluka and 181.54 sq.km. (8.35% of net sown area) in Baramati Taluka, while surface water irrigated area is about 71.52 sq.km. (17.5% of net sown area) in Purandhar Taluka and 233.79 sq.km. (22.5% of net sown area) in Baramati Taluka. The crops grown in Baramati taluka is Jowar which is 52% (617.91 ha).As Baramati is drought prone region the average rainfall so jowar is major crops some villages of Baramati there is canal and well irrigation there 15% (155.3 ha) is under sugarcane cultivation wheat ranks 3 rd in percentages (08%) Gram seven Percent Bajra and Groundnut are having same percent (04%) Onion is very less (03%) and sunflower is negligible. Comparison of bar diagram gives a very clear view of the cropping pattern of the two talukas.The talukas taken for study both of them come under the drought prone region having less rainfall.

In Purandar food grain crops are predominant such as bajra ,jowar and wheat and cash crops such as sugarcane, onion,gram ,and groundnut are very less. But the trend seen in Baramati taluka food crops is decreasing and cash crop area is increasing.which shows that the cropping has an influence of factors such as political and irrigation.

Purandar has 52 % of Jawar which is 321.88 ha. Purandar taluka has Average rainfall 696.3mm during the rainy season there is water availability in this tahsil major kharif crop is Jowar and rabi crop is Bajra the area under Bajra crop cultivation is 170.98 ha (28%) Wheat 13 % and Sugarcane, onion Gram and Groundnut that is very less (1 to 3) Percent

The average rainfall in Baramati is less then Purandar taluka but the traditional crops Jawar and Bajra is dominant crop According to Weaver method where there is monoculture crop combination found for food grain the economic development less seen here. Irrigation Facility as like canal irrigation in present in Baramati so the cropping pattern changing from traditional to cash crop such as Sugarcane, onion, Graphs, Pomegranates etc. The factor which also play vital role for the cropping pattern is political Factor. In Baramati tahesil Political impact has help to change the cropping Pattern from food grain to cash crop.

Conclusion

The Jowar is dominant crop in Baramati as well as in Purandar tahesil. Jowar cultivation is highest in Baramati. Food grain crop cultivation is more as compared to cash crops in Purandar taluka. .In Baramati Taluka bajra or food cropsseen are jowar and wheat. Area of cash crop in Baramati is increasing with respect to Purandar .Irrigation Facility in Baramati is developing.

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Tehsil-Wise Landuse Pattern in Southern Konkan Region of Maharashtra

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Abstract:

Land is the basic resource of human society. Its utilization shows a mutual relationship between the prevailing environmental conditions of particular region and man. Land use is the surface utilization of all developed and unoccupied land on a specific point, at a given time and space. landuse pattern of the Southern Konkan region under study differs from the district to district, due to the location and physical setting, the existing pattern of landuse, is shown in figure appears to have been resulted from a process of land exploitation within the frame of physical socio economic complex and modified by the expansion of irrigation and the growth of population. To avoid fluctuation and get reliable result the quinquennial average for 1981-2011 is taken into consideration.

For this analysis quinquennial averages for 1981-2011 are used. The Sindhudurg and Ratnagiri district is formed in 1981-2011 by splitting of Sindhudurg and Ratnagiri district, therefore, the data of those two tehsils for the period of 1981-2011 is considered as data of Sindhudurg and Sindhudurg district.

Introduction

The present paper consists of general land use, Land use classification, district wise trends in general land use pattern, net sown area, in the study area, quantity of change in Land use from 1981and2011, and Land use good organization are discussed. Land is our great inheritance – a deserted, subjugated and robbed inheritance. The appalling part of the story is that the inheritors are themselves plunderers and yet the land continues to supply the lifeblood of our civilization and national survival. Land is the basic resource of human society. Its utilization shows a mutual relationship between the prevailing environmental conditions of particular region and man. Land use is the surface utilization of all developed and unoccupied land on a specific point, at a given time and space (Dr. Patel Ganesh, 2114). The production factors are land, transportation facilities and the stage of technological improvement. The utilization factor includes the number of people, utilization of goods per person and the gross exports. Any shift in the consumption of supplies may change the consumption of other commodities. The villages of Maharashtra are lacking in the basic concept of balanced and nutritional diet. The sample families of villages of konkan region shows a very poor result with respect to intake of balanced, nutritional diet and general awareness. The result of this is that most of the people suffer from slow growth rate, low eye sight, teeth problem, weakness, increased hair fall, anemia, skin problem, lowering of intelligence level and bone deformities. Proper awareness regarding the

importance of balanced diet should be enhanced among the village folks. (Hajare R.V., 2014) Landuse a function of four variables – Land, water, air and man. Each plays it's possess role in composing its life history. Land constitutes its body; water run through is veins life blood, Air gives it Oxygen and man alts as the dynamic actor to reflect its types, pattern and distribution (Singh R. P., 1992).

Objective

To find out tehsil wise landuse pattern distribution in the study region is the main objective of the present study.

Study area

The region selected for present investigation is southern part of littoral Maharashtra, located between $15^0$36'north to $18^0$50'north Latitude and $74^0$36'east to $75^0$50'east Longitudes comprising Ratnagiri and Sindhudurg districts It had north south length of 450 Km and east west of 65Km having average height of 1350 mt From mean sea level, the region is bounded by Arabian Sea to the west, the Karnataka and Goa states to the south, Raigarh district to north and Satara, Sangli and Kolhapur districts to east. Administratively it is divided into17 tehsils comprising 13295.5 sq.km areas and supporting 25, 58154 population.

Geographically the Southern Konkan has considerable variation in relief, climate and socio-economic environment. The region is a narrow coasted strip with hilly and ragged topographic features along the Sahyadri hills, the valleys are more open and the hills are less rugged, towards the coast it valley into hearty level plains.

In general, the region experiences moist and humid climate. The rainfall is heavy, especially in the hilly eastern part that is on high Crestline of Sahyadri, weather in rainy season is humid and in winter season it is cool. The average rainfall of south Konkan is about 250 cm. The rainfall is concentrated in four months from June to September in all over the region. The average temperature in summer season is 33^0c and winter season is 18^0C. Broadly the year may be divided into three seasons, the summer season from March to May, the monsoon season from June to October and winter season from November to February.

Methodology

The present study is based on secondary data collected from the socio –economic review of Sindhudurg and Ratnagiri district 1981 and 2011, forest survey of India, Dehradun, (Annual state of forest Report, 2016-17), India's Forest cover contribution as a carbon sink, ministry of Environment and Forest (Government of India, August 2009), Maharashtra ISFR 2017,State Environment Report and Forest Government of India, Maharashtra Forest Policy 2016, and electronic data have collected to the internet facility, Local forest department, books, Journals, Wikipedia the free encyclopedia etc. And also used a GIS technique of preparing a map, for the construction of per cent of various indicates by applying statistical and mathematical formulas and graphical techniques are used.

Table No-1

Landuse patter in southern konkan of Maharashtra 1981 and 2011

Sr. no.	Landuse	Area in per cent	
		Sindhudurg	Ratnagiri

1	Forest	8.22	7.67	1.46	0.72
2	Net Cultivable area	31.39	33.06	1.86	31.6
3	Fallow Land	11.37	11.5	28.76	14.5
4	Area not available for cultivation	31.11	28.43	33.91	26.8
5	Others	17.91	19.34	34.01	26.4
	Total	100	100	100	100

Source: - Socio-Economic Review of Sindhudurg and Ratnagiri District 1981 and 2011.

Table no 1 reveals the landuse pattern of southern konkan region of Maharashtra in the year of 1981 and 2011, the landuse pattern is shows in percentage. In the landuse pattern the forest area is deceased in Sindhudurg and Ratnagiri district because to increased the population, increase the industrial area, increase the agriculture land also. In this table shows the net cultivable area is increased then it is show that the cultivable area is increased and the forest area is decreased.

Table No-2

Tahsil Wise Land Use Pattern of Southern Konkan of Maharashtra 1981

Sr. no.	Tehsils	Area in %t	Forest in %	Cultivable Area %	Fallow land in %	Land not available for cultivation	Other land in %t	Total in %
1	Mandangad	3.33	2.4	3.96	6.26	3.04	1.85	3.4
2	Dapoli	6.75	2.4	8.23	7.31	5.76	5.74	6.55
3	Khed	7.95	6.14	5.17	12.14	5.44	10.34	7.72
4	Chiplun	8.73	0.53	12.39	4.84	8.22	7.54	8.45
5	Guhaghar	4.97	4.07	4.36	7.78	5.58	5.77	5.46
6	Ratnagiri	7.26	2.64	9.07	11.94	7	10.42	9.02
7	Sangmeshwar	9.78	0.53	9.22	6.62	9.83	11.59	9.43
8	Lanja	5.78	2.67	6.72	6.47	5.34	4.63	5.6
9	Rajapur	9.29	8.81	8.21	5.31	11.42	9.42	9.04
10	Kankavali	6.04	21.81	6.59	1.16	7.2	4.59	5.85
11	Kudal	6.41	21.23	6.21	1.32	4.53	9.01	6.24
12	Sawantwadi and Vengurla	8.6	25.52	8.43	3.83	6.96	0.37	6.95
13	Malvan	4.8	0.67	4.29	3.16	6.17	3.55	4.37
14	Devgad	5.92	6.75	4.38	12.19	9.68	0.08	5.69
15	Vaibhavwadi	3.15	6.16	3.29	8.57	2.44	0.29	3.27
16	Dodamarg	3.75	5.39	3.15	3.2	5.07	0.16	3.19

Source:- Socio-Economic Review of Ratnagiri and Sindhudurg District 2011

Table No-3

Tehsil Wise Land Use Pattern of Southern Konkan Of Maharashtra 2011

Sr. no.	Tehsils	% Area in	% Forest in	Net Cultivable Area %	Fallow land in %	Area not available for cultivation in %	Other landin %	Total in %
1	Mandangad	3.23	0.28	3.66	6.73	2.5	1.17	3.27
2	Dapoli	6.54	Na	6.79	3.6	6.7	9.6	6.69
3	Khed	6.57	8.14	8.24	3.11	5.54	9.08	7.29
4	Chiplun	8.45	0.54	8.78	14.04	8.6	8.87	9.06
5	Guhaghar	5.95	4.07	4.92	7.9	5.89	8.58	5.82
6	Ratnagiri	7.02	2.64	6.05	0.66	10.34	8.61	6.63
7	Sangmeshwar	9.48	3.62	9.38	19.77	10.88	6.54	10.06
8	Lanja	5.6	2.36	5.76	7.98	5.59	5.79	5.86
9	Rajapur	9	1.86	11.16	2.24	4.43	27.73	11.03
10	Kankavali	5.86	20.22	6.08	0.32	3.54	4.08	5.06
11	Kudal	6.2	22.11	5.64	2.7	5.67	5.5	5.76
12	Sawantwadi + Vengurla	8.6	25.52	8.43	3.83	6.96	0.37	6.95
13	Malvan	4.68	0.67	4.29	3.16	6.17	3.55	4.37
14	Devgad	5.92	6.75	4.38	12.19	9.68	0.08	5.69
15	Vaibhavwadi	3.15	6.16	3.29	8.57	2.44	0.29	3.27
16	Dodamarg	3.75	5.39	3.15	3.2	5.07	0.16	3.19
17	South Konkan	100	100	100	100	100	100	100

In table no 3 and 4 reveals that the tehsil-wise landuse pattern in southern konkan region. It shows follows--

Area under forest

Indian forestry revolves around social and environmental elements of Sustainable Forest Management (SFM). The demand for wood and wood products will continue to increase in the future. The present need is met mainly from the agro forestry sector and balance demand through imports. The forests of the country are catering to 16% of the human and 18% of the cattle population needs. India is also maintaining around 20% of the forest area under a protected area network for providing ecological security. , The nation has empowered occupation and habitation rights for forest dependent communities along with the responsibility for conservation of forests. There is a wide gap between "have" and "have not "in the country. The strengthening in the capacity of the rural poor for improving their income is crucial for checking the degradation of forests. The forestry sector is impacted by other sectors such as energy, agriculture, education, water resources, industry, infrastructure development, bio-fuels, change in demographic structure and high economic growth. All the policies of the Government of India have to move around the prime objective of the National Forest Policy and mandate of achieving 33% forest and tree cover in the country. (Dr C B Londe, 2015) The area under forest includes all lands which are under forest, whether private or state owned. There is close association between the Nature of the terrain, the amount of rainfall received and the area under forests (Diddee, et al., 2002).In the

study region the area under forest was 8.22 per cent during the year 1981 For the period of 1981 - 2011 it has decreased by 0.55 per cent in Sindhudurg district and 0.74 per cent in Ratnagiri district. The Kankavali tahsil recorded high proportion (10.62 per cent) during 1981 followed by Kudal (9.77 per cent) and Sawantwadi (8.72 per cent) tahsils. Some tahsils like Dapoli, Lanja have recorded moderate concentration of area under forest (1 to 2 per cent). The remaining tahsils namely Chiplun, Sangameshwar, Guhagar, Ratnagiri, Devgad and Malvan tahsils have recorded very low concentration of area under forest. The Mandangad, Dapoli, Guhagar, Ratnagiri and Malvan tahsils have recorded low concentration of forest land. This part of region has been denuded the forest cover due to constant overgrazing, excessive and unplanned cutting of trees and lack of forest management.

Volume of change in area under forest during the period under review is depicted in table. Although no large scale changes are marked in the pattern, the region has undergone some changes in the forest cover, varying from 3.84 per cent increase in Devgad tahsil and 4.13 per cent decrease in Vaibhavwadi tahsil. The overall increase in forest area is 0.34 per cent only which is insignificant

Land Not Available for Cultivation

Agriculture still forms the backbone of our Indian economy and important role of a human being. Agriculture sector in India contributes nearly one half of the national income, providing jobs to three fourth of the total population. (Dr. D. C. Kamble, 20198). The area under non-agricultural uses includes the area under settlements, roads, railways, embankments, canals, tanks etc this category of land in the region covers 31.11 per cent in 1981 and 28.43 in 2011 in the Sindhudurg district and in the Ratnagiri district 33.91 in 1981 and 26.80 in 2011. In the study region the comparison of land not available for cultivation was 31.11 per cent in 1981 and in 2011 28.43 per cent in Sindhudurg district and in Ratnagiri district 33.91 per cent and in 2011 26.80 per cent. It has decreased by 2.68 per cent in Sindhudurg district and 7.11 per cent in Ratnagiri district during study period. The regional variation of land not available for cultivation is shown in table. There are no table changes in the distribution of land under this category. Most of the land in Rajapur, Devgad, Malvan and Kudal tahsils are stony wastes. The maximum land, about 42.76 per cent of Devgad tahsil is not available for cultivation followed by Rajapur (35.66 per cent), Malvan (33.28 per cent) and Kudal (20.51 per cent) tahsils during 1981. The spatial distribution of volume of change in land not available for cultivation as depicted in table is uneven. Most of the increase in area involved in change is noted in Vaibhavwadi (21.15 per cent) and Dodamarg (37.17 per cent) tahsils. Except these tahsils Ratnagiri (12.28 per cent), Khed (4.69 per cent) and Kudal (4.55 per cent) tahsils have recorded increase of land under this category. Maximum decrease under this category is confined to coastal area such as Guhagar (7.26 per cent), Rajapur (22.19 per cent) and Vengurla (8.03 per cent).

Other Uncultivated Land Excluding Fallow:

The culturable waste land, permanent pastures land and land under miscellaneous tree crops and groves are considered as other uncultivated land. Culturable waste land includes the land which can be brought under cultivation for some times but which has been not cultivated successively for more than five years. The category of miscellaneous tree crops includes lands under casuarina trees, thatching grass, bamboo bushes or other trees used for fuel etc. Actually these are the lands which are put to some agricultural use but said area extent is not included in

the category of net area sown. Total area under this category recorded is 17.91 per cent in 1981 and 19.34 per cent in 2011 in Sindhudurg district. And in Ratnagiri district 34.01 per cent in 1981 and 26.40 per cent in 2011. Kudal tahsil (40.42 per cent) has recorded highest percentage of area under this category followed by Khed (37.40 per cent), Sangameshwar (34.05 per cent) and Guhagar (33.33 per cent) tahsils. The remaining tahsils excepting Malwan (15.99 per cent) have moderate proportion of land under this category. The tahsils have relatively higher proportion of these lands mainly due to culturable waste; Grazing lands (Gayran's) hilly areas with thin cover are included in this category. The volume of change in this category is shown the table. The Kankavali tahsil has shown an increase (above 10 per cent) in area under this category followed by Vaibhavwadi and Dodamarg tahsils, whereas most of decrease (above 10 per cent) is recorded in Kudal, Devgad and Khed tahsils.

Fallow Land

Unlike the other agriculture related uses, fallow lands are regular part of the cultivated land on which cultivation has been temporarily suspended due to some reasons. Fallowing is either enforced by unfavorable weather conditions like droughts and floods due to which land just cannot be sown or seeding get destroyed or farmers resort to fallowing because returns from cultivation of the involved land may be too low and hence the work uneconomic, or if they lack the necessary where withal for taking up cultivation of such lands (Sharma, 1999). If the land remains fallow for only the current year, it is recorded as current fallows (ICAR, 1980). The other fallow lands include all land which are used for cultivation, but are temporarily unsown for a period of not less than one year and not more than five years. For present study these two categories are grouped together.

Total area under this land use category is 11.37 per cent in 1981 and 11.50 per cent in 2011 in Sindhudurg district and in Ratnagiri district 28.76 per cent in 1981 and 14.50 per cent in 2011. Areal distribution under this category varies from 10 to 20 per cent. Proportion of land under this category is relatively high (Above 20 per cent) in Sangameshwar, Lanja, Vaibhavwadi and Dodamarg tahsils. Due to the rugged nature of terrain, the lands are kept fallow to enrich soil fertility. Mandangad, Chiplun, Rajapur, Kankavali and Vengurla tahsils have recorded low proportion (below 10 per cent). Volume of change in this category is uneven. Sangameshwar and Vaibhavwadi have shown high increase (above 10 per cent) in area under fallow land due to unremunarative nature of cultivation and deforestation. Whereas Mandangad tahsil has shown high decrease (above 10 per cent) of area under fallow land due to increase in net sown area.

Net Sown Area

The extent of cropped lands in any region determined by net sown area and fallow lands of that region which is of vital significance in studies related to agricultural geography. The net sown area is the actual area under crops in the same year. Table 5.1 reveals spatio-temporal distribution of net sown area which has been influenced by physiographic constraints. This category has occupied about per cent area 31.39 per cent in 1981 and 33.06 per cent in 2011 in Sindhudurg district and in Ratnagiri district 1.86 per cent in 1981 and 31.60 per cent in 2011. Mandangad tahsil has recorded high proportion (67.84 per cent) followed by Chiplun (51.12 per cent) and Vengurla (43.99 per cent) tahsils. The remaining tahsils have recorded moderate proportion of net sown area. It is due to rugged terrain, poor soils and scarcity of water supply coupled together with poorly developed transport network and low technological development.

The spatial distribution of volume of change in net sown area as depicted in the variation table is uneven. The Mandangad tahsil has shown an increase (above 6 per cent) in area under this category followed by Khed, Chiplun, Guhagar, Sangameshwar, Devgad, Kudal and Vengurla tahsils. This is due to technological innovations used by farmers (based on questionnaire and personal interviews). The maximum decrease (above 6 per cent) under this category is confirmed to some tahsils such as Dapoli and Ratnagiri. This can be well attributed to the area increased under settlement, industry and roads.

Table No-4

Variation In Total Land Use Pattern In Southern Konkan of Maharashtra 1981-2011

Sr. No.	Tehsils	Total in % (1981)	Total in % (2011)	Variation
1	Mandangad	3.4	3.27	-0.13
2	Dapoli	6.55	6.69	0.14
3	Khed	7.72	7.29	-0.43
4	Chiplun	8.45	9.06	0.61
5	Guhaghar	5.46	5.82	0.36
6	Ratnagiri	9.02	6.63	-2.39
7	Sangmeshwar	9.43	10.06	0.63
8	Lanja	5.6	5.86	0.26
9	Rajapur	9.04	11.03	1.99
10	Kankavali	5.85	5.06	-0.79
11	Kudal	6.24	5.76	-0.48
12	Sawantwadi	10.25	6.95	-3.3
13	Vengurla	2.23		
14	Malvan	4.81	4.37	-0.44
15	Devgad	5.95	5.69	-0.26
16	Vaibhavwadi	Na	3.27	Na
17	Dodamarg	Na	3.19	Na

Source: - Socio-Economic Review of Sindhudurg and Ratnagiri District 1981 and 2011.

Table no 4 reveals the variation of land use pattern in southern konkan region the year of 1981 and 2011. In this table shows the tehsil-wise landuse pattern variations, the landuse pattern is change some tehsils because increase the population, increase agriculture land, increase industrial area, increase road facilities. This is interpreted the tehsil-wise in Mandangad tehsil the total landuse pattern land is decreased because this area is hilly so the people is migrated to Mumbai for some work. In Khed, Ratnagiri, Kankvali, Kudal, Sawantwadi, Vengurla, Malvan and Devgad the total landuse pattern is decreased because in this area the Industrial area is increased, also increased tourism, and in Devgad tehsil the Alphonso cultivation is increased so the total landuse pattern is some tehsils decreased. And in above tehsils means Rajapur, Guhaghar, Chiplun the total landuse pattern is increased because the agriculture land is increased under the mango, cashew and vegetables cultivation

Conclusion:

The landuse pattern of the study region is the reflection of the effect of physical and socio-economic factors. Net sown area in the region ranks first by occupying 31.79 per cent area

followed by fallow land (13.46 per cent). Hence there is a large potential for brining area under cashew cultivation. The areal extent of cashew cultivation has increased over fourfold during the period under review. Although cashew and mango is cultivated throughout the region, the concentration is observed in few pockets. Keeping in the view the area under fallow land, there seems to be a large potential for increasing the area under cultivation which will help to increase the economic status of the region as a whole. Rice is the dominant crop occupying 37.45 per cent of the cultivable area. The region as a whole has experienced 14.02 per cent change in the cropping pattern during the period.ango increases in Kudal tahsil (6.20 per cent of study area).

The tahsilwise temporal dynamics in the cropping pattern indicates that fruit crops (cashew and mango) are leading increasing, where as leading decreasing crops are mainly cereal traditional crops (ragi and rice).This is good indication of commercialization of agriculture in the region. However it needs to be strengthened by providing technical know-how and financial aid to the small and marginal farmer of the region.

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Farmers Club Programme and Rural Development in India

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Abstract:

Agriculture is the backbone of Indian economy as nearly 60% of the population of the country depend on agriculture and contribute 23% to the Gross Domestic Production (GDP). Last two decades witnessed growth level of 4% in agriculture against the average growth of less than 2% in the last 50 years. For sustained 4% growth in agriculture there is a need to improve productivity and efficiency. The failure of the growth oriented strategy to solve the problems of rural poverty and unemployment led to its re-examination. The unequal distribution of the benefits of the growth oriented programmes between prosperous and backward areas and between rich and poor households initiated group specific and area specific programs. Farmers Club Programme (FCP) is a very vital tool for the agricultural and ultimately the rural development. It provides package for transfer of technology, improved input use efficiency, promoting investments in agriculture and creating a favorable and enabling economic environment. This programme was also initiated to enjoy the benefits of collective bargaining power both for procuring inputs and market their produce. In this way the Farmers Club Programme is an appropriate and most suitable strategy initiated by National Bank for Agriculture and Rural Development (NABARD).

Rural development is a dynamic process of development of the rural people through various programmes and projects so that they can become self-reliant citizens of the country. The work is done by involving various agencies and organizations along with the local peoples at the top. The development of the rural people is essential for the development of whole country which ultimately gives economic, political and social stability of the country. In view of liberalization and globalization of the economy, rural India virtually provides an unlimited market for national and international products and services. Rural development program have to be reoriented higher level of investment in rural sector, in terms of funds, facilities and trained personnel. Development is a continuous and consistent social process generally measured by changes in Gross Domestic Production (GDP). It comprises of peoples of all sections and sectors of the society to get participate in this process. Thus the term rural development is used to imply the changes in socio-economic systems which move away from a state of life perceived as 'Unsatisfactory' towards a materially and spiritually better condition of life.

Key Words: Rural, Sustainable, Lagers, Poor's, Resources, Panchayatraj, Five Year Plan, Citizens, Farmers club, GDP, NABARD etc.

Introduction:

Development is a natural process in the sense that all forms of life on the Earth surface have an inherent urge to survive and develop. Hence, it is a very routine part that the subject of development has been studied by the scholars of all faiths, ideologists and disciplines. The term rural development is an offshoot of the mega term Development. It connotes overall

development of rural areas with a view to improve the quality of life of rural peoples. In this sense, it is comprehensive and multidimensional concept and encompasses the development of the human resources in the rural areas. Rural development is the end result of interactions between various physical, social, cultural, economic, technological and institutional factors.

The process of rural development is related to economic wellbeing and improvement in the quality of life of peoples in the rural area. More than 60% population of India is living in rural area. It is struggling to live and to progress in the globalization along with the traditional occupation of agriculture. For the overall progress and development of this rural population, sustainable rural development with inclusive approach is of vital importance. This type of development always considers social, cultural, economic, environmental and spatial aspects that shape the peoples of that region.

The development tend to keep working in discrete sectors of economy i.e. agriculture, industry, transport, infrastructure along with social, cultural, economic and educational sectors. Inclusive sustainable rural development integrates the social, cultural and economic constraints of the society along with the lager's, poor's, displaced, deprived and excluded sections of population. Development is a continuous and consistent social process generally measured by changes in Gross Domestic Production (GDP). It comprises of peoples of all sections and sectors of the society to get participate in this process. Thus the term rural development is used to imply the changes in socio-economic systems which move away from a state of life perceived as 'Unsatisfactory' towards a materially and spiritually better condition of life.

Need And Origin Of Farmers Club Programme

The failure of the growth oriented strategy to solve the problems of rural poverty and unemployment led to its re-examination. The unequal distribution of the benefits of the growth oriented programmes between prosperous and backward areas and between rich and poor households initiated group specific and area specific programs. The special programmes were introduced for the weaker sections of rural population and backward areas. The major programmes included the Small Farmer Development Agency(SFDA), the Marginal Farmers and Agricultural Laborers Programme(MFAL), the Draught-Prone Area Programme(DPAP), the Desert Development Programme(DDP), Hill Area Development Programme(HADP), the Tribal Area Development Programme(TADP), the Minimum Need programme(MNP), the Crash Scheme For Rural Employment(CSRE) and Food For Work Programme(FFW). These programmes were initiated for the eradication of the rural poverty and backwardness by increasing income power of these peoples. The major premise of the group specific and area specific programmes was that their benefits would flow to the weaker section of backward rural areas.

The emerging needs in agricultural sector are adoption of location specific skill and knowledge based technologies, promote greater value addition to agricultural produce, harness information technology more effectively to realize financial sustainability and compete in the international market. To meet these needs and for transmitting the latest agricultural techniques to the farmers field, orienting them to establish better relationship with banks, adoption of post-harvest technology and value addition the Farmers Club Programme was initiated. This programme was also initiated to enjoy the benefits of collective bargaining power both for procuring inputs and market their produce. In this way the Farmers Club Programme is an

appropriate and most suitable strategy initiated by National Bank for Agriculture and Rural Development (NABARD).

Organization Of Farmers Club Programme

Farmers Club is a grassroots level informal forum without having any registration and should have minimum of ten members. All villagers can become members of this club. Each club will have two office bearers i.e. Chief Coordinator and Associate Coordinator which are elected through club members on democratic basis for two years. The main function of office bearer would be organizing meetings, accounting and bank coordination. The club must make endeavor to raise their own resources by way of contribution from members and collective marketing of agricultural produce. Any bank operating in rural area i.e. Commercial Bank, Regional Bank, Cooperative Bank can sponsor and organize Farmers Club in rural area. They can hire services of NGOs and other organizations. Bank branches can promote the club directly or through agencies like Non Government Organizations (NGOs), Krishi Vigyan Kendras(KKs), Agricultural Universities(AUs) , corporate etc. Important guidelines for formation of Farmers Club are as follows.

1) Select a village suitable for launching clubs in the operational area.
2) Identify few borrowers with good track record of proper loan utilization.
3) Encourage the members to select Chief and Associate Coordinator which will ensure collective leadership and proper working of the club.
4) Provide orientation training to them with the help of NABARD.
5) Promote members to take monthly meeting regularly and have meaningful discussion on follow-up action.
6) Motivate them to identify credit and non-credit needs.
7) Prepare a plan of action and accordingly arrange the expert talks, counseling and need based actives with the help of Government and Non Government Organizations (NGOs), Krishi Vigyan Kendras (KKs), Agricultural Universities (AUs), corporate etc.
8) Maintain Membership Register, Minutes Book and Account Register.
9) Evolve the performance parameters and measure the club performance annually.
10) Use club as a tool in aid of branch.

Concept And Principles Of Farmers Club Programme

Farmers club is an informal forum of farmers at grassroots level in the village or cluster of villages generally in the operational area of bank. Such clubs are organized by rural branches of banks with the support of and financial assistance of NABARD for mutual benefits of the concerned banks and the rural people. On 5th November 1982, the Prime Minister of India launched 'Vikas Volunteer Vahini Programme (VVV)' to promote principles of development through credit. The VVV programme was revisited and renamed as Farmers Club Programme(FCP) in 2005. NABARD encourages regional banks to promote Farmers Club in rural areas under the Farmers Club Programme. The services of Non Government Organizations (NGOs), Krishi Vigyan Kendras(KKs), Agricultural Universities(AUs) etc can also be availed for the same purpose. Kipping in view the structural and other challenges of agricultural sector and various policy initiatives of government of India the programme has undergone various changes since its inception.

Principles of Farmers Club Programme are as follows

1) Credit must be used in accordance with the most suitable methods of science and technology.
2) The terms and conditions of credit must be fully respected.
3) Work must be done with skill so as to increase production and productivity.
4) A part of additional income created by credit must be saved.
5) Loan installments must be repaid in time and regularly so as to recycle credit.

In this way the mission of this programme is the development of rural areas through credit, technology transfer, awareness and capacity building.

Functins Of Farmers Club

The functions of Farmers Club are as follows

1) Coordinate with the banks to ensure credit flow among its members and forge better bank-borrower relationship.
2) Organize minimum one meting per month along with the non members also.
3) Interface with the subject matter specialist in the various fields of agriculture along with the personal of Agricultural Universities, Development Departments and even experienced Farmers are also invited for the guest lectures.
4) Liaison with corporate input suppliers to porches bulk inputs on behalf of members.
5) Facilitate joint activities like value addition, quality production, processing, marketing for the benefit of members.
6) Undertake socio-economic development activities like community work, education, health, environment and natural resource management.

Selectiin Of Farmers Club Area

The farmers club should be preferably organized in the specific areas to ensure better results and benefits to the farmers.

1) Minor and medium irrigation project areas.
2) Check dam command areas.
3) Watershed development project areas.
4) Small Farmers Agribusiness Consortium Districts (SFAC).
5) Agricultural Export Zone (AEZ) areas which offer high potential for crop diversification, high value crops, contract farming etc.
6) Areas where private corporate sectors like IT parks and industrial zones are in operation.
7) Any other area taken up by Government of India, State Government and any other Non-Government Agency for intensive agricultural development.

Other than the above mentioned areas NABARD can contact similar other corporate houses who are engaged in these kinds of activities to enhance the Farmers club Programme and may guide the way to 'contract farming'.

Status Of Farmers Clubs In India (2017)

Sr no	state	No of FC	Sr no	state	No of FC	Sr no	state	No of FC
1	A and n islands	05	12	Jammu and Kashmir	120	23	Puduchery	11

2	Andhra predesh	1017	13	Zarkhand	1707	24	Punjab	876
3	Arunachal Pradesh	148	14	Karnataka	1029	25	Rajasthan	1041
4	Assam	297	15	Kerala	620	26	Sikkim	26
5	Bihar	1814	16	Madhya Pradesh	2062	27	Tamilnadu	1703
6	Chhatisgarh	582	17	Maharashtra	717	28	Telangana	839
7	Delhi	01	18	Manipur	80	29	Tripura	41
8	Goa	10	19	Meghalaya	65	30	Uttarpradesh	1979
9	Gujrath	769	20	Mizoram	33	31	Uttarakhand	572
10	Hariyana	835	21	Nagaland	39	32	West Bengol	2235
11	Himachal Pradesh	495	22	Odisha	2195			

Source: Agricultural Department of India and NABARD 2017.

Following table reveals state wise status of number of Farmers Clubs in March 2017. West Bengal (2235) is having highest number of FCs on the contrary Delhi (01) is having lowest number of FCs in 2017. The highest number of FCs are also recorded in the states named Odisha (2195), Uttar Pradesh (1979), Bihar(1814), Zarkhand (1707), Tamilnadu (1703) respectively. On the other hand the states namely Andeman and Nikobar Islands(05), Goa(10), Pduchery(11), Sikkim(26), Mizoram(33), Nagaland(39), Tripura(41) are having very negligible number of CFs. The states which are leading in agriculture Rajasthan(1041), Karnataka(1029), Andhra Pradesh(1017), Punjab(876), Telangana(839) and Hariyana(835) are also having a sizable number of CFs. Thus there is a reasonably good spread of FCs throughout the country.

Conclusion

The government of India is giving a top priority to rural development. Every section of the society should give opportunity to express their needs and problems in planning and implementing the schemes. The participating member's especially rural poor's and women's should have equal opportunity in every program. As the development in science and technology has changed the world to a great extent peoples participation is the key of any successful rural development program. To meet these needs and for transmitting the latest agricultural techniques to the farmers field, orienting them to establish better relationship with banks, adoption of post-harvest technology and value addition the Farmers Club Programme was initiated. This programme was also initiated to enjoy the benefits of collective bargaining power both for procuring inputs and market their produce. The FCP is a successful scheme of Government of India because from the initiation the number of FCs are increasing day by day. The Farmers Club Programmee is implemented in each and every state of the country. In this way the Farmers Club Programme is an appropriate and most suitable strategy initiated by National Bank for Agriculture and Rural Development (NABARD).

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Population Growth in Ahmadnagar District oif Maharashtra: A Geographical Analysis

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Abstract:

In this paper it is intended to analyse decadal population growth rate in general and male-female in specific in Ahmadnagar district of Maharashtra during 1991-2001. Present Paper is mainly based on secondary sources of data which is collected form District Census Handbook of Ahmednagar, 1991 and Primary Census Abstract of Ahmadnagar, 2001. The population of any region is the outcome of its physical and socio-economic environment. Growth of population is the change in the number of people living in a particular area between two given points of time. The net change between two points of time expressed in percentage and is described as the growth rate of population. Present study clearly shows tahsil-wise variation in population growth rate.It is found that population growth of any region is the outcome of various physical and socio-economic factors. Herein, migration is one of the major reasons of raising the population growth rate

Key Words: Population Growth Rate, Socio-Economic, Environment

Introduction:

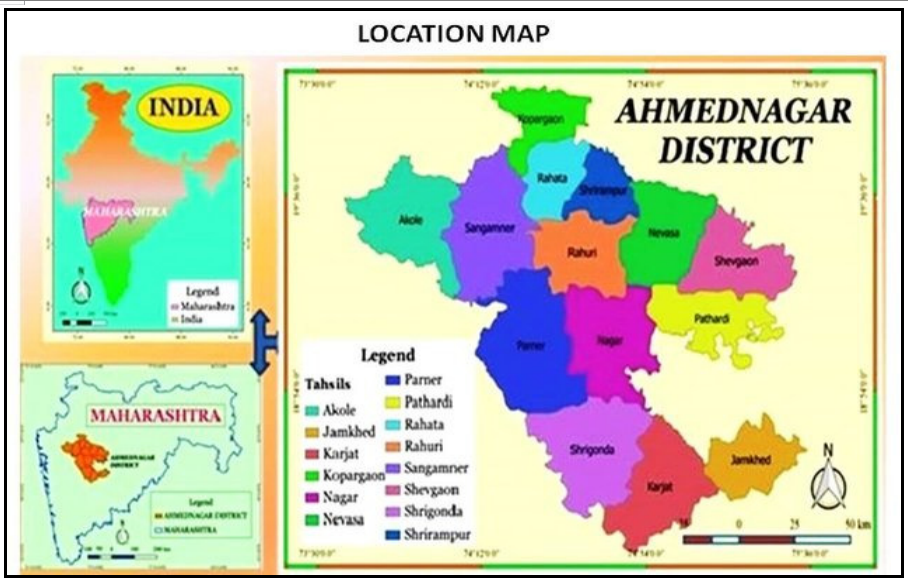
The population of any region is the outcome of its physical and socio-economic environment. Ramotra (2008) studied the growth of Scheduled Caste Population in Maharashtra and pointed out that the distribution and concentration of scheduled Caste population in different regions of Maharashtra state depends upon varied socio-economic factors. Study of population growth and changes therein of a region is also significant for understanding its dynamism as well as for planning at the local and regional level. The growth of population is positive if there is increase in population, whereas it is negative if there is decrease in population between two given points of time.

Objectives

The main objective of the present study is to analyse the decadal population growth rate in general and male-female in specific in Ahmadnagar district of Maharashtra during 1991-2001.

Study Region

For the purpose of present study Ahmednagar district is selected. It is situated partly in the upper Godavari basin and partly in the Bhima basin occupying a somewhat central position in the state of Maharashtra. It is located in between 18º 2' and 19º 9'north latitude to 73º 9' and 75º 5' east longitude. Topographically Ahmednagar district is divided in to three parts like, Sahyadri ranges, Plateau region and Bhima, Godavari basins.



Database And Methodology

The present study is mainly based on secondary sources of data which is collected form District Census Handbook, 1991 and Primary Census Abstract of Ahmadnagar, 2001. The collected data is processed and presented in the form of tables and graphs. The decadal growth rate is a vital part of Census operations. This gives an overview of the percentage of total population growth in a particular decade. Decadal Population growth rate has been calculated by using following formula:

$$PGR = \frac{P2 - P1}{P1} \times 100$$

Where,

PGR is the population growth rate.
P2 is the population of the later decade,
P1 is the population of the initial decade.

Decadal Population Growth Rate (1991-2001)

Total Population Growth rate

As per 1991 census, the total population of Ahmadnagar district was 3372935 persons, with addition of 667707 persons which was reaches up to 4040642 persons in 2001. During 1991-2001, decadal average population growth rate was found 19.80 per cent in the district. However, the average growth rate in the district was lower than that of the state average of 22.57 per cent and national average of 21.34 per cent. The average male population growth rate was 20.37 per cent, while average female population growth rate was 19.20 per cent. The highest total population growth rate was observed in Nagar tahsil (25.64 per cent), whereas lowest population growth rate was observed in Karjat tahsil (11.58 per cent) during the decade of 1991-2001(Table 1 and Fig. 1).

Nagar tahsil is a district headquarters, one of the urbanized, industrialized tahsil having 15.82 per cent urban population during 1991. There is also development of infrastructural facilities like transportation, communication, trade, commerce, educational, health and so on,

which leads to generation of large scale employment opportunities in secondary and tertiary sector, therefore, in migration of population from surrounding rural area for education, employment trade and commerce. Hence, migration is one of the major reasons of raising the population growth rate in Nagar tahsil. Another majority of Muslims and also Scheduled Caste population i.e. 13.78 per cent resided in Nagar tahsil in 1991. Their fertility rate is also higher than the other religion and communities hence, it was found high population growth rate than the other tahsils of the study area.

On the other side, Karjat tahsil denoted with the drought-prone, socio-economically backward, agriculturally less developed and entirely rural tahsil in the district. Lack of employment opportunities leads to out migration of peoples mostly towards urban centers and agriculturally developed tahsils. Mostly outward migration of sugarcane cutters is found general phenomenon in the drought-prone tahsils.

Table 1

Ahmadnagar District: Decadal Population Growth Rate, 1991-2001

Sr. No.	Tahsil	Population Growth Rate (%)		
		Total	Male	Female
1	Akole	20.02	21.33	18.72
2	Sangamner	24.42	24.9	23.91
3	Kopargaon	24.09	24.83	23.31
4	Rahata	24.83	24.34	25.36
5	Shrirampur	14.79	14.87	14.71
6	Nevasa	19.64	20.10	19.15
7	Shevgaon	19.45	19.53	19.37
8	Pathardi	15.62	15.98	15.25
9	Nagar	25.64	26.35	24.85
10	Rahuri	16.77	17.30	16.20
11	Parner	15.18	16.87	13.51
12	Shrigonda	17.67	18.32	16.99
13	Karjat	11.58	11.93	11.20
14	Jamkhed	12.52	12.86	12.17
District Average		**19.8**	**20.37**	**19.20**

Source:1) District Census Handbook, Ahmadnagar, 1991.

2) Primary Census Abstract of Ahmadnagar, 2001.

The very high population growth rate was found in Nagar tahsil only. The high (20-25 per cent) population growth rate was observed in 4 tahsils, like Rahata (24.83 per cent), Sangamner (24.42 per cent), Kopargaon (24.09 per cent) and Akole (20.02 per cent). The moderate (15-20 per cent) population growth rate was observed in 6 tahsils, like Nevasa (19.64 per cent),Shevgaon (19.45 per cent), Shrigonda (17.67 per cent), Rahuri (16.77 per cent), Pathardi (15.62 per cent) and Parner (15.18 per cent). The lowest (below 15.00 per cent) population growth rate was observed in 3 tahsils, like Shrirampur (14.79 per cent), Jamkhed (12.52 per cent) and Karjat (11.58 per cent).

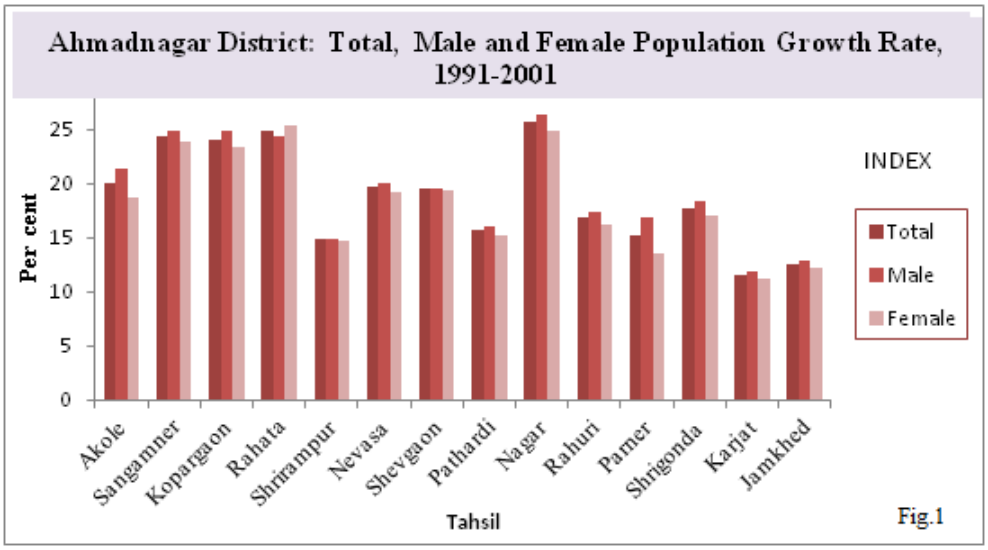


Fig.1

Male and Female Population Growth Rate

Table 1 and Fig. 1 show the male-female population growth rate in the study area during 1991 to 2001. It is found that except the Rahata, male population growth rate was always higher than the female population growth rate in entire district. It is because of male dominance out migration from Rahata tahsil towards its nearest Shrirampur and Kopargaon tahsil for employment purpose responsible for male growth rate is comparatively lower than the females.

During 1991-2001, the average population growth rate for both male and female was 20.37 per cent and 19.20 per cent respectively for the district as a whole, the population growth rate for male was much higher than that of females. The highest male population growth rate was recorded in Nagar tahsil (26.35 per cent), which was above the district average, while lowest male population growth rate was recorded in Karjat tahsil (11.93 per cent). It is because of sex selective in migration at Nagar tahsil and out migration from Karjat tahsil.

Male population growth rate was found above the district average in the tahsils, like Nagar (26.35 per cent), Sangamner (24.90 per cent), Kopargaon (24.83 per cent), Rahata (24.34 per cent) and Akole (21.33 per cent), whereas it was found below the district average in the tahsils, like Nevasa (20.10 per cent), Shevgaon (19.53 per cent), Shrigonda (18.32 per cent), Rahuri (17.30 per cent), Parner (16.87 per cent), Pathardi (15.98 per cent), Shrirampur (14.87 per cent), Jamkhed (12.86 per cent) and Karjat (11.93 per cent).

On the other hand as many as 5 tahsils recorded with female population growth rate above the district average. These tahsils includes Rahata (25.36 per cent), Nagar (24.85 per cent) Sangamner (23.91 per cent), Kopargaon (23.31 per cent) and Shevgaon (19.37 per cent). While remaining 9 tahsils, like Nevasa (19.15 per cent), Akole (18.72 per cent), Shrigonda (16.99 per cent), Rahuri (16.20 per cent), Pathardi (15.25 per cent), Shrirampur (14.71 per cent), Parner (13.51 per cent), Jamkhed (12.17 per cent) and Karjat (11.20 per cent) recorded with female population growth rate below the district average.

Conclusion

Present study clearly shows tahsil-wise variation in population growth rate. The highest total population growth rate was observed in Nagar tahsil (25.64 per cent), whereas lowest population growth rate was observed in Karjat tahsil (11.58 per cent) during the decade of 1991-

2001. It is found that population growth of any region is the outcome of various physical and socio-economic factors. Herein, migration is one of the major reasons of raising the population growth rate in Nagar tahsil. Another majority of Muslims and also Scheduled Caste population i.e. 13.78 per cent resided in Nagar tahsil in 1991. Their fertility rate is also higher than the other religion and communities hence, it was found high population growth rate than the other tahsils of the study area. It is observed that the average population growth rate for both male and female was 20.37 per cent and 19.20 per cent respectively during 1991-2001. It is also observed that except the Rahata, male population growth rate was always higher than the female population growth rate in entire district. The highest male population growth rate was recorded in Nagar tahsil (26.35 per cent), which was above the district average, while lowest male population growth rate was recorded in Karjat tahsil (11.93 per cent). It is because of sex selective in migration at Nagar tahsil and out migration from Karjat tahsil.

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Reality in Front of Sustainable Farming in Indian Agriculture

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Introduction :

An article discussion about what exactly the nature of farming issues is in India, strategic steps, and actual issues. In addition, there are specific grounds for agricultural prosperity and this article has also highlighted how agriculture works as a 'business'. The main rendition of this article is that Indian farming needs to be looked at from Indian perspective.

The article presented in the language of the method of modification means that there is a large number of tautological, which means that it is a recompense of what has been said earlier. Agriculture is related to the question of clay, from world trade to philosophy of life. The discussion can either go to the top (from the soil) to the top or to the bottom (to the soil). We accept other methods for inclusion. Discussion of techno-economic reforms by maintaining current constitutional, political, financial structure of agriculture, and discussions of long-term alternate arrangements are also helpful.

Objective of the Study:

1. Observe the realities of Indian agriculture
2. Study the necessary new changes in farming

Research Methodology:

This paper is basically descriptive and analytical in nature. In this paper an attempt has been taken to analyze the agricultural aspects in India. The data used in it is purely from secondary sources like books, Magazines, Journals, website etc.,

Discussion:

Ideal Thoughts:

Since you have to start at the very top, Dr. Ramchandra Parnerkar said in his full-fledged economics that unless a person has to work for labor and slavery, it is very miserable to progress on it (Spiritual etc.). Therefore, the society should accept food security and give food to everyone free of cost. He was also aware of how difficult it is to get this notification implemented. Because farmers who give free grains to the people in the fields, will take necessary things of social life? Other people in the community will also have to make their produce available free of cost. That means it will be a society, it should be based on different objectives, keeping aside the covetousness. It's a hypothetical question whether it will come in the immediate time or not. But in view of the human uplift, the food security that we are discussing without considering any religion, Dr. Parnerkar had presented his complete anthology in his book. It is mentioned here as an ideological legacy.

Reality in front of Indian agriculture:

Low holding area:

About 93% of the farming community in India is under 4 hectare land holdings. About 76 percent of these farmers have less than 2 hectares of which only 54 percent of these farmers own

only one hectare of land. In total, very less empirical cultivation of farmers in our country, which is a big problem and most of them are poor and marginalized. Nearly 65% of the area under cultivation in India is dryland which is dependent on monsoon rains. Therefore, in solving the problems of the farmers of our country, foreign agricultural design and technology cannot be used as such. The emphasis on acceptance of Green Revolution is based on the assumption that 'excessive use of external entities - excessive production - more risk'. From this we see the condition of the majority of the poor farmers. Instead of Indian context, it should be accepted as 'least use of external equipment - adequate production - at least risk' (Low external - inputs Optimum output - low risk). Similarly, when accepting any new technology, it should be emphasized that they should be of short-term, full confidence and far-reaching interests of the farmer.

The ownership of farming is private. Even though the size of its own farming is small, it has a financial support for the farmer and his family. But children are considered to have equal rights in the property of their father as per the Indian Heritage Rights Act, and in every 2-3 generations the size of each individual land is 2-3 acres (2.5 acres = 1 hectare) and each becomes a small or a small (marginal or marginal) farmer. 65-66% of the farmers in India are small and marginal. They cannot make full use of large wells, tractors and other machinery, so they are deprived of these improvements. Since the ability of farmers to borrow and repay the debt is limited, the banks are not ready to lend to the small-scale landlords. So many farmers still take loans from the lenders for farming on high interest rates. Although the production of farmland is very low, he has to pay a heavy interest on loan, he will become a cause of poverty by remaining less spent on farmer's expenditure.

In today's capitalism, heterogeneous society (including urban society), it is assumed that farming-farmers should be poor. Recently, the Central Governments Statistical Department conducted a rural survey. It shows that the cost of farming does not suit the market prices. About 40 percent of the farmers said that they want to quit agriculture. In such a case of globalization, the expanding industrialist from the cities to the villages is happy with such conditions. Because the lands of frustrated farmers can be bought cheaply. Besides, landless farmers are made available cheaply as unskilled workers in the city. Political goal policies are responsible for such situations. Nearly 50-60 years of farming-tribal-rural development have been neglected in almost all the states. Industrialization by large companies is considered to be progressing in budget, planning and government policy. In comparison, agriculture is being neglected.

Collective farming:

How to provide small farmers with organizational financial, technical benefits to large farms and how available irrigation can be made available to farmers in most of the land are two important questions beyond of Indian agriculture. If the government gives special concessions to the collective farming workers in the new period, then changing the present mindset will give new meaning to the farming.

Production and Market behavior:

The current agricultural production system emphasizes the need to meet the market's needs rather than the family needs of the farmer. All the entrepreneurs who want to cultivate the farm have to buy from the market, and in order to meet the needs of the households through the

money sold by the commodities, they have to buy goods from the market again. In a sense the market forces the farmer to act on their lock.

Agriculture production is in uncontrolled weather, while industrial production is done in controlled weather. Farming production Farmers can not increase their liking during good weather and can not reduce them in bad weather. Therefore, increasing productivity of agriculture is a complicated task. However, in controlled conditions, the production in the factory can be done less or more according to the manufacturer's wishes. Therefore, the Government has to accept more responsibility for the financial protection of the agriculture product and the producer. The demand from consumers (public) for agricultural grains, vegetables and fruits etc. is unchanged. If you do not get enough grain, you will be able to pay as much as you like. But grains and vegetables do not eat as much more crops. So the prices become fall. Therefore, it is necessary to store around 20% waste farming and collect storage facilities all over the country. It does not require foreign capital and companies. It is easy for the country's eminent scientists, engineering specialists, management experts, and economists. This requires that the government's strong policy and strong support for organizational and financial support.

Sustainability in farming:

The technology that has been accepted in the last half-century has got immediate benefits. That is, for some time agriculture production has increased, but at that level it has not survived for a long time. The importance of sustainability in farming now is to be prioritized. Sustainability in farming is of three types of economic, social and environmental. The production of the farming is long-lasting stable at an adequate level (i.e. decrease in the slowdown in production every year), profitability at the highest level, decreasing the financial risk of agriculture, meeting the nutritional requirements of the family, without soil erosion, and the biomass Maintaining proper nutrition and maintaining its natural fertility, these are the signs of sustainability of the soil.

Although traditional farming is also sustainable agriculture, it cannot be the answer of today's time. Due to the fact previously the population was less and the area of land holding was higher. Today, it is a challenge that it is possible to get more production from minimum land and in addition to the use of some good practices in ancient agriculture, it has to be used effectively with the use of new nature-compatible techniques.

All living beings have a natural tendency to adapt to different geographic conditions. With the introduction of only varieties of high yields in the Green Revolution, so many of the nature-generated crops are destroyed or are on the way to extinction. These varieties have their own characteristics. Some of its properties are very important, such as tolerating water stress during drought, maintaining sustainable water in the flood water, disease prevention, etc. The importance of such varieties is going to increase in the face of climate change. Therefore, special care has to be taken to maintain these varieties.

Water and Soil importance:

Culture without water and without water culture, it is impossible. Relationship between water and society, river and society, Sea Ocean, ground water, and rainfall is different in relation to agriculture and water. Water is a natural donation; nature has the ability to meet human needs. The economy of the country and the state is still dependent on rainy farming. If rain rages, then

the development crumbles are stopped. To overcome this, awakening awareness of water literacy, water conservation, water usage is essential.

Water resources and consumers relation is non breakable of emotionally, physically, spiritually, practically, culturally, etc. Thousands of years remained unbroken till the arrival of the British from the time of enrichment, appropriation, time. But the British power divided the water conservation water security and water consumers. The responsibility of conservation and security is on one hand and the consumer is one side (dependent) so my water is destroyed by this kind of affection.

There is plenty of irrigation water available in Punjab-Haryana, West Bengal and the southern states. In Punjab and Haryana, 95-97% of the area is irrigated and therefore there is less discrepancy between farmers, and due to the gap between the average per household farm income and factory income, rural and urban inequality is low. Irrigation in Maharashtra is in the area under cultivation of nearly 20%. That is, in today's situation, the irrigation facilities are available they are general rich farmers and dry farming farmers are general poor this type of distribution were in rural areas. If we see irrigation facilities and in which the big farmer is progressive using high value tools, seeds, other materials, the small dry farming farmer is seen as weak.

The water source is just rain. Due to the scientific knowledge of consumption of nature, rain, water, air, it can reduce drought and scarcity of consciousness. We can feel the scarcity in many ways. Water scarcity, fodder scarcity, food scarcity, scarcity of farm laborers, all these scarcity causes the shortage of thinking.

In the past 50 years, soil and water management have been neglected in farming practices. But in today's agronomy, 'the health of the soil' has become an essential part. Similarly, it is important to pay attention to the availability of water and the efficient use of its crops. For this, people should cooperate with the community development program on village level. It also requires careful selection of suitable crops for efficient use of water and the strict method of irrigation.

Shortage of infrastructure:

There are no roads in the fields, not composting and organic fertilizers in villages; not soil testing and crop based advices on it; not a compilation of accumulated experiences of laborers-farmers and tribals; There is no arrangement for their agriculture education, agriculture science and engineering, seeds, farm laborers -not developed by farmers. So how will the productivity of agriculture grow in real sense? Then how to say such the country of agriculture?

If the agriculture in India is to be improved and people from rural areas want to avoid unplanned and uncontrolled migration, then people should be encouraged and enthusiastic in the life of rural areas. For this, efforts should be made to try to get the value of farmers to the development of education-technical education, rural irrigation development, energy development, village industries, agro-industries, agricultural production, marketing facilities, training, and actual realization of farming. Proper participation of farmers in all processing institutions, technology institutions and research institutes. Small farmers should be given special financial assistance and other assistance from group farming. Also, there should be priority in the economic policy of the central government and all the State Governments, that the rural society based on agriculture and farming should be economically self-sufficient and enjoyable.

Conclusion :

1. Increasing the size of the farm: To (a) break the cluster (b) Group farming should be encouraged without contract with any company.
2. Generating permanent roads connecting the farms: It is possible to increase yields of farmers after going to the production component in the farm and reaching the warehouse or market without loss of 15-20% of the goods produced.
3. Information about the government's plans, their conditions, systems, etc. by introducing the Agro Information Centers at the Gram Panchayat office should be immediately received by e-information. Need to be supervised whether government schemes reach the farmers. Farmers should look at varieties of crops and productivity in the village.
4. Women, men and students of school and college students get the pleasure of conducting small diploma in agricultural education and on-line examination. In the same way, farming processes should be related to the industries.
5. Experience of farming in calculating the cost of production of the produce and deciding affordable prices, the incidental events of that year should be included in the open discussion.
6. Arrangements for safe and well-maintained warehouses should be developed such as bank lockers.
7. The comfortable living conditions in the Constitutional Guidelines are assured. The details of the State and Central Government budgets should be based on the details of how close to it (or not) it is to disclose.

It's not easy to do all this, but not too hard!

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A Comparative Study of Air Pollution Level in four Metropolitan Cities of Maharashtra

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Introduction:

Air pollution is much big problem on our earth surface prior human evolution, at that time volcanic eruptions, forest fires and meteoroid impacts are certain sources of air pollution. It is historic phenomena as old as human culture. The black linings of caves inhabited by some of our ancestors are evidence of indoor air pollution with wood or coal smoke, pollutants which have drawn more attention recently as a significant risk factor in the development of lung cancer.[1] Problem of Air pollution becomes more severe after industrial revolution. In Industrial revolution added so many pollutants and decreases ambient quality of air. According to World Health Organization Air pollution kills an estimated 7 million people worldwide every year. WHO data shows that 9 out of 10 people breathe air containing high levels of pollutants.[2] Development in automotive vehicles leads to great extent of air pollution in developed and developing countries, Being developing country India is not exception to that fact. Major source of air pollution in country is Automatic vehicle fuel combustion, biomass and fuel wood burning. Indian Cities are depicting different pattern of Air pollution. The four major Indian cities, air pollution was consistently worse in Delhi, every year over 5-year period (2004–2008). Kolkata was a close second, followed by Mumbai. Chennai air pollution was least of the four.[3] Air pollution is responsible for lung cell damage, inflammatory responses, impairment of pulmonary host defenses, and acute changes in lung function and respiratory symptoms as well as chronic changes in lung cells and airways. Many Indian cities are not safe for breathing. Therefore this paper tries to compare pollution level in four metropolitan cities of Maharashtra.

Study Area:

For this study Mumbai, Pune, Nashik and Nagpur were selected. Specific locations like Bandra, Karve Road, Gangapur Road and GPO Civil Line for Air quality data were taken in to account respectively. These metropolitan cities are emerging cities and in the various stages of development. Mumbai is biggest metropolitan city in India whereas Pune is ninth largest city in India and leading Metro city. Nasik and Nagpur are big million cities in state.

Objectives:

This Research paper has following Objectives:

1.To study Pollution Level among four major cities of Maharashtra.

2.To Compare pollutant and their level among metro cities of Maharashtra.

Data base:

For this study Data has been collected through secondary source from authentic and authorized Central Pollution Control Board website. Live tracking of pollution level have displayed on this website. This is reliable and accurate data for this kind of study. For certain information Census and district Gazetteer Data has been used.

Result and Discussion:

The majority of Indian cities suffer from extremely high levels of urban air pollution, particularly in the form of suspended particulate matter SO2 and NO2, Levels of all pollutants are increasing due to industrial processes, agri- cultural activities, building construction, and road traffic, as well as reductions in natural habitat and other natural sources.[4] The focus of this study

is on the air pollutants as determined and generated through anthropogenic activities. Unplanned and rapid development of cities resulted in to polluting air quality. This study shows how major pollutant level like ozone, sulfur dioxide, and carbon monoxide and particulate matters deteriorates air quality.

1.Ozone:

Generally Ozone is form when pollutants released by various sources (Oil refinery, Chemical Plants, Cars, Power plants etc) react chemically in presence of sunlight in lower level of atmosphere on ground. Ozone at ground level is hazardous pollutant.This pollutant is responsible for alterations in lung function, breathing pattern. Some study shows that people who came in to exposure of ozone becomes hyper responsiveness. It is observed that ambient ozone exposure is associated with increased asthma attacks in asthmatics[5].

2.Sulpfur Dioxide:

Sulfur Dioxide is major pollutant. It reacts with other substances and form hazardous compound like sulfuric acid, sulfurous acid and sulfate particles. Major sources of SO2 are fossil fuel like coal, oil and gas burning. Maximum So2 comes from anthropogenic activities and Motor vehicle emission is also one of the prime sources of Sulfur Di oxide. It results cough, Shortness of breathing. Most of the people exposed to So2 are resulted Asthma and respiratory Diseases.

In 1953, Amdur and co-workers examined the responses of men breathing up to 8 ppm SO2 in one of the first controlled studies of humans exposed to air pollutants. They observed that SO2 caused a change in respiratory pattern and that the effect was concentration dependent. The tolerance level of inhalation was individually different.[6]

3:Carbon Monoxide:

Incomplete combustion of fuels is responsible for CO. Carbon Monoxide is highly poisoning because after inhalation it mix with hemoglobin and disturb to proportion of oxygen transport to the tissues. The high affinity of CO for hemoglobin (Hb) was studied in a series of experiments by Haldane before the turn of the century. In experiments conducted on himself and his colleagues he established that the relative affinity of CO for Hb was about 250-300 times that of oxygen.[7]High concentration of CO leads to suffocation, headache, and Increases risk of chest pain for heart patients.

4:Nitrogen Oxide:

Likewise others Nitrogen dioxide is a result of road traffic and other fossil fuel combustion processes.NO2 reduce immunity of lungs infection and bronchitis. The major health hazard that is associated with NO2 are increased incidence of lower respiratory tract infections in children and increased airway responsiveness in asthma patients. Study done by Neas, L. M et al shows Long-term exposure to NO2, typically in homes with gas burning appliances, appears to be associated with increased susceptibility to lower respiratory tract illness[8]

5:Perticulate Matter(10):

PM10 is particulate matter of 10 micrometers or less in diameter. It could be inhalable dust particles, mist or smoke. If it is Biological it can lead to bacterial or fungal infection in human body. It is Allergic. If PM like Asbestos and chromates are frequently absorbed by human body it leads to cancer.

6. Particulate Matter(2.5):

These are fine particles less than 2.5 micrometer. This is major air pollutant in lower atmosphere.

These particles are tiny and lighter than PM10.These particles remain longer in air. Inhalation leads to asthma, heart attack, bronchitis and other respiratory Diseases.

Pollution Level In Cities:

In cities Vehicular pollution, industrial dust, lead, Carbon Monoxide are major pollutant in lower atmosphere. Data has been used for this Study is taken from secondary sources of CPCB wesite.

Comparison in Pollution Level among Metro Cities In Maharashtra.

Location	Pune				Nashik				Aurangabad				Mumbai			
Pollutant	PM 10	PM 2.5	NOx	SO2	PM 10	PM 2.5	NOx	SO2	PM 10	PM 2.5	NOx	SO2	PM 10	PM 2.5	NOx	SO2
Maximum	358	411	40	129	238	262	160	29	184	327	167	134	404	329	103	54
Minimum	82	68	8	45	34	43	30	1	73	57	26	2	139	80	18	18
Average	211	169	19	90	111	120	76	8	124	179	83	29	262	217	66	30

Source: Central Pollution Control Board.

Conclusion:

City Pune and Mumbai are industrially more developed than other cities. In case of vehicles these cities shows tremendous increase in number of vehicles hence Particualate mater are observed very high in atmosphere. Mumbai and Pune have worst condition in case of particulate matters. Pollutant like Nitrogen oxides are observed very medium to poor range. These pollutant Detroiters ambient qualities of air. Sulfur di oxide is also one major air pollutant.

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Crop Combination Calculate Based on Weaver's Method in Malshiras Tahsil

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Abstract:

Agriculture still forms the backbone of our Indian economy and important role of a human being. Agriculture sector in India contributes nearly one half of the national income, providing jobs to three fourth of the total population. In short agriculture plays a important role in the economic development process of a country and agriculture continues to be the most dominant sector of the Malshiras Tahsil economy. Agriculture productivity has been an important issue as the population continues to increase. The concept of agricultural productivity has been extensively used to explain the patterns of agriculture and spatial organization. In such regions, provision of irrigation is important aspect. Irrigation is necessary in traditional agriculture to overcome droughts scarcity of rainfall. In modern agriculture need of irrigation increased tremendously. Irrigation constitutes one of the most effective technical means of the raising agricultural production in the developing countries. (Dr.D. C. Kamble, 2018) The agricultural land under different crops in Malshiras tahsil is not only having close relation with physic-climatic conditions but also socio-economic and infrastructural facilities are also important for the agricultural practices. In Malshiras tahsil rainfall is very inadequate and scanty because location of the tahsil is drought prone area. Therefore, irrigation is a significant determinant influenced on the agricultural practices and changing pattern. So, in this Paper is an attempt to make to understand the variations of agricultural practices due the unequal availability of irrigation facilities in the study area.

Keywords - Crop Combination, Agricultural Regions

Introduction

Agricultural land use is dependent on appropriate climatic (rainfall, temperature, moisture, etc.), water resources, physical physiographical factors or elements (slope, altitude, soil and terrain) ,organizational factors or , technology and socio-economic. Agriculture is the basis of the Indian economy mainly due to three reasons. Firstly, since the beginning of the decade of the 1950s, this percentage has increased from 55% to 20%, Agriculture is the biggest contributor to the country's national income. Secondly, more than half the workforce in India is engaged in

the field of agriculture. Third, growth of other sectors and overall economy depends on performance of agriculture to a considerable extent. Agriculture is the prime and one most the important activity for the survival of the mankind and his animals.

Objectives :

Find out Crop Combination in Malshiras tahsil.

Review of Literature

According to Stamp, (1953) the study of agricultural productivity has been attempted by many scholars by advising and improving different techniques. Shafi (1960) determining the agricultural productivity on global scale by selecting number of countries and some major crops. The areal unit and ranking co-efficient was derived. Khusro (1964) analyzed that many others measured the agricultural productivity in terms of grain equivalents per hand of population. Determining output in relation to input or output - input ratio and profitability of farming measured in terms of the return for the sum total or human efforts or paid-out-cost in relation to the output. Sapre – Deshpande (1964) and Bhatia (1967) elaborated that the Giving weight age to the ranking order of the output per unit area with the percentage share under each crop have calculated the productivity. According to Murthy (1976) irrigation, the basic input in most part of the cultivated land in our country has played a vital role in stepping up food production, as other inputs like fertilizers improved seeds etc. contribute their due share only when assured water supply is available. (K, 2001) (Santosh P. Mane, 2019)

Database and Methodology

The study of agricultural practices in Malshiras tahsil is conducted with help of both the primary and secondary data. Since this agricultural data is of dynamic nature, it is gathered from various sources such as District Socio-economic abstract of Solapur district, District Annual Reports, Revenue department, District Agriculture department, Zilla Parishad Solapur, Department of Agricultural Pune, etc. Along with this some databases which are generated by other scholars are also utilized in this study. (Mane S. P., 2018)

In 1954, J.C. Weaver has applied least standard deviation technique for computing crop combination of a region. It is also known as Weaver's crop combination method. The theoretical curve for the standard measurement was employed i.e. as follows.

Monoculture= 100 per cent of total harvested crop land in one crop

2-Crop Combination= 50 per cent in each of two crops

3- Crop Combination = 33.33 per cent in each of three crops

4- Crop Combination = 25 per cent in each of four crops

5- Crop Combination = 20 per cent in each of five crops

10-Crop Combination = 10 per cent in each of ten crops

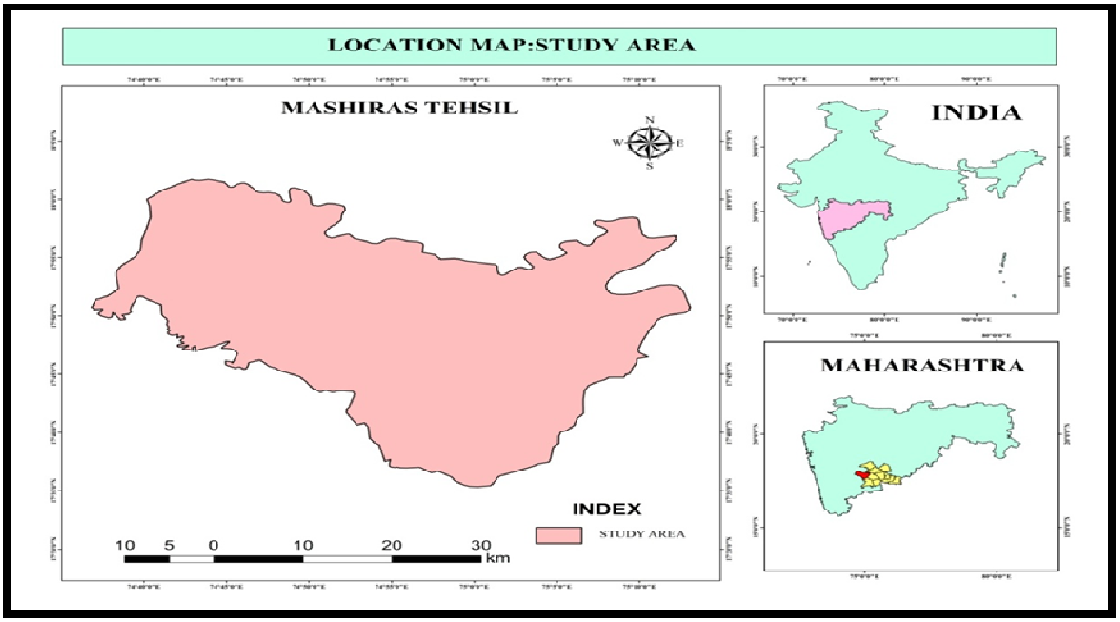
$$SD(\partial) = \sqrt{\frac{\Sigma d^2}{n}}$$

Where, **d** is the difference between the actual crop percentage in a given areal unit and the appropriate percentage in the theoretical curve, **n** is the number crops in a given combinations. As Weaver pointed out, the relative, not absolute value being significant, square routes were not extracted so, the actual formula used was as below

$$SD = \frac{\Sigma d^2}{n}$$

Study Area

A brief study of the regional character is attempted in this chapter which is useful for understanding the basis for distributional pattern of population numbers and its density. Malshiras tahsil lies to north-west of Solapur district (Hajare R. V., 2014). Malshiras is one of the 11 blocks of Solapur district and it extends approximately between latitudes 17° 36' North and 18° 2' north and between longitudes 74° 41' east and 76° 18' east. The block is on the western side of the district. Malshiras tahsil is situated on the west fringe of Solapur district and lies entirely in Nira basins. (Mane D. D., 2018) (Mane S. P., 2018). The tahsil is bounded on the north by Indapur tahsil (Pune district) on the north-east Madha tahsil, on east by Pandharpur tahsil, on south by Sangola, on west by Man tahsil (Satara district) and north-west side Phaltan (Satara district). In the west part of Malshiras taluka Mahadeo hilly range pass north to south for a few kilo meters and Sulski-Tuki (715m) is height pick in Malshiras tahsil and few scattered hills in Malshiras tahsil. The tahsil in general has flat or undulating Nira terrain.



Study of cropping pattern

In recent years the concept of crop combination had engaged the attention of geographers and agricultural land use planner. The distribution maps of individual crops are interesting and useful for planners (Husain, 2004). In this section the study of cropping pattern is made with the help of statistical methods. To understand the cropping pattern in the collected data from the case studies in the selected villages with selected farmers in that villages in each and every circles of the Malshiras tahsil. (K, 2001) The cropping patterns are checked by implementing crop combination, crop concentration and crop diversification techniques. Circle wise collected information on the basis of irrigation facilities in Malshiras tahsil. The condition of each circle may differ from other rather it is different due to mainly the irrigation parameters. Therefore, analyzed the circle level condition of Malshiras tahsil discussed in below section. (Dr.D. C. Kamble, 2018) (Santosh P. Mane, 2019)

Analysis of crop combination by Weaver's method

Weaver's crop combination technique is applied for the regionalization of crop combination in Malshiras tahsil for the two point of time such as 2015.

Table 1

Malshiras Tahsil: Circle Wise Crop Combination Values Calculated By Weaver's Method, 2015

Sr. No.	Name of Circle	Monoculture	2 crop Combination	3 crop Combination	4 Crop Combination	5 Crop Combination	6 Crop Combination	7 Crop Combination	8 Crop Combination	9 Crop Combination	10 Crop Combination	Crop Combination Index
1	Malshiras	3722.22	621.74	209.88	149.53	126.70	120.93	131.00				JSMWBBa
2	Islampur	3722.22	665.78	237.44	147.49	126.79	120.55	123.91				JMBWSP
3	Velapur	4947.72	519.36	152.30	77.92	62.75	82.55					JSMBW
4	Akluj	4515.84	681.58	181.76	77.17	74.07	82.76					SWJMB
5	Lawang	4624.00	612.00	176.01	79.63	66.33	83.73					JSWBM
6	Mahalung	2304.00	711.51	414.85	336.88	294.62	271.32	255.64	242.21	228.35	215.07	SJWMBaBGMaKGa
7	Piliv	3586.81	571.84	197.28	136.36	133.43	145.59					JBWMS
8	Sadashivnagar	3721.00	561.68	235.15	142.97	116.69	128.53					JBSMW
9	Natepute	3813.06	650.78	221.45	119.89	101.83	122.94					JSMWB
10	Dhaigaon	4802.49	713.72	207.36	81.47	60.85	62.92					JSWBM
11	**Malshiras tahsil**	**4809.08**	**573.96**	**186.02**	**90.04**	**59.89**	**75.19**					**JSWMB**

Above table represents the detail crop combination of Malshiras tahsil during the period of 2015. Malshiras tahsil contains five crop combinations such as JSWMB (Jowar-Sugarcane-Wheat-Maize-Bajra). Among them only in Mahalung circles contain ten crop combinations viz. In case of Malshiras and Islampur circles having six crop combination viz. SJWMBaBGMaKGa (Sugarcane-Jowar-Wheat-Maize-Banana-Bajra-Groundnut-Mataki-Kardai-Gram). JSMWBBa (Jowar-Sugarcane-Maize-Wheat-Bajra-Banana) and JMBWSP (Jowar-Maize-Bajra-Wheat-Sugarcane-Pomegranate) respectively. Remaining all of seven circles viz. Velapur, Akluj, Lawang, Piliv, Sadashivnagar, Natepute and Dhaigaon circles having five crop combination, there are mainly crops cultivated as jowar, sugarcane, wheat, maize and bajra.

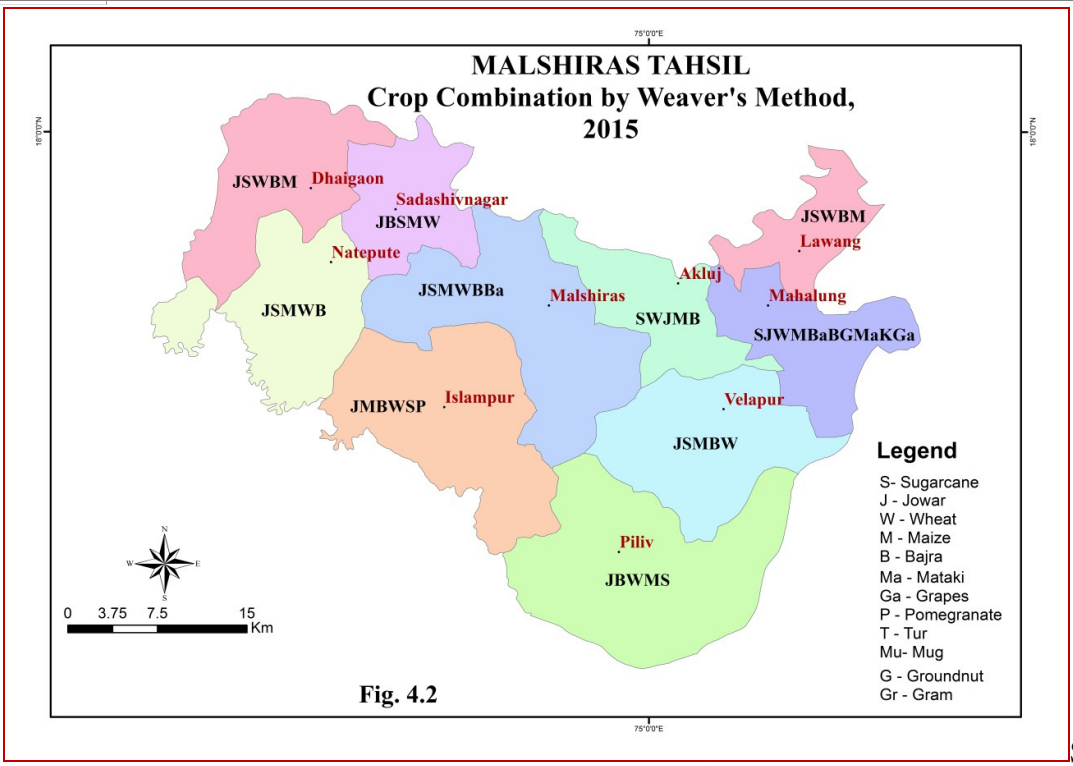


Fig. 4.2

Source: Land Record office Malshiras Tahsil 2015

The ten crop combination containing circles are located in the northern and central part of tahsil. Since only some patches are having water availability and some of areas agriculture is totally depend on rainfall, therefore mix cropping pattern (up to ten crops) is observed in circles. On the contrary, due to sufficient amount of water and other determinants the lands of some circles are utilized for particular limited crops. Whereas in areas of tahsil, there is inadequate water, shallow soil and undulating land so there are only rain fed crops are grown like bajra, rabijowar, sugarcane, fruits and vegetables, gram, mataki, other pulses, fibres and so on.

Conclusion

Mahalung is a Only one circle have been recorded as high with ten crop combination. Seven circles Malshiras and Islampur circles having seven crop combinations Five circles Velapur, Akluj, Lawang, Sadashivnagar and Dhaigaon circles having five crop combinations and , six crop combinations has obtained in all ten Circle.

Agricultural productivity In Malshiras Tahsil observed that the high irrigated with higher the agricultural productivity, because of these circle mostly farmers are used of more use of innovative techniques HVY, use of fertilizers for the cropped etc. so higher the agricultural productivity in these areas. While in the some villages' i.e. less availability of irrigation, farmers are using limited fertilizers in each unit of crop area, so reduces productivity. Changing or choosing to use improved production technology, the ecosystem did not pick up the desired speed and uneven rainfall, so the productivity of this ecosystem is much worse.

unscientific farming system, illegal chemical spreading, lack of machines to produce, illegal seeds, unavailability of raw materials for agricultural purposes, and increasing prices of fuel, Irrigation is an important determinant influenced on the agricultural productivity.

Major area of the Malshiras Tahsil use, HYD, fertilizers, innovative techniques, tract used cultivation and availability of irrigation facilities by wells tube, well, river, and canal are the important for the higher the agricultural productivity in Malshiras tahsil. (Santosh P. Mane, 2019) (Mane D. D., 2018)

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Status of food Indiustries in Satara Tehsil : A Case Study of food Industries Owners

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Research Student.

Dr. M. B. Potdar.
research guide.

Abstract:

Food industries are includes the industry preparing food products like wafers, pickles; spices and other snacks and cattle feed.In Satara Tehsil about 52 food industries are established. About 4 industries were established before 1990. But all other remaining established between 1991 to 2000. There is no industry established after 2000. Mostly all industrialist are middle and old age and about graduated no one is technically expert. Food industries are small scale and medium scale there is no large scale industry in food industry. All industries are having private ownership few are running on partnership and few are individual owner. This industry doesn't required much workers so small scale industries are having workers up to 10 and medium scale industries are having workers between 20 to 40.

Keywords:

Food industry, food product, additional income.

Introduction:

Food processing sector plays important role in diversification of agricultural activity improving value addition opportunities and creating surplus for exports agro product.

Food processing involves any type of value addition to the agriculture production and produce starting at the post harvest level.

Food processing industry is a sunrise sector in modern time. Food processing industry is a part of agro based industry, in food processing industry following segment indicates within the food processing industry.

Basis of raw material used:-

1) **Fruits and vegetables:-**

Beverages, Juices, Palms, Lonchi, Papad, wafers, chips, slices, James, sauces cashew nut processing etc. are included in fruits and vegetables sector. It is fruit and vegetable based production are included its production use in direct eating.

2) Grain and Cereals:-

Flour, Bakeries, Biscuits', Starch, Glucose, Cornflakes, molted foods, cattle feed, Vermicelli, Pasta foods, Grain based produced which use in direct eating etc. include in this group.

Consumer Foods:-

Chocolates, confectionery, Soft / Aerated beverages etc. production are including in this group. Also it's including the milk and milk production, but it's conducted data in livestock industry. So this is not included in food industry. The food industry in Satara Tehsil is increasing day by day to meat demand of local people. For food production is available large market area of Satara city. In that includes the packed food, aerated soft drink, drinking water, snacks, chips, Bakery Products, Ice cream, jam, juice, sauce, pickles etc.

in the current days food production have large demand and people use this production in large scale as well as agriculture production means raw material is available, transportation facilities are good, big market, and demand of food production increases as a result industry is developed in the Satara Tehsil. 14 % food processing units organized in Maharashtra states its first rank in other states.

Objectives:-

1) To assessment the Food industries in the Satara tehsil.
2) To analyze the role of food industries about development of study region.

Study Area-:

Satara Tehsil is located in74° 02" E longitude and 17° 42" N latiitude. It covers an area of 4,048sq.m. Of Satara district. In the Satara Tehsil have 211 villages. Population of Satara Tehsil is 1, 49,170 in 2011. Elevation of Satara Tehsil is 742 m. in the Satara tehsil 2 industrial areas are established which is known as Old MIDC and Additional MIDC.

Database And Methedology-:

Primary datais collected from schedule prepare for the industrial owners. In this schedule covers information about establishment, finance, set up production and investment even regarding problems. Secondary data has been collected from district censous handbook and socio-economic review.

Food Industries In Satara Tehsil-:

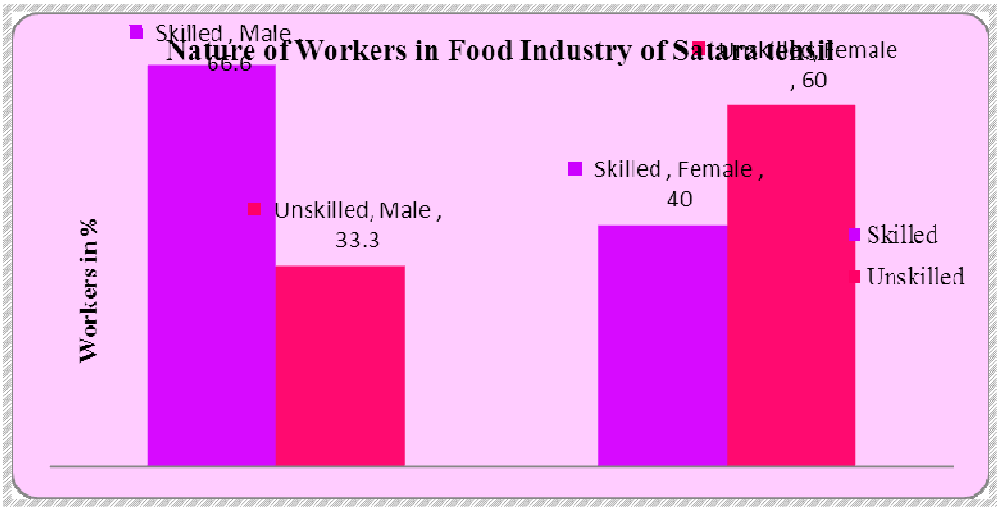
Food industries are includes the industry preparing food products like wafers, pickles; spices and other snacks and cattle feed.In Satara Tehsil about 52 food industries are established. About 4 industries were established before 1990. The year between 1991 to 2000 established 17 industries, and the year between 2001 to 2011 established 31 industries.

Table: Nature of workers in Food Industry of Satara Tehsil

Nature of workers	Male	Percentage	Female	Percentage
Skilled	24	66.6	2	40
Unskilled	12	33.3	3	60

Source: Based on fieldwork. (2013-14& 2014- 2015)

Figure: Nature of workers in Food Industry of Satara Tehsil



Source: Compiled by the researcher.

Success of this industry is depend on taste therefore this industry need more skilled labor therefore skilled labours are more in this industry.

Nature of raw material-:

Rice, bran, grains, tomato dry chilly, salt, spices, mango and sugar etc. material required for in collected food industry.

Government facilities or scheme using for industry-:

In the food industries have used ICS facility and also in the MIDCs infrastructural facilities.

Departments in the industry-:

In the collected data of food industries are available departments of Account, marketing, production, Q.C; research, HR etc.

Marketing strategy of the industry-:

These industries are supplying their products in the wholesale and retail shops and suppliers but mostly in Satara, Solapur and Pune district. Few products are going in Ratnagiri and Raigad district.

Nature of final product-:

Cattle feed, mango juice, pickles, tomato sauce, etc. final product is made in the collected food industries.

Table: Expenditure by Food Industry or on the Product of Satara Tehsil

Factor	Per month	Per year	Permanent
Land	11052	1 to 2 lakh	
Equipmemt/ machinery	-	-	3 to 12 lakhs
Electricity	12000 to 5 lakhs		
Raw material	2 lakh to 1 crore		
Transport	25000 to 10 lakh		
Marketing	10000to 1 lakh		
Worker	60000 to 1 lakhs		
Other	-	-	
Maintenance	10000 to 2 lakh		

Source: Based on the fieldwork. (2013-14& 2014- 2015)

Mostly these food industries are medium and small scale doesn't invested large amount therefore investment is low as compare to other industries. In the food industries expenditure is high on the Machineries, raw material, electricity, workers and transportation, because of food industries require raw material is large proportion and some of them raw material is impair, because of raw material is have mostly perishable. Electricity is requiring for the run of

machinery of manufacturing goods, and the transportation depends upon the distance of raw material and market place.

Table:Food Industries Provided Facilities to Workers of Satara Tehsil

Facilities	Actual value	Percentage
Cloth	2	28.57
Food	1	14.29
Health	1	14.29
Education	-	-
Transportation	-	-
House	-	-
Entertainment	-	-
Communication	1	14.29
Training program	1	14.29
Other facility	1	14.29

Source: Based on fieldwork. (2013-14 & 2014- 2015)

The food industries are providing various facilities to the workers. In that, 28.57 % industries provided cloth for working hours for cleanliness and safety and the 14.29 % industries provided food, health, communication, training program and other facility. Education, transportation, house and entertainment these facilities are not provided in the food industries in the Satara Tehsil.

Table: Category wise Wages of Workers in Food Industry of Satara Tehsil

Category	Wages	Incentives
Administrative	20 to 30 thousand	20 to 30 thousand
Executive	15 to 20 thousand	10 to 12 thousand
Engineer	10 to 14 thousand	8 to 10 thousand
Worker	6 to 10 thousand	
Security guard	6 to 8 thousand	
Other	-	-

Source: Based on fieldwork. (2013-14 & 2014- 2015)

In the food industries given category wise wages, administrative wages is having rupees in between 20 to 30 thousand and incentives also gives between 20 to 30 thousand, executive's wages have between 15 to 20 thousand and incentives gives 10 to 12 thousand, engineer wages have 10 to 14 thousand and incentives gives 8 to 10 thousand, workers wages having 6 to 10 thousand and the security guard wages have is 6 to 8 thousand.

Thus all kinds of wages are found in large and medium scale industry not in the small scale industries.

Nature of waste material-:

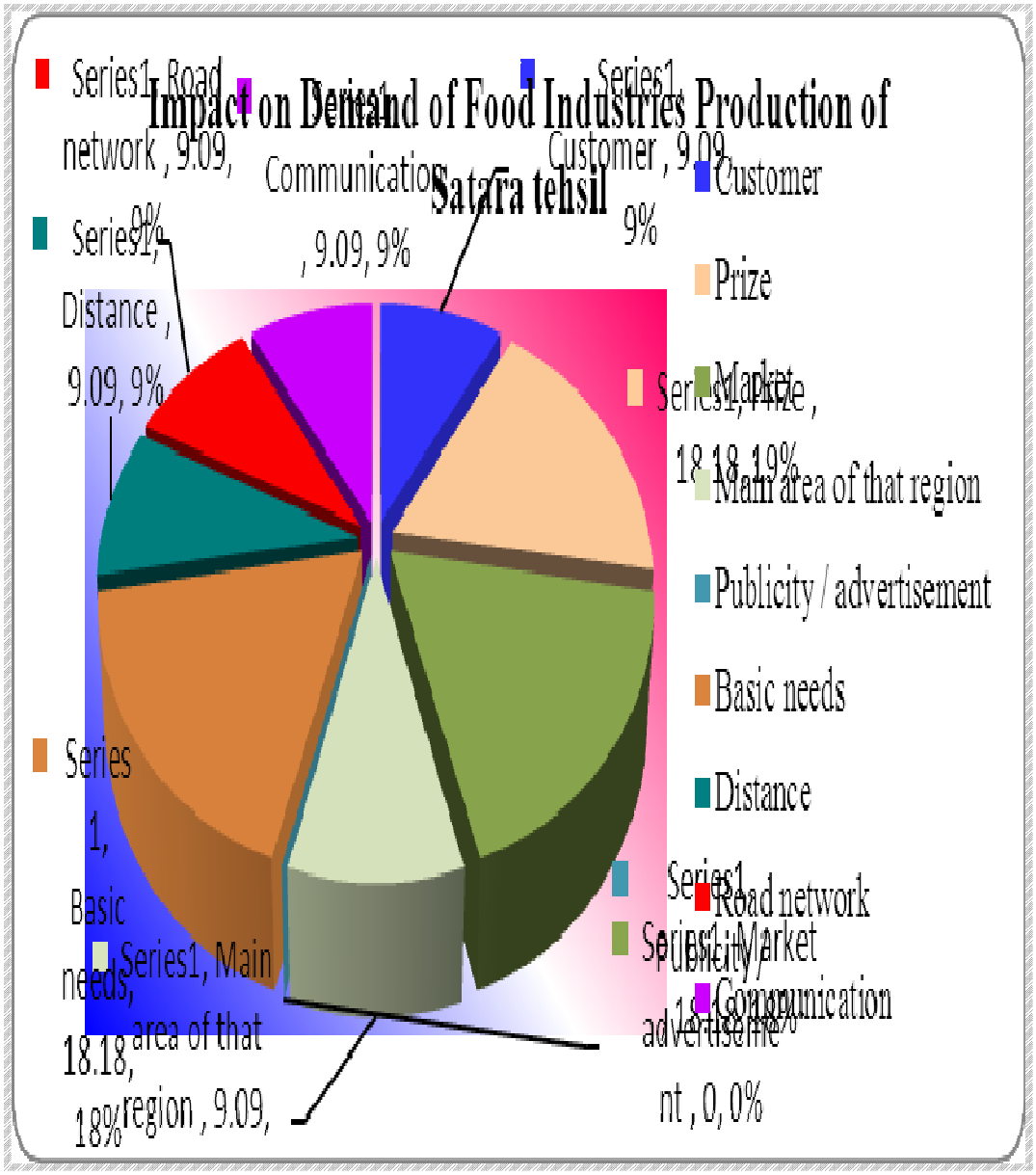
In the food industries using vegetables, fruits and grains with oil and spices which create waste material which can be utilize as fertilizers. So they are dumping few of the material in the dig to prepare fertilizer and few are selling as fodder for animals to the farmer.

Table: Impact on Demand of Food Industries Production of Satara Tehsil

Impacting factor	Actual value	Percentage
Customer	1	9.09
Prize	2	18.18
Market	2	18.18
Main area of that area	1	9.09
Basic needs	2	18.18
Distance	1	9.09
Road network	1	9.09
Communication	1	9.09

Source: Based on the fieldwork. (2013-14& 2014- 2015)

Figure:Impact on Demand of Food Industries Production of Satara tehsil



Source: Compiled by the researcher

In the above Table of impact of demand of production is shown the food industries impacting factor on demand of production. As per food industrial owners view 9.09 % factors of customer, main area of that area, distance, road network, and communication impacting on the demand, and the highest impacting factor of food production on demand have a prize, market, and the basic needs.

Annual turnover of industry-: In the collected food industries annual turnover is 50 lakhs to 50 crore.

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Physico-Chemical Properties of Fresh Water Bodies from Drought Prone Area Around Mhaswad Tal. Man (MS)

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Abstract:

On this earth, water is the most important natural resource to all living organisms, human health, food development, most ecological systems and economic development. Various contaminants like chemicals affected safety of drinking water. In the present investigation the water quality is determined regarding its physico-chemical properties in and around drought prone area of Mhaswad Tal. Man in post monsoon season i. e. in December month. The different parameters like temperature, colour, odour, taste, p^H, salinity, EC, total alkalinity, hardness, TDS, TS, TSS, BOD, COD, etc. were studied in the present investigation.

The objective of present investigation is to focus on the water quality for the drinking purpose. The surface water samples were collected from four different sites named Diwad, Gangoti, Bhataki and Masalwadi water reservoirs around Mhaswad. Total solids and TDS values shows that the water from Diwad and Bhataki area is less useful for drinking purpose. The results of COD showing there are less organic and inorganic pollutants present in the samples taken for the study.

Key Words : Physico-chemical characters, drinking water, contaminants, pollutants.

Introduction:

On this earth, water is the most natural resource to all living organisms. Human health, food production is related to the quality of water. The functioning of an aquatic ecosystem and its stability to support life forms depend, to a great extent, on the physico-chemical characteristics of its water. The safety of drinking water is affected by various pollutants including chemicals. Such low quality of water may cause many diseases to human being. In the present investigation attempt has been made to test the quality of water affected due to chemical contaminants.

Mhaswad is situated 17.635/ N 74.787/ E in the Man tahasil of Satara District, (MS). It is situated on the banks of Manganga river. Very poor average range of monsoon rain and high range of max. temp. calculates Mhaswad as drought prone area of Satara dist. In the present study, water samples were collected from Diwad, Gangoti, Bhataki and Masalwadi water reservoirs around Mhaswad and tested for different physico-chemical properties.

Materials and Methods :

The present study was carried out from four different areas around Mhaswad. The samples were collected in the morning hours and all samples were collected by dipping glass bottles in the water reservoirs. To minimize the changes in water properties from time of collection to the time of actual analysis, some tests were taken immediately like p^H, temperature etc.

The p^H was measured using p^H meter and turbidity by turbidity meter. The other physico-chemical analysis of surface water samples was performed as per the procedure described by APHA (2005) and Trivedy and Goel (1986).

Table No. 1.1 showing methods used for the analysis of samples

Index No.

Index No.	Water Quality Teste	Instrument /Method
1)	Temperature	Thermometer
2)	Colour	Platinum Cobalt (Visual Comparison) method
3)	Odour	Wide Mouth glass stoppered bottle
4)	Taste	By tasting
5)	p^H	P^H meter
6)	Salinity	Test Method
7)	Turbidity (NTU)	Turbidity method
8)	Total Solids	Test Method
9)	Total Suspended Solids	Test Method
10)	TDS	Water TDS meter
11)	Dissolved Oxygen	Titrimetric Method
12)	Dissolved Co_2	Titrimetric Method
13)	Total Hardness	Titrimetric Method
14)	BOD	Titrimetric Method
15)	COD	Titrimetric Method

Results :

Table No. 1.2 showing physico-chemical properties of different fresh water bodies around Mhaswad

Taste Taken	Gangoti Sample	Diwad Sample	Bhataki Sample	Masalwadi Sample
1) **Colour**	Colourless	Colourless	Colourless	Colourless
2) **Odour**	Odourless	Odourless	Odourless	Odourless
3) **Taste**	Tasteless	Tasteless	Tasteless	Tasteless
4) **Temperature**	23.7^0 c	22.8^0 c	24.9^0 c	23.6^0 c
5) **p^H**	7.95	7.80	10.12	8.86
6) **EC (mS/Cm^{-1})**	0.58	0.49	0.68	0.65
7) **Turbidity (NTU)**	6.2	6.4	8.2	5.6
8) **Conductance (ms)**	18.0	11.0	8.64	6.39
9) **Total Solids (mg/l)**	460	540	620	490
10) **TDS (mg/l)**	115	650	620	490
11) **Total Alkalinity (mg/l)**	131	164	198	182
12) **Salinity (PPT)**	9.66	6.12	4.83	3.53

13) **DO (mg/l)**	7.0	6.0	7.0	7.0
14) **Free Co_2 (mg/l)**	23.1	19.4	28.8	12.6
15) **Total hardness as $CaCo_3$ (mg/l)**	130	318	310	270
16) **BOD (mg/l)**	2.4	2.9	3.1	2.3
17) **COD (mg/l)**	1.8	1.4	1.5	1.7

Discussion:

The results obtained in table no. 1.2 are showing some physical and chemical properties of the water samples analysed in the present investigation. Physical properties like colour, odour, taste and temperature were agreeable in all the water samples taken. As per general ISI Standards for drinking water's, turbidity above 0.1 NTU and below 5 NTU is unhealthy for drinking purpose. All the water samples in this study shows turbidity above 5 NTU which clears that water is safe for drinking purpose. The p^H ranging between 6.5-8.5 is a sign of healthy water. The p^H values of samples from Bhataki is having p^H 10.12 is a sign of low quality of water. Electrical conductivity of the samples ranges between 0.49- 0.68 mS/Cm^{-1}. Conductivity is the ability of a substance to conduct electricity. The conductivity of water is a more-or-less linear function of the concentration of dissolved ions. Conductance ranges between 6.39 to 18.0 ms in the samples studied.

Total dissolved solids in the Bhataki and Diwad reservoirs elevate density of water , gas solubility and decrease utility of water for drinking purpose. Our results are coincide with previous work of Manivasakam (2003). TDS values more than 500 mg/l are not desirable for drinking purpose. Similarly higher values of TS in Diwad and Bhataki water samples may be due to water carrying silt, clay and other soluble materials.

Presence of bicarbonates, carbonates and hydroxides in the water is a result of higher alkalinity (Jain et al., 2000). In the present investigation higher alkalinity is detected in Bhataki and Masalwadi water samples as compare to other water samples studied. This corelates with the higher p^H of Bhataki water.

Salinity found more in the Gangoti water sample as compare to other three samples studied. Generally in the river water 0.5 PPT salinity is observed while in sea water 35 PPT of salinity is observed. Our results range between 3.35 to 9.66 PPT.

Dissolved oxygen is an important factor in assessing water quality, Monitoring oxygen concentration also helps to know the "health" of water body and its one convenient way of "feeling the pulse" of an aquatic ecosystem (Odum, 1971). The concentration of dissolved oxygen is usually related to water current, temperature or substrate conditions. Biju et al., (2000) studied the chemical and physical conditions of Chalakudy river system and reported that dissolved oxygen level was higher in high altitudes of the river than in lower reaches due to movement of water and the values ranged from 5.3 to 8.5 mg/l. DO values between 6 to 7 mg/l are satisfactory for survival of growth of aquatic organisms (Raveen et al., 2008).

Free carbon dioxide values ranged between 12.6 to 28.8 mg/l in the samples taken for study. Biological activities and higher rate of decomposition determines the free carbon dioxide in the water samples (Sukhija, 2007). Bhataki water samples shows highest free Co_2, may be the result of highest decomposition and biological activities in the water. Total hardness of water is governed by the amount of Ca^{++} and Mg^{++} salts in the water. Diwad and Bhataki water samples

are showing highest values of total hardness and alkalinity and free carbon dioxide correlates with each other in the present investigation.

Manjare et al. (2010) were studies the Physico-chemical Parameters of Tamadalge Water Tank in Kolhapur District, Maharashtra. Monthly Changes In Physical and Chemical Parameters Such as Water Temperature, Transparency, Turbidity, Total Dissolved Solids, pH, Dissolved Oxygen, Free Carbon dioxide, and Total Hardness, Chlorides, Alkalinity, Phosphate and Nitrates.

Tamadalge Water Tank in Kolhapur District, Maharashtra. Monthly Changes In Physical and Chemical Parameters Such as Water Temperature, Transparency, Turbidity, Total Dissolved Solids, pH, Dissolved Oxygen, Free Carbon dioxide, and Total Hardness, Chlorides, Alkalinity, Phosphate and Nitrates.

Biochemical oxygen demand (BOD) is a measure of the amount of oxygen that bacteria will consume while decomposing organic matter under aerobic conditions. The low values of BOD in the Gangoti and Masalwadi water sample shows low level of bio degradable material in the water bodies. Higher BOD was recorded by Sikder et al. (2016) at the Turag River. Chemical oxygen demand (COD) does not differentiate between biologically available and inert organic matter, and it is a measure of the total quantity of oxygen required to oxidize all organic material into carbon dioxide and water. Those results are far below than the results found by Sikder et al. (2016), Ahmed and Nizamuddin (2012) and Miah (2012). The low values of COD in the Diwad and Bhataki water samples shows less organic and inorganic pollutants which is in correlation with the results obtained by Koushik and Saksena, 1999.

Manjare et al.(2010) and Sarvanakumar and Ranjith Kumar (2011) studied different water samples for different physical and chemical properties which shows correlation with our results.

Conclusion :

The results obtained in this present investigation shows that the water in Gangoti and Masalwadi reservoirs is useful for drinking, and domestic use and also for irrigation purpose. The water bodies from Bhataki and Diwad are influenced by pollutants. Proper maintenance is required to keep them clean and safe.

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Climate Change is of Great Concern for the Tourism Industry

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Abstract:

Climate change is of great concern for the tourism industry climate is a key resource for tourism and given tourism importance in the global challenges of climate change and poverty reduction. Mararthwada though the arid region and witnessed the devastating economical, industrial and agricultural impact of few years of drought. Generally this region drought very worst. So in vey available tourist in Mararthwada to develop and gate sustainable development in the tourism industry.

Keywords: Climate change, Worship Tourism, Sustainable Development, Drought area.

Introductuion :

India is havaing freedom for every religion. There are many tourist places iodated people everywhere in India climate is a key resource for and given tourism importance in the global challenges of climate change and poverty reduction, there is a need to urgently adopt a range of polices which encourages truly sustainable tourism that retreats a quadruple bottom line of environment, social, economic and climate responsiveness. More than many other industries, tourism relies on a stable climate.

Study region

Marathwada is a region of the Indian state of Maharashtra. The region coincides with the Aurangabad Division of Maharashtra. It bounded the states of Karnataka and Telangana and it lies to east of the Vidarbha and Khandesh region of Maharashtra. It included eight districts of Aurangabad, Jalna, Parbhani, Hingoli, Nanded, Beed, Osmanbad and Latur. It has total geographical area of 64590 km^2 and had a population of 1,87,31,872 (census 2011).

Objectives:

Major objectives of this study are to asses the worship, Tourism in Marathwada to analyze the drought area and to find out sustainable tourism.

Database and Methodology

For the present research article both primary and secondary data have been utilized. Primary data by visiting many tourist places and observer at different seasons etc.
Secondary data have been collected from district gazetteers, socioeconomic abstracts MIDC, ITDC, Published books and Journals and news papers.

Discussion

Worst drought:

Marathwada region has been reeling under drought condition since 2012. It is a part of scanty rainfall area of central Maharashtra. The region is under the influence of southwest monsoon. When monsoon times the average rainfall becomes 750 mm, but rainfall has fall on

down up to 50 mm and sometimes rainfalls without its season on words in time and temperature also reveals that highest degree that increase year to year. So all districts of Marathwada re affected fro drought. The region had faced several droughts in the post droughts have occurred in the every five years normely, very worst drought conditions. It is muti-dimentional drounght water crisis has led to a contraction.

Crop Damaged:

Marathwada which was transforming from drought, was hit hard by hailstorm. This has damaged crops and fruits farming, sometimes, who had faced drought and untime rainfall and any causes put damaged cropes and callaped farmers for the last few years.

2015 this year the solution factor was rain in Marathwada which suffered a year of drought. Highly rainfall of this area has worried farmers concerns. There is a failed of crop year by year farmers are hopeful of getting yields, crops, fruits and vegetables but due to hail of some areas have been totally crops damaged becomes drought situation but suddenly the rain shrugged. This is why the crop that has reached your hands has become very rough.

Lowest Income:

The warer crisis has led to a contraction in agricultural, industrial and services forcing skilled and unskilled works from this area to migrate to other parts of the state and other state in search of any jobs. The economy of this region is of this region is in the dolsrums, agri, industries and totally market are shutting down as the economy craters and people everywhere migrate out.

According to the kelkar committee report economic focus as per capita income of Marathwada at 40824 is the lowest of any region in the Maharashtra.

Table No.1

Per capita income (2009-10)

Sr.No.	Region	Per Capita Income
1	Rest of Maharashtra	68818
2	Vidarbha	52282
3	Marathwada	40824

Table No.2 Division wise Number of Enterprise

Sr. No.	Division	Enterprises
1	Mumbai	24786
2	Kokan	39269
3	Nashik	27458
4	Pune	92233
5	Aurangabad	18751
6	Amravati	14510
7	Nagpur	26714

Source: Economic Survey of Maharashtra 2015-16

According to Economic survey report 2015-16 showing the distribution of division wise number of enterprises in Maharashtra is indicates 18751 lowest numbering of enterprises.

Table No.3

Per capita income (2009-10)

Sr. No.	Division	Employment in lakh
1	Mumbai	4.05
2	Kokan	6.32
3	Nashik	3.15
4	Pune	10.05
5	Aurangabad	1.93
6	Amravati	1.14
7	Nagpur	2.55

Source: Economic Survey of Maharashtra 2015-16

According to the server of report there are about 1.93 lakh industries employment of Marathwada.

Conclusion:

But number of tourist visiting these tourist place is increasing every year. From all over India as well as world to tourists visit people live in low and bad condition. No any maximum crop production, fruits and vegetables, no jobs, employ. Thus totally collapses there economically conduction, extra loan buzzer load maximum farmers, so farmers suicides in this time. These condition become so fair and good to develop tourism in Marathwada a very golden chance because already built of cultural religious, historical and archeological tourist centre to become a very sustainable development area.

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A Geographical Study of Settlement Pattern and Road Network Development in Kolhapur District

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Abstract:

Transport is the back-bone of national economy. It provides an essential of all modern economies. Any transportation network is a reflection of the contemporary spatial organization of economy, social condition and political setup. Transportation is an essence for the development of any region or country. It is a matter of great concern that the study of such a subject like road transport has remained much neglected in our country. In fact the life blood of a region flows through its arteries of roads. Road transport is one of the great material needs of a man. The one of earliest problems of the man was how to move himself and his possessions. Even in the primitive people this problem existed as they had to go in search of pray. In present, when the country is marching towards industrialization, roads are playing a very significant role. In this research paper to study settlement pattern and road network development in Kolhapur district. The present research paper is based on secondary data and GIS mapping techniques is used for distribution of road network. In transport network development towns are played major role, according to 2011 census in study area there are 23 towns. These towns are well connected to transport network. In these 23 towns there are 9 towns are located in Karvir tehsil and 5 towns in Hatkanangale tehsil, these two tehsil well developed by road and rail network.

Key word: Settlement pattern, Road network development.

Introduction:

Roads are key for transportation of men and materials. In a developing country like India, with the rapid increase in intensity of traffic and introduction of heavier vehicles, the road pavements of better specialization and quality have become very necessary. The study of geography of transport, in spite of its immense significance remained neglected for long time in Kolhapur district. Kolhapur district is one of the populous districts in the Maharashtra. It covers only 2.5% area of the state but have 2.95 % population to the total population of the state. In Kolhapur district total length of road network is 7952.97 km; out of this, National Highways account for 1.38%, State Highways for 12.91%, and Major District roads for 40.99%, Rural Roads for 44.71%. It means that study area national and state highway road network as compeer to district and village is very poor. National highways account for 2 per cent of the total road length, but carry near by 40 per cent of the total road traffic. The proposed study region experiences the disparity in the distribution of mode of transportation from tahsil to tahsil. Development of transport faces the problems due to its rugged and undulating topography. Transportation is always influencing the human activities. Accessibility and connectivity, is important in mobility of the people and goods from different destinations. If these two factors are good then the economy of the region make remarkable progress which further leads to the social and cultural development of the region. In this proposed study emphasize is given on these

factors. Here attempt is made to analyse the transportation of the study region and describes settlement pattern and distribution of road network.

Study Area::

Kolhapur district is situated in the extreme southern part of Maharashtra State. It lies between 15° 43' and 17° 17' north latitudes and 73° 40' and 74° 42' east longitudes.It is surrounded by Sangli district to the north, Karnataka State to the east and south and Ratnagiri and Sindhudurg districts to the west. The Sahyadri ranges to the west and Varna River to the north form the natural boundaries. The shape of district is triangular; base of triangular is west side and two edges from north-east and south-east direction. District north and south side are narrow but western side is so wide. The district has an area of 7,685.00 sq km and a population of 3876001 populations as per census 2011. While the geographical area of the district accounts for 2.5 percent of the total area out of the Maharashtra State.

The density of population is 504 persons per sq km Among the 35 districts of the State, the district ranks 20th in terms of area as per 2011 census. The headquarters of the district is at Kolhapur, a city with a population of 549236 (2011) Census. Kolhapur was the capital of the former Kolhapur State, a premier State of the Deccan and was also the seat of the Residency for Deccan States. It derives its importance from its past political connections and its present position as a great commercial, religious, cultural and educational centre. It is well linked both by road as well as by rail.

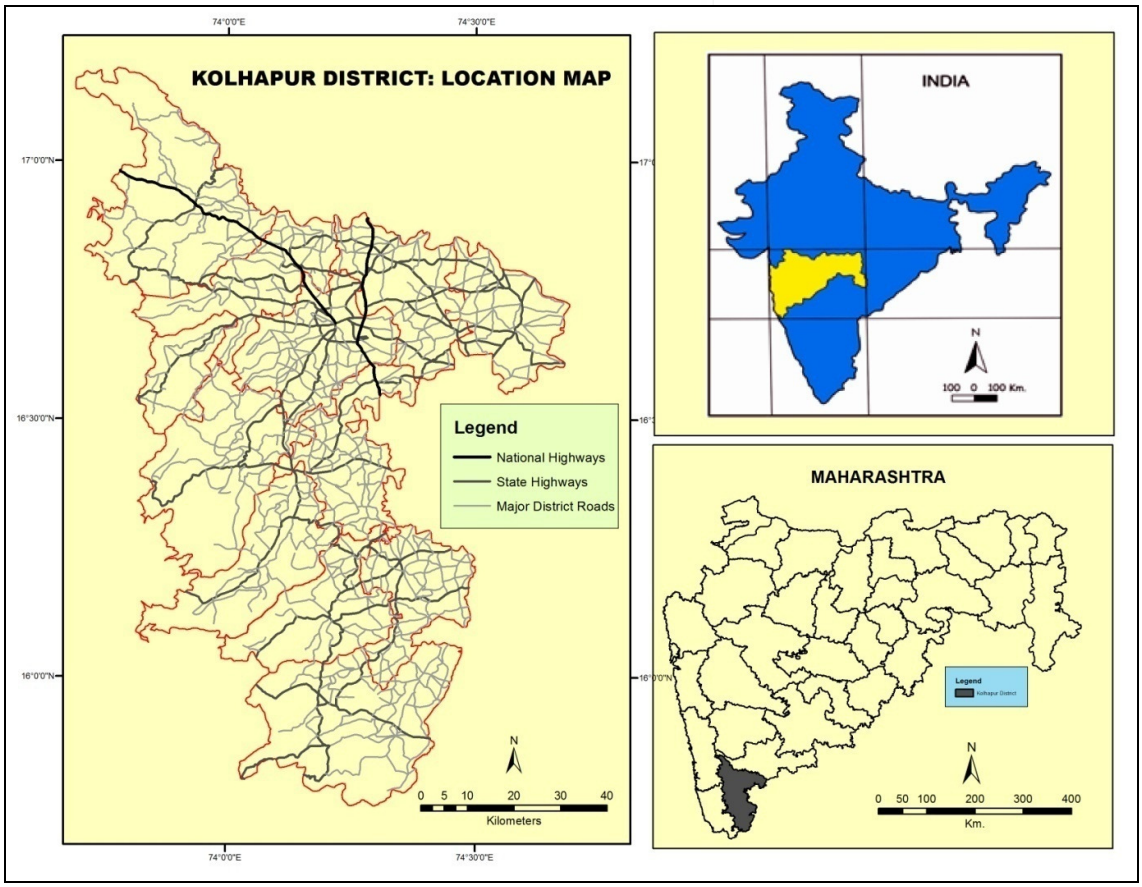


Fig. No 1

The district has an area of 7,685.00 sq km and a population of 2989507 (1991), 3523162 (2001) and 3876001 population as per census 1991, 2001 and 2011. While the geographical area of the district accounts for 2.5 percent of the total area out of the Maharashtra State.

Objective

1. To study distribution of road network in Kolhapur district.
2. To study settlement pattern and road network in Kolhapur district.

Database And Methodology:

In present research paper is based on secondary data which is collected from Socio Economic Abstract of Kolhapur District, Gazetteer of Kolhapur District and District census handbook 1991, 2001 and 2011. GIS mapping techniques is used for distribution of road network. Besides this, few information and secondary data regarding the present research work have been collected from the books, journals, reports, miscellaneous sources, published, and unpublished sources.

Result And Discussion

Distribution of Road Network in Kolhapur District in 2015

Nagpur plan which was set up in 1943 for balanced and coordinated road development in India, divided the road transport system in Five classes viz. national highways, state highways, major district roads & other district roads and village roads. Accordingly, Road transport is put into four categories in Kolhapur district national highways, state highways, major district roads, other district roads, rural roads.

Table No 2

Distribution of Road Network in Kolhapur District (Road Length in Km.) 2015

Sr. No	Tehsil	National Highways	State Highways	District Roads	Rural Roads	Total	Share of Road Network
1	Shahuwadi	37.49	73.69	313.61	345.78	770.57	9.69
2	Panhala	14	76.6	264.44	305.82	660.86	8.31
3	Hatkanangale	23	126.21	234.69	547.48	931.38	11.71
4	Shirol	0	102.85	213.98	332.38	649.21	8.16
5	Karvir	30.52	113.82	347.23	415.4	906.97	11.40
6	Bavda	0	34.2	91.15	64.3	189.65	2.38
7	Radhanagari	0	85	366.2	374.6	825.8	10.38
8	Kagal	5	59.04	321.47	341.2	726.71	9.14
9	Bhudargad	0	68.83	253.9	275.85	598.58	7.53
10	Ajra	0	96.92	192.65	154.2	443.77	5.58
11	Gadhinglaj	0	71	281.35	115.1	467.45	5.88
12	Chandgad	0	118.47	379.63	283.95	782.05	9.83
District		**110.01**	**1026.63**	**3260.3**	**3556.06**	**7953**	**100**

Source: Socio-Economic Abstract of Kolhapur District 2016.

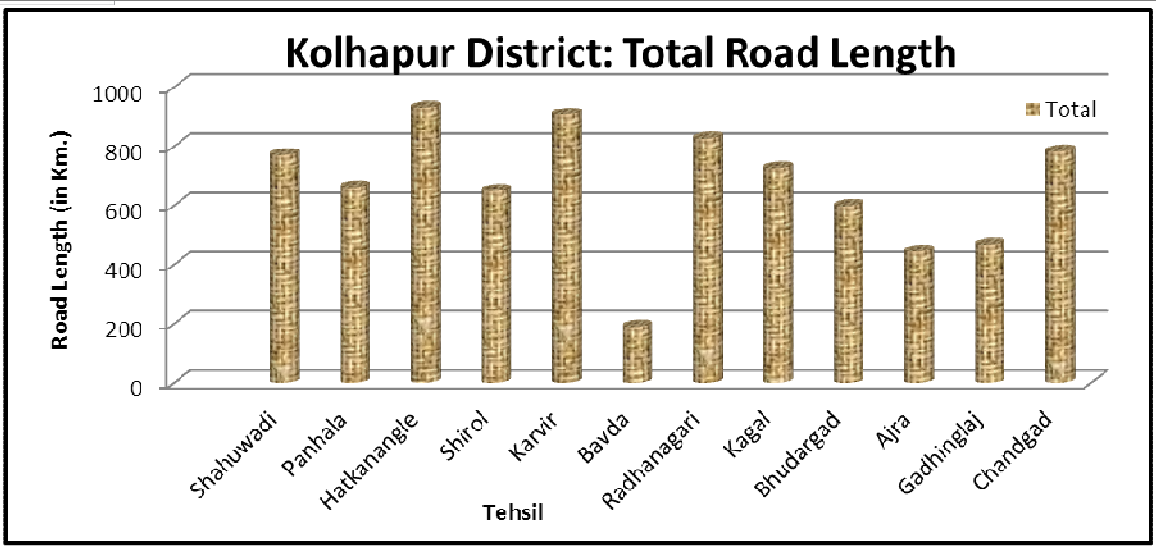


Fig. No. 2

Above the table no 1 and fig no 2 revels that all the five categories are combined to find out the tehsil wise total road length in Kolhapur District (Table No. 2). It is very clear from the Fig 2 that tehsil Hatkanangale and Karvir have the maximum road length i.e. 931.38 kms (11.71%) and 906.97 kms (11.40%) respectively and these two tehsil are situated in the eastern part of the district. Bavda, Ajra and Gadhinglaj tehsil have been recorded minimum road length i.e. 189.65 kms (2.88%), 443.77 kms (5.58%), 467.45 kms (5.88%), respectively these tehsil are located hilly and plateau region in western and south part of Kolhapur district.

Distribution of Settlement Pattern and road network

Rural Road Connectivity is not only a key component of Rural Development by promoting access to economic and social services and thereby generating increased agricultural incomes and productive employment opportunities in India, it is also as a result, a key ingredient in ensuring sustainable poverty reduction notwithstanding the efforts made, over the years, at the State and Central levels, through different Programmes, about 40% of the Habitations in the country are still not connected by All-weather roads.

It is well known that even where connectivity has been provided, the roads constructed are of such quality (due to poor construction or maintenance) that they cannot always be categorised as All-weather roads. With a view to redressing the situation, Government have launched the Pradhan Mantri Gram Sadak Yojana on 25th December, 2000 to provide all-weather access to unconnected habitations. The Pradhan Mantri Gram Sadak Yojana (PMGSY) is a 100% Centrally Sponsored Scheme (PMGSY). The primary objective of the PMGSY is to provide Connectivity, by way of an All-weather Road (with necessary culverts and cross-drainage structures, which is operable throughout the year), to the eligible unconnected Habitations in the rural areas, in such a way that all Unconnected Habitations with a population of 1000 persons and above are covered in three years (2000-2003) and all Unconnected Habitations with a population of 500 persons.

Table No: 2

Population Size class Distribution of Rural Settlement

Sr. No	District	Rural Settlement Population Size Class							
		I < 200	II 200-499	III 500-999	IV 1000-1999	V 2000-4999	VI 5000-9999	VIII 10000 & >	Total
		Small			Medium		Large		

1	Shahuwadi	2	9	45	58	18	1	0	133
2	Panhala	2	13	29	50	27	7	1	129
3	Hatkanangale	0	0	3	6	18	18	13	58
4	Shirol	0	0	1	3	26	18	6	54
5	Karvir	1	4	13	25	57	18	3	121
6	Bavda	1	13	16	14	1	0	0	45
7	Radhanagari	1	12	30	36	30	5	0	114
8	Kagal	0	1	5	26	44	7	1	84
9	Bhudargad	4	14	45	34	15	1	1	114
10	Ajra	4	22	31	32	7	1	0	97
11	Gadhinglaj	1	5	21	28	27	7	1	90
12	Chandgad	0	31	55	51	18	0	1	156
Kolhapur District		16	124	294	363	288	83	27	1195

Source: Kolhapur District Census Handbook 2011.

Table No. 2 is reveals that population size class distribution of rural settlement. According to 2011 census data there are 140 villages out of 1216 having less than 500 populations. It means that these villages are disqualifying for Pradhan Mantri Gram Sadak Yojana. In 2000 - 2013 under the scheme of PMGSY government covered 217 habitations and completed 584.110 km. road length. It means that in study area 18% villages are to take benefits of Pradhan Mantri Gram Sadak Yojana.

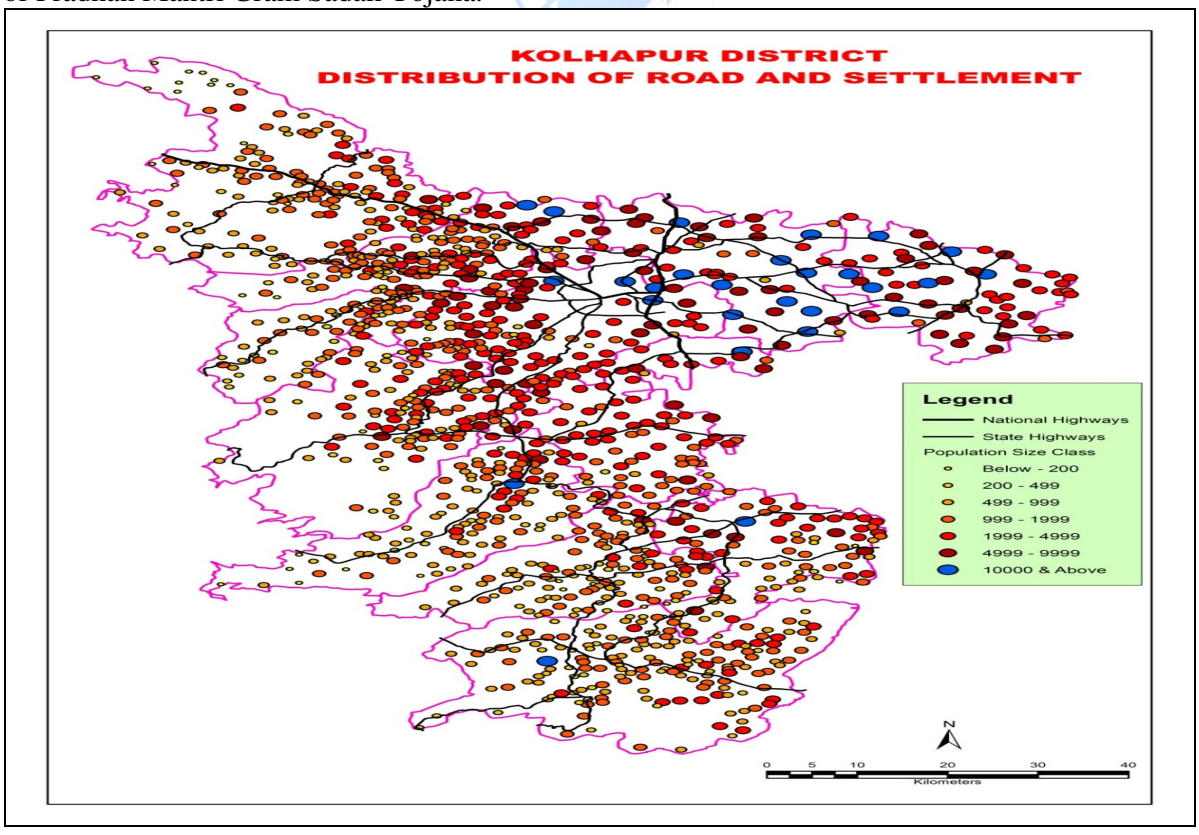


Fig. 3

According to population size class there are 3 types of villages viz. small (Below 999), Medium (1000 - 4999) and Large (Above 5000). In study area there are 1216 in these 1195 inhabitations villages, out of these 434 are small (35.69%) villages, 651 are Medium (53.53%) and only 110 villages are in large (8.79%) categories. In fig no. 3 it shows that large villages are located in Hatkanangale (31), Shirol (24) and Karvir (21) tehsil. These eastern part of study area are well developed by road and rail network.

In transport network development towns are played major role, according to 2011 census in study area there are 23 towns. These towns are well connected to transport network. In these 23 towns there are 9 towns are located in Karvir tehsil and 5 towns in Hatkanangale tehsil, these two tehsil well developed by road and rail network. Out of 23 remaining 9 towns are located in Panhala, Kagal, Shirol each tehsil 2 towns and Shahuwadi, Ajra Gadhinglaj each 1 towns.

Conclusion:

The Hatkanangale and Karvir tehsil have the maximum road length i.e. 931.38 kms (11.71%) and 906.97 kms (11.40%) respectively. Bavda and Ajra tehsil have been recorded minimum road length i.e. 189.65 kms (2.88%), 443.77 kms (5.58%), respectively. The maximum road network is found in eastern part there is plain region of panchaganga river basin and minimum road network is developed is in hilly part which is covered by Sahyadri ranges.

The large villages (more than 5000 population) and town are most dominant factor which are played vital role in road network development. The large villages are located in Hatkanangale (31), Shirol (24) and Karvir (21) tehsil. These eastern part of study area are well developed by road and rail network. According to 2011 census data there are 140 villages out of 1216 having less than 500 populations. It means that these villages are disqualifying for Pradhan Mantri Gram Sadak Yojana at hence poor road network developed where small villages are more e.g Bavda and Ajra tehsil. In transport network development towns are played major role, according to 2011 census in study area there are 23 towns. These towns are well connected to transport network. In these 23 towns there are 9 towns are located in Karvir tehsil and 5 towns in Hatkanangale tehsil, these two tehsil well developed by road and rail network.

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पाणलोट क्षेत्र विकासातून ग्रामीण विकासाकडे !

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गोषवारा:

अवर्षण, टंचाई, दुष्काळ यांची चर्चा आणि वादही आता रोजचेच झाले आहेत, पण या गदारोळात प्रश्नांचा तळ लागतोच असे नाही. दुष्काळ व टंचाईचा वेध घेतलाच पाहिजे. शिवाय प्रश्नांच्या मुळाशी जाऊन त्यातून बाहेर पडण्याचा मार्गही सुचवला गेला पाहिजे. म्हणूनच हा शोध निबंध! पाणीबचतीबाबत साक्षर करणारा, विदारक वास्तवाबाबत जागा करणारा आणि उपायाकडे नेणारासुद्धा !

परिचय :

आपण अवर्षण आणि दुष्काळ यांमध्ये फरक करायला शिकलो आहोत. अवर्षण म्हणजे कमी पाऊस पडणे हे नैसर्गिक आहे. त्यावर अजून मानवाचे नियंत्रण नाही. पण त्या अवर्षणामध्ये दुष्काळ राहू नये यासाठी काय करायला पाहिजे याचा मागोवा घेण्याचा प्रयत्न आपण करतो आहोत. जमिनीची उत्पादकता टिकवणे हे महत्त्वाचे काम अजून झालेले नाही. उत्पादकता कशी टिकवायची हा वेगळा विषय आहे. मात्र, या मुद्दयाकडे आपल्याला गांभीर्याने लक्ष द्यायला लागणार आहे. अवकाळी प्रदेशाचीसुद्धा एक उत्पादकता असते, हे लक्षात घेऊन पावले उचलण्याची गरज आहे. आपला दुग्धव्यवसाय वाढतो आहे. त्याला चाऱ्याच्या पाठिंब्याची गरज आहे. त्यामुळे कसदार जमिनीच्या उत्पादकतेबरोबरच, कुरणांची, जमिनींची उत्पादकता वाढवण्याकडे लक्ष देणे आवश्यक आहे. त्यासाठी जमिनीचा कस वाढवण्यासाठी जे उपाय करणे गरजेचे आहे, त्यावर आपली पाणलोट विकासाची संकल्पना आधारलेली आहे. पण ही संकल्पना र्सवकष दृष्टिकोनातून, व्यावहारिक दृष्टीने आपण लोकांपर्यंत पोहोचवू शकलेलो नाही.

पाणलोट म्हणजे काय ?

एखाद्या ओढ्याला – नदीला ज्या क्षेत्रातून छोटे–छोटे ओघळ आणि नाल्यांमधून पाणी वाहून येते त्या क्षेत्राला त्या नदीचे पाणलोट क्षेत्र असे म्हणतात. पावसाचे पाणी पडल्यानंतर ते डोंगरावरुन किंवा टेकडीवरून छोट्या–छोट्या ओघळ आणि नाल्यांमधून खाली वाहत येते. पाणी उतारावरून वेगाने खाली वाहत येताना ओघळीमधून सोबत भूपृष्ठावरील माती घेऊन येते आणि शेवटी नदीला येऊन मिळते. अशा प्रकारे एखाद्या विशिष्ट भूभागावर पडणारे पावसाचे पाणी ओढे, नाले आणि ओघळींमधून नदीला येऊन मिळते. अशा भूभागाला त्या नदीचे पाणलोट असे म्हणतात. पाणलोट क्षेत्र हे काही हेक्टरपासून काही हजार हेक्टरपर्यंत असू शकते. जसे– हिमालयीन पाणलोट पाणलोट क्षेत्र हे पाण्याच्या नैसर्गिक प्रवाहांमुळे तयार झालेली परिसंस्था (ecosystem) आहे. पावसाचे पाणी हे प्रामुख्याने पाणलोट क्षेत्रातून वाहत असते. अशा पाण्याचे संधारण आणि व्यवस्थापन करणे म्हणजेच पाणलोट क्षेत्र विकास होय. जलचक्राचा जमिनीवरील प्रवासच मुळी पाणलोटातून होतो, त्यामुळे जर एखाद्याला 'पाणी' वाचवायचे असेल तर या नैसर्गिक पाणलोटापासून सुरुवात करावी लागेल.

'धावणा—या पाण्याला चालायला लावणे, चालणा—या पाण्याला थांबायला लावणे आणि थांबलेल्या पाण्याला जमिनीत मुरायला लावणे' हे पाणलोट क्षेत्र व्यवस्थापन म्हणता येईल.

एकात्मिक पाणलोट क्षेत्र विकासाचे मुख्य घटक

एका विशिष्ट पाणलोट क्षेत्रात उपलब्ध असणा—या संसाधनाचे – उदा. जमीन, पाणी, पशुधन आणि मनुष्यबळ पाणलोट क्षेत्र विकास होय. पाणलोट क्षेत्र विकासात नैसर्गिक संसाधने, मनुष्यबळ आणि पशुधन या सर्वांमध्ये पर्यावरण समतोल साधण्याचा प्रयत्न केला जातो, कारण लोक आणि पशुधन हे त्या पाणलोट क्षेत्रात राहतात. एकूणच, पाणलोट क्षेत्र विकास हे अनेक घटक आणि विषयांशी संबंधित असून, त्यातील अंतर्भूत घटकांमध्ये सातत्यपूर्ण समन्वय आणि आदान – प्रदान घडवून आणले जाते. उदा. पशुधन व्यवस्थापन हा विषय जमिनीची उत्पादकता, तसेच जमिनीचे आणि पाण्याचे व्यवस्थापन आणि चारा/कुरण विकास या सर्व घटकांवर अवलंबून आहे. विशिष्ट भागातील पशुधन, कृषी उत्पादन आणि वने यांच्याशी ग्रामीण ऊर्जा व्यवस्थापनाचा घनिष्ठ संबंध आहे.

पाणलोट क्षेत्र हा केवळ भौगोलिक प्रदेश नसून, तो एक जिवंत भूभाग आहे. कारण पाणलोट क्षेत्रात तेथील स्थानिक समाज राहत असतो आणि त्या भागावर त्याची उपजीविका अवलंबून असते. ज्या भागामध्ये मर्यादित/अपुरी नैसर्गिक संसाधने आहेत, अशा भागातील पर्यावरणावर मागण्यांचा दबाव खूपच जास्त असतो. जर या मागण्यांचे व्यवस्थापन उपलब्ध नैसर्गिक संसाधनांच्या क्षमतेच्या अधीन राहून केले नाही, तर त्या भागातील परिस्थितीकी (मबवसवहल) धोक्यात येऊ शकते. परिणामी स्थानिक लोकांच्या गरजा पूर्ण होऊ शकत नाहीत, ते दारिद्र्याकडे लोटले जातात, या सर्व परिणामांची परिणती म्हणजे त्या भागातून लोकांचे स्थलांतर होते.

पाण्याचे अर्थशास्त्र समजून घेणे आवश्यक

आपल्याला सामजिक प्रगतीचा पुढचा टप्पा गाठायचा असेल, तर पाण्याचे अर्थशास्त्र समजून घेणेही आवश्यक आहे. पाणलोटाच्या ताळेबंदाची चर्चा करताना प्रत्येक भूभागाच्या वेगळ्या अडचणी आहेत, हे लक्षात घेणे आवश्यक आहे. नव्या सामाजिक परिस्थितीनुसार गरजा बदलत आहेत. त्या दृष्टीने पाण्याचे नियोजन करण्यासाठी मानसिकता विकसित होणे गरजेचे आहे. त्याबाबतीत आपण कमी पडतो आहोत. त्यामुळे आपण नव्या वादाची सुरुवात केली आहे. आता प्रत्येक घनमीटर पाण्याची उत्पादकता कशी वाढेल याबाबत विचार करावा लागेल. प्रत्येक घनमीटर पाण्याचे कोणत्या माध्यमातून कसे रूपांतर होते, हे समजून घेतले पाहिजे. तरच आपण नागरीकरण, औद्योगिकीकरण, ग्रामीण आणि शहरी शेती याचे संतुलन निर्माण करू शकू. हे संतुलन निर्माण करण्यासाठी आपण जागरूकता करण्यात कमी पडल्यामुळे आपल्याला अनेक समस्यांना तोंड द्यायला लागते आहे.

पाण्याचे नियोजन करताना प्रत्येक पाणलोट क्षेत्राचे वेगळे गणित बसवावे लागणार आहे. शेती, उद्योग यांच्या पाण्याच्या गरजेची सांगड कशी घालायची याचा सर्वंकष विचार करण्यासाठी मंचाची गरज आहे. सरासरी पाणी, त्याचे नियोजन, दोलायमानतेमुळे येणारी तूट, अशा दोन्ही पातळ्यांवर विचार करावा लागेल. ही तूट कशी येते हे आपण अजूनही लोकांना समजावू शकलो नाही. भूजलातील तूट, पावसाची तूट, प्रवाहातील तूट अशा चिकित्सक पद्धतीने आपल्याला या परिस्थितीचा विचार करावा लागेल. आपल्याकडे ६० ते ८० टक्के पाणी बाष्पीभवनामुळे वाया जाते. मात्र, त्याबाबतही आपल्याकडे अजून पुरेशी जागरूकता नाही. काळानुसार

पाण्याचे आणि माणसाचे नाते बदलत आहे. ते लक्षात घेऊन पाण्याचा समन्वित व काटकसरीने विचार करणारा समाज निर्माण करणं आणि त्यांच्यात सहयोग कसा राहील, हे आपल्याला आव्हान आहे.

या दिशेने बघितल्यास दुष्काळनिवारण आणि शेतीसह ग्रामीण भागाच्या नियोजनात्मक विकासासाठी पाणलोट विकास क्षेत्राचे स्थान मध्यवर्ती आहे, हे दिसून येते. पाणलोट क्षेत्राचा शास्त्रशुद्ध विकास घडवून आणण्यासाठी पुढील बाबी मार्गदर्शक ठरू शकतात.

पाणलोट क्षेत्र विकासाची मूलभूत तत्वे

१. पाणलोट क्षेत्रामध्ये पावसाचे पाणी पडल्यानंतर ते 'माथ्यापासून पायथ्याकडे' वाहत येते, त्यामुळे जेथे पावसाचे पाणी पडते अशा पाणलोटाच्या माथ्यापासून पाणलोट विकासाची सुरुवात करावी.

२. पाणलोटातील जमिनीवर मृदा संवर्धनाच्या कामाला प्राधान्य दिले पाहिजे आणि त्यानंतरच पाणलोटातील ओघळ आणि नाल्यांमधून वाहणा—या पाण्याचे संवर्धन केले पाहिजे. पाणलोटाचे सर्व क्षेत्र जमिनीने व्यापलेले असते, त्यामुळे जमिनीवर ओघळी व नाल्यांपेक्षा जास्त पाणी पडत असतेय म्हणून प्रथम 'मृदा संवर्धन' केल्यास जलसंधारण करावयास जास्त वाव मिळतो. (ओघळी व नाल्यांमध्ये पाणलोटाचा केवळ ५ ते १० टके भाग असतो)

३. मृदा संवर्धनाच्या दृष्टिकोनातून मूल:स्थानी जलसंधारणाच्या उपचारांवर अधिक भर दिल्यास पावसाच्या पाण्याचे जास्तीत जास्त संधारण करता येते, पर्यायाने अशा उपचारांमुळे मातीतील आद्रता वाढीस लागून जमिनीवरील तसेच भूमिगत जलसाठ्यांमध्ये वाढ होते, ज्याचा फायदा पाणलोट क्षेत्रामध्ये राहणा—या शेतक—यांना, विशेषत: अल्पभूधारक शेतक—यांना होतो. दुस—या बाजूला केवळ पाणलोटातील ओघळी आणि नाल्यांवर आधारित जलसंधारण उपाययोजना (बांधकामे) स्वीकारल्यास अशा प्रवाहांमधून वाहणारे पाणी केवळ अडवता येते, ज्याचे प्रमाण खूप कमी असते आणि त्याचा लाभदेखील अशा प्रवाहांच्या जवळ राहणा—या शेतक—यांनाच होतो (असे शेतकरी हे प्रामुख्याने सधन असतात).

४. पाण्याचे कार्यक्षमपणे संधारण आणि त्याचे समन्यायी वाटप या दोन्ही दृष्टीने पाणलोट क्षेत्रातील जमिनीवर मृदा संधारणाच्या कामांना ओघळी व नाल्यांवरील बांधकामांपेक्षा प्राधान्य दिले पाहिजे.

५. संपूर्ण देशामध्ये झाडांचे आच्छादन वाढवणे हे अत्यंत निकडीचे आहे, त्यासाठी वनीकरण आणि वृक्ष लागवड कार्यक्रम (छोटी झाडे, गवत आणि झुडूपवर्गीय झाडांची लागवड इत्यादी) हाती घेणे आवश्यक आहे. पाणलोट क्षेत्र विकासात वनीकरण आणि वृक्ष लागवडीचा कार्यक्रम हाती घेताना स्थानिक कृषी—वातावरणीय (हतव—ब्सपउंजपब) विभाग, पर्जन्यमान आणि बाष्पीभवनाचे प्रमाण या गोष्टीसुद्धा विचारात घेणे आवश्यक आहे.

६. जलसाक्षरता, पाण्याचा नियमित ताळेबंद (नकपज), सुयोग्य पीक पद्धतीचा अवलंब, समन्यायी पाणी वाटपाच्या तत्त्वाचा स्वीकार गरजेचे आहे. असे केल्यास पाणलोटाच्या माध्यमातून संधारित केलेल्या पाण्याच्या उपलब्धतेच्या प्रमाणात पाण्याची मागणी तसेच वापर वाढणार नाही, त्यामुळे उपलब्ध पाण्यातूनच जास्तीत जास्त उत्पादकता वाढविता येईल. (पाण्याच्या प्रत्येक थेंबातून जास्तीत जास्त पीक घेता येईल).

७. स्थानिक जल संसाधनांचे भूपृष्ठावरील व खालील व्यवस्थापन आणण्यासाठी समन्यायी व कार्यक्षम असे समुदाय निर्धारित शासन प्रोटोकॉल्स निर्माण करणे अत्यंत गरजेचे आहे.

एकात्मिक पाणलोट क्षेत्र विकासाच्या कामाबद्दल जोपर्यंत स्थानिक समुदायामध्ये मालकीची भावना निर्माण होऊन लोकांचा सक्रीय सहभाग वाढत नाही, तोपर्यंत एकात्मिक पाणलोट क्षेत्र विकासाचे काम चिरंतन टिकून राहू शकत नाही. पाणलोट क्षेत्र विकास कार्यक्रमातून निर्माण होणा–या मालमत्ता आणि संरचना यांची देखभाल आणि दुरुस्ती यामध्ये स्थानिक लोकांचा सक्रिय सहभाग वाढविण्यासाठी, गावक–यांची तसेच त्या गावातील आवश्यक आहे. कशासाठी आणि कशाप्रकारे करता येईल यासाठी पुढील मुद्दे विचारात घेणे आवश्यक आहे.

पावसाच्या पाण्याचे संधारण आणि जमिनीची सुपीकता वाढविण्यासाठी पुढील प्रमाणे उपक्रम हाती घेतले जाऊ शकतात.

१. निसर्गत: मृद संधारणाला या सर्व उपाययोजना अनुरूप आहेत. पाणी जेथे पडते, तेथूनच पाणी अडवायला सुरुवात करणे हे पाणलोट क्षेत्र विकासाचे महत्वाचे तत्त्व आहे, त्यामुळे त्याची सुरुवात डोंगराच्या माथ्यापासून करून डोंगर उतारावर आणि खाली पायथ्यापर्यंत येणे आवश्यक आहे. त्यासाठी 'माथा ते पायथा' हे तत्व स्वीकारणे गरजेचे आहे. पाणलोटाच्या माथ्यापासून करण्यात येणा–या तांत्रिक उपचारामध्ये सलग समपातळी चर (CCT) व जल शोषक चर (WAT) खोदल्याने पाण्याचा वेग कमी होतो. उतारावरून खाली आल्यानंतर शेत जमिनीमध्ये समपातळी बांध (CB) व शेती बांध (FB) बांधले जाऊ शकतात व त्यांना अतिरिक्त अपधाव वाहून नेण्यासाठी सांडव्याची सोय केली जाऊ शकते. या उपायांमुळे माथ्यापासून खाली येताना सलग समपातळी चर आणि शेतीबांध बांधून खाली वाहून आलेल्या पाण्याला जमिनीमध्ये मुरवता येऊन जमिनीची धूप रोखली जाऊ शकते. यामुळे जमिनीची सुपीकता टिकून राहु शकते. मातीतील आद्रता टिकून राहून भूजलाचे पुनर्भरणही करता येऊ शकते.

२. नाल्यावरील उपचार पाणलोटातील ओघळी, नाले आणि प्रवाहांमध्ये या उपाययोजना करता येऊ शकतात. या उपाययोजनांची सुरुवात माथ्यापासून करावी. यामध्ये डोंगरावरील घळीमध्ये दगडी बांध घालुन असे बांध हे डोंगरावरील दगड एकत्र करून घळीमध्ये ठेवले जातात. थोडे खाली आल्यानंतर नाल्यांमध्ये मातीचे नाला बांध व गॅबियन बंधारे बांधून अजून खाली आल्यास सिमेंट नाला बांध आणि पाझर तलाव बांधले जाऊ शकतात. या सर्व संरचनेच्या मदतीने माथ्यापासून वेगात वाहत येणा–या पाण्याला ठिकठिकाणी अटकाव घालून त्याचा वेग कमी केला जाऊन पाणी साठविले जाऊ शकते. अशा प्रकारे संधारित केलेले पाणी जमिनीत मुरवून भूगर्भातील पाण्याचे साठे वाढविता येऊ शकतात.

३. वनीकरण, जैविक घटक आणि कुरण विकास पाणलोटातील सलग समपातळी चार काही दिवस सूर्यप्रकाशात उघडे ठेवून त्यांचे पुनर्भरण केले जाऊ शकते. त्यावर झाडे, गवत आणि झुडपांची लागवड करता येऊ शकते. अशी झाडे–झुडपे व गवत स्थानिक जातीचे असल्याने स्थानिक लोकांच्या इंधन, चारा, लाकूडफाटा, फळे व अन्न या गरजा या झाडा–झुडपांमार्फत भागविल्या जातात, ही झाडे स्थानिक पर्जन्यमान व बाष्पीभवन यांच्याशी सुसंगत असतात. मातीची खोली कमी असते, अशा ठिकाणी चारा लागवड केली जाते. झाडे – झुडपे व गवतांमुळे जमिनीला सेंद्रिय द्रव्ये तर मिळतातचय परंतु याशिवाय जमिनीची धूपही थांबते आणि वेगाने जमिनीवर पडणा–या पावसाच्या पाण्याच्या पोषक चारा मिळून पशुधन विकास साध्य होतो. विशेषत: दुधाळ जनावरांना याचा अधिक फायदा होतो. यामुळे उत्पन्नात वाढही होते आणि चराऊ जमिनीवर ताणही येत नाही. त्यासाठी स्थानिक शेतक–यांच्या गरजा आणि जमिनीची क्षमता हे दोन्ही विचारात घेऊन जमिनीचा सुयोग्य वापर करण्याविषयी शेतक–यांना मार्गदर्शन करणे आवश्यक आहे.

४. फलोत्पादन, पशुधन आणि मत्स्यसंवर्धन पाणलोट क्षेत्रात केलेल्या विविध उपाययोजनांचा परिणाम म्हणून पाण्याची उपलब्धता आणि त्याचबरोबर मातीतील आद्रतेचे प्रमाणदेखील वाढते, त्यामुळे त्या भागातील पीक पद्धतीमध्ये आमूलाग्र बदल होऊन त्यात वैविध्य येते. पीक पद्धतीत बदल झाल्यामुळे लोक विविध पिके घेतात. यामुळे परिसरातील लोकांचे उत्पन्न तर वाढतेचय पण त्याचबरोबर त्यांना चांगले पोषणही मिळते. बाजारपेठेतील चढ–उतारांचा सामना करता येतो आणि पावसाच्या अनिश्चिततेलाही तोंड देता येते. एखादा शेतकरी पीक पद्धतीत बदल करून फलोत्पादनही करू शकतो, तसेच कृषी आधारित अन्य व्यवसाय जसे की, पशुसंवर्धन, परसातील कुकुटपालन, शेळीपालन, वराहपालन, दुग्धव्यवसाय इत्यादी करू शकतो. ज्या ठिकाणी जलसाठे आहेत, त्या ठिकाणी मत्स्यसंवर्धनसुद्धा करता येते.

५. ग्रामीण ऊर्जा व्यवस्थापन आणि उपजीविकेसाठी साहाय्यकारी व्यवस्था ग्रामीण भारतातील इंधन व उर्जेची मागणी आणि पुरवठा ही मागणी पूर्ण करणा–या संसाधनांची उपलब्धता यामध्ये लक्षणीय अंतर आहे. विशेषत: स्वयंपाकासाठी लागणा–या इंधनाची गरज भागविण्यासाठी लोक झाडे आणि झुडपांची तोड करण्याचा पर्याय स्वीकारतात. तसेच स्वयंपाकासाठी आणि पाणी तापविण्यासाठी अस्वच्छ इंधनाचा (उदा. शेतातून निघणा–या टाकाऊ वस्तू, लाकूड, गुरांचे शेण इत्यादींचा) वापर करतात, ज्यामुळे धूर आणि धोकादायक वायू बाहेर पडून घरात प्रदूषण होते. याचा परिणाम म्हणून ग्रामीण भागात श्वसनाशी आणि डोळ्यांशी संबंधित विकार बळावतात. यातून घरातील लोकांचे, विशेषत: महिला व मुलांचे आरोग्यदेखील प्रभावित होते. परवडणा–या इंधनाचा पर्याय लोकांकडे उपलब्ध नसल्याने ते स्वयंपाकासाठी वृक्षतोड करण्यास तसेच शेतीतून निघणा–या टाकाऊ वस्तू जळण म्हणून वापरण्यास बाध्य होतात. याची परिणती वृक्षतोडीत होऊन पर्यावरणाचा –हास होतो, त्यामुळे जैवविविधताही धोक्यात येते.

पुनरुज्जीवन केलेल्या विकसित पाणलोटासाठी वृक्षतोड हा एक मोठा धोका आहे, त्यामुळे लोकांना स्वयंपाक आणि विजेसाठी स्वच्छ आणि पर्यायी इंधन स्रोतांची ओळख करून देणे आणि लोकांनी त्याचा वापर करणे हे वनीकरण आणि कुरण विकास शाश्वत ठेवण्यासाठी आवश्यक आहे. पाणलोटाचे उपचार पूर्ण झाल्याने पुनर्जीवित संसाधनावर (जमीन, पाणी, जैविक घटक, शेती, इत्यादी) आधारित आणि त्याबरोबरच शेती उत्पन्नाच्या मूल्य साखळीवर आधारित सुयोग्य उपजीविकेची पद्धती विकसित होऊ शकते. याचा परिणाम म्हणून उत्पन्नात वाढ होऊन चांगले व्यवस्थापन केल्यास फायदे शाश्वतरीत्या मिळू शकतात.

पाण्याचे समन्यायी आणि कार्यक्षम व्यवस्थापन पाणलोट क्षेत्र कार्यक्रमामुळे भूजल पातळी वाढते, परिणामी अधिक उत्पन्न मिळविण्याच्या इर्षेने त्या भागातील लोक जास्त पाणी लागणा–या नगदी पिकांकडे वळतात. भूपृष्ठावरील आणि भूगर्भातील पाण्याचा मोठ्य प्रमाणावर आणि अमर्याद उपसा केला जातो, मोठ्य प्रमाणावर विहिरी खोदल्या जातात, बोअरवेल्स घेतले जातात. त्याचबरोबर मोठ्य आकाराचे शेततळे तयार करून त्यात पावसाचे पाणी साठविण्याऐवजी भूगर्भातील पाणी उपसून साठविले जाते. याचबरोबर पाण्याचा अपव्यय होईल अशा सिंचन पद्धतीने शेताला पाणी दिले जाते. या सर्वांचा परिणाम म्हणून भूगर्भातील पाण्याची पातळी झपाटयाने खाली जाते. अमर्याद उपसा थांबविला नाही तर पाणलोट क्षेत्र विकास कार्यक्रम सुरू होण्यापूर्वी असलेल्या पातळीपेक्षाही पाणी खाली जाते. शेतातील उत्पादन खालावते आणि दुष्काळसदृश परिस्थिती निर्माण होते.

निष्कर्ष :

इस्रायलमध्ये आपल्यापेक्षा किती तरी कमी पाऊस पडतो. पण तिथे कधीच दुष्काळ नाही. त्यांना ते शक्य होते आणि आपल्यालाच का होत नाही? पाऊस कमी पडो की जास्त पडो, पडलेल्या पावसाचा थेंब अन् थेंब आपण जमिनीत जिरवला तर दुष्काळाचे काही कारणच नाही. फक्त पाणी जिरविण्याची दक्षता मात्र घ्यायची आहे. एवढे माहीत असूनही दुष्काळ का पडतो? याचे एक कारण म्हणजे पाणी जिरविण्याचे हे शाश्वत स्वरुपाचे काम आपण करायचे नसून सरकार येऊन करणार आहे, असा आपला समज आहे. तो समज दूर झाला पाहिजे.

पाणलोट क्षेत्र विकास कार्यक्रमाबरोबरच कोणत्या कारणांसाठी पाण्याची गरज किती आहे, त्यात पिण्याच्या पाण्याला प्राथमिकता देऊन उपलब्ध होणा–या पाण्यातून त्या भागासाठी कोणती पीक पद्धती योग्य ठरेल, तसेच कार्यक्षम जलसिंचन पद्धतीचा वापर करून पाण्याच्या प्रत्येक थेंबातून कशा प्रकारे जास्तीत जास्त पीक घेता येऊ शकेल, या सर्व बाबींची ओळख करून देणे आवश्यक आहे. असे केल्यास लोकांना वर्षभर पिण्याचे पाणी तर उपलब्ध होईलच, शिवाय त्यांचे शेतीतून मिळणारे उत्पन्नही वाढेल. अशा प्रकारे, वरील विवेचनावरून आपल्या लक्षात येईल की, सहभागीय पाणलोट क्षेत्र विकास कार्यक्रम हा लोकांच्या केवळ पाणी, अन्नसुरक्षा आणि उपजीविकेच्या वाढत्या संधी एवढ्यच गरजा भागवित नाही तर या संपूर्ण प्रक्रियेदरम्यान लोकांमधील रचनात्मक आणि सुप्त क्षमता वृद्धिंगत करण्याससुद्धा हातभार लावतो.

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श्रीमंत मालोजीराजांनी कोरडवाहू आणि भूमिहीन शेतकऱ्यांसाठी केलेले कार्य

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मोबाईल नं.९४२१११९५११

प्रास्ताविक :–

फलटण संस्थान हे दक्षिण महाराष्ट्रातील सर्वात जुने आणि वैभवशाली संस्थान होते. त्याची स्थापना सन १२८४ मध्ये पहिला निंबराज (परमार) याने केली. सन १२८४ ते १९४८ पर्यंत हे संस्थान अनेक राजकीय चढउतार व स्थित्यंतरे यातून गेले. एकंदर २५ राज्यकर्ते या फलटण संस्थानच्या नाईक निंबाळकर घराण्यात होऊन गेले. याच संस्थानचे २५ वे व शेवटचे अधिपती श्रीमंत मालोजीराजे उर्फ नानासाहेब महाराज यांची कारकिर्द अतिशय महत्वाची मानली जाते. त्यांनी सन १९१७ ते १९४८ असा प्रदिर्घ काळ राज्यकारभार करून फलटणच्या आधुनिकीकरणाला सुरूवात केली. त्यामुळे फलटण संस्थान हे २० व्या शतकात मुंबई प्रांतातील एक प्रगतशील व विकसनशील संस्थान बनविण्याचा श्रीमंत मालोजीरावांनी प्रयत्न केला.

श्रीमंत मालोजीरावांचे राज्यारोहन :–

श्रीमंत मुधोजीराव यांचे चिरंजीव श्रीमंत व्यंकटराव ऊर्फ नाईकसाहेब हे सन १८८७ मध्ये निपुत्रीक मृत्यू पावल्यामुळे श्रीमंत मुधोजीरावांनी रघुनाथराव नाईक निंबाळकर यांचा मधला मुलगा नारायणराव यांना दि. २८ डिसेंबर १८९९ रोजी दत्तक घेऊन त्यांचे नाव मालोजीराव असे ठेवले. परंतु लवकरच १७ ऑक्टोंबर १९१६ साली श्रीमंत मुधोजीराजांचे निधन झाले. श्रीमंत मालोजीराजे अल्पवयीन असल्याने संस्थानचा राज्यकारभार ब्रिटीश सरकारने नेमलेल्या ॲडमिनिस्ट्रेटर मार्फत चालविला. पुढे श्रीमंत मालोजीराजे २१ वर्षाचे झाल्यानंतर नोव्हेंबर १९१७ रोजी संस्थानचा राज्यकारभार त्यांच्याकडे देण्यात आला.

श्रीमंत मालोजीराजे व शेती सुधारणा:–

फलटण संस्थानातील प्राथमिक उत्पादन जवळजवळ कृषी उत्पादन आहे. येथील बहुसंख्या प्रजा शेतकरी आहे. म्हणून श्रीमंत मालोजीराजांनी शेतीचे उत्पन्न सारखे सारखे कसे वाढेल व याचा फायदा शेतकऱ्यांना कसा होईल यासाठी प्रयत्न केले. स्थुलमानाने संस्थानच्या शेती क्षेत्राचे दोन विभाग पाडले जातात. संस्थानच्या उत्तरेच्या प्रदेशात निरा नदीच्या उजवा कालवा जात असल्याने हा भाग बागाईत आहे. या भागात उंची पिकांची लागवड केली जात होती. फलटण संस्थानात एकुण २,५४०४३ एकर जमीन असून त्यापैकी २,१०४६४ एकर शेती योग्य आहे. निरा उजव्या कालव्याखाली ७८००० एकर जमीन आहे.

परंतु संस्थानच्या दक्षिणेकडील भाग हा दुष्काळी म्हणून ओळखला जात होता. सन १९४४–४५ साली १,२३,३८७ एकर जमीन जिराईत पिकांखाली होती. संस्थानचा दक्षिणेकडील भाग बराच मोठा असल्याने या भागात कोरडवाहू शेती केली जात होती. या भागातील जमिनीस फार उतार असल्याने जमिनीची होणारी धूप थांबविणे त्यासाठी बंदिस्ती करणे, शेतीमध्ये ताली घालणे, पावसाचे पाणी मुरविणे, वृक्षारोपण करणे असे अनेक उपक्रम श्रीमंत मालोजीराजेंनी कोरडवाहू शेतकऱ्यांसाठी हाती घेतले होते.[४]

कोरडवाहू भागातील शेतीसाठी पाणी पुरवठा :–

जमिनीची धूप थांबविणे आणि जागच्या जागी पाणी मुरविणे हे जर कार्य केले तर कोरडवाहू शेती निश्चित सुधारते व उत्पादन क्षमता वाढते यासाठी पाणीपुरवठयाची साधने त्यांनी दक्षिण भागात वाढविली. यासाठी श्रीमंत मालोजीरावांनी तीन प्रकारच्या योजना हाती घेतल्या होत्या त्यातील एक योजना अशी होती संस्थानातील बाणगंगा नदी व अनेक लहान ओढयास बांध घालून पाणी अडवून ते शेतीला देणे, दुसरी योजना लहान लहान पक्की धरणे बांधून पाट काढणे, आणि तिसरी योजना म्हणजे मातीची धरणे घालून जमिनीखालील पाणीपुरवठयाची वाढ करणे यातूनच श्रीमंत मालोजीरावांनी कोरडवाहू भागात अनेक लहान धरणे बांधली होती. सन १९४२/४३ या वर्षात संस्थानातील आदर्की, आळजापूर, बिबी व निरगुडी येथे ५४,८३०/– रुपये बंधारे बांधण्यासाठी श्रीमंत मालोजीरावांनी खर्च केले.[५]

जमीन बंदिस्तीच्या योजना :–

कोरडवाहू भागात ज्या दिवसात शेतात पिके नाहीत त्या दिवसात जमीन बांधणीची कामे हाती घेण्यात येत होती. जमिनीमध्ये तालीघालण्यासाठी तज्ञ व्यक्तींची नेमणूक केली जात होती. जमिनीमध्ये ताली कोठे बांधाव्यात त्याची लांबी, रुंदी, उंची किती असावी, ताली मुरमाच्या असाव्यात की चुना, दगड यांच्या असाव्यात याचा विचार केला जाई व त्याबददल शेतकऱ्यांना प्रशिक्षण देण्यात येत असे. दक्षिणेकडील उताराच्या जमिनीवर चर खोदून त्यामध्ये वृक्षारोपण केले जात. त्यामुळे पाण्याच्या प्रवाहापासून जमिनीची धूप थांबविण्यास मदत होई याशिवाय झाडांची योग्य निवड शेतकरी करीत असल्यामुळे सरपण आणि जनावरांच्या चाऱ्याचा प्रश्न ही सुटला जाई.[६]

दुर्जल शेती :–

श्रीमंत मालोजीरावांनी कोरडवाहू भागातील शेतकऱ्यांचे शेतीचे उत्पन्न वाढविण्यासाठी नवीन शास्त्रीय पध्दतीची कोरडवाहू शेती सुरु केली. त्यासाठी नांगरट आणि कुळपणी यांचे ठराविक प्रमाण व काळ, नवीन बी बियाणे खतांचा उपयोग, बेवडाची ठराविक पध्दत, सुधारलेली अवजारे यांचा उपयोग करुन शेतीचे उत्पन्न वाढविले. याचा प्रसार करण्यासाठी शेतकी खात्यामध्ये एक स्वतंत्र विभाग चालू केला. याशिवाय कोरडवाहू भागात श्रीमंत मालोजीरावांनी अनेक धरणे बांधली त्यातील बाणगंगा नदीवरील धरण महत्वाचे आहे त्यामुळे बारा हजार एकर जमीन ओलिताखाली आली.[७]

दुष्काळी कर्जमाफी :–

फलटण संस्थानात पावसाची कमतरता असल्याने अनेक वेळा दुष्काळ पडत तसेच शेतकऱ्यांना तगाईच्या स्वरुपात कर्जे दिली यामधून शेतीमध्ये बांध घालणे, ताली बांधणे, लहान मोठे बंधारे बांधणे अशी कामे करुन घेत तसेच दुष्काळामुळे शेतकऱ्यांना जमीन महसूल भरणे शक्य झाले नाही तर तो माफ केला जाई. सन १९३७/३८ मध्ये श्रीमंत मालोजीरावांनी ५१,२४९/– रुपये शेतकऱ्यांची थकबाकी माफ केली.[८]

सामाईक व फड शेती पध्दत :–

श्रीमंत मालोजीरावांनी आपल्या संस्थानात शेतीसंबंधी दोन अभिनव प्रयोग सुरु केले होते. पिंप्रद व राजाळे या गावी सामाईक व फड शेती पध्दती सुरु केली होती. वास्तविक दोन्ही प्रयोग एकाच पध्दतीचे दोन प्रकार आहेत पिंप्रद येथील सामाईक शेती करणारे स्वत: शेताचे मालक नाहीत अगर त्यांना स्वत:चे कॅनॉलचे पाणी नाही. स्वत:चे काही नसणारा परंतु एकत्र शेती करणारा संघ असे म्हटले जाई कारण जमीन खंडाची,

पाणी दुसऱ्याचे, भांडवल दरबारचे अशी या संघाची स्थिती होती. परंतु अशाही स्थितीत संघाने घेतलेले आजवरचे भांडवल परत केलेले आहे. सामाईक शेतीमध्ये पिंप्रद येथे बत्तीस एकर ऊस, शंभर एकर धान्यपिके बागायत होती तर राजाळे या ठिकाणी पंचाहत्तर एकरात धान्य पिके घेण्यात आली होती. याशिवाय श्रीमंत मालोजीरावांनी जिंती येथे फड शेती पध्दतीचा प्रयोग सुरु केला होता. कॅनॉलच्या पाण्याची बचत या पध्दतीमुळे होत सामाईक शेती बददल श्रीमंत मालोजीराजे म्हणतात की सर्व संस्थानात सामाईक व फड शेती पध्दत रुढझाल्यास शेतकरी वर्गाचे फार मोठे कल्याण झाल्याखेरीज राहणार नाही असा आम्हाला भरवसा वाटतो.[९]

भूदानाचे कार्य व भूमिहीन शेतक्ऱ्यांना जमिनी –

परमपूज्य आचार्य विनोबा भावे यांची भूदान चळवळ आज भारतात मशहूर आहे. या चळवळीचे महत्व लक्षात आलेवर सर्वसामान्य अशी ही चळवळ होवू लागली आहे. ज्याचे जवळ जे स्वत:च्या गरजेपेक्षा जास्त आहे ते त्यांनी आपण होऊन नसणाराला द्यावे अशी मूळ भूमिका या भूदानामध्ये आहे. यामुळे समाजामधील गरीब व श्रीमंत हा भेदभाव कमी होवून आपण सर्व मनुष्यमात्र एक आहोत अशी बंधुत्वाची भावना निर्माण होते. व त्यामुळे आर्थिक व सामाजिक संघर्ष कमी होण्यास मदत होते व समाजामध्ये स्वास्थ्य राहते अशा या महान कार्याच्या निमित्ताने आचार्यांचे महाराष्टातील त्यावेळचे अनुयायी कै. शंकरराव देव, आण्णासाहेब सहस्त्रबुध्दे, अप्पासाहेब पटवर्धन, आचार्य भाऊ धर्माधिकारी, सातारा जिल्हयातील श्री. माणिकचंद बंडूचंद गांधी, फलटणचे श्री. बाबुलाल गांधी इत्यादी कार्यकर्त्यांनी श्रीमंत मालोजीराजे यांची भेट घेऊन आपण भूदान करावे अशी विनंती केली. त्यावेळी श्रीमंत मालोजीराजे यांनी त्यांना सांगितले की, आपली इच्छा व उद्देश भूमिहीनांना जमीन देण्याचाच आहे तर मी आपल्या उपस्थितीत माझी जी वंशपरंपरेने कुळे खेडयातून आहेत पण त्यापैकी ज्यांना घरची जमीन नाही अशा भूमिहीनांना नऊ एकरांपर्यंतची जमीन दान करण्यास तयार आहे. म्हणजेच माझीच कुळे जमीनीचे मालक होतील. अशा भुदानास आपण मान्यता द्यावी असे वर नमुद केलेल्या समितीला विचारले. त्यांनी समती दिली मग श्रीमंत राजेसाहेब यांनी सुमारे बाराशे एकर जमिन कै.शंकरराव देव यांच्या अध्यक्षतेखाली समारंभपूर्वक पुर्वीच्याचकुळाचे नावे करून त्यांना कायमचे मालक केले. याबद्दल पुज्य आचार्य विनोबाजी भावे यांनी राजेसाहेब यांना धन्यवाद दिले. तसेच महाराष्ट्रात त्यावेळी पुज्य विनोबाजी भावे यांची पदयात्रा आली. तेव्हा सातारा, सांगली, कोल्हापूर, निपाणी, कुडाळ, सावंतवाडी, रत्नागिरी वगैरे भागातून झाली. त्यात त्यांच्या स्वागतात व यात्रेत व निरोपात राजेसाहेबांनी भाग घेतला होता. [१०]

सारांश :–

श्रीमंत मालोजीराजांनी आपल्या कारकिर्दीत आपल्या संस्थानात कोरडवाहू शेतकऱ्यांसाठी फार मोठी आर्थिक मदत देवून त्यांचे शेतीचे उत्पादन वाढविणेसाठी प्रयत्न केला. तसेच आपल्या संस्थानातील भुमिहीन शेतकऱ्यांना आपल्या जमिनी खंडाने देवून त्यांचा उदरनिर्वाह करण्याचा फार मोठा प्रयत्न केला. तसेच आचार्य विनोबा भावे यांच्या भूदान कार्यास मदत म्हणून संस्थानातील कुळाकडे जमिनी होत्या. त्या त्यांच्या नावाने करून दिल्या व त्यांच्या कार्यामुळे भूमिहीन शेतकरी जमिनीचे मालक बनविले. त्यामुळे त्या शेतकऱ्यांचे कल्याण झाले.

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माळशिरस तालुक्यातील मंडलनिहाय हरभरा पिकाच्या उत्पादकतेचा चिकित्सक अभ्यास

डॉ. चंद्रकांत महादेव साळुंखे.
सहाय्यक प्राध्यापक - सहकार महर्षि शंकरराव मोहिते पाटील महाविद्यालय, नातेपुते.

प्रस्तावना -

भारत देश हा खेडयांचा मोठा देश असल्याने खेडयांमध्ये शेती हाच लोकांचा मुख्या व्यवसाय आहे. आज ही देशातील ७० टक्के पेक्षा जास्त लोक शेती व्यवसायामध्ये गुंतलेले आहेत. म्हणूनच भारतीय अर्थव्यवस्था ही शेती प्रधान आहे. एकूण राष्ट्रिय उत्पन्नाच्या सुमारे ३२ टक्के उत्पन्न हे एकटया शेती व्यवसायातून होते. देशातील अनेक व्यवसायांना कच्या मालाचा पुरवठा हा शेतीतूनच केला जातो. उदा. साखर उद्योग, कापड उद्योग इ. अलिकडच्या काळात शेतीमध्ये अनेक समस्या निर्माण झालेल्या आहेत. त्यामध्ये पिकांच्या उत्पादकतेची समस्या ही एक महत्वाची समस्या आहे.

माळशिरस तालुका हा सोलापूर जिल्हयाच्या पश्चिम भागात वसला आहे. सोलापूर जिल्हा हा महाराष्ट्रातील पर्जन्य छायेच्या प्रदेशात असल्याने या जिल्हयात पर्यायाने माळशिरस तालुक्यात सर्वात कमी पर्जन्य पडते. सन १९६० पूर्वी माळशिरस तालुक्यातील शेती सर्वस्वी पावसावर अवलंबून होती. त्यामुळे शेतीतील दर हेक्टरी उत्पादन कमी होते. यावरती उपाय म्हणून माळशिरस तालुक्याचे भाग्यविधाते सहकार महर्षि शंकरराव मोहिते पाटील यांनी निरा उजवा कालव्याच्या सहाय्याने तालुक्यात हरितक्रांती घडवून आणण्याचा प्रयत्न केला.

अभ्यास क्षेत्र -

माळशिरस तालुक्याची निर्मिती इ.स. १८७५ मध्ये झाली असुन. माळशिरस तालूका हा महाराष्ट्राच्या दक्षिणेस असलेल्या सोलापूर जिल्हयाच्या पश्चिम भागात सोलापूर पासून १२५ कि.मी. अंतरावर आहे. माळशिरस तालूक्याचा अक्षवृत्तीय विस्तार १७°४०' उत्तर ते १७°५६' उत्तर अक्षांश असुन रेखावृत्तीय विस्तार ७४°४५' पूर्व ते ७५°१६' पूर्व रेखांश असा आहे. तालुक्याचे एकूण क्षेत्रफळ १६०८०१.६४ हे. एवढे असून २०११ च्या जनगणणेनुसार तालुक्याची लोकसंख्या ४८५६४५ एवढी आहे. तालुक्या मध्ये भिमा , नीरा नदी , नीरा उजवा कालवा , उजनी उजवा कालवा व विहीरी मार्फत शेतीला पाणी पुरवठा केला जातो.

उदिष्टये -

१. माळशिरस तालुक्यातील मंडलनिहाय हरभरा पिकाच्या उत्पादकतेचा अभ्यास करणे.
२. मंडलनिहाय हरभरा पिकाचा उत्पादकता निर्देशांक शोधणे.
३. माळशिरस तालुक्यातील शेतीवर परिणाम करणारे नैसर्गिक, आर्थिक, सामाजिक घटकांचा अभ्यास करणे.

या उदिष्टांना समोर ठेवून प्रस्तूत शोध निबंध तयार केला आहे.

अभ्यास पध्दती - प्रस्तूत शोध निबंधात माळशिरस तालुक्यातील हरभरा पिकाची उत्पादकता निर्देशांक काढण्यासाठी प्रा. येनेडी यांच्या पध्दतीचा वापर केला आहे.

कृषी उत्पादकता (Crop Productivity)

$$Pn = \frac{Y}{Yn} \div \frac{T}{Tn} \times 100$$

खुलासा :

Pn= Productivity Index
Y= Production of the selected crop in the component arial unit
Yn= Total Production of the selected crop in the entire region
T= Area of the selected crop in component arial unit
Tn= Total Area of Selected crop in the entire region

भौगोलिक व्याप्ती

प्रस्तुत प्रबंध सोलापूर जिल्ह्याच्या पश्चिमेस असणारा संपूर्ण माळशिरस तालुका संशोधनाच्या भौगोलिक व्याप्तीत घेतला आहे.

कालसापेक्ष व्याप्ती :

सदर संशोधनाची कालसापेक्ष व्याप्ती ही इ. स.२००० ते २०१० या दहा वर्षापुरताच मर्यादित आहे.

हरभरा पिकाची उत्पादकता :

हरभरा हे माळशिरस तालुक्यातील रब्बी हंगामातील पीक आहे. हे पीक तालुक्यातील सर्व मंडळातून घेतले जाते. परंतु संबंधीत प्रदेशातील हवामान, जमीन, पाणी, उत्पादकता या सर्व गोष्टींचा हरभरा पिकाच्या उत्पन्नावर परिणाम होत असल्याचे दिसून येते.

हरभरा पीक उत्पादकता निर्देशांक (क्षेत्र व उत्पादन टक्केवारीमध्ये)

अ. क्र.	मंडळ	सन २०००-२००५		सन २००५-२०१०		निर्देशांक		
		क्षेत्र	उत्पादन	क्षेत्र	उत्पादन	२०००-२००५	२००५-२०१०	बदल
१	नातेपुते	९.५२	११.८४	२५.७६	११.३२	१२४.३६	४३.९४	-८०.४२
२	दहिगाव	१९.३९	७.४१	२३.४५	९.४५	३८.२१	४०.२९	+२.०८
३	सदाशिवनगर	१२.२९	८.५४	५.०६	८.६७	६९.४८	१७१.३४	+१०१.८६
४	माळशिरस	११.९४	१७.३०	५.०६	१५.५३	१४४.८९	३०६.९१	+१६२.०२
५	अकलुज	१५.५८	१२.५६	१२.५७	१३.८०	८०.६१	१०९.७८	+२९.१७
६	महाळुंग	१२.४६	१३.१८	८.१३	१३.९०	१०५.७७	१७०.९७	+६५.२०
७	वेळापूर	१०.३०	११.१२	१५.१३	८.७९	१०७.९६	५८.०९	-४९.८७
८	पिलीव	८.४८	१८.०२	४.८१	१८.४९	२१२.५०	३८४.४०	+१७१.९
	एकूण	**१००%**	**१००%**	**१००%**	**१००%**			

संदर्भ : संशोधकाद्वारा संकलित केलेल्या अधिकृत माहितीवर आधारित.

सन २०००-०५ या कालावधीत जास्त उत्पादकता $(\bar{x}+2S.D.)$ गटात पिलीव या एकाच मंडळाचा समावेश होतो. या मंडळातील हरभरा पिकाखालील सरासरी क्षेत्र ९८ हे. (८.४८ टक्के) तर उत्पादन ८७५ कि.ग्रॅ. (१८.०२ टक्के) एवढे आहे. या गटातील मंडळाचा पीक उत्पादकता निर्देशांक २१२.५० एवढा दिसून येतो. या मंडळातील हलकी ते मध्यम प्रतीची, पाण्याचा निचरा होणारी जमीन असल्याचे हरभरा पिकाची उत्पादकता जास्त आढळते.

मध्यम उत्पादकता गटामध्ये $(\bar{x}+1S.D.)$ माळशिरस व नातेपूते या दोन मंडळांचा समावेश होत असून या मंडळातील हरभरा पिकाचे सरासरी क्षेत्र २४८ हे. (२१.४६ टक्के) तर
उत्पादन १४१५ कि.ग्रॅ. (२९.१४ टक्के) एवढे असल्याचे दिसते. या गटाचा पीक उत्पादकता निर्देशांक १२४.३६ ते १४४.८९ च्या दरम्यान आढळतो.

कमी उत्पादकता गटामध्ये $(\bar{x}-1S.D.)$ वेळापूर, महाळूंग, अकलूज व सदाशिवनगर या चार मंडळाचा समावेश होत असून या मंडळातील हरभरा या पिकाखालील सरासरी क्षेत्र ५८५ हे. (५०.६३ टक्के) तर उत्पादन २२०५ कि.ग्रॅ. (४५.४ टक्के) एवढे असल्याचे दिसते. या गटाचा पीक उत्पादकता निर्देशांक ६९.४८ ते १०७.९६ च्या दरम्यान दिसून येते.

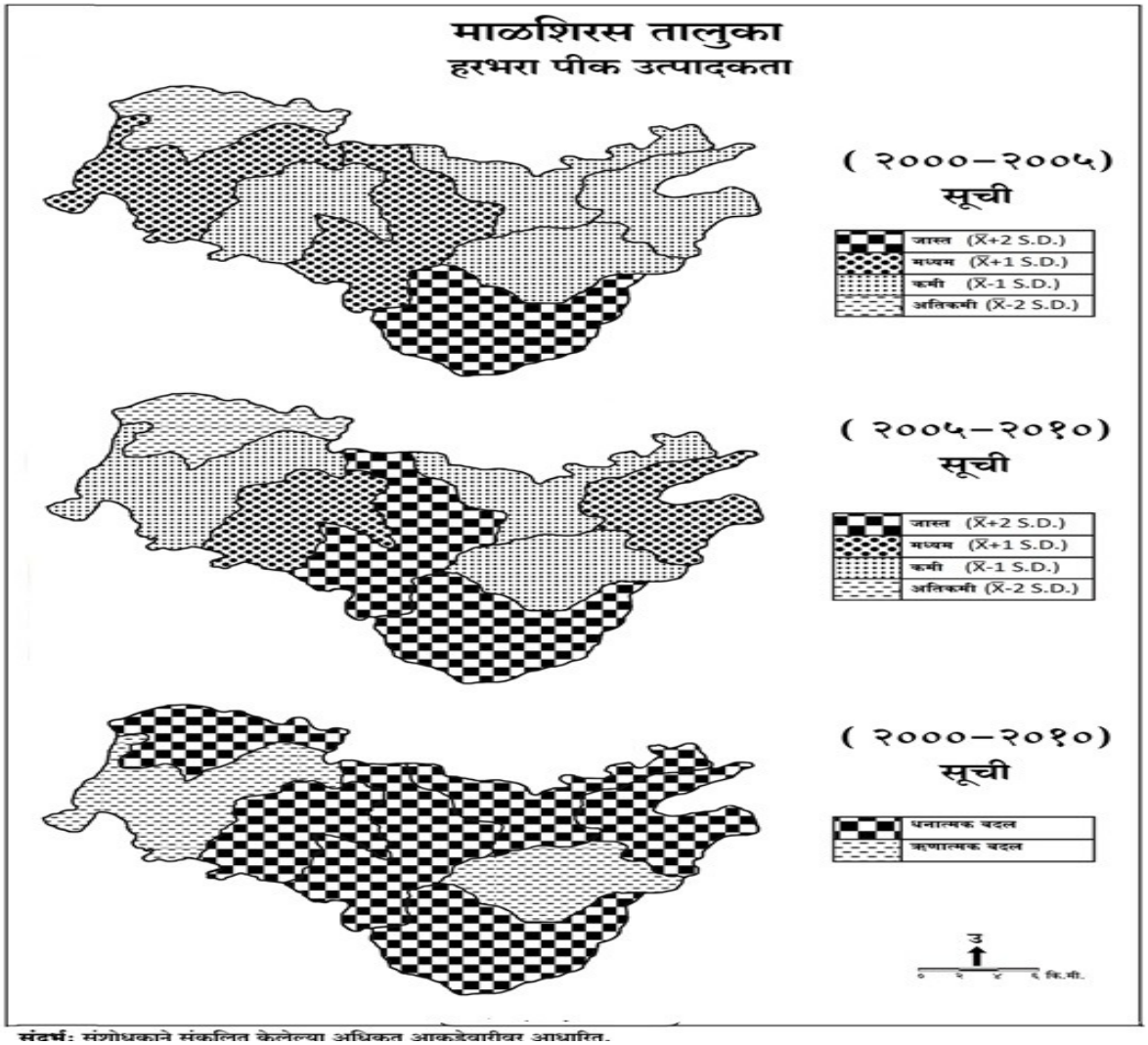
अति कमी उत्पादकता $(\bar{x}-2S.D.)$ गटात दहिगांव या एकाच मंडळाचा समावेश होत असून या मंडळातील हरभरा पिकाचे सरासरी क्षेत्र २२४ हे. (१९.३९ टक्के) तर उत्पादन ३६० कि.ग्रॅ. (७.४१ टक्के) एवढे असल्याचे दिसून येते. या गटाचा हरभरा पिक उत्पादकता निर्देशांक ३८.२१ एवढा आढळतो. या मंडळातील उपलब्ध असणाऱ्या जलसिंचन सोयीमुळे अतिरिक्त पाणीपुरवठा झाल्याने पीक उत्पादकता कमी आढळते.

माळशिरस तालुक्यात सन २००५-१० या कालावधीत जास्त उत्पादकता गटामध्ये $(\bar{x}+2S.D.)$ पिलीव व माळशिरस या दोन मंडळाचा समावेश होतो. या मंडळातील हरभरा पिकाखालील सरासरी क्षेत्र १५८ हे. (९.८७ टक्के) एवढे असून सरासरी उत्पादन १४३९ कि.ग्रॅ. (३४.०२ टक्के) एवढे आहे. या गटातील मंडळाचा पीक उत्पादकता निर्देशांक ३०६.९१ ते ३८४.४० च्या दरम्यान आढळतो. या दोन्ही मंडळात हरभरा पिकास योग्य जमीन व योग्य पाणीपुरवठा सोयी उपलब्ध असल्याने उत्पादकता जास्त आढळते.

मध्यम उत्पादकता $(\bar{x}+1S.D.)$ गटात सदाशिवनगर व महाळुंग या दोन मंडळाचा समावेश होत असून या दोन मंडळातील हरभरा पिकाखालील सरासरी क्षेत्र २११ हे. (१३.१९ टक्के) एवढे असून सरासरी उत्पादन ९५५ कि.ग्रॅ. (२२.५७ टक्के) एवढे आहे. या गटातील मंडळाचा पीक उत्पादकता निर्देशांक १७०.९७ ते १७१.३४ च्या दरम्यान आढळतो.

कमी उत्पादकता $(\bar{x}-1S.D.)$ गटात अकलूज, वेळापूर व नातेपूते या तीन मंडळाचा समावेश होत असून या मंडळातील हरभरा पिकाखालील सरासरी क्षेत्र ८५५ हे. (५३.४६ टक्के) तर उत्पादन १४३५ कि.ग्रॅ. (३३.९१ टक्के) एवढे आहे. या गटातील मंडळाचा हरभरा पीक उत्पादकता निर्देशांक ४३.९४ ते १०९.७८ च्या दरम्यान आढळतो.

अति कमी उत्पादकता $(\bar{x}-2S.D.)$ गटात दहिगांव या एकाच मंडळाचा समावेश होतो. या मंडळातील हरभरा पिकाखालील सरासरी क्षेत्र ३७५ हे. (२३.४५ टक्के) तर उत्पादन ४०० कि.ग्रॅ. (९.४५ टक्के) एवढे आढळते. या



संदर्भ: संशोधकाने संकलित केलेल्या अधिकृत आकडेवारीवर आधारित.

गटाचा हरभरा पिक उत्पादकता निर्देशांक ४०.२९ एवढा दिसून येतो. या पिकास अतिरिक्त पाणीपुरवठा होत असल्याचे पीक उत्पादकता कमी आढळते.

सन २०००-०५ ते २००५-१० या दहा वर्षात हरभरा पिकाच्या उत्पादकता निर्देशांकात सर्वात जास्त वाढ पिलीव मंडळात १७१.९ तर सर्वात जास्त घट नातेपूते मंडळात ८०.४२ एवढी आढळते. उर्वरित दहिगांव, सदाशिवनगर, माळशिरस, अकलूज व महाळूंग या पाच मंडळात धनात्मक व वेळापूर या एका मंडळात ऋणात्मक बदल झाल्याचे आढळते.

निष्कर्ष

१. सन २०००-२००५ या पाच वर्षात कालावधीस हरभरा पिकाच्या जास्त उत्पादकता गटात पिलीव तर अति कमी उत्पादकता गटात दहिगाव या मंडळाचा समावेश होतो. तसेच सन २००५-१० या पाच वर्षात सदर पिकाच्या जास्त उत्पादकता गटात पिलीव व माळशिरस या दोन मंडळाचा समावेश होतो. तर अति कमी पीक उत्पादकता ही दहिगाव या एकाच मंडळात दिसून येते.

२. संशोधन अभ्यास क्षेत्रात वरील दहा वर्षाच्या कालावधीत हरभरा पिकाच्या पीक विविधता निर्देशांकात धनात्मक बदल हा नातेपुते (०.४५) या मंडळात दिसून येतो. तर सदाशिवनगर, माळशिरस व महाळुंग या कृषी मंडळात या पिकाचे क्षेत्र आढळत नाही.

संदर्भ -

१. डॉ. सुरेश फुले, क़षी भूगोल , विद्या भारती प्रकाशन मेन रोड लातूर
२. प्रा. के ए खतिब (१९९१) भारताचा क़षी भूगोल , मेहता पब्लीकेशन पुणे
३. सोलापुर जिल्हा सामाजिक व आर्थिक समालोचन २०००-२०१०
४. पीक उत्पादकता अहवाल २००० ते २०१० क़षी विभाग माळशिरस तालुका

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तालुकानिहाय ऊस पीक केंद्रीकरणाचा भौगोलिक अभ्यास : विशेष संदर्भ सोलापूर जिल्हा (१९९०-२०१०)

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ता. माळशिरस जि. सोलापूर

प्रस्तावना :

महाराष्ट्र हे एक शेती व्यवसायात अग्रेसर असे राज्य आहे. देशाच्या एकूण भौगोलिक क्षेत्रापैकी सुमारे १० टक्के क्षेत्र हे महाराष्ट्राच्या वाट्याला येते. महाराष्ट्राच्या एकुण क्षेत्रफळापैकी ३०८लक्ष हेक्टर क्षेत्र शेतीत योग्य आहे. महाराष्ट्राच्या एकुण भौगोलिक क्षेत्रफळाच्या सुमारे ५ टक्के क्षेत्र सोलापूर जिल्ह्याच्या वाट्याला आले आहे. (प्र. बा. भोसले, कृषी भू-विज्ञान २००६)

सोलापूर जिल्ह्यातील एकुण लागवडीयोग्य क्षेत्रापैकी ८३ टक्के क्षेत्रात प्रत्यक्षा शेती हा व्यवसाय केला जातो. उर्वरित १७ टक्के क्षेत्र हे पडीक आहे. सोलापूर जिल्ह्याचा बराचसा भाग पठारी आहे. त्यावर नद्यांची खोरी विकसीत झ ाली आहेत. सोलापूर जिल्ह्यातील भीमा व सीना या नद्याचा बहूतेक भाग सपाट मैदानाचा व सुपीक आहे. जिल्ह्याचा उत्तर व ईशान्य भागात बालाघाटचे डोंगर पश्चिमेस महादेव डोंगर, नैरुत्येस शुक्राचार्याचे डोंगर आहेत. या जिल्ह्याचे भौगोलिक स्थान विचारात घेता हा जिल्हा पर्जन्य छायेच्या प्रदेशात मोडतो. तथापि अलिकडे वाढत्या पीक केंद्रीकरणाकडे शेती क्षेत्रात अनेक समस्या निर्माण होऊ लागल्या आहेत. म्हणून प्रस्तुत शोधनिबंधाच्या माध्यमातून पीक केंद्रीकरण व त्यामध्ये निर्माण झालेल्या समस्यांची सोडवणूक करण्याचा प्रयत्न केला जाणार आहे.

"विशिष्ठ पिकाची क्षेत्रीय घनता म्हणजे पीक केंद्रीकरण होय."(जसबीरसिंग १९७६)

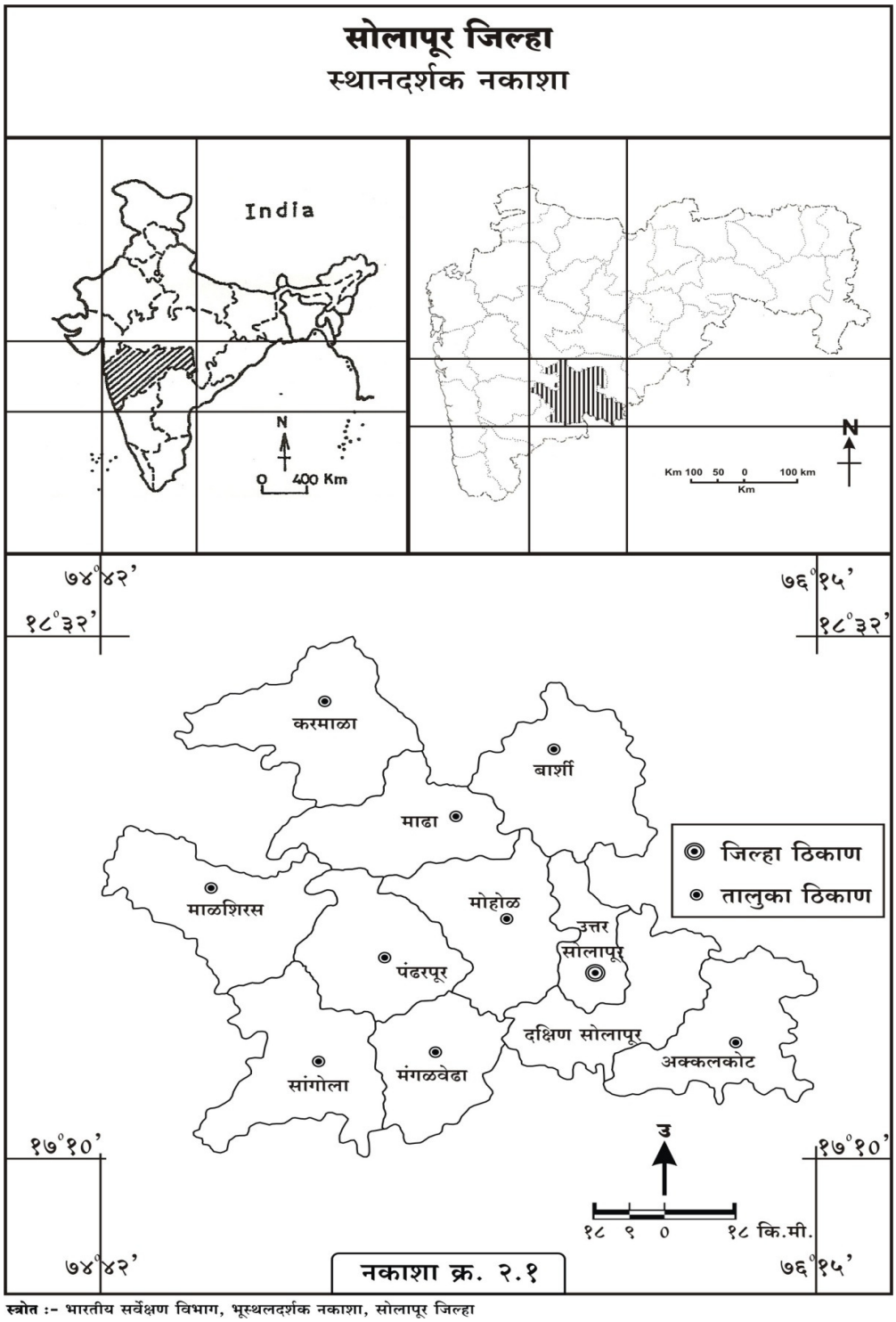
"Crop Concentration reveals that variation in the density of any crop in a given region at a point of time. (Bhatia, 1965)."

स्थान विस्तार :

महाराष्ट्र राज्यातील सोलापूर जिल्हा हा क्षेत्रफळ व लोकसंख्या या दुष्टीकोनातून एक महत्त्वाचा जिल्हा मानला जातो. या जिल्ह्यातून भीमा, सीना व माण इ. प्रमुख नद्या वाहतात. या सर्व नद्या कृष्णा नदीच्या उपनद्या आहेत. सोलापूर जिल्ह्याचा विस्तार १७°१०'उत्तर ते १८°३२' उत्तर अक्षांश आणि ७४°४२' पुर्व ते ७६°१५' पुर्व रेखांश असा आहे. (नकाशा क्र. १)

सोलापूर जिल्ह्याची उत्तर दक्षिण लांबी २०० कि.मी. असून पुर्व-पश्चिम लांबी १५० कि.मी आहे. जिल्ह्याच्या पश्चिमेस सह्याद्रीच्या रांगा पुर्वेकडे उस्मानाबादचे पठार, नैऋत्येकडे सांगली जिल्हा व वायव्येकडे पुणे तर दक्षिणेस कर्नाटकातील विजापूर जिल्हा आहे. सोलापूर जिल्ह्याचे एकुण भौगोलिक क्षेत्रफळ १४८७८ चौ. कि.मी. असून हे महाराष्ट्राच्या एकुण क्षेत्रफळाच्या ४.८२ टक्के आहे. प्रशासकीय दृष्ट्या सोलापूर जिल्हा ११ तालुक्यामध्ये विभागला आहे.

सोलापूर जिल्हा स्थान दर्शक नकाशा



स्त्रोत :- भारतीय सर्वेक्षण विभाग, भूस्थलदर्शक नकाशा, सोलापूर जिल्हा

उद्दिष्टे :

१) जिल्ह्यातील तालुकानिहाय ऊस पिकाचे केंद्रीकरण अभ्यासणे.

२) तालुकानिहाय ऊस पिक केंद्रीकरणाचा तुलनात्मक अभ्यास करणे.

२) सोलापूर जिल्ह्यातील पिके पर्यावरणाशी पुरक आहेत का ते अभ्यासणे.

माहिती संकलन :

प्रस्तुत शोध निबंधनासाठी प्राथमिक व दुय्यम स्वरुपाच्या आकडेवारीचा आधार घेतला आहे.

अभ्यास पध्दती :

सोलापूर जिल्ह्यातील तालुकानिहाय ऊस पीक केंद्रीकरण अभ्यासण्यासाठी भाटीया (१९६५) यांच्या सुत्राचा वापर केला आहे.

$$Index\ of\ \det er\min ing\ concentration\ of\ crop\ 'a' = \frac{Area\ of\ crop\ 'a'\ in\ the\ component\ areal\ unit}{Area\ of\ all\ crops\ in\ the\ component\ areal\ unit} \div \frac{Area\ of\ crop\ 'a'\ in\ entire\ region}{Area\ of\ all\ crops\ in\ the\ entire\ region}$$

तक्ता क्र. १ तालुकानिहाय ऊस पिक केंद्रीकरण निर्दशांक (सन १९९०-९५, २००५-१०)

(क्षेत्र टक्केवारीमध्ये)

तालुके	उत्तर सोलापूर	बार्शी	अक्कल-कोट	दक्षिण सोलापूर	मोहोळ	मंगळवेढा	पंढरपूर	सांगोला	माळशिरस	करमाळा	माढा
१९९०-९५	०.५०	०.२५	०.६४	०.६८	०.७१	१.७८	२.४७	०.६६	१.४५	१.०२	०.४१
२००५-१०	०.६७	०.४३	१.०६	०.७३	०.६६	१.४७	१.७१	१.९९	१.३७	०.५५	०.४३
बदल	+०.१७	+०.१८	+०.४२	+०.०५	-०.०५	-०.३१	-०.७६	+१.३३	-०.०८	-०.४७	+०.०२

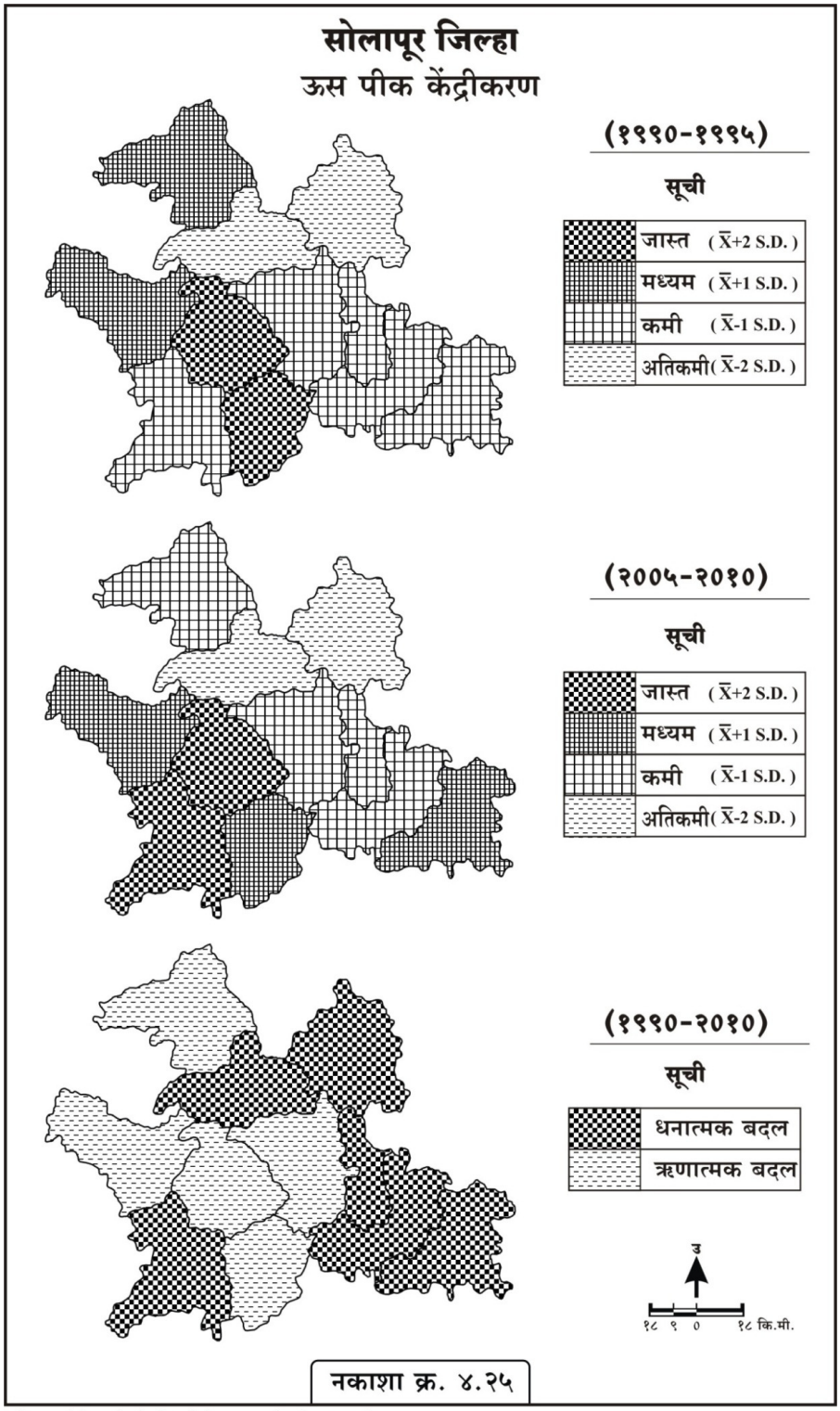
स्त्रोत : संशोधकाने संकलीत केलेल्या माहितीवर आधारीत

ऊस पीक केंद्रीकरण :

सन १९९०-९५ या कालावधीतील ऊस पीक केंद्रीकरण निर्देशांकाचे माध्य ०.९६ एवढे तर प्रमाण विचलन ०.६४ एवढे आढळते.

जास्त पीक केंद्रीकरण निर्देशांक गटात $(\bar{x}+2S.D.)$ पंढरपुर (२.४७) व मंगळवेढा (१.७८) या दोन तालुक्यांचा समावेश होतो. मध्यम पीक केंद्रीकरण निर्देशांक गटात $(\bar{x}+1S.D.)$ माळशिरस व करमाळा या दोन तालुक्याचा समावेश होत असून कमी पीक केंद्रीकरण निर्देशांक गटात $(\bar{x}-1S.D.)$ मोहोळ, द.सोलापूर, सांगोला, अक्कलकोट व उ.सोलापूर या पाच तालुक्यांचा समावेश होतो. तर अति कमी केंद्रीकरण निर्देशांक गटात $(\bar{x}-2S.D.)$ माढा (०.१४) व बार्शी (०.२५) या दोन तालुक्यांचा समावेश होतो.

नकाशा क्रमांक २



स्त्रोत :- संशोधकाने संकलित केलेल्या आकडेवारीवर आधारित.

निर्देशांक $(\bar{x}+1S.D.)$हा मंगळवेढा, माळशिरस व अक्कलकोट या तीन तालुक्यात दिसून येते. कमी पीक केंद्रीकरण निर्देशांक गटात $(\bar{x}-1S.D.)$द.सोलापूर, उ.सोलापूर, मोहोळ व करमाळा या चार तालुक्याचा समावेश होतो. तर अति कमी पीक केंद्रीकरण निर्देशांक गटात $(\bar{x}-2S.D.)$ बार्शी व माढा (०.४३) या दोन तालुक्याचा समावेश होतो.

निष्कर्ष :

सन १९९०-९५ व २००५-१० या पाच वर्षातील ऊस पिक केंद्रीकरण निर्देशांकाची तुलना करता ऊस पिक निर्देशांकात सर्वात जास्त धनात्मक बदल (वाढ) हा सांगोला या तालुक्यात १.३३ एवढा तर सर्वात जास्त ऋणात्मक बदल (घट) पंढरपूर या तालुक्यात ०.७६ एवढा झाल्याचे आढळून आले आहे.

उर्वरीत अक्कलकोट, बार्शी, उ.सोलापूर, द.सोलापूर व माढा या पाच तालुक्यात धनात्मक वाढ तर करमाळा, मंगळवेढा, माळशिरस व मोहोळ या चार तालुक्यात ऋणात्मक बदल (घट) झालेला आढळतो. (तक्ता क्र.१ व नकाशा क्र.२)

संदर्भ :

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भारतातील कोरडवाहू शेतीचे महत्व

(Importance of Dry Land in India)

प्रा.डॉ. हरी साधू वाघमारे
भूगोल विभाग प्रमुख तथा संशोधन मार्गदर्शक
संभाजी कॉलेज ;कला, वाणिज्य व विज्ञानद्ध, मुरूड
ता.जि. लातूर–४१३५१०

प्रस्तावना (Introduction) :

आंतरारष्ट्रीय चर्चासत्रातील ''अवर्षणग्रस्त क्षेत्रातील कृषि आणि ग्रामीण भागाचे विकास व नियोजन'' या मुख्य विषयाला अनुसरून संशोधकाने ''भारतातील कोरडवाहू शेतीचे महत्व'' या विषयावरील आपले मत संशोधन पेपराच्या माध्यमातून मांडलेले आहे. पृथ्वीच्या एकूण भूप्रदेशापैकी ३५ पैकी क्षेत्र (४० ते ४९ दशलक्ष चौ. कि.मी.) कोरडया प्रदेशाचे आहे. या पैकी निम–कोरडे क्षेत्र १४ टक्के, कोरडे क्षेत्र १६ टक्के आणि अति कोरडे क्षेत्र ५ टक्के आहे. या प्रदेशामध्ये जागतिक १७ ते २० टक्के लोकसंख्या वास्तव्य करते. त्यांचे जिवन कोरडया हवामानाच्या पर्यावरणाशी निगडीत आहे. निम–कोरडया प्रदेशातील लोकसंख्येची वाढ झपाटयाने होत आहे.देशातील एकूण पिकाखालील क्षेत्राच्या जवळपास ४५ टक्के क्षेत्र सिंचनाखाली असून महाराष्ट्रात मात्र हे प्रमाण १८ टक्के आहे . संपूर्ण सिंचनक्षमता विकसित केल्यावरही राज्यातील जवळपास ७० टक्के क्षेत्र कोरडवाहूच राहणार असल्याने ग्रामीण भागातील अर्थव्यवस्था बळकट करून जनतेचे जिवनमान उंचावण्याकरिता कोरडवाहू शेतीचा अग्रक्रमाने विकास करणे अपरिहार्य आहे.

सिंचनाच्या अत्यंत सीमित सुविधा, अंतर्गत प्रवण क्षेत्राची, अवनत जमिनिची तसेच हलक्या जमिनिची मोठयाप्रमाणावरील व्याप्ती हि पिकांच्या कमी उत्पादकतेची प्रमुख कारणे आहेत. राज्यामध्ये अवर्षणप्रवण क्षेत्राची व्याप्ती जवळपास ५२ टक्के असून हलक्या जमिनीचे प्रमाण ३९ टक्के आहे. राज्यातील क्षारपड व चिबड जमिनीचे क्षेत्र १२ लाख हेक्टर पेक्षा जास्त असून विविध प्रकारच्या धूपीमुळे अवनत झालेल्या जमिनीचे प्रमाण ४२ टक्के आहे. या सर्व कारणामुळे राज्यातील कोरडवाहू शेती ही अत्यंत जिकरीची व जोखमीची असून या शेतीचा कायमस्वरूपी विकास करून कृषि उत्पादनात सातत्य व स्थिरता आणणे आवश्यक आहे.

अभ्यास क्षेत्र (Study Area):

सदरील संशोधन पेपराची मांडणी संशोधकाने भारतातील कोरडवाहू शेतीच्या संदर्भाने केलेली आहे.

उद्दिष्टये (Objectives)

सदर संशोधन पेपराची उद्दिष्टये खालीलप्रमाणे आहेत:

1. कोरडवाहू शेतीची उत्पादकता आणि उत्पन्न वाढवून शेतकऱ्यांना आर्थिक स्थैर्य प्रदान करणे.
2. सुक्ष्म जलसिंचनाचा वापर करून सिंचनाची कार्यक्षमता वाढविणे.
3. प्रशिक्षण शेततळी, अभ्यास दौरे यांच्या माध्यमातून मनुष्यबळाचे सक्षमीकरण करणे.
4. माध्यमातून संरक्षित सिंचनाच्या सुविधा निर्माण करणे.

कोरडा किंवा शुष्क प्रदेश म्हणजे काय?

''ज्या प्रदेशात ओलावा किंवा आर्द्रतेची कमतरता, कायमस्वरूपी, ऋतुकालीन किंवा नियतकालिक असते आणि त्याची विभागणी वार्षिक पर्जन्य किंवा वनस्पतीचे आच्छादन यावर आधारित निमओसाड व अतिओसाड अशी होते, त्याला कोरडा किंवा शुष्क प्रदेश असे म्हणतात''

कोरडवाहू शेती म्हणजे काय?

1. ''कोरडया प्रदेशात जलसिंचन विरहित अवर्षण प्रतिरोधक पिकांची लागवड करणे आणि मृदेतील ओलावा बाष्पीभवनापासून राखून शेती केली जाते, याला कोरडवाहू शेती असे म्हणतात.''
2. ''ज्या प्रदेशात पावसाचे प्रमाण कमी आहे. किंवा उपलब्ध सिंचन सुविधा अत्यल्प आणि हंगामी स्वरूपाची आहे. अशा ठिकाणी लागवड करून शेती केली जाते, त्यास कोरडवाहू शेती असे म्हणतात.''

कोरडवाहू शेतीची वैशिष्टये

1. **कमी पावसाचा प्रदेश:** कोरडवाहू शेतीमध्ये कमी पावसाच्या परिस्थितीमध्ये कार्यक्षम व्यवस्थापन आणि पावसाच्या पाण्याचा उपयोग करून शती करतात.
2. **वार्षिक पर्जन्य ५० सें.मी. पेक्षा कमी:** ज्या प्रदेशात वार्षिक पर्जन्य ५० सें.मी. पेक्षा कमी असतो तेथील शेतकऱ्यास जीवन जगण्यासाठी झगडावे लागते. तेथील कोरडवाहू शेती अनिश्चित अवस्वथेत असते.
3. **सातत्याने ओलाव्याची कमतरता:** शेतकऱ्यांना उपलब्ध पीक चक्रामध्ये सातत्याने ओलाव्याच्या कमतरतेशी जुळवून घ्यावे लागते. यामधून कोरडवाहू शेती विकसित होत असते. सीमांत प्रदेशातील शेतकऱ्यास वारंवार अनेक वर्षे कमी पिकांच्या उत्पानाशी तोंड दयावे लागते.
4. **उपलब्ध पावसाचे पाणी अडवून त्याचे संवर्धन करणे:** उपलब्ध पावसाचे पाणी साठवून त्याचा पिकासाठी वापर केला पाहिजे. यासाठी पिकांच्या फेरपालटामध्ये एका उन्हाळयाच्या हंगामात जमीन पडीक ठेवावी लागते. यामुळे दोन हंगामामधील ावसाच्या पाण्याचा उपयोग एका पिकाच्या वाढीसाठी होतो. शेतावर धान्याच्या ताटाचा बुडखा तसाच ठेवला जातो की, ज्यामुळे आर्द्रता पकडली जाते. विशेषत: समशीतोष्ण प्रदेशात वाऱ्याने वाहत येणारे हिम पकडले जाते आणि पायऱ्या–पायऱ्यांच्या शेतीमुळे वाहत जाणारे पाणी अडविले जाते. याचप्रमाणे डोंगरावरून पायथ्याकडे जाणाऱ्या पाण्याचा वेग शेतीमधल्या सरीमुळे लहान प्रमाणात कमी होतो. शेतीमधील तण काढल्यामुळे ओलाव्याचे संवर्धन होते.
5. **उपलब्ध ओलाव्याचा परिणामकारक उपयोग:** एका जमिनीला पिकांच्या वाढीसाठी ओलावा प्राप्त झाल्यावर कोरडवाहू शेती परिणामकारक होण्यासाठी त्याचा वापर योग्य प्रकारे करणे गरजेचे असते. बियांची खोली आणि रोप लावण्याची वेळ काळजीपूर्वक ठरवावी लागते. ज्या स्थानावर पुरेसा ओलावा प्राप्त होत आहे त्याची निवड करावी लागते किंवा कोठे व केव्हा पाऊस पडेल.

   शेतकऱ्याची अशी प्रव्रत्ती असते की, पीक विविधता अवर्षण आणि कडक उन्हामध्ये तग धरू शकणाऱ्या वाणाची निवड करतात. एक वेळ कमी उत्पादन झाले तरी चालेल. यामुळे ऋतुकालीन पाऊस नेहमीपेक्षा लवकर थांबला तरी यशस्वीरित्या पीक येण्याची संभाव्यता वाढते.
6. **मृदा संवर्धन** : कोरडवाहू शेतीचे स्वरूप असे असते की, जमिनीची धूप सहज होते. विशेषत: वाऱ्यापासून मृदेची धूप होते. जमिनीला ओलावा टिकून राहण्यासाठी काही उपाययोजना करणे आवश्यक असते. कोरडवाहू शेतीच्या शाश्वततेसाठी मृदेचा वरचा थर अतिशय महत्वाचा असतो. कोरडवाहू शेती प्रदीर्घ कालखंडासाठी मृदेचा वरचा थर राखणे सर्वांत महत्वपूर्ण असते आणि यासाठी मृदेमधील ओलावा टिकविण्यासाठी मृदा संवर्धन आवश्यक असते. धूप नियंत्रणामध्ये आणण्यासाठी वाऱ्याचा वेग कमी करणे, नांगरणी कमी करणे किंवा नांगरणी न करणे. संवेदनशील भूमीवर कडबा पसरणे आणि पटटेदार शेती यांचा अवलंब करावा लागतो.

7. **शेतामधील आदानांच्या किंमतीवर नियंत्रण राखणे महत्वाचे** : कोरडवाहू शेतीचे तंत्र अशा प्रदेशात वापरले जाते की, जेथे स्वाभाविकपणे जलसिंचनविरहित कृषिसाठी योग्य असते. हा असा प्रदेश आहे की, शेतकऱ्यांनी कितीही पैसा खर्च केला किंवा पिकासाठी कितीही प्रयत्न केले तरी शेतकऱ्यांनी शुष्क वर्षामध्ये पिकांचे अपयश आणि अत्यंत कमी उत्पादन येण्याचा धोका असतो.

   म्हणूनच कोरडया प्रदेशामधल्या शेतकऱ्यांना पिकाच्या हंगामात सातत्याने उत्पादनाच्या क्षमतेवर लक्ष ठेवलेच पाहिजे. खतांसारख्या आदानाचा खर्च कमी करण्याची तयारी केली पाहिजे आणि असे आढळले की, शेतामधील अपुऱ्या ओलाव्यामुळे पिकाचे उत्पादन कमी येणार आहे तर तण नियंत्रण करणे आवश्यक असते.

8. **भरपूर ओलावा असणाऱ्या वर्षात कमाल उत्पादन घेण्याचा प्रयत्न** : ज्या वर्षी जमिनीमध्ये भरपूर ओलावा आहे त्या काळात शेतकऱ्यांनी आदानांमध्ये वाढ करून त्या प्रमाणात खर्च करून कमाल उत्पादन घ्यावे व कमी उत्पन्नाच्या हंगामाची भरपाई करावी.
9. **कमी कालखंडात येणाऱ्या पिकाच्या जातीची निवड:** पिकाच्या बुटक्या जातीची निवड करण्याची मुख्य तत्व असे की, त्या कमी काळात तयार होतात. त्याची मुळे खोलवर जातात आणि उत्पादनही जास्त येते.
10. **पिकांची पेरणी लवकर करणे** : कोरडया प्रदेशात अनिश्चित मान्सूनला तोंड देण्यासाठी पिकांची पेरणी लवकर करणे हा एक चांगला पर्याय असू शकतो. याचा पडताळा खरीप आणि रब्बी हंगामात आलेला आहे. संशाधकांनी असे सूचित केले आहे की, शेतकऱ्यांनी पावसाची शक्यता लक्षात घेऊन विशिष्टय पिकांची पेरणी आधीच करावी आणि पाऊस पाडण्याची वाट पाहू नये. परंपरा न पाहता शेतजमिनीच्या ओलाव्याची स्थिती पाहून पिकाच्या पेरणीची तारीख ठरवावी.
11. **खत फक्त एकदाच न देता त्याच्या मात्रा द्याव्यात:** कोरडया फक्त एकदाच खत देणे योग्य नाही तर त्याच्या पोषणासाठी खताच्या कमाल मात्रा विशेषत: नत्रयुक्त खते दयावीत की ज्यामुळे कमाल उत्पादन येऊ शकेल.
12. **पावसाचे पाणी साठविणे** : कोरडया प्रदेशात उपलब्ध होणारे पावसाचे पाणी साठवून ठेवणे हा एक सर्वात चांगला उपाय बाष्पीभवनापासन वातावरणात जाणारे पाणी थोपविण्यासाठी तलावाच्या तळाशी मातीबरोबर सोडिअम क्लोराइड आणि कार्बोनेट मिसळून लावणे.

भारतामधील कोरडवाहू शेती

भारतामध्ये ३२ दशलक्ष (एकूण पीक क्षेत्राच्या २५ टक्के) कोरडा प्रदेश आहे. कोरडया प्रदेशांनी राजस्थान आणि गुजरातचा बराचसा प्रदेश व्यापलेला आहे. याशिवाय पंजाब, हरियाणा, उत्तर प्रदेशचा पश्चिम भाग, मध्य प्रदेश, महाराष्ट्र, कर्नाटक, आंध्र प्रदेश आणि तामिळनाडू राज्यांच्या काही प्रदेशांचा समावेश होतो.

कोरडवाहू शेतीची वैशिष्टयपूर्ण लक्षणे

- कोरडवाहू शेतीचा पाया ओलावा आर्द्रता संवर्धन हा आहे. हे उद्दिष्ट साध्य करण्यासाठी शेतजमीन विशेषत: पावसाळयात जमिनीची नांगरणी वारंवार करतात.
- शेतात एकदा पीक काढल्यानंतर पुढच्या हंगामात शेती पडीक ठेवली जाते. यामुळे जमिनीची सुपीकता सुधारते.
- जमिनीत पेरणी करण्यापूर्वी तिचे चूर्णन करतात.
- पिकाची कुदळणी आणि तण वारंवार काढणे. सर्वसाधारण सूर्यादयापूर्वी कुदळणी करतात की, ज्यामुळे रात्रीचे दंव जमिनीत मिसळते आणि पिकांना ओलावा प्राप्त होतो.
- मृदेमधील ओलाव्याचे संवर्धन करण्यासाठी शेतजमीन कडब्याने झाकणे आणि धूप नियंत्रण करतात.
- कोरडवाहू प्रदेशात कृषिला जोड व्यवसाय म्हणून पशुपालन आणि दुग्धव्यवसाय केला जातो.

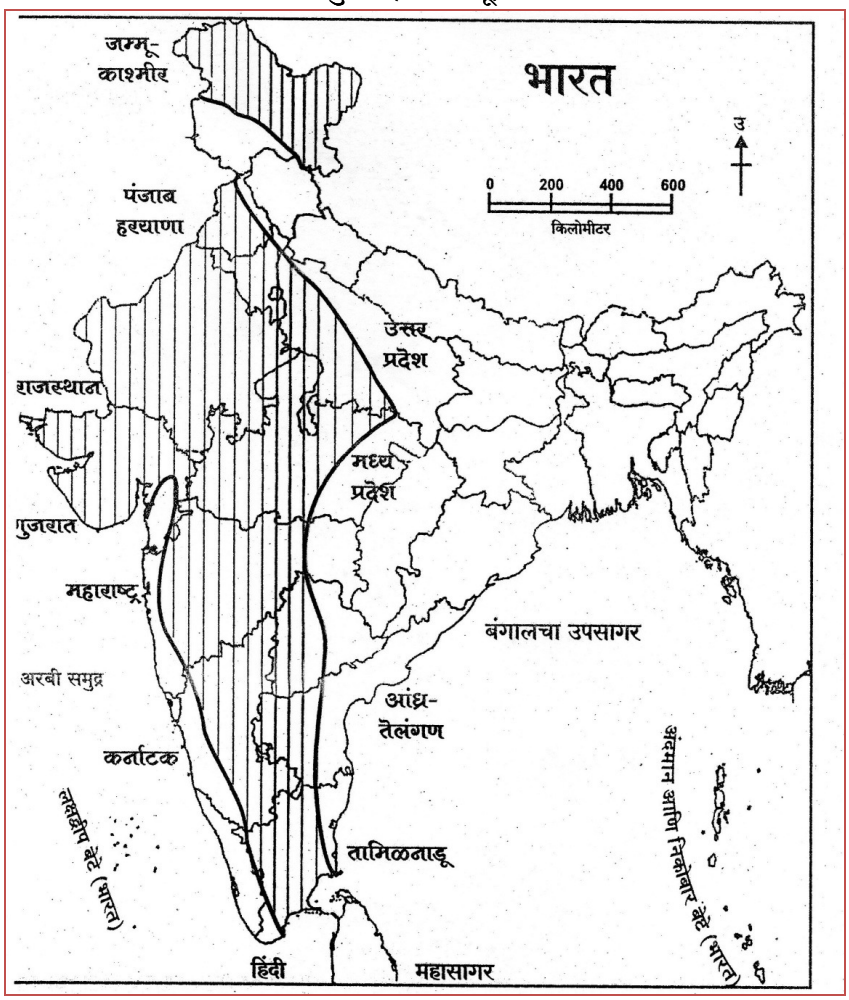
पिके (Crops) %

कोरडवाहू शेतीमधील प्रमुख पिके भरडधान्ये (ज्वारी, बाजरी, मका); कडधान्ये, भुईमूग, तेलबिया आणि चारा आहेत. कोरडवाहू शेती प्रदेशामधील ७५ टक्के लोकसंख्या प्रत्यक्ष आणि अप्रत्यक्षरित्या कृषिवर अवलंबून असली तरी त्यांचे राहणीमान कमी दर्जाचे असते.

कोरडवाहू शेतीच्या प्रमुख समस्या

1) पावसाची कमतरता, अनिश्चित स्वरूपाचा मान्सून यांचा परिणाम अवर्षण, दुष्काळ व पूर येण्यात होतो.
2) मृदा बऱ्याच प्रमाणात वाळूमिश्रित असून त्यामध्ये ह्युमस व पोषणमूल्यांची कमतरता असते.
3) कोरडया शेतीमधील प्रदेश मृदेच्या धुपेला संवेदनशील असतो.
4) पिकांचे दर हेक्टरी उत्पादन कमी असते.
5) जमिनीमधील ओलावा व जलसिंचनाची अनुपस्थिती असल्याने उच्च पैदास बी–बियाणे आणि नंतर नवीन तंत्रज्ञानाचा वापर करणे शक्य असत नाही.

भारतातील शुष्क (कोरडवाहू) शेतीचे प्रदेश



कोरडवाहू शेतीसाठी उपाययोजना

1) कोरडवाहू शेती प्रदेशात पावसाचे पाणी साठविले पाहिजे. यासाठी सरकारी व निमसरकारी एजन्सीनीर लोकांना मार्गदर्शन केले पाहिजे.
2) शेतकऱ्यांना अवर्षण प्रतिरोधक अन्नधान्याचे बी–बियाणे सानुग्रह दराने पुरविले पाहिजे.

3) मृदा संवर्धन उपाययोजनाव्दारा मृदेची धूप थांबविली पाहिजे.
4) शेतकऱ्यांनी दोन रोपांमध्ये बरेच अंतर ठेवले पाहिजे की, ज्यामुळे नियमितपणे कुदळणी व तण काढणे शक्य होईल.
5) जलद व अल्पकाळात पीक तयार होईल अशा बी–बियाणांचा विकास केला पाहिजे.
6) ज्या पिकांना अधिक पाण्याची गरज असते त्याची लागवड पाणलोट क्षेत्राच्या निम्न सखल भागात करावी.
7) मृदेची सुपीकता शेणखत व कंपोस्ट खत वापरून सुधारावी.
8) पावसाळयात वारंवार नांगरणी करण्याची आवश्यकता असते.
9) कोरडवाहू शेतीमध्ये संशोधनास प्रोत्साहन दिले पाहिजे.

निष्कर्ष (Conclusion) %

1. पृथ्वीच्या एकूण भूप्रदेशापैकी ३५ टक्के क्षेत्र म्हणजेच ४० ते ४९ दशलक्ष चौ.कि.मी. कोरडया प्रदेशाचे आहे.
2. भारतामध्ये ३२ दशलक्ष हेक्टर म्हणजेच एकूण पीक क्षेत्राच्या २५ टक्के कोरडा प्रदेश आहे.
3. कोरडवाहू शेती प्रदेशातील ७५ टक्के लोकसंख्या प्रत्यक्ष आणि अप्रत्यक्षरित्या कृषिवर अवलंबून असल्याने त्यांचे राहणीमान कमी दर्जाचे आहे.
4. महाराष्ट्र राज्यांमध्ये अवर्षणप्रवण क्षेत्राची व्याप्ती ५२ टक्के आहे.
5. कोरडवाहू शेतीमधील प्रमुख पिके भरडधान्य (ज्वारी, बाजरी व मका) ही कडधान्य आहेत. याशिवाय भुईमूग, तेलबिया आणि चारा ही पिके आहेत.
6. कोरडवाहू शेती सुधारण्यासाठी विविध समस्येचे निराकरण करून योग्य उपाययोजना केल्यास या शेतीची उत्तम प्रकारे प्रगती साधता येते.

संदर्भ

1. भारताचा समग्र भूगोल – सवदी, कोळेकर
2. भारताचा कृषि भूगोल – डॉ. विजया साळुंके
3. स्केत स्थळावरील माहिती

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भौगोलीक घटकांचे राष्ट्र शक्तीतील महत्व

प्रा.जयश्री दादासाहेब शेंडे
राज्यशास्त्र विभाग
मुधोजी महाविद्यालय, फलटण,
जि.सातारा

प्रस्तावना :

भौगोलीक घटकांचे राष्ट्र शक्तीच्या संदर्भातील महत्व हे आंतरराष्ट्रीय राजकारणात प्रत्येक राष्ट्रासाठी महत्वाची भूमिका बजावताना दिसते. भौगोलिक घटक किती? कोणत्या स्वरुपात? कशा प्रकारे? महत्वाचे ठरतात हे सांगताना आपल्याला क्विन्सी राईट या राजकीय विचारवंताचे शब्द मार्गदर्शन करतात.

"Political Geography is the Science relating the physical environment to politics, and particulary to the state. As an aspect of international relations it is the science relating the physical environment to world politics and the art, sometimes called Geopolitik of untilizing the physical environment in world politics."

जिओ पॉलिटीक्स ही शब्द संकल्पना प्रथम १९ व्या शतकात ब्रिटिश राज्यशास्त्रज्ञ रॉडल्क केज्लीन यांनी वापरली. राज्यशास्त्र विषयातील आंतरराष्ट्रीय राज्यशास्त्र विषयाच्या अभ्यासात आंतरराष्ट्रीय राजकारण हा एक महत्वाचा विचार प्रवाह आहे. व 'राष्ट्राची भौगोलिकता' हा घटक प्रभावी भूमिका बजावत असतो. राष्ट्रीयसत्ता राष्ट्राचा भूतकाळ, वर्तमानकाळ अणि भविष्यकाळ मांडते. आधुनिक काळात 'सत्ता' राष्ट्रांच्या स्वतंत्र अस्तित्वासाठी बहुमोल भूमीका बजावते.

राष्ट्रसत्तेचा अभ्यास

अभ्यासपद्धती :

वरील विषयाच्या अभ्यासासाठी वापरलेल्या पद्धती पुढीलप्रमाणे सांगता येतात. या विषयाच्या अभ्यास मांडणीसाठी संशोधन पद्धतीतील दुय्यम साधने म्हणजेच लिखित संदर्भ ग्रंथ आणि इंटरनेट वरील माहिती यांचा आधार घेतलेला आहे.

भारतात प्राचीन काळात कौटिल या विचारवंताने राष्ट्रसत्तेचे महत्व सांगितले. मध्ययुगात इटलीतील विचारवंत मॅकियाव्हेली इंग्लडचे थॉम्स हॉब्ज यांनी राष्ट्रीय सत्तेला महत्वाचे स्थान दिले. २० व्या शतकात मॉर्गेन्थॉ, हेरॉल्ड लॅसवेल, डाईक या विचारवंतानी राष्ट्रीय सत्तेचा सखोल अभ्यास केला थोडक्यात राष्ट्रसत्ता ही राजकारणाचा बळकट आधार मानला जातो. व राष्ट्रीय सत्तेमध्ये भौगोलिकता हा घटक महत्वाचा ठरतो.

राष्ट्रीय सत्तेचा अर्थ समजुन घेताना त्यांच्या व्याख्या महत्वाच्या ठरतात. त्या पुढील प्रमाणे मांडता येतील.

१. फेडलफोर्ड आणि लिंकन यांनी केलेली व्याख्या पुढीलप्रमाणे मांडता येते.
"आर्थिक, मानसिक, नैतिक, लष्करी आणि राजकीय घटकांपासून बनलेले आणि राष्ट्रहिताच्या संर्वधनासाठी यशस्वीपणे वापरले जाणारे राष्ट्राचे सामर्थ्य म्हणजे राष्ट्रशक्ती होय."

२. हॅन्स जे. मॉर्गेन्थॉ यांच्या मते, "इतर व्यक्तिंच्या मनावर नियंत्रण ठेवणारी एखाद्या व्यक्तिची किंवा समूहाची सत्ता म्हणजे राष्ट्रीय सत्ता होय."

भौगोलिक तत्व या आधारभूत घटकाचे महत्व सांगताना डॉ. एअर्स (Dr.Eayrs) म्हणतात. "एकवेळ करारभंग केले जातील किंवा संधी एकतर्फी भंग केल्या जातील परंतु भुगोल आपल्या भक्षास घट्ट पकडून ठेवीत असतो. " (Pacts may be broken, treaties unilaterally denounced, but geography holds its victims fast)

वरील व्याख्या आजच्या परिस्थितीमध्ये तितक्या मोठया प्रमाणात लागु होत नाहीत. कारण कोणतेही राष्ट्र परराष्ट्र धोरणाबाबत भौगोलिक स्थितीचा लाभ करुन घेत असते. परंतु तंत्रज्ञानाच्या प्रगतीमुळे, दळणवळणांच्या साधनांच्या विकासमुळे आज राष्ट्राच्या धोरणाबाबत भौगोलिक स्थितीचा प्रभाव कमी झालेला दिसतो. उदा. ब्रिटन सारखे राष्ट्र युरोपीय खंडात प्रथम स्थानावर होते ते महासत्ताच्या राजकारणाच्या परिणामामुळे, वाढत्या दळणवळणाच्या साधनांच्या धोरणांमुळे पर राष्ट्र धोरणात मागे पडलेले दिसते. थोडक्यात अधुनिक विकसित दळणवळणांच्या साधनांचा, युद्ध तंत्राचा परिणाम होऊन भौगोलिकतेचे महत्व कमी होत आहे.

राष्ट्रशक्ती निश्चित करताना खालील गोष्टी विचारात घ्याव्या लागतात.

- इतर घटकांचा अभ्यास – कोणत्याही घटकाचा अभ्यास करताना तो इतर घटकांच्या संदर्भात करावा लागतो. उदा. लोकसंख्या जास्त आहे म्हणून त्या विशिष्ट राष्ट्राची राष्ट्रीय शक्ती जास्त आहे. असे म्हणता येणार नाही. कारण लोकसंख्या जास्त असूनही इतर घटक कमकुमत असतील तर उदा. भौगोलिक स्थिती, नैसर्गिक साधन–संपत्ती इ. तर तो देश शक्तीशाली होत नाही.
- सापेक्ष कल्पना – राष्ट्रीय शक्ती ही सापेक्ष कल्पना आहे म्हणजेच शेजारील राष्ट्रे किंवा इतर राष्ट्रे समोर ठेवूनच विशिष्ट राष्ट्राला आपल्या शक्तीचा अंदाज घ्यावा लागतो. उदा. भारताच्या राष्ट्रीय शक्तीची तुलना पाकिस्तानबरोबर केल्यास भारत शक्तीशाली राष्ट्र ठरु शकते. परंतु भारताची अमेरिकेबरोबर तुलना केल्यास भारताची राष्ट्रशक्ती कमी ठरते.
- विश्लेषण महत्वाचे – एखाद्या देशाच्या राष्ट्रीय शक्तीचा अभ्यास करताना त्याच्या घटकांचे केवळ प्रमाण पाहून राष्ट्रशक्तीचा अंदाज येत नाही तर त्या घटकाचे पुर्णपणे विश्लेषण करणे गरजेचे ठरते. उदा. लोकसंख्या या घटकाचा अभ्यास करताना प्रौढ व्यक्तींचे प्रमाण, स्त्री–पुरुष प्रमाण, बालकांचे प्रमाण या सर्वांचे विश्लेषण अभ्यासावे लागते.
- उपयोग करुन घेण्याची क्षमता – राष्ट्रीय शक्तीचा अभ्यास करताना घटकांचे केवळ प्रमाण अभ्यासून चालत नाही तर त्या घटकांचा त्या देशाचे नागरिक प्रत्यक्षात किती उपयोग करुन घेतात. हे महत्वाचे ठरते.
- परिस्थितीनुसार बदल – राष्ट्रीय शक्तीच्या संदर्भात घटकांचे महत्व हे परिस्थितीनुसार बदलत जाते. उदा. पुर्वी ब्रिटन हा देश शक्तीशाली होता तर आज अमेरिका व रशिया हा देश शक्तीशाली ठरतो.

वरील मुद्यांचा विचार करुनच विशिष्ट देशाच्या राष्ट्रीय शक्तीच्या सामर्थ्याबद्दल अभ्यास मांडता येतो.

राष्ट्रीय शक्तीच्या अभ्यासाबद्दचे दृष्टीकोन –

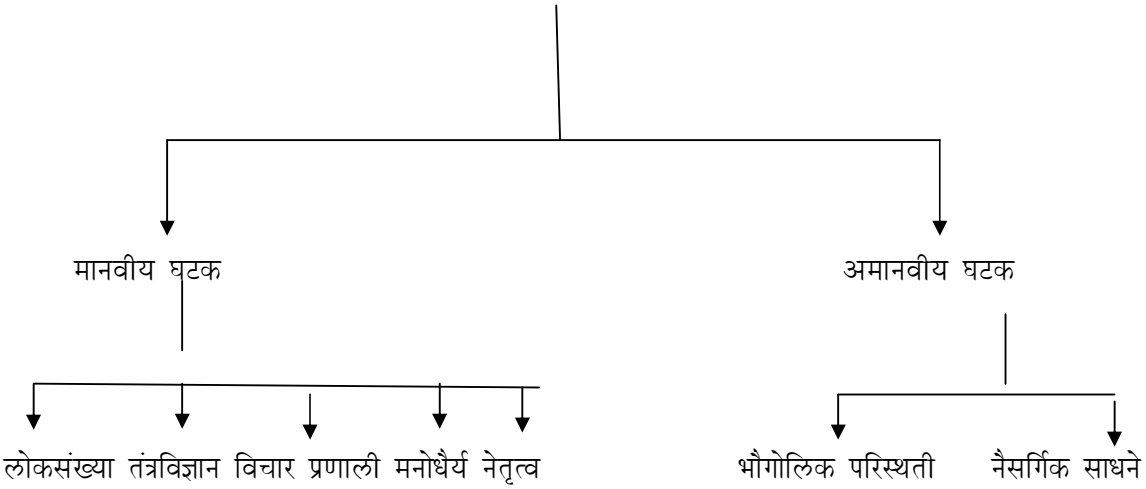
थोडक्यात कोणत्याही राष्ट्राच्या शक्तीचा अंदाज करणे, राष्ट्रशक्तीचे मुल्यमापन करणे हे सोपे काम नसते.

- आंतरराष्ट्रीय राजकारणातील राजकीय विचारवंत मॉर्गेन्था यांनी राष्ट्रीय शक्तीच्या घटकांची केलेली विभागणी पुढीलप्रमाणे मांडता येते. –

१. स्थायी घटक २. अस्थायी घटक

२.

- पामर आणि पर्किन्स यांनी राष्ट्रीय शक्तीच्या घटकांची केलेली विभागणी पुढीलप्रमाणे मांडता येते. –

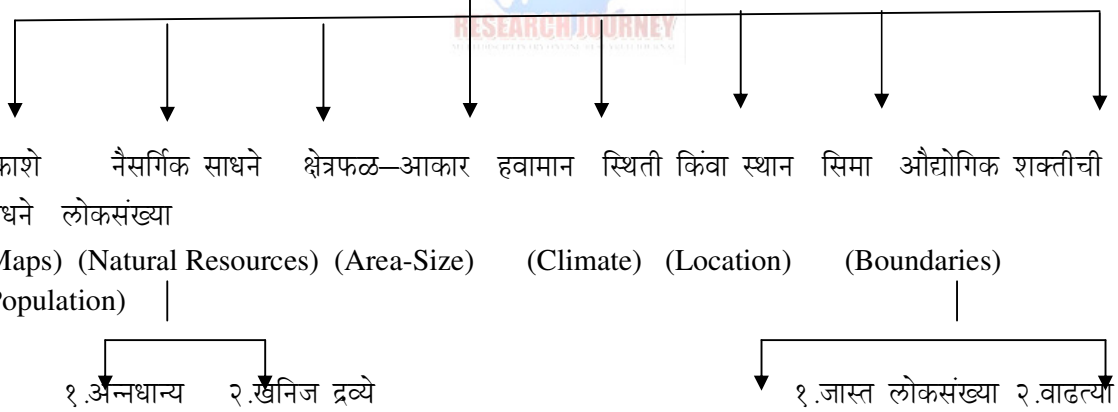


- प्रो. हार्टमन यांनी आपल्या "रिलेशन्स ऑफ नेशन्स" या पुस्तकात राष्ट्रीय शक्तीच्या घटकांची केलेली विभागणी पुढीलप्रमाणे मांडता येते. –

१. लोकसंख्या २. भौगोलिक परिस्थिती ३. आर्थिक स्थिती ४. ऐतिहासिक सामाजिक परिस्थिती ५. शासकीय संघटना ६. लष्करी सामर्थ्य

❖ सर्वसाधारणपणे राष्ट्रीय सत्तेचे भौगोलिक घटक पुढीलप्रमाणे मांडता येतात. –

राष्ट्रीय सत्तेचे भौगोलिक घटक (Geographical Elements)



- **नकाशे (Maps) :–**

राष्ट्रीय सत्तेच्या संदर्भात वेगवेगळे नकाशे अतिशय महत्वाची भूमीका बजावतात. नकाशाच्या माध्यमातून विशिष्टय देशाची महत्वाची ठिकाणे, युद्ध स्थळे, समूद्राची खोली आणि खनिज द्रव्ये उपलब्ध असलेली ठिकाणे यांची माहिती मिळते. नकाशांचा उपयोग शेजारी–शेजारी असलेला राष्ट्रांमध्ये निर्माण झालेले सीमवाद सोडवण्यासाठी करता येतो. युद्धाच्या काळात कोणत्याही राष्ट्राच्या दृष्टीने 'नकाशे' अतिशय महत्वाचे ठरतात. नकाशांद्वारेच शत्रू राष्ट्राची ठिकाणे, त्या विशिष्ट राष्ट्राच्या सैन्याने व्यापलेले प्रदेश इ. चे

सखोल माहिती मिळते. युद्धाच्या काळात आवश्यक असणारी विशिष्ट राष्ट्राचे समुद्र, जंगले यांची माहिती नकाशांमूळे मिळत असते.

- **नैसर्गिक साधने :–**

राष्ट्रीय सत्तेत वाढ करणारा एक घटक हा नैसर्गिक साधने हा सुद्धा आहे. नैसर्गिक संपत्ती ही कायम स्वरूपाची असते. राष्ट्राची राष्ट्रीय सत्ता विकसित करण्यासाठी नैसर्गिक साधने महत्वाची असतात. या घटकामध्ये अन्नधान्ये, खनिज तेल, ॲल्युमिनियम, मॅगनीज, सोने, चांदी, लोखंड युरेनियम कोळसा इ. चा समावेश करता येतो.

  - **अमेरिका –** युरेनियमचे साठे अमेरिकेत उपलब्ध झाले. त्यामुळे अमेरिकेच्या राष्ट्रीय शक्ति वाढ होऊन ती महासत्ता म्हणून स्थिर होऊ लागली. युरेनियम ॲटमबॉम्बच्या निर्मितीसाठी अमेरिकेला उपयोगी ठरले.
  - **इंग्लंड –** सोळाव्या शतकात इंग्लड या राष्ट्रीय लोखंड व कोळशाचे साठे मिळाले. इंग्लडच्या राष्ट्रीय शक्ति वाढ झाली. तेथे सर्वात प्रथम औद्योगिक क्रांती झाली. इंग्लडची वेगाने प्रगती झाली.
  - **आफ्रीका, आशीयायी राष्ट्रे –** दुसऱ्या महायुद्धानंतर आफ्रिका आशियायी राष्ट्रे स्वतंत्र झाली आणि आपापल्या नैसर्गिक साधन संपत्तीच्या साहाय्याने विकसित होऊ लागलेली दिसतात.

नैसर्गिक साधनामध्ये प्रामुख्याने अन्नधान्य व खनिजद्रव्ये यांचा समावेश होतो. त्यांचा राष्ट्राच्या विकासामध्ये मुख्य सहभाग असतो.

- **अन्नधान्ये (Food Stuffs) –**

राष्ट्र शक्तिमध्ये अन्नधान्याची सुबत्ता हा घटक महत्वाची भूमिका बजावताना दिसतो. अन्नधान्याची सुबत्ता त्या राष्ट्राला प्रगतीच्या मार्गावर घेऊन जातात. तर अन्नधान्याची टंचाई त्या राष्ट्राला परावलंबी करते आणि सदैव अन्नधान्याची टंचाई त्या राष्ट्रामध्ये क्रांती सुद्धा घडवून आणते.

- **भारत –** भारतात नेहमी धान्यटंचाई राहिली आहे. मॉर्गेन्थ्रा या विचारवंताने

भारताच्या अन्नधान्याच्या टंचाईला 'परराष्ट्र धोरणातील कायमचा दुबळेपणा' असे म्हटले आहे.

- **खनिजद्रव्ये (Minerals) –**

कोणत्याही राष्ट्राच्या राष्ट्रीय विकासासाठी खनिजद्रव्ये आवश्यक असतात. मानवी जीवनाच्या सुरवातीपासून १९ व्या शतकापर्यंत देशाचे सामर्थ्य मोजताना नैसर्गिक साधने हा घटक दुय्यम मानत होते. पहिल्या महायुद्धाच्या काळात आणि नंतर उद्योगधंदे व दळणवळण, युद्धे या बाबत ऊर्जेचे साधन म्हणून खनिज साठे यांचे महत्व वाढत गेले. बहुसंख्य लढाऊ हत्यारे, वाहने (ट्रकपासून विमानांपर्यंत) खनिज तेलवर चालत आहेत. परिणामत: ज्या देशाकडे खनिज तेलांचा साठा जास्त आहे त्यांचे महत्व वाढले आहे.

भारतामध्ये खनिज तेल कमी प्रमाणात आहेत. त्यामुळे भारताला अरब राष्ट्रांवर खनिज तेलासाठी अवलंबून राहावे लागते. त्याचा परिणाम म्हणजे भारताला इराण–इराक युद्धाबाबत कोणतीही भूमिका घेता येत नाही. एवढेच नव्हे तर या युद्धाचा निषेध ही नोंदवता येत नाही. यालाच तेल राजनीती ;वपस.चवसपजपबेद्ध असे म्हणतात.

- **औद्योगिक शक्तिची साधने –**

औद्योगिक दृष्टया राष्ट्र प्रगत झाल्यास राष्ट्राला लष्करी साहित्य शस्त्रास्त्रे इ. निर्माण करता येतात व स्वत:ची संरक्षण व्यवस्था बळकट करता येते. कच्चामालाची निर्यात करून राष्ट्राच्या संपत्तीमध्ये वाढ करता येते.

- **क्षेत्रफळ–आकार (Area-Size) –**

भौगोलिकतेच्या दृष्टीने क्षेत्रफळ–आकार, विस्तार हे घटक अतिशय महत्वाचे ठरतात. उदा.सर्वात मोठा देश रशिया आहे तर सर्वात लहान देश व्हॅटीकॉन आहे.

इंग्लडने– छोटा देश असून अर्ध्या जगावर राज्य केले. तसेच आकाराने मोठे असणाऱ्या देशांनी इंग्लडला पराभूत करणे शक्य झाले नाही.

जपान– या देशाच्या समूहामुळे आशिया खंडापासून वेगळे झालेले जपान आपला नाविक सामर्थ्यामुळे चीन, रशिया या मोठया भू–प्रदेशांच्या देशांना पराभूत करू शकले आहे.

भारत– भौगोलिकतेचा विचार करता भारत हा जगातील सातव्या क्रमांकाचा देश आहे. समूद्र किनाऱ्यांमुळे भारताचे नैसर्गिक संरक्षण होते. मॅकिन्डर या विचारवंताच्या मते "भारत हा पृथ्वीवरील मोठा नैसर्गिक किल्ला आहे."काही वेळा मोठया भू–भागामुळे काही प्रश्न निर्माण होतात. उदा. संरक्षण, राष्ट्रीय ऐक्य, कार्यक्षम प्रशासन इ.

- **हवामान (Climate) –**

हवामानाचा राष्ट्राच्या राजकीय शक्तिवर, भविष्यकालीन घटनांवर परिणाम होत असतो. एलसवर्थ हर्टिगृन यांनी केलेला संशोधनात ३२° फॅरेनहाईट आणि ७०° फॅरेनहाईट यांच्या दरम्यान हवामान पोषक हवामान ठरते.

राष्ट्राच्या हवामानाचा परिणाम त्याच्या परराष्ट्र धोरण, लष्करी शक्ति, औद्योगिकरण, शेती उत्पादन इ. घटकांवर पडत असतो. थोडक्यात देशाला सामर्थ्यशाली करताना हवामान घटक महत्वाचा ठरताना दिसतो.

- **स्थिती किंवा स्थान (Location) –**

भौगोलिक स्थान हे देशाच्या जडण घडणीमध्ये महत्वाची भूमिका बजावते.

○ **ब्रिटन, जपान** – या दोन राष्ट्रांच्या विशिष्टय स्थानामुळे त्यांना जागतिक महत्व मिळालेले आहे. युरोप खंडापासून ब्रिटन अलग असल्यामुळे अडीच शतके ब्रिटन युरोप खंडाचे सत्ता संतुलन करू शकला.

शिकार, पशुपालन, शेती इ. गोष्टी राष्ट्राच्या भौगोलिक स्थितीवर अवलंबून असतात. आंतरराष्ट्रीय वायुमार्ग, जलमार्ग यांच्या संबंधात असलेली राष्ट्रे विकसित होण्यासाठी खूप मदत होते.

भारताच्या उत्तरेस हिमालय, पश्चिमेस अरबी समूद्र, दक्षिणेस हिंदी महासागर, पूर्वेला बंगालचा उपसागर या वैशिष्टयपूर्ण भौगोलिक स्थितीमुळे भारताचे नैसर्गिक संरक्षण झाले आहे.

थोडक्यात एखाद्या राष्ट्राच्या भौगोलिक स्थानावरून त्या देशाची राष्ट्रीय शक्ति निश्चित होण्यास खूप मदत होते.

- **सिमा (Boundaries) –**

राष्ट्राच्या सीमा रेषा नैसर्गिक तसेच कृत्रिम असतात. भारताला कृत्रिम सिमारेषांमुळे भारत–चीन, भारत–पाकिस्तान ही संघर्षाची बिजे ठरली आहेत. कृत्रिम सिमारेषांमुळे अरब राष्ट्रे इराण–इराक यांच्यातील सतत चाललेले संघर्ष हे उदाहरण देता येते.

- **लोकसंख्या (Population) –**

राष्ट्रीय सत्तेचा आधारभूत घटक म्हणून राष्ट्राच्या लोकसंख्येकडे पाहीले जाते. लोकसंख्या किती असावी हे पाहताना तिचे गुणात्मक व संस्थात्मक स्वरूप महत्वाचे ठरताना दिसते. प्राचीन काळात प्लेटोने ५०४० तर अटिस्टॉटलने १०,००० लोकसंख्या आदर्श राज्यासाठी असावी असे मत मांडलेले आहे.

राष्ट्रातील उत्पन्न व उपभोग यावर देशाच्या लोकसंख्येचा परिणाम होत असतो. लोकसंख्या जास्त असेल तर काम करणारे हात, डोकी जास्त असतात.

- **जास्त लोकसंख्या –**

जास्त लोकसंख्या देशाला काम करणारे हात देते, काम करणारी डोकी देते. त्यामुळे देशाची राष्ट्रशक्ति वाढते. तसेच वस्तूना स्वत:च्या देशात बाजारपेठ उपलब्ध करून देते.

- **वाढत्या लोकसंख्येचा स्फोट–**औद्योगिकरणामुळे लोकसंख्या अतिप्रमाणात वाढली आहे. जगातील १/३ लोकसंख्या चीन व भारतात आहे.
- **कमी लोकसंख्या–**कमी लोकसंख्या म्हणजे कामासाठी हात कमी पडतात, डोकी कमी पडतात. उदा. अमेरिकेत विशाल सूपिक भूमी,पाणी असतानाही काम करण्यासाठी त्यांना आफ्रिकेतून नीग्रो कामगारी बोलवावे लागतात. आज ही तेथे मनुष्यबळ कमी पडते आहे.

थोडक्यात लोकसंख्या खूप जास्त किंवा खूप कमी नसावी भौगोलिकता कार्यक्षमता गुणवत्ता इ. अनेक घटकांच्या तुलनेने पर्याप्त असावी. लोकसंख्येचा विचार करताना नागरीकांचे शिक्षण,गुणवत्ता,पात्रता,चांगल्या सवयी,विचार,चारित्र्य इ. गोष्टी लक्षात घ्याव्या लागतात.

वरील प्रकारे भौगोलिकता हा घटक राष्ट्रीय शक्तीच्या संदर्भात स्पष्ट केल्यानंतर भौगोलिकता या घटकाचे महत्व कमी आहे किंवा हा घटक दुय्यम आहे असे म्हणणारे विचार प्रवाह म्हणजेच भौगोलिक घटकावरच्या टिका पुढीप्रमाणे माडता येतात.

टिका

१) भुगोल हा विषय व त्यातील भौगोलिकता ही संकल्पना आंतरराष्टीय राजकारणामध्ये राष्ट्रीय सत्तेच्या संर्दभात सर्वात प्रमुख घटक ठरत नाही.

२)भौगोलिकता समाज,तंत्रज्ञान,लोकसंख्या इ.घटाकांवर प्रभाव पाडते.परंतु प्रत्यक्षात आंत्तरराष्टीय राजकारण विविध घटकांनी प्रभावित होते.

सारांश

प्रस्तूत विश्लेषण आणि टिका पाहिल्यानंतर आपल्याला असे म्हणता येतो कि,भौगोलिक असलग्गतेमुळे दोन्ही महायुध्याच्या परिणामापासून अमेरिका दूर राहीली. यूरोपच खंडातील देशांना मात्र दोन्ही महायुध्दाच्या परिणामांना तोंड द्यावे लागले.हे नाकारता येत नाही. तसेच आजही भारताच्या कृत्रीय सिमारेषांमुळे भारत–पाकिस्तान भारत–चिन यांच्यातील संबंध –निकोप होत नाहीत असे म्हणावे लागते.

भारताच्या संदर्भात भौगोलिकता भारताच्या संरक्षणासाठी मोठया प्रमाणात अनूकुल ठरली आहे.हे मान्य करावेच लागते तसेच भारताचे अलिप्ततेचे धोरण विकसीत होताना भारताच्या भौगोलिकतेने महत्वाची भूमीका बजावली आहे असे म्हणता येते.

१९ व्या शतकामध्ये जवळजवळ निम्मया जगावर राज्य करणारे ब्रिटन आज तुलनात्मक दृष्टया प्रबल राहीले नाही. तसेच दोन्ही महायुध्दांमध्ये जगातील राजकारणात विशिष्ट स्थान नसलेला अमेरिका देश आज महालत्ता म्हणून स्थान मिळवून आहे कारण त्या राष्टाचे हवामान,भौगोलिकता या सर्वाचा उपयोग राष्ट्रबांधणीत अमेरिकेने करून घतेले आहे.नैसर्गिक किल्ला असणारा भारत अन्नचवंस्त्राच्या युगामध्येही विकासाच्या दिशेने वाटचाल करत आहे ही सुध्दा भौगोलिकता असणारी देणगी आहे. भारत महासत्ता होईल याला लोकसंख्येचे

अनुकुल प्रमाण (१८ ते ४५ वयोगट) विस्तीर्ण भू—प्रदेश भौगोलिक अनुकुलतेमुळे संरक्षनासाठी तुलनात्मक दृष्टया करावा लागणारा कमी खर्च हे घटक साहाय्यभूत ठरत आहेत. बौद्धीकतेबाबत अमेरिकेतही स्वत:चे स्थान निर्माण करणारा भारतीय ही सुध्दा जमेची बाजू आहे. एकूणच राष्ट्राच्या भुतकाळ पासून भविष्य काळापर्यत स्थीर असणारा भौगोलिकता हा घटक त्या त्या राष्ट्राच्या राष्ट्रशक्ती मध्ये कमी—अधीक प्रमाणात महत्वाचा ठरत असतो हे नाकारताच येत नाही भौगोलिकतेचा अनुकुल,वापर करून स्वत:ची राष्टंशक्ती वाढवणे आणि आत्तंरराष्ट्रीय राजकारणाच्या क्षेत्रामध्ये स्वत:चे स्थान निश्चत आणि बळकट ठेवणे हे प्रत्येक राष्ट्राच्या सामर्थ्यावर अवलंबून राहते एवढेच. थोडक्यात राज्य निमिर्तीमध्ये भूक्षेत्र हा महत्त्वाचा आणि अत्यावश्यक स्वत: चे स्थान निर्माण करताना, ते टिकवून ठेवतात भौगोलिकता वेगवेगळया असतेच भौगोलिकते शिवाय राज्य निमिर्ती होत नाही.

संदर्भ :

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गोषवारा:

कृषी क्षेत्र हे भारतीय अर्थव्यवस्थेचा कणा आहे. भारतात 75 टक्के प्रत्यक्ष व अप्रत्यक्ष रोजगार हा शेती क्षेत्रावर अवलंबून आहे. गांधींजींनी म्हटल्याप्रमाणे खरा भारत खेडयातच राहतो. म्हणून खऱ्या भारताचा जर विकास करायचा असेल तर शेती व ग्रामीण भागाचा विकास साधणे आवश्यक आहे. शेती व ग्रामीण विकास करावयाचा जर असेल तर शेती व ग्रामीण भागाची परिस्थिती समजावून घेणे आवश्यक आहे. शेती व ग्रामीण भागाच्या परिस्थितीचा आढावा सदर संशोधन पेपरमध्ये घेण्यात आला आहे.

महत्त्वाचे मुददे: भारतीय शेतीसमोरील आव्हाने व उपाययोजना, ग्रामीण भारतातील सकारात्मक बाबी

प्रस्तावना:

आजही भारतीय ग्रामीण भागात 75 टक्के लोकसंख्या शेती व शेतीपूरक उदयोगांवर अवलंबून आहे. शेतीचा संबंध मातीच्या प्रश्नापासून जागतिक व्यापारापासून जीवनाच्या तत्वज्ञानापर्यंत आहे. डॉ रामचंद्र पारनेरकर यांनी पूर्णवादी अर्थशास्त्रात म्हटल्याप्रमाणे व्यक्तीला जोपर्यत अन्नासाठी मजुरी व गुलामी करावी लागते तोपर्यंत त्याची प्रगती होणे दुरापास्तच आहे. म्हणून समाजाने अन्नपूरवठयाची जबाबदारी स्विकारुन सगळयांना अन्नपुरवठा विनामूल्य दिलाच पाहिजे. सगळयात मोठा खासगी उदयोग म्हणजे शेती. स्वतःच्या मालकीची शेती कितीही लहान असली तरी ती शेतकऱ्याला आणि त्याच्या कुटुंबाला आजच्या विकासाच्या अवस्थेत आधार आहे. कर्ज घेण्यासाठी तारण आहे. त्यामुळे त्याची सामाजिक प्रतिष्ठा आहे. ही प्रतिष्ठा टिकविणे व वाढविणे गरजेचे आहे. म्हणून भारतीय शेती व ग्रामीण परिस्थिती पहिल्यांदा लक्षात घेणे गरजेचे आहे व त्यानंतर उपाययोजना जाणून घेणे गरजेचे आहे.

संदर्भ साहित्याचा पडताळा :

1 श्रीनिवास खांदेवाल (2018),यांच्या शेती विकास, ग्रामीण विकास : साठ टकके जनतेचा विकास या लेखात भारतातील शेतीच्या प्रश्नाचे स्वरुप व धोरणत्मक पावले व प्रत्यक्ष परिस्थिती यांची मांडणी करण्यात आली आहे[1].

2 प्रा रमेश राठोड (नोव्हें 2014), यांच्या जागतिकीकरण आणि भारतीय शेती या लेखात जागतिकीकरणामुळे भारतीय शेतीत झालेले बदल मांडण्यात आलेले आहेत[2].

3 रमेश पाध्ये (13 ऑगस्ट 2015), संकटातील शेती आणि शेतकरी या लोकसत्ता वर्तमानपत्रातील लेखात निसर्गाच्या प्रकोपाने शेतकऱ्यांचे झालेले हाल व सरकारची भूमिका किती रास्त आहे यावर प्रकाशझोत टाकण्यात आला आहे [3].

4 श्री दत्तू ढगे (24 जुलै 2016), यांच्या शेती व पर्यावरण या महाराष्ट्र टाईम्समधील लेखात शेतीत वापरता येणाऱ्या आधुनिक तंत्रज्ञानाची माहिती मांडण्यात आली आहे[4].

संशोधन उद्देश:

1 भारतीय शेतीसमोरिल आव्हाने व उपाययोजनांचा अभ्यास करणे.

2 भारतीय ग्रामीण भागातील सकारात्मक परिस्थितीचा अभ्यास करणे.

1 संशोधन पध्दती: सदर संशोधन पेपरमध्ये गुणात्मक संशोधन पध्दतीचा वापर करण्यात आला आहे.

तथ्यसंकलन :

प्राथमिक व दुय्यम तथ्यसंकलन स्त्रोतांचा वापर खालीलप्रमाणे करण्यात आला आहे.

1 प्राथमिक तथ्यसंकलन स्त्रोतांचा वापर : अ निरीक्षण

2 दुय्यम तथ्यसंकलन स्त्रोतांचा वापर :अ संकेत स्थळांचा वापर ब वर्तमानपत्र

भारतीय शेतीसमोरील आव्हाने व उपाययोजना :

1 कमी धारणाक्षेत्र

ग्रामीण भागात शेतीचे अनेक छोटया तुकडयांमध्ये विभाजन झाल्याने छोटया शेतकऱ्यांना मोठया शेतीचे संघटनात्मक, वित्तिय, तांत्रिक फायदे व सिंचन सेवा कशा मिळवून देण्यात याव्या हे मोठे प्रश्न आहेत. 93 टक्के शेतकरी हे 4 हेक्टर जमिनधारणेच्या आतले आहेत 76 टक्के शेतकऱ्यांच्या नावे 2 हेक्टरपेक्षा कमी जमिन आहे. 54 टकके शेतकरी केवळ 1 हेक्टर जमिनीचे मालक आहेत[5]. मोठया विहीरी, ट्रॅक्टर्स व अन्य यंत्रसामग्रीचा ते पूर्ण उपयोग करु शकत नाही व ते सुधारणेपासून वंचित राहतात. अनेक शेतकऱ्यांना बॅकाकडून कर्ज मिळत नाही. ते जास्त दराने सावकारंकडून आजही कर्ज घेतांना दिसतात त्यामुळे त्यांच्याकडे शिल्लक कमी राहतांना दिसते व त्यांच्या गरिबीत वाढ होतांना दिसते. विनोबा भावेंची अपेक्षा व कल्पना अशी होती की, भुदानातील लाभार्थींनी एकमेकांशी सहकार्य करावे. परंतू, जमिनीच्या मालकीबदद्ल शेतकऱ्यांची भावना इतकी जबरदस्त असते की ते एकमेकांना सहकार्य करण्यास तयार नसतात. कुटुंबात होणारे मुलामुलींमधील शेतीचे विभाजन त्या भागांची रितसर मोजणी त्वरित होऊ न त्याची नोंदणी व्हावी ही प्रक्रिया सक्षम, शास्त्रिय पध्दतीने होत नसल्याने कुटुंबातील महत्वाचे प्रश्न लोंबकळत राहतात. मुलामुलींचे शिक्षण, विवाह इत्यादी खोळंबतात व आपआपसातील अविश्वास, हिंसा वाढीस लागते. ही प्रणाली त्वरित दुरुस्त व जलद होणे ग्रामीण जीवनातील शांततेकरीता महत्वाची आहे.

2 आत्महत्याग्रस्त शेतकऱ्यांचे प्रश्न

अनेकदा शेतीची मालकी वडील किंवा मोठा मुलगा यांच्या नावावर असते. आत्महत्या करणाऱ्या शेतकऱ्यांच्या नावावर ही जमिन नसल्याने ते शेतकरी असल्याचे मान्य केले जात नाही व अशा शेतकऱ्यांना नुकसानभरपाई मिळत नाही. शेतकऱ्यांच्या आत्महत्याबाबत ग्रामपंचायतीव्दारे त्याला वित्तिय व्यवहार करण्याचा अधिकार दिलेला आहे असा मुखत्यारनामा (पॉवर ऑफ ऍटॅर्नी) करुन घेणे किंवा ज्या शेतकऱ्याची आत्महत्या घडली असेल त्या शेतकऱ्याला संयुक्तपणे नुकसानभरपाई देण्याची व्यवस्था केली पाहिजे[6]. ग्रामीण अर्थव्यवस्थेत कौटुंबिक सहकार्य टिकून असल्याने आत्महत्याग्रस्त शेतकऱ्याच्या कुटुंबाला मदत केली जाते. अनेकदा आत्महत्याग्रस्त शेतकऱ्याची जबाबदारी त्याच्या बायकोवर किंवा आईवर येवून पडते. अशा महिलांचा हक्क कोणी हिरावू नये म्हणून हक्कांची त्वरित व पर्याप्त नोंदणी केली जाईल अशी कायदयात तरतूद करुन घेवून हे ग्रामपंचायतीकडे किंवा पंचायत समितीकडे सोपविता येईल अशी तरतूद होणे गरजेचे आहे.

3 सिंचनक्षेत्रांचा अभाव

भारतातील एकूण शेतीपैकी 65 टकके शेती ही कोरडवाहू आहे व ती निसर्गाच्या लहरीपणावर अवलंबून असल्याने हया शेतीत परदेशातील आधुनिक तंत्रज्ञान वापरणे शक्य नाही.सिंचनासाठी पाणी

उपलब्धतेमुळे शेतकरी गरीब व श्रीमंत ठरतात. एकापेक्षा जास्त किंवा 2 ते 3 धान्यपिकांवरुन त्यांचे उत्पन्न ठरते. पश्चिम विदर्भात कोरडवाहू प्रदेशात 25 ते 30 एकर जमीन असलेला शेतकरीही पावसावर एकच पीक घेऊ शकत असल्याने तो गरीब असतो. पंजाब हरियाणा, पश्चिम बंगाल व दक्षिणेच्या राज्यांमध्ये सिंचनाचे भरपूर पाणी उपलब्ध आहे. 95 ते 97 टक्के शेती सिंचित आहे. त्यामुळे शेतकऱ्यांमध्ये आपआपसातील विषमता कमी आहे आणि सरासरी दर व्यक्ती शेती उत्पन्न व कारखाना उत्पन्न यातील अंतर कमी असल्याने ग्रामीण शहरी विषमता कमी आहे. महाराष्ट्रातील 20 टक्के क्षेत्र हे सिंचनाखाली आहे[7]. त्यामुळे ज्यांना सिंचनसेवा उपलब्ध आहे ते श्रीमंत व कोरडवाहू जमीन असणारे शेतकरी हे गरीब शेतकरी आहे असे विभाजन साधारणतः ग्रामीण भागात झालेले आढळून येते. कोरडवाहू भागही जास्तीत जास्त कसा सिंचनाखाली आणता येईल यासाठी प्रभावी उपाययोजना राबविणे गरजेचे आहे.

4 बी बीयाणांची उपलब्धता

बीयांणांच्या बाबत शेतकरी कंपन्यांवर अवलंबून आहे. यात शेतकऱ्यांचे स्वावलंबन होणे गरजेचे आहे. त्यासाठी तांत्रिक शिक्षण देणे गरजेचे आहे. याचा मोठा फायदाही इतर कंपन्या घेतांना दिसतात मग भारताला कृषीप्रधान देश म्हणायचे तरी कसे ? असा मोठा प्रश्न निर्माण होतांना दिसतो हे काम कृषी विदयापीठे व राष्ट्रीय स्तरावरील कृषी संशोधन संस्थांनी हाती घेतले पाहिजे.

5 आधुनिक साठवणगृहांचा अभाव

अनुकूल नैसर्गिक हवामान शेतकऱ्यांना उपलब्ध झाल्यास मोठया प्रमाणात उत्पादन निर्मिती होते मात्र योग्य साठवणगृहांची सुविधा नसल्याने सर्व माल वाया जातो व शेतकऱ्यांना मोठया तोटयांना सामोरे जावे लागते. यासाठी योग्य साठवणगृहांची व्यवस्था सरकारने निर्माण करणे गरजेचे आहे.

6 निर्यातीसंबंधी समस्या

मालाची योग्य गुणवत्ता असूनही केवळ निर्यातीयंबंधी योग्य माहितीचा अभाव शेतकऱ्यांना असल्याने ते निर्यातीचे फायदे घेवू शकत नाही. यासाठी सुध्दा शेतकऱ्यांमध्ये निर्यातीबदद्ल जागृती घडवून आणल्यास परकिय चलनात मोठी वाढ होवू शकते याचा फायदा शेतकऱ्यांना व देशाला दोन्हींना होवू शकतो.

7 जास्त मालविक्रीची समस्या

शेती ही पूर्णतः निसर्गावर अवलंबून असते. शेतीचे उत्पन्न कमी झाले भाववाढ झाली तर सगळीकडे बोभाटा होतांना दिसतो. मात्र जेव्हा वाढीव उत्पन्न निर्माण होते तेव्हा अतिरिक्त मालाला भाव दयायला कोणीच तयार नसते. मातीमोल भावाने चांगल्या किमतीचा माल बाजारपेठेत विकावा लागतो. अनेक शेतकरी तर चांगला माल रस्त्यावर ओततांना दिसतात. असे न होवू देण्यासाठी शेतीमालावर प्रक्रिया करणाऱ्या उदयोगांची निर्मिती कशी होईल यासाठी योग्य धोरण राबविणे गरजेचे आहे.

8 शासकीय अनुदानासंबंधीच्या समस्या

अमेरिका व यूरोपमध्ये जमिन जास्त व शेती करणारी लोकसंख्या 3 टकके इतकी आहे. हेलीकॉप्टरने पेरणी फवारणी केली जाते. श्रमिकांची उपलब्धता नाही. त्यामुळे 40 40 फुटांची कापणी एकदम होते. धान्य पोत्यात भरेपर्यंत एकटा माणूस काम करु शकतो इतकी प्रगत यंत्रणा कार्यरत आहे. उत्पादन गरजेपेक्षा जास्त असल्याने कापूस, गहू, मका, वाटाणा यांची निर्यात केली जाते. बरीचशी शेती कृषीनिर्यात व्यवसाय करणाऱ्या कंपन्या करतात व त्यासाठी शेतकऱ्यांकडून माल

खरेदीचे करार करुन घेतले जातात. ज्या देशात त्यांच्या मालाला मागणी नसते असा माल अविकसित देशांत विकला जातो. अमेरिकेसारखे प्रगत देश त्यांच्या 2 ते 3 टकके शेतकऱ्यांना भरमसाठ अनुदान देते. मात्र इतर देशातील शेतकऱ्यांच्या अनुदानावर आक्षेप घेते त्यामुळेही शेतकऱ्यांना स्पर्धेला सामोरे जाता येत नाही व शेतकऱ्यांचे नुकसान होत असते[8].

9 बाजारपेठेसंबंधीच्या समस्या

अनेक शेतकरी खूप चांगल्या दर्जाच्या मालाची निर्मिती करतात परंतू, बाजारभाव हा बाजारपेठेवर अवलंबून असतो. अनेकदा शेतकऱ्यांना योग्य भाव मिळत नाही. पिकासाठी खर्च केलेला खर्चसुध्दा भरुन निघत नाही त्यामुळे शेतकऱ्यांच्या अपेक्षांचा भंग होतो व वर्षानूवर्ष हा तोटा वाढत जावून अनेक शेतकऱ्यांना अनेकदा जमिनसुध्दा विकावी लागते.गेल्या 60ते 70 वर्षापासून शेती, ग्रामीण व आदिवासी भागांकडे दुर्लक्ष होतांना दिसते. आंतरराष्ट्रीय व्यापारात शेतीमाल निर्यात केला जातो परंतू शेतकऱ्यांकडून आंतरराष्ट्रीय पातळीपर्यत माल पाठविणारी यंत्रणा ही सर्व खासगी आहे. खरा कष्ट करणारा वर्ग लाभापासून वंचित राहतो व इतर मध्यस्थच त्याचा फायदा घेतात. मार्केट यार्डात मालाचा भाव ठरविणाऱ्या संस्था आहेत मालाची किंमत ठरविण्याची एकाधिकारशाही सगळी हया संस्थांकडे आहे. शेतकऱ्यांनी कष्टाने पिकविलेल्या मालाचा अक्षरक्षः लिलाव केला जातो. त्यातही केलेले कष्ट तर बाजूलाच परंतू केलेला खर्च भरुन निघतो की नाही याची हमी त्यांना नसते म्हणजेच खर्च करुन कष्ट करुन अनेक नैसर्गिक व इतर समस्यावर मात करुन स्वतःच्या मालाचा लिलाव व मालाची लुटमार शेतकऱ्यांना उघडया डोळयांनी बघावी लागते हे चित्र कुठेतरी थांबले पाहीजे म्हणून केंद्रिय समिती कायदा बदलविण्याची गरज आहे. भाजीपाला, फळे यांच्या बाबतीत शेतकऱ्यांचे बाजार संघटित करुन त्यातून मध्यस्थ, दलाल, व्यापारी यांचे उच्चाटन करुन त्यांना योग्य भाव मिळावा यासाठीची योग्य यंत्रणा अस्तित्वात असणे गरजेचे आहे.

10 अर्थसंकल्पात होणारे दुर्लक्ष

अर्थसंकल्पात गेल्या 60ते 70 वर्षापासून शेती, ग्रामीण व आदिवासी भागांकडे दुर्लक्ष होतांना दिसते. अर्थसंकल्पात औदयोगिकीकरणाच्या प्रगतीत सरकारी धोरणात प्रगती मानले जाते त्यामानाने कृषी धोरणाकडे दुर्लक्ष केले जाते. हे टाळून शेती व शेतीपूरक उदयोगांनासुदा प्रोत्साहन मिळेल असा अर्थसंकल्प तयार करण्यात यावा की जेणेकरुन शेतीच्या सर्वांगिण विकासास चालना मिळेल.

11 रुढी परंपरांवर अतिरिक्त प्रमाणात खर्च

ग्रामीण भागात आजही हुंडयासारख्या प्रथा सर्रास चालू आहेत. लग्न, समारंभ व उत्सव यावर अतिरिक्त प्रमाणात खर्च करण्याची प्रथा आजही कायम आहे. प्रसंगी कर्ज काढून सर्व रूढी परंपरा पूर्ण केल्या जातात .यामुळेही शेतकरी कर्जाच्या विळख्यात अडकले जातात व नंतर अनेक समस्यांना सामोरे जावे लागते.

12 जमिन विकीची समस्या

शेतीतून उत्पन्नाची हमी मिळत नसल्याने शेतकऱ्यांकडून जागतिकीकरण व सेझच्या नावाखाली अनेक उदयोजक स्वस्तात जमिन खरेदी करतांना दिसतात व शेतजमिन विकलेला शेतकरी अकुशल कारागिर म्हणून शहरात काम करतांना दिसतो.

13 रस्ते व इलेक्ट्रीसिटीच्या सोयीसुविधांचा अभाव

देशातील शेतीला रस्ते नाहीत अनेक ग्रामीण भागातील शेतकऱ्यांना रस्त्याच्या प्रश्नाला सामोरे जावे लागते.

14 सेंद्रिस शेतीविषयक ज्ञानाचा अभाव

कंपोस्टिंग पासून सेंद्रिय खत तयार करण्याचे तंत्र शेतकऱ्यांना माहित नाही. त्यामुळे हया शेतीचे फायदे शेतकऱ्यांना घेता येत नाही. माती परीक्षण व त्यावर आधारित पीक सल्लाही वेळोवेळी शेतकऱ्यांना देणे आवश्यक आहे. मातीचे स्वास्थ किंवा नैसर्गिक सुपिकता मापनाचे एक गमक म्हणजे मातीतील सेंद्रिय कर्बाचे प्रमाण. भारतीय शेतीत हे प्रमाण 1 टकके इतके पाहिजे. हे प्रमाण 0.4 टकके इतके घसरले आहे[9]. मातीच्या नैसर्गिक सुपिकता टिकवण्यासाठी प्रयत्न करणे गरजेचे आहे.

15 **अनुभवांचे आलेखन**

शेतमजूर, शेतकरी, आदिवासी यांच्या अनुभवांचे आलेखन नाही. शेती शिक्षणाची व्यवस्था नाही . त्यामुळे शेतीतील मागील अनुभव व शिक्षण वाया जाते. त्याचा फायदा पुढच्या पिढीला होत नाही.

ग्रामीण भारतातील सकारात्मक बाबी

1 विविधतेत एकता

ग्रामीण भागात आजही विविधतेत एकता आढळते. विविध जाती धर्माचे लोक गुण्यागोविंदाने राहतात. एकमेकांच्या दुखःत सहभागी होतात.

2 सहकार्य वृत्ती

ग्रामीण भागात पदोपदी शेतकऱ्यांना एकमेकांची गरज पडते. त्यामुळे एकमेकांना सहकार्य शेतकरी करतांना दिसतात.

3 कमी गरजा

ग्रामीण भागातील लोकांच्या गरजा कमी असल्याने सामाजिक शांतता ग्रामीण भागात जास्त प्रमाणात आढळून येते.

4 स्पर्धेचा अभाव

ग्रामीण भागात जीवघेण्या स्पर्धेचा अभाव आढळतो. त्यामुळे कमी उत्पन्नातही शेतकरी सुखासमाधानात राहतांना दिसतात.

5 सणउत्सवात आनंदाचे वाटप

ग्रामीण भागात आजही सणउत्सव, रूढीपरंपरा पाळल्या जातात. सर्व समाज एकोप्याने यात एकत्र येतो व आनंदाची देवाणघेवाण करतांना दिसतो.

6 स्वच्छ वातावरण

ग्रामीण भागात शहरी भागाच्या तुलनेत आजही स्वच्छ वातावरण उपलब्ध आहे.प्रदूषणमुक्त वातावरणाचा फायदा आजही ग्रामीण भागात होतांना दिसतो.

8 चंगळवादी संस्कृतीपासून अंतर

गरजेपेक्षा जास्त खरेदी किंवा आधुनिक फॅशन्सचा अवलंब करण्यात ग्रामीण भागात कोणतीही स्पर्धा आढळत नाही.त्यामुळे चंगळवादी संकृतीपासून ग्रामीण भाग आजही अंतर ठेवून आहे.

अनुमानः

शेती व ग्रामीण भाग हा खऱ्या भारताचा चेहरा आहे.त्याचा विकास झाल्याशिवाय भारताचा विकास साधला जावू शकत नाही.विकसनशील अर्थव्यवस्थेकडून विकसित अर्थव्यवस्थेकडे जायचे असेल तर भारतीय शेतीचा व ग्रामीण भागाचा विकास साधणे आवश्यक आहे.त्यासाठी मुलभूत समस्या लक्षात घेवून उपाययोजना करणे आवश्यक आहे. शेतीसुध्दा एक खासगी उदयोग आहे. मात्र नाशवंत मालाची निर्मिती करणारा व अनियंत्रित बाजारपेठांमध्ये त्याचा माल विकला जातो. त्यामुळे अशिक्षित शेतकरी त्याच्याच मालाचे योग्य पैसे, उत्पन्न मिळवू शकत नाही . त्यामुळे इतर

उदयोगांबरोबर शेतीलाही मानाचे स्थान दिल्याशिवाय शेतीचा व पर्यायाने ग्रामीण भागाचा व भारताचा विकास साधला जावू शकत नाही.

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हवामान आणि मानवी जीवन पध्दती!

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साराश:(Abstract):

हवामान हा मानवी जीवनावर परिणाम करणारा एक अतिशय महत्वाचा प्राकृतिक घटक आहे. हवामानाचा मानवी जीवनावर प्रत्यक्ष वा अप्रत्यक्षपणे परिणाम होतो. प्राचीन काळात वेळोवेळी झालेल्या हवामानाच्या बदलातून मानवाची उत्क्रांती झाली. हवामानाच्या अभ्यासात तापमान, बाष्प, पर्जन्य, दव–दहीवर इत्यादी सर्व आविष्कार तापमानावर अवलंबून असतात. यांपैकी पर्जनांच्या प्रमाणावर कोणत्याही भागातील पाणीपूरवठा अवलंबून असतो. नैसर्गिक साधनसंपत्ती निर्माण करण्याची विशिष्ट क्षमता पृथ्वीची असते. गेल्या शे –दिडशे वर्षात मानवाने आपल्या सुखी व समृद्व जीवनासाठी व विकासाच्या नावाखाली नैसर्गिक संपत्तीची वारेमाप लुटचालविली आहे. तर दुसऱ्या बाजुला नैसर्गिक चक्रामुळे वातावरणात सातत्याने बदल होत आहे. अर्थात बदल हा निसर्ग नियम आहे. change is the law of nature- या प्रमाणेच मानवी संस्कृतीत ही परीवर्तन होत असल्याचे चित्र स्पष्ट होत आहे. भाषा, धर्म, रूढी, परंमपरा, कला, व्यवसाय उदयोग, यंत्र, वाहतूक संदेशवहन, शहरीकरण, नवनवे शोध इत्यादी क्षेत्रात आपले कर्तृत्व सिद्ध करून दाखवत आहे.

बीजसंज्ञा (Keyword): हवामान, तापमाण, जीवनपद्धती, परिवर्तन इत्यादी

उद्दिष्टये (Objectives):

1. हवामान प्रदेशाच्या बदलानुसार मानवी जीवनपद्धती समजून घेणे.
2. मानवी जीवनपद्धतीस हवामान घटक कसा जबाबदार आहे हे अभ्यासणे.

संशोधन पद्धती व माहिती संकलन (Methodology & data collection):

प्रस्तूत लेखासाठी दुय्यम साधनाचा आधार घेण्यात आला आहे. या विषयाशी संबंधीत अनेक पुस्तके, संदर्भग्रंथ, मासिके, संशोधन लेख, वर्तमानपत्रे, राज्य–राष्ट्रीय व आंतरराष्ट्रीय स्तरावर प्रकाशित होणारी लेखनसंपदा इत्यादी त्याबरोबर इंटरनेटवरील विविध वेबसाईटचा आधार घेण्यात आला आहे.

प्रस्तावना (Introduction):

नैसर्गिक घटकात हवामानाला अनन्य साधारण महत्व आहे. पृथ्वीवरील जीवसृष्टीचे संपूर्ण जीवनचक्र हवामान नियंत्रित करत असते. जीवसृष्टीतील मानवाचे जीवनचक्र पूर्णतः निसर्गावर अवलंबून आहे. हिप्पोक्रेटस (Hippocrates 460 BC to 359 BC) यांनी On Airs, Waters and Places या ग्रंथात आशिया व युरोप मधील मानवी जीवनाची तुलना केली आहे. ग्रीकांच्या आध्यात्मिक गुणव व्यवहारावर हवामान, प्राकृतिक रचना व मृदेचा प्रभाव आहे. पश्चिम युरोप मध्य सौम्य, शीत व आल्हादायक हवामान असल्याने तेथील मानवाची कार्यक्षमता व उत्साह टिकून राहतो त्यामुळे ते स्वातंत्र्यप्रेमी व साहसी आहेत तर आशियातील लोक उष्ण, दमट हवामानामुळे लवकर थकतात. त्यांची कार्यक्षमता जास्तकाळ टिकत नाही, त्यामुळे ते गुलामगिरीत राहण्याच्या वृत्तीचे आहेत.

विषय विवेचन **(Discussion):**

Climate change ज्याला आपण मराठीत हवामान बदल म्हणतो. पृथ्वीवरील हवामानामध्ये प्राकृतिक अथवा मानवनिर्मित अशा कोणत्याही कारणामुळे सातत्याने किमान सहा वर्ष किंवा त्यापेक्षा कितीही जास्त काळासाठी आणि आकडेवारीसह सिद्ध करता येईल असा दखल घेण्याएवढा बदल झाला तर त्यास हवामान बदल असे म्हणता येईल (http:// prahaar. in) हवामान घटकापैकी पाउस, तापमान, सुर्यप्रकाशाचा कालावधी, हवेचा दाब, वाऱ्याचा वेग, बाष्पीभवनाचा वेग या व अशाच अनेक घटकामध्ये मोठ्या प्रमाणात नेहमीपेक्षा बदल होणे, तसेच तो बदल जाणवण्याइतपत असणे, ष्यामुळे वातावरण आणि पर्यावरण बदलते आणि हवामान घटकांच्या नेहमीच्या आकडेवारीत सांख्यिकीय बदल दिसने यासच बदल ही संज्ञा प्राप्त झाली आहे.

मानवी जीवनपद्धती आणि हवामान :

मानवी जीवनाचा विकास हवामानावर अवलंबून असते. म्हणून स्थलपरत्वे मानवाचे जीवन भिन्न स्वरूपात पहावयास मिळते. प्रामुख्याने अन्न, वस्त्र, निवारा, उदयोग–व्यवसाय, आचार–विचार, वेशभुषा, लोकसंख्या, शोधसंशोधन, अंधश्रद्धा इत्यादी मानवी जीवनाशी निगडीत असणाऱ्या घटकाचा समावेश होते. त्याचा थोडक्यात परामर्श खालील प्रमाणे आला आहे.

1. **आहार (अन्न)** :

शारीरिक उर्जेच्या उत्पत्तीपत्तीसाठी ज्या पदार्थाचे सेवन केले जाते. त्यास अन्न म्हणतात. मनुष्य ज्या प्रदेशात उपलब्ध असलेल्या पदार्थांना अन्नामध्ये वापर करतो. अर्थात हे पदार्थ त्याला सहजासहजी प्राप्त होतातच असे नाही. पदार्थ मिळवण्यासाठी त्याला बरेच प्रयत्न करावे लागतात.
उष्ण हवामानाच्या प्रदेशात वास्तव्य करणाऱ्या मानवाला अन्नाची सुविधा सहजगत्या उपलब्ध होते. याचे उत्तम उदाहरण म्हणजे आपला भारत देश होय. कारण भारत उष्णकटीबंधीय देशापैकी एक देश आहे.तसेच जगाामध्ये वैभवसंपन्न, सांस्कृतिकदृष्ट्या व शेतीप्रधान म्हणून ओळखला जातो. सामान्यपणे धान्य उत्पादनाच्या दृष्टीने पाहिल्यास दक्षिण भारतात भाताचे तर उत्तर भारतात गहू पिकांचे उत्पादन मोठ्या प्रमाणात घेतले जाते. याचाच अर्थ उत्तर भारतीय लोकांच्या आहारात तांदूळ (भात) हे प्रमुख अन्न असल्याचे दिसून येते तर मसाल्याचे पदार्थ सागरी किनारपटटीच्या भागात घेतले जाते. भारत उष्णकटिबंधीय देश म्हणून ओळखला जात असला तरी हवामानाचे विविध प्रकार व त्यानुसार अन्नउत्पादनात बदल होतो परिणामी मानवाच्या आहारात बदल दिसून येतो. याशिवाय फळाच्या बाबतीतही भिन्नता दिसून येते महाराष्ट्रात आंबा, जम्मू व काश्मिर मध्ये सफरचंद व केसर आसाममध्ये चहा इत्यादी.

2. वस्त्र व वेषभुषा :

मानवाच्या मूलभूत गरजापैकी एक मुलभूत गरज आहे. मानव उन, वारा, पाउस, यापासून संरक्षन तसेच लज्जा रक्षणाकरीता वस्त्राचा वापर करतो. हे जरी खरे असले तरी स्थलपरत्वे वस्त्र व वेशभुषेमध्ये फरक आढळतो याचे प्रमुख म्हणजे प्रादेशानुसार बदलत जाणारे हवामान होय. म्हणून जगातील उदाहरणादाखल जर्मनी, ब्रिटन, स्वीडन इत्यादी थंड प्रदेशातील युरोपीय लोक उबदार व गरम लोकरीचे, उलनचे कपडे वापरतात. पण जर का तेच युरोपीय लोक भारतरसारख्या उष्ण कटिबंधीय प्रदेशात तामिळनाडू केरळ सारख्या राज्यात वास्तव्य करू लागतात. तेव्हा तेथील गरमी मातृदेशातील हवामानापेक्षा अधिक उष्ण जाणवू लागल्याने त्यांना तेथील असह्य होते. त्यापासून संरक्षण करण्यासाठी उलनचे, लोकरीचे कपडे वापरण्याऐवज ीते सुती वस्त्र वापरू लागतात. तसेच उनापासून बचाव करण्यासाठी छत्री सारख्या साधनाचाही वापर करू लागतात. याउलट दक्षिण भारतीय, अरबीदेश, आफ्रिकन इत्यादी उष्ण हवामान प्रदेशातील लोक कॅनडा, सैबैरिया सारख्या थंड

व टुंड्रा हवामान प्रदेशात वास्तव्यास गेल्यास तेथील थंड हवा त्यांना असह्य करते. तेव्हा ते सुती वस्त्राऐवजी उली व लोकरापासून तयार केलेल्या कपड्याची निवड करतात.

3. निवारा व वस्ती :

मानवी जीवनात अन्न व वस्त्र यांना जेवढे महत्व आहे, तेवढेच महत्व निवाऱ्यालाही आहे. कारण निवारा किंवा घर ही एक मानवाची अत्यावश्यक गरज आहे. मानव उष्ण व थंड वारे, उन, पाउस, जंगली हिस्त्र प्राणी, शत्रू इत्यादीपासून संरक्षण व्हावे या करीता आणि अन्नधान्य व इतर उपयोगी वस्तू ठेवण्याकरिता निवारा करून राहतो. मानवाच्या इतर मुलभूत गरजावार हवामानाचा प्रभाव पडतो तसा प्रभाव मानावाच्या निावरा व वसाहती वरही होतो. थंड प्रदेशातील लोक हिवाळयाच्या दिवासात कडक थंडीपासून बचाव करण्यासाठी आपल्या घराची दारे व खिडक्याची रचना व आकार लहान ठेवतात. यामुळे दिवसभर पडणाऱ्या थंडीपासून घेर उबदार राहण्यास मदत होते. हिमालय पर्वत प्रदेशातील लोक सुध्दा आपल्या घराची दारे खिडक्या लहान ठेवतात. कारण बर्फकी ऑधी अथवा अतिथंड हवा घरात मोठया प्रमाणात येऊ नये व जेणे करून घेर उबदार राहावीत म्हणून. याउलट उष्णप्रदेशातील लोकांच्या घराला दारे खिडक्या मोठमोठया आकाराच्या व जास्त वेन्टीलेटर असलेली घरे बनवितात त्याच बरोबर खिडक्या व दाराला पडदे लावतात. त्यामुळे हवा खेळती राहवी व उष्ण हवेचे संचलन होण्यामुळे उष्णतेची तीवृता कमी जाणवते.

4.शारिरिक **लक्षणे** : सुप्रसिध्द ग्रीक तत्वज्ञ ॲरिस्टॉटल (इ.स.पू. 384 ते इ.स.पू. 322) यांच्या मते भागेलिक भिन्नतेमुळे माणसाचा रंग, शरीर रचना, केशरचना यासारख्या मानव जातीच्या काही गुणात भिन्नता दिसून येते दृ हे पटवून देण्यासाठी आषिया व युरोप या दोन क्षेत्राची तुलना केली आहे. युरोपातील समशीतोष्ण हवामुळे हे लोक रंगाने कृष्णवंशीय आहेत. तसेच आफ्रिकेतील जास्त तापमानामुळे तेथील निग्रो लोक रंगाने काळे आहेत. यांनी केलेले हे विश्लेषण मानावाच्या जीवनावर होणारा परिणाम स्प''ट करून थांबत नाही तर त्याचा राजकीय स्थितीला सुध्दा कारणीभूत असल्याचे स्पष्ट करते. इंग्रजी अंमल भारतात असताना काळे–गोरे भेदांमुळे भारतीयांना कनिष्ट पदावर नेमणूक दिली जात असत व गोरे इंग्रजाना मोठया हुदयावर नियुक्ती देत. महात्मा गांधीचा आफ्रिकन दौरा इतिहास प्रसिध्द आहेच. रेल्वेच्या फस्क्लास डब्यातून बाहेर काढण्यात आले ते केवळ वर्णद्वेषामुळेच.

5. उदयोग व्यवसाय :

उदयोगधंदयाचा विकास हा हवामानाशी संबंधित आहे. हवामानातील तापमान, आर्द्रता, पर्जन्य व धुके इत्यादी घटकांचा प्रभाव उदयोगावर पडतो तर हवामानावर अक्षांश, समुद्र सपाटीपासूनचे अंतर, जमीन व पाण्याचे वितरण, समुद्रप्रवाह, जमीनीचा उतार इत्यादीचा प्रभाव पडतो. तेवहा उयोगाचे स्थान निवडताना हवामान घटकांचा विचार करावाच लागतो. अनुकूल हवामान नसेल तर उदयोग व्यवसायाचा विकास होत नाही. प्रतिकूल हवामानात उदयोग निर्माण करणे परवडत नाही. जगात सुतीवस्त्र उदयोगास दमट हवामान लागत असल्याने भरतात मुंबई, चेन्नई तसेच लंडन, टोकिओ या किनारपटटयाच्या प्रदेशात विकसित झाले. सिमेंट व चूनखडी उदयोगासाठी उष्ण व कोरडी हवा लागत असल्याने ते गुलबर्गा, बडवानी येथे आहेत. िउ अल्हाददायक हवामान हे पर्यटन व्यवसायासाठी चालना देते. त्यामुळे माथेरान, महाबळेश्वर, शिमला, कुलू–मनाली, उटकमंड, मसूरी, नैनिताल ही ठिकाणे पर्यटकांना आकर्षित करतात.

शिवाय हवामानाचा मानवाच्या कार्यक्षमतेवरही प्रभाव पडतो. डच लोकांची शारिरिक क्षमता मजबूत असल्याने सतत कामात मग्न राहण्याची वृत्ती बौध्दिक व विचार करण्याची क्षमता आणि संयम इत्यादी गुणवैशिष्टये त्यांच्यात दिसून येतात. तसेच हवामानावर मानवाचे व्यवसाय अवलंबून आहेत.

लाकुडतोड, 'ोती, खणकाम, पशुपालन, वाहतूक संदेशवहन इत्यादी. शेतीसारख्या व्यवसाय पूर्णतः हवामानावर आधारित आहे. म्हणूनच काही विशिष्ट हवामानाच्या प्रदेषात कही विशिष्ट प्रकारची पीके घेतली जातात. उष्ण कठिबंधीय उष्ण हवामानाच्या प्रदेशात तांदूळ, कापूस, रबर, तंबाखू, कॉफी, चहा इत्यादी पिके घेतली जातात. समशीतोष्ण कटिबंधीय प्रदेषात गहू, मका, बटाटे, बार्ली, ओट, राय इत्यादी पीके घेतली जातात.

6. मानवी आरोग्य व स्वास्थ :

ज्याप्रदेशात बर्फाने आच्दादलेली क्वचित ठिकाणी जमिन उघडी आढळून येते, मुख्यत्वे अशा प्रदेशातील मानव, वनस्पती, आणि प्राणी जीवनास प्रतिकुल आहे (उदा. टुंड्रा प्रदेशातील एकस्मिो लोक) ज्या प्रदेशात सदैव हवेत आर्द्रतर आते. येथे लहान दिवस असलेल्या प्रदीर्घ अंधाऱ्या राव्रीचा हिवाळा आणि अत्यल्प काळाचा कालावधी असतो म्हणजे 09 महिने हिवाळा व 03 महिने उन्हाळी असतो या महिन्याचा कालावधीत सलग राव्रीमुळे येथील लोकांच्या जीवनावर विपरीत परिणाम झालेला दिसून येतो. ध्रुवीय प्रेदशात राव्रीमुळे अशक्तपणा, रक्तक्षय, निद्रानाश वेडाचे झटके येणे मानसिक संतुलन बिघडणे, आत्महतया करण्याची इच्छा होणे यासारख्या विकृती आढळून येते.

टुंड्रा प्रदेशातील हिमवादळे ही मानवाचा फार मोठा शव्रू आहेत. हिमवादळे फार काळ टिकले तर या लोकंना गोठून मरावे लागते. या भागात वर्षातील फक्त 70 दिवस दहिवर मुक्त असतात. त्यावेळी स्वच्छ सूर्य प्रकाश आणि हवा गरम–दमट असते. त्यामुळे जमिनीवरील बर्फ काही प्रमाणात वितळतात.

7. संशोधन :

शुष्क हवामानाच्या प्रदेशात अधिक काळ निरभ्र असल्यामुळे आकाशातील ग्रह, तारे, आकाशगंगा इत्यादी स्पष्टपणे दिसतात शिवाय याचा प्रभाव मानवाच्या मस्तिष्क वर पडतो. यामुळे यांच्या विचाराला प्रेरणा मिळते. गणितीय साध्य सोडवण्यास देखील येथील हवामान व निरभ्र आकाशाची मदत अभ्यासकांना होते. म्हणून मिस्त्र अरब, बुखारा इत्यादी शुष्क हवामानातील देशात मोठया प्रमाणात खगोलीय संशोधन होण्यास मदत झाली. अर्थात उत्कृष्ट चारित्र्य निर्माण होण्यास तेथील हवामान हा घटक कारणीभूत ठरतो.

8. अंधश्रध्दा :

18 व्या शतकात सर इम्यानुअल कॉन्ट (1724 ते 1804) आपल्या भौतिक भूगोलात हवामानाचा प्रभाव स्पष्ट करताना प्रतिपादन केले की उष्ण प्रदेशात वास्तव्य करणारे लोक भित्रे, आळशी असतात. त्यांच्या भित्रेपणामुळे त्यांच्यात अंधश्रध्दा वाढते. जेथे राजेशाही असते तिथे गुलामगिरी प्रवृत्ती वाढत असते. मानव व प्राणी जेव्हा दुसऱ्या प्रदेशात स्थलांतर करतात त्यावेळी त्यांच्यावर हवामान बदलाचा परिणाम होतो. उदा. तपकिरी रंगाच्या खारी या सैबेरिया मध्ये स्थलांतर केल्यामुळे त्यांचा रंग राखाडी–करडा झाला आहे. तर पांढऱ्या रंगाच्या गायी राखाडी'भूऱ्या रंगाच्या झाल्या आहेत.

9. मानवाची कार्यक्षमता :

मानवाच्या कार्यक्षमतेवर हवामानाचा जितका परिणाम होतो तितका इतर कोणत्याही घटकाचा होत नाही. हवामानात होणाऱ्या बदलाचा मानवी कार्यक्षमता आणि शारीरिक क्रियावर परिणाम होतो. निररिाळया हवामानाच्या प्रदेषात मानवाची कार्यक्षमता कमी अधिक असलेली दिसून येते. भारतात राहणाऱ्या लोकाच्या कार्यख्मतेचा विचार केला असता त्याच्या कार्यखमतेत फरक आढळतो. उदा. तामिळनाडू, केरळ , असाम व पश्चिम बंगाल या राज्यातील हवामान उष्ण, दमट असल्यामुळे तेथील माणसाची कर्यक्षमता कमी असलेली दिसून येते. याउलट भारतातील उंच प्रदेषात राहणाऱ्या लोकांची

कार्यक्षमता आल्हाददायक हवामानामुळे जास्त आहे. उदा. जम्मु काश्मीर, हिमाचल प्रदेष भारतातील इतर राज्यातील उंच प्रदेष. मानवाची कार्यक्षमता जास्त असणाऱ्या दृष्टिने कोणत्याही प्रदेशातील तापमान फार जास्त किंवा कमी असावयास नका. हवेमध्ये र्आतेचे प्रमाण जास्त किंवा कमी असावयास नको. हवामानाची कार्यक्षमतेच्या दृष्टिने अनुकूल किंवा आदर्श परिस्थिती व्यक्ती, त्याचे वय, त्याचा व्यवसाय आणि जीवनमान यानुसार भिन्न भिन्न असते.

10. लोकसंख्या व आर्थिक लाभ :

सुप्रसिध्द ग्रीक तत्वज्ञ ॲरिस्टॉटल (इ.स.पू.348 ते इ.स.पू. 322) याच्या मते युरोपीय लोक तेथील शीत हवामानामुळै उत्साही, धाडसी व शूर असले तरी त्यांच्यात कही प्रमाणात बुध्दिमता व कला कौशल्या कमी असते. मात्र शौर्य व धाडसामुळे ते स्वतंत्र रहण्याचा वृत्तीला प्राधान्य देतात याउलट आशियाच्या उष्ण प्रदेशात राहणारे लोक बुध्दिमान व कुशल उत्तम राज्यकर्ते होउ शकतात मात्र त्यांच्यामध्ये धाडसी उत्साही व सातत्याचा अभाव अर्थात आळशी आहेत. म्हणूनच त्याच्या नशिबी दास्यत्व येते. दीर्घकाळ पारतंत्र्यात राहतील उदा. भारत हा त्यापैकी एक देश आहे.

याशिवाय हवामान घटकाचा परिणाम काम करणाऱ्या मजूरावर सुध्दा होतो. अधिक उष्णतामान असणाऱ्या प्रदेशातील मजूर उष्णतेच्या तीवृतेमुळे लवकर थकतात. याउलट समशीतोष्ण हवामानातील मजूर अधिक काम करतात. त्यांच्यात उत्साह संचारलेला असतो. परिणामी त्यांच्या आर्थिक मोबदल्यावर होतो. अर्थात मजुरी आणि वेतन याचा संबंध हवामानाशी असतो हे नाकारता येत नाह. एवढेच नाहीतर लोकसंख्या वाढ–घट सुध्दा हवामान घटकावर अवलंबुन असते. जगातली निम्मी लोकसख्या उष्णकटिबंधीय हवामानाच्या प्रदेशात केंद्रीत झालेली आहे. जसी लोकसंख्या वाढ तशी मजुरांची संख्या वाढत जाते परिणामी मजुरीचे दर घटत जातात.

निष्कर्ष (Conclusion):

खालील काही महत्वाचे निष्कर्ष अभ्यासातून काढलेले आहेत ते पुढील प्रमाणे

1. मानवाच्या जीवनशैलीवर प्रदेशाचे स्थान, आकार, रचना, उंचसखलपणा, हवामान या सर्व प्राकृतिक घटकांचा प्रभाव पडलेला असतो.
2. मानाच्या अन्न, वस्त्र, निवारा आणि उदयोग यावरही हवामानाचा प्रभाव पडतो असे नाहीतर मानवाच्या इच्छा–आकांक्षा, अंधश्रध्दा, आचारविचार, कार्यक्षमता, भाषा व धर्म इत्यादीवरही भौतिक पर्यावरणाचा अर्थात हवामानाचा प्रभाव पडतो.
3. भौतिक परिस्थिती व सामाजिक परिस्थितीमध्ये जन्मजात कोणताही संबंध्द नसतो. दोन भिन्न प्रदेशातील हवामानात एक सारखेपणा असला तरी त्या प्रदेशातील सामाजिक प्रणाली मध्ये एकसारखेपणा असतोच असे नोही. उदा. भारतातील नागालॅड व फिलीपाईन्स मध्ये वातावरणीय स्थिती एक समान आहे. या वातावरणीय स्थीतीमुळै दोन्ही प्रदेशातील लोकांच्या आर्थिक व सामाजिक प्रणालीचा तुलनात्मक अभ्यास केला असता दोन्ही प्रदेशात भोगोलिक वातावरण, हवामान इत्यादी घटकामध्ये एक समानता आढळते. परंतु दोन्ही देशाच्या चालीरिती, रूढी, परंपरा, धार्मिक सण–उत्सव, आचार विचार इत्यादी सामाजिक स्थितीमध्ये भिन्नता आढळते.

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प्रस्तावना :-

ऐतिहासिकदृष्ट्या पाणी हे मानवी संस्कृतीच्या स्थापनेचे, विकासाचे व ऱ्हासाचे मूळ कारण आहे. पाण्याला स्वतःचा रंग, गंध, चव व रूप नसताना, समाजात व संस्कृतीला रंग, गंध, चव व रूप पाण्याशिवाय प्राप्त होत नाही. यावरून मानवी जीवनात पाण्याचे महत्त्व लक्षात येते. अमेरिकेचे माजी अध्यक्ष जॉन. एफ. केनेडी यांनी ५० वर्षांपूर्वी ''जी व्यक्ती, संस्था किंवा देश पाण्याच्या समस्येचे निराकरण करेल तिला नोबल पारितोषिक द्यायला हवेत, एक शांतता प्रस्थापित करण्यासाठी तर दुसरे विज्ञानाचा उपयोग करण्यासाठी'' असे मत मांडले. जे आजच्या परिस्थितीत उपयुक्त व सत्य ठरताना दिसत आहे. म्हणून पाण्याचा काटकसरीने वापर करणे आवश्यक आहे. पाण्याचा वापर अनेक कारणांसाठी केला जातो. शेती विकासात पाण्याला खूप महत्त्व आहे.

सातारा जिल्ह्यातील सिंचन क्षेत्रात बदल घडवून आणण्याकरिता महाराष्ट्र कृष्णा खोरे विकास महामंडळाचे योगदान महत्त्वपूर्ण ठरले आहे. महामंडळाच्या स्थापनेमुळे सातारा जिल्ह्यातील सिंचन प्रकल्पांच्या बांधकामांना गती मिळाली आहे. परंतु निधी अभावी अपूर्ण प्रकल्पांची संख्या अधिक आहे. 'कृष्णा पाणी तंटा' लवादाने पाणी साठवण्याची कालमर्यादा निश्चित केल्यामुळे महाराष्ट्र कृष्णा खोरे विकास महामंडळाने सातारा जिल्ह्यात धरणाचे कामे पूर्ण करून पाणी साठवण्याची क्षमता निर्माण केली आहे. परंतु धरणाचे कालवे व चाऱ्यांचे काम अपूर्ण असल्याने शेत जमीनीपर्यंत पाणी जात नाही. सिंचन प्रकल्पांत पाणी असून शेतीला देता येत नसल्यामुळे सिंचन क्षमतेत झालेली वाढ कमी झाली आहे. सुखटणकर समिताच्या मते, सातारा जिल्ह्यातील खंडाळा, फलटण, माण, खटाव व कोरेगांव हे पाच तालुके अवर्षणप्रवण क्षेत्रात मोडतात.या पाच तालुक्यातील सिंचन क्षेत्र वाढवण्यासाठी महाराष्ट्र कृष्णा खोरे विकास महामंडळाने सिंचन प्रकल्पांची निर्मिती केली आहे. माण या तालुक्यात आंधळी मध्यम सिंचन प्रकल्पाची निर्मिती करून सिंचन क्षमता वाढवण्याचा प्रयत्न केला आहे. धोम बलकवडी धरणाचे पाणी खंडाळा व फलटण तालुक्यात शेतीसाठी आणण्यात आले. त्यामुळे सिंचन क्षेत्रात वाढ झाली आहे.

संशोधन विषयाचे महत्त्व :-

सन २०११ च्या जनगननेनुसार सातारा जिल्ह्याचा एकूण लोकसंख्येपैकी ग्रामीण भागातील लोकसंख्येचे प्रमाण ८१.०२ टक्के आहे. ग्रामीण भागातील लोकसंख्या कृषी क्षेत्रावर अवलंबून असते. कृषी क्षेत्राचा विकास अनेक घटकांवर अवलंबून असतो. त्यापैकी पाणी या घटकाला विशेष महत्त्वाचे स्थान आहे. शेतजमीनीला वेळेवर पाणी मिळावे म्हणून पाणी साठवणे गरजेचे आहे. शेतजमीनीला वेळेवर पाणी मिळाल्यास पीक पध्दतीत व पीक निर्देशांकात बदल होऊन शेतमालाचे उत्पादन व शेतकऱ्यांच्या उत्पन्नात वाढ होते. सन २०१३-१४ मध्ये सातारा जिल्ह्याचे एकूण लागवडीखालील क्षेत्र ८२३८३० हेक्टर एवढे

होते. त्यापैकी सिंचनाखालील क्षेत्र २१०७२३ हेक्टर एवढे आहे. एकूण लागवडलीखालील क्षेत्रापैकी सिंचनाखालील क्षेत्र २५.५८ टक्के दिसून येते. म्हणजे जिल्ह्यात सिंचनखालील क्षेत्र कमी आहे. सिंचनाखालील क्षेत्र वाढवण्यासाठी सिंचन प्रकल्प वेळेत पूर्ण करून पाणी साठवण्याची क्षमता वाढवणे अवश्यक आहे. थोडक्यात सिंचन क्षेत्र वाढवण्यासाठी पावसाचे पाणी साठवणे आवश्यक आहे. पाणी साठवण्यासाठी सिंचन प्रकल्पांची गरज आहे. केवळ सिंचनासाठीच नव्हे तर पिण्यासाठी, उद्योगांसाठी, विद्युत निर्मितीसाठी पाण्याची साठवणूक करणे गरजेचे असते. त्यामुळ सिंचन प्रकल्पांच्या निर्मितीमुळे सिंचन क्षेत्रात झालेल्या वाढीचा अभ्यास करणे महत्त्वपूर्ण ठरतो.

संशोधनाची उद्दिष्टे :-

१) सातारा जिल्ह्यातील सिंचन प्रगतीचा अभ्यास करणे.
२) सातारा जिल्ह्यातील सिंचन प्रकल्पांची स्थिती जाणून घेणे.
३) सातारा जिल्ह्याच्या कृषी विकासातील योगदान अभ्यासणे.

संशोधन पध्दतीः-

प्रस्तुत विषयाच्या संशोधनासाठी दुय्यम साधन सामुग्रीचा आधार घेण्यात आला आहे.यामध्ये महाराष्ट्र शासनाचे आर्थिक पाहणी अहवाल, जिल्हा सामाजिक व आर्थिक समालोचन सातारा जिल्हा, सातारा जिल्हा गॅझेटीअर, लाभक्षेत्र विकास प्रधिकरण सातारा, संदर्भग्रंथ, सिंचन विकास पत्रिका, संकेत स्थळे इत्यादी स्रोतातून महिती जमा करण्यात आली आहे.

सातारा जिल्ह्याचा सिंचन इतिहास :-

सातारा जिल्ह्याचे सर्व क्षेत्र कृष्णा व कोयना नदी खोऱ्यात मोडत असल्यामुळे स्वातंत्र्यपूर्व काळात काही कालवे व तलाव बांधण्यात आल्याचे दिसून येते. छत्रपती शिवाजी महाराजांचे आजोबा मालोजीराजे भोसले यांनी इ.स.१४२७ ते १४६० (३३ वर्ष)या कालखंडात फलटण तालुक्यातील शिखर शिंगणापूरचे तळे निर्माण केल्याचा उल्लेख इतिहासात सापडतो. जिल्ह्यात पावसाचे प्रमाण विषम व अनिश्चित असल्यामुळे शेतकऱ्याला शेतीपासून पुरेसे उत्पन्न मिळत नव्हते. यावर मात करण्यासाठी पूर्वीपासूनच जिल्ह्यात अनेक जलसिंचनाच्या योजना राबविण्यात आल्याचे दिसून येते. जिल्ह्यात पहिला कालवा १८४९ मध्ये वसना नदीवर रेवडी (ता. कोरगाव) येथे बांधण्यात आला. त्यानंतर कृष्णा नदीवर खोडशी (ता कराड) येथे व येरळा नदीवर येरळा (ता खटाव) येथे कालवे बांधण्यात आले. इ.स. १८७० मध्ये नंदिनी नदीवर चिखली कालवा, १८७२ मध्ये माण नदीवर गोंदवले कालवा, इ.स.१८७५ मध्ये वांग मायनी कालवा, इ.स. १८८१ मध्ये येरळा नदीवर नेर कालवा, सन १९०१ मध्ये म्हसवड कालवा बांधण्यात आल्याचे दिसून येते. असे असले तरी जलसिंचनासाठी प्रामुख्याने विहिरींचा जास्त वापर होत असल्याचे दिसून येते. विहिरींद्वारे सर्वात जास्त सिंचन फलटण तालुक्यात होते. फलटण तालुक्याच्या सीमेवरून नीरा कालवा जातो. कालव्यामुळे फलटण तालुक्यातील विहिरींची पाणी पातळी वाढली आहे. जिल्ह्यातील सर्वच तालुक्यांना पृष्ठभागीय प्रकारच्या सिंचनाचा लाभ होतो.

सातारा जिल्हयातील हवामान व पर्जन्यमान :-

सातारा जिल्ह्याच्या भौगोलिक स्थितीत तफावत आढळून येते. त्यामुळे हवामान व पर्जन्यमानातही तफावत आढळून येते. जिल्ह्याच्या पश्चिम भागात उन्हाळ्यात हवामान थंड व आल्हाददायक असते तर पावसाळ्यात थंडी असते. वाई तालुक्यात मात्र वर्षभर समशितोष्ण हवामान असते. जिल्ह्याच्या मध्यभागी

उन्हाळ्यात उष्ण, हिवाळ्यात दिवस उबदार तर रात्री थंडी असते. पूर्व भागात हवामान अधिक उष्ण आहे. जिल्ह्याचे हवामान वर्षभर सामान्यतः आल्हाददायक असते.

महाराष्ट्रातील इतर जिल्ह्याप्रमाणे सातारा जिल्ह्यासदेखील दक्षिण पूर्व मौसमी वाऱ्यांपासून पाऊस मिळतो, भौगोलिक परिस्थितीनुसार जिल्ह्यातील पर्जन्यमानात तफावत आढळून येते. पश्चिम भागातील महाबळेश्वरची समुद्र सपाटीपासूनची उंची १४३६ मीटर असल्याने सरासरी वार्षिक पर्जन्यमान ६२२६ मि.मी. एवढे जास्त तर माण या दुष्काळी तालुक्यातील सरासरी वार्षीक पर्जन्यमान ४४३ मि.मी. एवढे कमी आहे. पश्चिम भागातील महाबळेश्वर जावळी, पाटण या तालुक्यांचा ५००० मिलिमीटरपेक्षा जास्त पाऊस पडतो तर जिल्ह्याच्या पूर्व भागात फलटण, खटाव, माण या तालुक्यांत ६०० ते १२००० मि.मी. पाऊस पडतो. पश्चिमेकडून पूर्वेकडे जाताना पर्जन्यमान जलदगतीने कमी होत जाते. जिल्ह्याच्या मध्य व दक्षिण भागात सातारा, वाई, कोरेगाव व कराड या तालुक्यात १२०० ते २००० मि.मी. पाऊस पडतो. उत्तरेकडील खंडाळा तालुक्यांतही पावसाचे प्रमाण कमी आहे. सध्या जिल्ह्यात १५ पर्जन्यमापक केंद्रे असून जिल्ह्याच्या एकूण पर्जन्यमानाच्या ७१ टक्के पाऊस नैऋत्य मोसमी वाऱ्यांपासून पडतो. खालील विवरण पत्रात सातारा जिल्ह्यातील तालुकानिहाय पर्जन्यमान दर्शविलेले आहे.

तक्ता क्र.१.

सातारा जिल्ह्यातील तालुकानिहाय पर्जन्यमान (पर्जन्य मि.मी)

अ. क्र	वर्ष / तालुका	२००९ मधील पर्जन्य	२०१० मधील पर्जन्य	२०११ मधील पर्जन्य	२०१२ मधील पर्जन्य	२०१३ मधील पर्जन्य
१	महाबळेश्वर	२५५३.८	४२४४.०	६४५६.८	३९०८.७	३८१२.०
२	वाई	९३७.०	१०२९.०	८७३.२	६५०.१	८८१.४
३	खंडाळा	५८४.०	६६२.३	४३३.८	४५१.०	६३३.२
४	फलटण	६५२.१	१०२८.४	३४२.२	२६७.१	४६९.०
५	माण	६२७.८	७६१.५	२२५.८	२६९.०	४०७.२
६	खटाव	५६६.३	८१४.६	३७३.१	२७३.४	५७४.९
७	कोरेगाव	७५२.४	९०४.२	४९७.४	३६०.६	५९६.०
८	सातारा	१०९१.६	१०११.२	७७७.६	६८६.०	१२८२.८
९	जावळी	१८९४.९	१५३०.२	१७३७.२	१२५८.८	१७८७.०
१०	पाटण	१८७५.४	१५११.२	१८०४.०	१५७४.४	१५१०.३
११	कराड	७९७.८	८७२.८	५९३.६	५५०.६	५६९.५
	एकूण	**११३३३.१**	**१४३६९.३**	**१४१२४.७**	**१०२४९.८**	**१२४२३.५**
	सरासरी	**११२१.३**	**१३०६.३**	**१२८३.२**	**९३१.८**	**११२९.४**

आधार - 'जिल्हा सामाजिक व आर्थिक समालोचन' सातारा जिल्हा -२०१० ते २०१४, पृ.क्र.६०, ५५, ६०, ५७, ५६.

वरील विवरणपत्रात दर्शविल्याप्रमाणे सातारा जिल्ह्यात सन २००९, २०१०, २०११, २०१२, २०१३ या वर्षांत सरासरी पर्जन्यमान अनुक्रमे ११२१.३ मि.मी. , १३०६.३ मि.मी., १२८३.२ मि.मी, ९३१.८मि.मी. व शेवटी ११२९.४ मि.मी. पाऊस पडल्याचे दिसून येते. २००९ ते २०१३ या पाच वर्षांच्या कालखंडात सरासरी पडणाऱ्या पावसाचे प्रमाण कमी जास्त असल्याचे दिसून येते. सन २०१० मध्ये सरासरी पावसाचे प्रमाण अधिक तर सन २०१२ मध्ये पावसाचे प्रमाण ९३१.८ मि.मी.कमी इतके आहे.सातारा जिल्ह्यातील महाबळेश्वर तालुक्यात पडणाऱ्या पावसाचे प्रमाण इतर तालुक्यांच्या तुलनेत सर्वात जास्त आहे. सन १९ च्या अवर्षणप्रवण समितीने, सातारा जिल्ह्यातील खंडाळा तालुक्याचा समावेश दुष्काळी तालुक्यात केला आहे. या दुष्काळी तालुक्यात सरासरी वार्षिक पाऊसमान सर्वात कमी असल्याचे दिसून येते.

वरील पाच वर्षांपैकी तीन वर्षात जिल्ह्याच्या सरासरी (११५५ मि. मी) पेक्षा कमी पाऊस झालेला आहे, तर सन २०१० व २०११ या दोन वर्षात सरासरीपेक्षा जास्त पाऊस झाल्याचे दिसून येते.

सातारा जिल्ह्यातील सिंचन प्रकल्पांची सद्यःस्थिती :-

सातारा जिल्ह्यात पावसाचे प्रमाण अनिश्चित व विषम स्वरूपाचे आहे. त्यामुळे त्याचा शेती उत्पादनावर परिणाम होतो. शेती उत्पादन वाढवण्यासाठी अधिका-अधिक शेती सिंचनाखाली आणणे आवश्यक आहे. सिंचन सुविधा निर्माण करण्यासाठी मोठे, मध्यम व लघु सिंचन प्रकल्प निर्माण करणे आवश्यक आहे. प्राचीन काळापासून सातारा जिल्ह्यात सिंचन सुविधा निर्माण केल्या जात आहेत. सातारा जिल्ह्याच्या विशिष्ट अशा भौगोलिक परिस्थितीमुळे सिंचन प्रकल्पांची निर्मिती करणे सोपे झाले आहे. सातारा जिल्ह्यात तालुकानिहाय सिंचन प्रकल्पांची संख्या खालील तक्त्यात दर्शविलेली आहे.

तक्ता क्र.२

सातारा जिल्ह्यातील तालुकानिहाय सिंचन प्रकल्पांची संख्या (सन २०१३-१४)

तालुका	मोठे प्रकल्प	मध्यम प्रकल्प	लघुसिंचन प्रकल्प	उपसा सिंचन योजना	सिंचन विहिरी
महाबळेश्वर	०	०	०	०	२४९
वाई	२	१	१	१	५१९१
खंडाळा	१	०	३	०	२४४५
फलटण	०	०	१०	०	१०५५२
माण	०	३	०८	०	४६३७
खटाव	०	२	०९	०	६५९९
कोरेगाव	०	०	०५	३	६५१६

सातारा	१	०	१४	०	२८५३
जावळी	०	१	०	०	५९०
पाटण	१	३	१०	०	१४०५
कराड	२	१	०७	३	५५२९
एकूण	०७	११	६७	०७	४६५६६

आधार - जिल्हा सामाजिक व आर्थिक समालोचन - सातारा जिल्हा, अर्थ व सांख्यिकी, संचालनालय, नियोजन विभाग, महाराष्ट्र शासन मुबई -२०१४ पृ.क्र. ६१

तक्ता क्र.२. मध्ये महाराष्ट्र कृष्णा खोरे विकास महामंडळातर्गत सातारा जिल्ह्यातील पूर्ण व अपूर्ण सिंचन प्रकल्पांची संख्या तालुकानिहाय दर्शविलेली आहे. तक्त्यावरून असे दिसून येते की, सातारा जिल्ह्यात सन २०१३-१४ पर्यंत मोठे -०७, मध्यम -११, लघु सिंचन प्रकल्प - ६७ व उपसा सिंचन योजना ०७ आहेत. जिल्ह्यात सन २०१३-१४ पर्यंत एकूण विहिरींची संख्या ४६५६६ एवढी आहे. त्यापैकी फलटण तालुक्यात एकूण विहिरींची संख्या १०५५२ एवढी सर्वात जास्त आहे. फलटण तालुक्यातून नीरा उजवा कालवा गेला असून कालव्यामुळे भूजल पातळी वाढली आहे. त्यामुळे फलटण तालुक्यात विहिरींची संख्या सर्वात जास्त आहे.

सातारा जिल्ह्यातील सिंचन क्षेत्र :-

सन १९५०-५१ ते १९६०-६१ या दहा वर्षात सिंचनाखालील क्षेत्रात ५१ टक्क्यांनी वाढ झाली आहे. सन १९५०-५१ मध्ये सातारा जिल्ह्यात विहिरींची संख्या २२,३५१ होते.तर सन १९५९-६० मध्ये २८,२९६ एवढी झाली. त्यामुळे सिंचन क्षेत्र वाढविण्यास मदत झाली आहे. सन १९९२-९३ मध्ये निव्वळ सिंचनाखालील क्षेत्र १,६३,४१६ हेक्टर एवढे होते. तर सन २००२-०३ मध्ये १,७८,६१२ हेक्टर एवढे क्षेत्र निव्वळ सिंचनाखाली होते. जिल्ह्याची वर्षानिहाय सिंचन स्थिती पुढील तक्त्यात दर्शविलेली आहे.

तक्ता क्र.३.

सातारा जिल्ह्यातील वर्षानिहाय सिंचन क्षेत्र

अ. क्र.	वर्ष	भौगालिक क्षेत्रफळ चौ.कि.मी	लागवडीयोग्य क्षेत्र (शंभर हेक्टर)	ओलिताखालील क्षेत्र (शंभर हेक्टर)	लागवडीयोग्य क्षेत्राची एकूण भौगालिक क्षेत्राशी टक्केवारी	सिंचनाखालील क्षेत्राची एकूण भौगालिक क्षेत्राशी टक्केवारी	सिंचनाखालील क्षेत्राची एकूण लागवडीयोग्य क्षेत्राशी टक्केवारी
१	१९६०-६१	१०४३७	८७२०	१०१०	८३.५५	९.६८	११.५८
२	१९७०-७१	१०४९२	७८६०	१०२०	७४.९१	९.७२	१२.९८

३	१९८०-८१	१०४८४	६८२०	१२९०	६५.०५	१२.३०	१८.९१
४	१९९०-९१	१०४८०	७७६०	१७१०	७४.०५	१६.३२	२२.०४
५	२०००-०१	१०४८०	७९९१	२३१८	७६.२५	२२.१२	२९.०१
६	२०१०-११	१०४८०	८२३८	२१६८	७५.५२	२०.६९	२६.३१
७	२०११-१२	१०४८०	७९१४	२१६८	७५.५२	२०.६९	२७.३९
८	२०१२-१३	१०४८०	७९१४	२१६८	७५.५२	२०.६९	२७.३९
९	२०१३-१४	१०४८०	८००६	२१६८	७६.३९	१९.६९	२७.०८

आधार- जिल्हा सामाजिक व आर्थिक समालोचन जिल्हा सातारा -२०११,२०१४ पृ.क्र. २०,२१,२२.

तक्ता क्र.३. वरून स्पष्ट होते की, १९६०-६१ मध्ये लागवडीयोग्य क्षेत्र ८७२० शंभर हेक्टरपैकी सिंचना खालील क्षेत्र १०१० शंभर हेक्टर आहे. सातारा जिल्ह्याच्या भौगोलिक क्षेत्रफळापैकी लागवडीयोग्य क्षेत्राचे प्रमाण ८३.५५ टक्के तर सिंचनाखालील क्षेत्राचे प्रमाण ९.६८ टक्के आहे. सन १९७०-७१ मध्ये लागवडीयोग्य क्षेत्रात घट होऊन ७८६० शंभर हेक्टर एवढे झाले आहे तर सिंचनाखालील क्षेत्रात वाढ होऊन ते १०२० शंभर हेक्टर झाले आहे. ५० वर्षानंतर सन २०१०-११ मध्ये लागवडीयोग्य क्षेत्रात सन १९६०-६१च्या तुलनेत घट झाल्याचे व सिंचनाखालील क्षेत्रात वाढ झाल्याचे दिसून येते. सन २०१०-११ मध्ये एकूण भौगोलिक क्षेत्रफळामध्ये लागवडीयोग्य क्षेत्राचे प्रमाण ७५.२२ टक्के तर सिंचनाखालील क्षेत्राचे प्रमाण २०.६९ टक्के झाले आहे. लागवडीखालील क्षेत्रात १९६०-६१ च्या तुलनेने सन २०१०-११ मध्ये घट झाल्याचे व सिंचनाखालील क्षेत्रात वाढ झाल्याचे दिसून येते. लागवडाखालील क्षेत्रामध्ये सिंचनाखालील क्षेत्राचे प्रमाण सन १९६०-६१ मध्ये ११.५८ टक्के होते. ५० वर्षानंतर सन २०१०-११ मध्ये २७.०८ टक्के आहे. सन १९६०-६१ च्या तुलनेत २०१०-११ चे लागवडीखालील क्षेत्राचे सिंचनाखालील क्षेत्राशी प्रमाण वाढत गेल्याचे दिसून येते. ते ११.५८ टक्क्यांवरून २७.०८ टक्क्यांपर्यंत वाढले आहे. म्हणजे निव्वळ वाढीचे प्रमाण १५.५० टक्के आहे. थोडक्यात वरील तत्त्यावरून असे दिसून येते की, जिल्ह्यात सिंचनाखालील क्षेत्रात १५.५० टक्क्यांनी वाढ झाली आहे.

निष्कर्ष :-

१) सातारा जिल्ह्यांत पर्जन्यमानात प्रंचड विषमता दिसून येते. महाबळेश्वर तालुक्यात सरासरीपेक्षा जास्त तर खंडाळा तालुक्यांत सर्वात कमी पर्जन्यमान असल्याचे दिसून येते.

२) सन २०१४ अखेर सातारा जिल्ह्यात एकूण सिंचन प्रकल्पांची संख्या ९२ असून त्यामध्ये मोठे-७, मध्यम-११, लघु सिंचन प्रकल्प-६७ व उपसा सिंचन योजना-०७ असल्याचे दिसून आले.

३) सातारा जिल्ह्यात सन २०१३-१४ पर्यंत एकूण विहिरींची संख्या ४६५६६ एवढी आहे. त्यापैकी फलटण तालुक्यात एकूण विहिरींची संख्या १०५५२ एवढी सर्वात जास्त आहे.

४) सिंचन प्रकल्पांमुळे सातारा जिल्ह्यातील शेतकऱ्यांच्या आर्थिक परिस्थितीत व जीवनमानात सुधारणा झाली आहे.

५) सन २०१३-१४ मध्ये सातारा जिल्ह्यातील एकूण लागवडीखालील क्षेत्रात सिंचनाखालील क्षेत्र ३१.३६ टक्के आहे. तर एकूण लागवडीयोग्य क्षेत्रात २७.१३ टक्के इतके आहे.

६) सातारा जिल्ह्याच्या एकूण भौगोलिक क्षेत्रापैकी ७९९१२३ हेक्टर म्हणजे ७५.५१ क्षेत्र लागवडीयोग्य आहे. त्यापैकी ५३४२५९ हेक्टर म्हणजे ६६.८५ टक्के क्षेत्र लागवडीखाली आहे. सातारा जिल्ह्याच्या एकूण भौगोलिक क्षेत्रफळापैकी निव्वळ लागवडीखालील क्षेत्र ५३४२५९ हेक्टर म्हणजे ५१ टक्के आहे. तर निव्वळ लागवडीखालील क्षेत्रामध्ये स्थूल सिंचनाखालील क्षेत्र ४०.५८ टक्के तर निव्वळ सिंचनाखालील क्षेत्र २८.३७ टक्के इतके आहे.

७) सन १९६०-६१ मध्ये सातारा जिल्ह्यात लागवडीयोग्य क्षेत्र ८७२० शंभर हेक्टरवरून सन २०१३-१४ मध्ये ८००६ शंभर हेक्टरपर्यंत कमी झाले आहे. तर सिंचन क्षेत्रात १०१० शंभर हेक्टरवरून २१६८ शंभर हेक्टरपर्यंत वाढले आहे. सन १९६०-६१ मध्ये लागवडीयोग्य क्षेत्राचे प्रमाण ८.१९ टक्क्यांनी कमी झाले आहे. तर सिंचनाखालील क्षेत्र ११२.६७ टक्क्यांनी वाढले आहे.

८) सातारा जिल्ह्यातील सिंचनाचा आढावा घेतल्यास असे दिसून येते की, जिल्ह्यात सिंचन क्षेत्रात वाढ करण्यास वाव आहे. त्यासाठी सिंचन प्रकल्पाची कामे वेळेत पूर्ण करणे गरजेचे आहे

संदर्भ ग्रंथः-

१. भोंगळे सुधीर (२००२), कृषिचिंतन, अमेय प्रकाशन, पुणे, प्रथम आवृत्ती.
२. महाजन प्रवीण (२०१२), जलसंपदा काल, आज आणि उद्या, आशीर्वाद पब्लिकेशन्स प्रा.लि., नागपूर.
३. ढमढेरे सुरेश (२००९), महाराष्ट्रातील सिंचन पाणलोट आणि जलसंधारण, एस.व्ही.डी. फाऊंडेशन, पुणे.
४. राज्यातील सिंचनाची प्रगती व भविष्यातील वाटचाल-श्वेतपत्रिका (२०१२), खंड-१ व २, जलसंपदा विभाग, महाराष्ट्र शासन, मुंबई.
५. महाराष्ट्राची आर्थिक पाहणी (२०१५-१६), अर्थ व सांख्यिकी संचालनालय, नियोजन विभाग, महाराष्ट्र शासन, मुंबई.
६. सातारा जिल्ह्यातील मोठे, मध्यम व लघु पाटबंधारे प्रकल्पांची माहिती पुस्तिका (२०१०), महाराष्ट्र कृष्णा खोरे विकास महामंडळ, पुणे, महाराष्ट्र राज्य, मुंबई.
७. सर्व पाटबंधारे योजनांची प्रगती आणि सद्यस्थिती दर्शविणारी जिल्हा पुस्तिका, सातारा जिल्हा (२०११), जलसंपदा विभाग, महाराष्ट्र शासन, मुंबई.
८. महाराष्ट्र राज्य गॅझेटिअर (२०१२), सातारा जिल्हा, पर्यटन व सांस्कृतिक कार्य विभाग, महाराष्ट्र शासन, मुंबई,
९. जिल्हा सामाजिक व आर्थिक समालोचन सातारा जिल्हा, (२००६ ते २०१४) अर्थ व सांख्यिकी संचालनालय, नियोजन विभाग, महाराष्ट्र शासन, मुंबई.
१०. महाराष्ट्र जल व सिंचन आयोग (१९९९), खंड १ ते ५, महाराष्ट्र शासन, मुंबई
११. महाराष्ट्र सिंचन विकास त्रैमासिक (२०१३), पाटबंधारे संशोधन व विकास संचालनालय पुणे, महाराष्ट्र शासन.
१२. ''सत्यशोधक समिती'' -१९७२

महाराष्ट्रातील तेलबीया लागवड व सध्यास्थिती

एजाज इब्राहिम पठाण
भुगोल विभाग
स्वामी विवेकानंद महाविद्यालय,
शिरूर ताजबंद, ता. अहमदपुर,जि.लातूर
मो.नं. 9765455800

प्रस्तावना :–

भारत हा कृषिप्रधान देश असुन, भारतीय अर्थव्यवस्थेचा कणा शेती आहे. देशातील भौगोलिक विविधतेमुळे विविध पिकांची लागवड केली जाते. यातील तेलबीया पिकांचे महत्व अनन्य साधारण आहे. कारण तेलबीयापासुन तेल हा महत्वाचा अन्नघटक मिळतो. देशात सोयाबीन, सुर्यफुल, भुईमुग, मोहरी, तीळ, करडई, एरंडी, जवस, व कारळ या नउ तेलबीया पिकांची लागवड विविध हंगामात केली जाते म्हणून भारतात तेलबीया पिकाखालील एकूण क्षेत्र 276 लक्ष हेक्टर, उत्पान 300 लक्ष टन आहे यामध्ये महाराष्ट्राचा तेलबीया उत्पादनात भारतात दुसरा क्रमांक येतो,

शोधनिबंधाचे उददिष्ट.

प्रस्तुत शोधानिबंधाचे उददिष्ट पुढील प्रमाणे आहे

1) महाराष्ट्रातील तेल बीयांचे महत्व किंवा खादय तेलाचे महत्व अभ्यासने
2) महाराष्ट्रातील तेल बीयांचे उत्पादन व टक्केवारी अभ्यासने
3) महाराष्ट्रातील प्रमुख तेलबीयांचे क्षेत्र उत्पादन व उत्पादकता अभ्यासने
4) महाराष्ट्रातील तेलबीयाचे कमी उत्पादन होण्याची कारणे व समस्यांचा अभ्यास करणे
5) महाराष्ट्रातील तेलबीयांच्या शेतीतील अधिक फायदयासाठीच्या बाबी अभ्यासणे

शोध निबंध पध्दती

पस्तुत शोधनिबंध हा प्रामुख्याने दुय्म साधनसामुग्रीवर आधारित आहे क्रमीक पुस्तके, संदर्भग्रंथ मासिके, वेबसाईट, सर्वेक्षण अहवाल या दुय्म साधनसांमुग्रीच्या आधारे माहिती संकलीत करण्यात आली आहे.

खादयतेलाचे महत्व

1. मानवास खादयतेलापासुन शरीराला उर्जा मिळते व्हीटॅमिन अे.डी.ई. आणि के विरघळण्यासाठी फॅटची आवश्यकता असते.
2. खादयतेलापासून अत्यावश्यक स्निग्धाम्ले मिळतात याची कमतरता असल्यास विविध कातडीचे रोग होतात,फॅटमुळे अन्नास चव व सुगंध मिळतो.
3. प्रत्यक्ष फॅट तेल आणि अप्रत्यक्ष फॅट ज्वारी,डाळी,दुध,भाजीपाला मिळुन मानवास एकूण 65 ग्रॅम फॅट प्रतिदिन आवश्यक आहे.
4. 2/3 प्रत्यक्ष फॅट अन्नातुन तर 1/2 फॅट प्रत्यक्ष खादय तेलापासून पुरवठा होतो.
5. आहार शास्त्रज्ञाच्या मते 30 ग्रॅम खादयतेल दरडोई प्रतिदिन आवश्यक आहे.
6. आहारातील कमी फॅट फक्त शारीरीक क्रिया पुर्ण करतात.
7. आहारात मध्यम फॅट वापरामुळे अधिकची उर्जा मिळुण या उर्जेव्दारे विविध कामे करता येतात.
8. आहारात जास्तीचे फॅट वापरामुळे कोलेस्टेरॉलचे प्रमाण वाढुन शरीरामध्ये विविध व्याधी निर्माण होतात.

9. 1 ग्रॅम फॅटपासुन 9 किलो कॅलरी उर्जा मिळते याउलट 1 ग्रॅम कार्बोहायड्रेट व प्रथीने पासुन 4 किलो कॅलरी उर्जा मिळते.
10. प्रौढ माणसास दैनंदिन कार्यासाठी 2000 ते 2400 किलो कॅलरी उर्जा लागते.
11. ढोबळमनाने मानवाच्या प्रतिकीलो वजनास 40 किलो कॅलरी उर्जेची आवश्यकता आहे.त्यानुसार प्रत्येकाने दैनंदीन आहारात खादयतेलाचा वापर करावा.

तेलबीया उत्पादनात प्रमुख राज्यांचा सहभाग 2010–11

अ.क	पिकांचे नाव	तेलबीयाचे उत्पादन लक्षटन	उत्पादनाची टक्केवारी
1	राजस्थान	80.35 (1)	20.0
2	महाराष्ट्र	60.90 (2)	16.6
3	गुजरात	49.97 (3)	13.0
4	मध्य प्रदेश	26.61	26.7
5	आंध्र प्रदेश	39.12	6.6
6	कर्नाटक	19.86	4.1
7	तामीळनाडु	12.12	3.8
8	इतर राज्य	11.32	8.9
	एकुण	**300.25**	**100**

वसंतराव नाईक मराठवाडा कृषी विद्यापिठ, परभणी (2010–11)

महाराष्ट्रातील शेतीची (सद्यास्थिती)

1) लोकसंख्या – 11 कोटी 23 लक्ष
2) क्षेत्रफळ – 3,07,713 चौ.की.मी.
3) लागवडीखालील क्षेत्र – एकुण : 307.6 लाख हेक्टर क्षेत्रापैकी 225.7 लाख हेक्टर
4) निव्वळ पेरणी क्षेत्र : 174.8 लाख हेक्टर

महाराष्ट्रातील प्रथम तेलबीया खालील क्षेत्र, उत्पादन, उत्पादकता (2013–14)

अ. क	पिके	क्षेत्र	उत्पादन (लक्ष टन)	उत्पादकता (कि/हे)
1	भुईमुग	3.15	3.92	1246
2	सुर्यफुल	0.711	0.443	623
3	तीळ	0.39	0.11	294

वसंतराव नाईक मराठवाडा कृषी विद्यापिठ, परभणी (2013–14)

तेलबिया कमी उत्पादनाची कारणे.

पिकातील समस्या	1	तेलबीया पिके सी–3 वर्गात मोडतात.
	2	तेलबीयात अधिक उर्जा असणा–या घटकांचा समावेश (कार्बोहाइड्रेट, प्रथिने, फॅट)
	3	तेलबीया पिकातील अमर्याद वाढ (Indetermenate) सुर्यफुल वगळुन
	4	तेलबीया पिकाचा कमी उत्पन्न निर्देशांक (Harvest index)
	5	वनस्पती अवशेष (Biomass) ला आर्थीक कमी महत्व चारा, इंधन

		(भुईमुग वगळता)
व्यवस्थापनातील समस्या	6	76 % कोरडवाहु लागवड
	7	पुरेशा अन्नद्रव्याच्या वापराचा अभाव
	8	लागवड तंत्रज्ञानाचा अभाव
	9	15 % खादयतेलाचा बायोडिझेलेसाठी वापर
	10	दरडोई खादयतेलाचा वापर कमी करावा
	11	खादयतेल व तेलबीया बाजारभाव यातील समन्वयाचा अभाव
	12	सुधारीत / संकरीत वाण यातील कमतरता
	13	खादयतेल प्रक्रिया करणारे कारखाने यांची गाळप क्षमते तील घट (कच्चामाल,विज,मजुर)
	14	तेलबीया विक्रीसाठी बाजारपेठ
	15	आयात निर्यात धोरण
	16	तेलबीयासाठीचे कमी बाजारभाव
	17	किड व रोगनियंत्रणाचा अभाव

तेलबीयाच्या शेतीतील अधिक फायदयासाठी खालील बाबीकडे लक्ष द्या.

1) जमिन,पाणी,सुर्यप्रकाश, खते बियाणे आंतरमशागत, तन नियंत्रण, किड व रोग नियंत्रण व काढणी बाबतचे तंत्रज्ञान अवगत करा.
2) स्वस्त व पर्यायी साधनसामुग्रीचा शोध घ्या (औषधी वनस्पती,जैविक किड व रोग नियंत्रण)
3) तेलबीया पिकांना इतर पिकासोबत स्पर्धा करण्यासाठी त्यातील गुणधर्म व दर्जा सुधारणे.
4) तेलातील विषारी घटकाचे प्रमाण कमी करणे.
5) सेंद्रीय खतांचा वापर करुण रासायनिक खतांची कार्यक्षमता वाढविणे.
6) मागणी, पुरवठा बाजार भावाचा अभ्यास करुण तेलबीया पिकांची निवड करावी.
7) शाश्वत, टिकावू तंत्रज्ञानाचा वापर करावा.
8) 15 % खादयतेल (बायोडिझेल) निर्मितीसाठी वापर टाळावे, खादयतेलाचा आहारातील जास्तीचा वापर टाळणे, तेलबीया व खादयतेल बाजार भावात समन्वय राखल्यास आपण खादयतेलात स्वंयपुर्ण होवू शकतो
9) शेतक–यांनी खालील 5 तत्वाची अमल बजावणी केल्यास तेलबीया शेती फायदेशीर ठरु शकते.
   1) राईट प्रॉडक्ट (योग्य साधने) 2) राईट क्वालिटी –(योग्यदर्जा)
   3) राईट मेथड (योग्य पध्दत) 4) राईट टाईम (योग्य वेळ)
   5) राईट कोऑर्डीनेशन (योग्य समन्वय)

संदर्भ ग्रंथ.

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सुर्यफुल लागवड अधुनिक तंत्रज्ञान – डॉ. अ.आ.चव्हाण . डॉ. म.का.घोडके
Oilseed crops : yield and adaptations under Environmental streets –
Parvaiz Ahemad

'RESEARCH JOURNEY' *International E- Research Journal*
Impact Factor - (SJIF) – 6.261, (CIF) - 3.452(2015), (GIF)–0.676 (2013)
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कोल्हापूर राज्यातील कृषी जल व्यवस्था (सन १८५१ - १९००)

डॉ. खंडेराव शिंदे
इतिहास विभाग
मो.नं.९८५०११७१९४
राजर्षी शाहू कला व वाणिज्य महाविद्यालय, रुकडी, जि.कोल्हापूर

छत्रपती शिवाजी महाराजानी स्थापन केलेल्या हिंदवी स्वराज्याचे आठराव्या शतकाच्या पहिल्या दशकात महाराणी ताराबाई व छत्रपती शाहू महाराज यांच्यातील संघर्षातून सातारा व कोल्हापूर अशी दोन राज्ये निर्माण झाली. महाराणी ताराबाईनी सन १७१० मध्ये कोल्हापूर राज्याची स्थापना केली. या कोल्हापूर राज्याची राजधानी सुरुवातीला 'पन्हाळा' नंतर 'कोल्हापूर' होती. कोल्हापूर राज्य दक्षिणी संस्थानातील सर्वात मोठे संस्थान होते.

अशा या कोल्हापूर राज्यात राजर्षी शाहूनी (सन १८९४-१९२२) शेती उत्पादन वाढवण्यासाठी अनेक जल सिंचनाची कामे केली. त्यामुळे कोल्हापूर कृषी उत्पादनात आघाडीवर असल्याचे दिसते. पण राजर्षी शाहू पूर्व काळात कोल्हापूर राज्याची कृषी जलव्यवस्था कशी होती, शेतीला कृत्रिम पाणी पुरवठा करण्यासाठी कोणत्या साधनांचा वापर केला जात होता तसेच राजर्षी शाहूनी राज्याभिषेकानंतरच्या सहा-सात वर्षात शेतीला पाणी पुरवठा करण्यासाठी कोणत्या योजना आखल्या होत्या या सर्वांचा आढावा घेण्याचा प्रयत्न प्रस्तुत शोधनिबंधात केला आहे.

कालवे -

कोल्हापूर राज्यात आजच्यासारखी मोठ-मोठी धरणे सन १८५१-१९०० या कालावधीत अस्तित्वात नसल्याने शेतीला पाणी पुरवठा करण्यासाठी कोठेही कालवे नव्हते असा उल्लेख ग्रॅहम रिपोर्ट (सन १८५४) व कोल्हापूर गॅझेटिअर (सन १८८३) मध्ये सापडतो.

धरणे व पाट -

शेतीच्या चांगल्या उत्पादनासाठी धरणे व पाटाची आवश्यकता असते. परंतु त्यावेळी कोल्हापूर राज्यात अशा प्रकारची धरणे व पाट बांधले गेले नव्हते. त्याऐवजी कित्येक ठिकाणी ओढ्यांवर मातीचे बांध घातले जात होते. बांध घालून शेतीला पाणी पुरवठा करण्यासाठी पाट काढण्यात येई. अशा प्रकारचे बांध व पाट कोल्हापूर राज्याच्या पश्चिमेकडील डोंगराळ भागात मोठ्या प्रमाणावर काढले होते.[१]. जानेवारी-फेब्रुवारी या महिन्यात पाण्याअभावी नद्या व ओढ्यांचे बांध व पाट कोरडे पडत.

कोल्हापूर राज्यातील धरणांची व पाटांची कमतरता लक्षात आल्यामुळे व सन १८९५-९६ च्या सुमारास कोरडा दुष्काळ पडल्यामुळे पिण्याच्या पाण्यासाठी व शेतीच्या पाण्यासाठी राजर्षी शाहूनी मामलेदारांना हुकूम दिला की जेथे नदीला बांध घालणे शक्य आहे तेथे बांध घालावा किंवा लोक स्वत:हून पुढे आले तर त्यांना मदत करावी.[२] या हुकूमाची पुढे अंमलबजावणी होऊन तशी व्यवस्था करण्यात आल्याचे दिसते.

तळी -

कोल्हापूर राज्यात सन १८५३ मध्ये लहान-मोठी एकूण १९७ तळी होती. कोल्हापूर शहरातील रंकाळे, पद्माळे, रुद्रतीर्थ किंवा महार तळे, राणेश्वर व कोटीतीर्थ या तळ्यांशिवाय कोल्हापूर राज्यात शेतीला पाणी पुरवठा करण्यासाठी दुसरी तळी नव्हती. रंकाळा तळ्याच्या पाण्याने ५८ बिघे, रुद्रतीर्थ किंवा महार तळ्याच्या पाण्याने ०६ बिघे, रावणेश्वर तळ्याच्या पाण्याने ८ बिघे व कोटीतीर्थ तळ्याच्या पाण्याने १४ बिघे जमीन भिजत होती.[३]

सन १८९५-९६ च्या सुमारास कोल्हापूर राज्यात फार दुष्काळ पडला होता. पाणी टंचाई दूर करण्यासाठी राजर्षी शाहूंनी कोल्हापूर राज्यातील पेठ वडगाव, रुकडी, सरुड, शिरोळ या गावांमध्ये नवीन तलाव बांधून घेतले तर जुन्या तलावाची दुरुस्ती करुन घेतली. या कामासाठी त्यांनी चार लाख रुपये खर्च केला होता.[४]

दुष्काळाचे दुष्परिणाम कमी करण्यासाठी पाटबंधारे योजना कार्यान्वित होणे गरजेचे होते. या योजनेचा विस्तार करण्यासाठी राजर्षी शाहूंनी खास अधिका-यांची नेमणूक केली होती. त्यानुसार कळंबा व शिरोळ येथे तलाव बांधण्यात आले तर अतिग्रे व रंकाळा येथील तलावाचे लाभक्षेत्र वाढविण्यात आले. त्यावेळी रंकाळ्यातील पाण्याचा फायदा ११७ एकर शेतीला मिळत होता.[५]

रंकाळा, पद्माळा, कळंबा तलाव भरल्यानंतर राहिलेले अतिरिक्त पाणी शेतीला दिले जाई. पण एखादा शेतकरी विना परवानगीने पिकाला पाणी देत असल्यास त्याच्याकडून दंड वसूल केला जाई. तसेच पाण्याच्या स्थळापासून २०० यार्डाच्या आत कोणाही शेतक-याला विहीर खोदता येत नसे. पाण्याच्या बंधा-यास कोणी अपाय करण्याचा प्रयत्न केल्यास त्यास पिनल कोडनुसार शिक्षा दिली जाईल असे जाहीर करण्यात आले होते. हा नियम १ जानेवारी १८९८ पासून अंमलात आणला.

रंकाळा तलावाचे पाणी रयत लोकांच्या जमिनीस, पिकास दिल्याबद्दल सन १८९८ पासून प्रत्येक एकरास ठराविक रक्कम ठरली ती पुढीलप्रमाणे -

वर्ग १ - बारा महिने पाणी लागणा-या पिकांना दर एकरास १६ रु. उदा. ऊस, पानमळा
वर्ग २ - आठ महिने पाणी लागणा-या पिकांना दर एकरास ६ रु. उदा. भुईमुग, मिरची
वर्ग ३ - चार महिने पाणी लागणा-या पिकांना दर एकरास ४ रु. उदा. शाळू, हरभरा, गहू
वर्ग ४ - दोन महिने पाणी लागणा-या पिकांना दर एकरास २ रु. उदा. बाजरी, मटकी

जी जमीन नांगरण्यास सुलभ नाही ती नांगरण्यास पाणी घेतल्यास प्रत्येक एकराला १ रु. रक्कम ठरविण्यात आली होती.

अशा प्रकारे त्यावेळी कोल्हापूर राज्यात तळ्यांची व्यवस्था करुन शेतीला पाणी पुरवठा केला जात होता.

विहीरी -

कोल्हापूर राज्यात जी बागायत शेती केली जात होती ती मुख्यत्वे विहीरीच्या पाण्यावर होती. विहीरीचे पाणी मोटेच्या सहाय्याने काढून शेतीला दिले जाई. कोल्हापूर राज्याच्या पश्चिम भागात विहीरींचे प्रमाण जास्त होते. तर पूर्व भागात त्या मानाने प्रमाण कमी होते. या विहीरी मजबूत बांधणीच्या होत्या. पाऊस जर चांगला झाला तरच उन्हाळ्यात विहीरींना पाणी असे. सन १८५३ मध्ये ११,९०८/- विहीरी (बुडकीसह) (Graham Report P-83), सन १८८१ मध्ये १०,३४४ विहीरी, सन १८९३ मध्ये १२,०१६/- विहीरींची संख्या होती.[७]

अशा बारमाही बागायती शेतीवर महसूल जास्त आकारला जाई. पाट व विहीर बांधणीसाठी सरकारकडून शेतक-यांना मदत मिळत होती. अशा बागायती शेतीमधून शेतक-याला जास्त फायदा मिळत होता.[८]

सन १८९५-९६ च्या दुष्काळामध्ये दुष्काळाची तीव्रता कमी करण्यासाठी कोल्हापूर राज्यात विहीरींची कामे राजर्षी शाहूंनी सुरु केली. विहीरी दोन दृष्टीने महत्वाच्या होत्या. लोकांना प्यायला पाणी मिळायला हवे व जास्त महत्वाचे म्हणजे शेतीला पाणी पुरवठा वेळेवर करता यावा याच हेतुने राजर्षी शाहूंनी तलाव, पाटबंधारे यांच्याबरोबर नवीन विहीरी खणण्याचे काम व जुन्या विहीरी दुरुस्त करण्यात काम चालू केले होते.[९]

बुडकी व फड पध्दत -

कोल्हापूर राज्यात पंचगंगा, वारणा, वेदगंगा, हिरण्यकेशी या मुख्य चार नद्यांचा उगम होऊन त्यांच्या प्रवाहाने चार मुख्य खोरी निर्माण झाली. याशिवाय इतरही लहान नद्यांची खोरी होती. एकूणच राज्यात नद्यांची संख्या जास्त असल्याने शेतकरी त्या नद्यांच्या पाण्याचा उपयोग शेतीसाठी बुडकी पध्दतीने करीत.

आजच्यासारखी पाईप लाईन त्यावेळी उपलब्ध नव्हती. तेव्हा नदीचे पाणी उंचावरील विहीरीमध्ये टाकून पुढे शेतीला पाणी देत असत यालाच बुडकी पध्दत म्हटले जाई.

बुडकीतील पाणी काढण्यासाठी मोटेचा उपयोग केला जाई. ही मोट दिवसातील ठराविक वेळ चालवली जाई. ही मोट नदीच्या पाण्यावर असल्याने मोसमी पिकानाच फायदा होई. वर्षातील जून ते नोव्हेंबर या सहा महिन्यातच बुडकीचे पाणी शेतीला देत येत असे.[१०]

फड पध्दतही शेती उत्पादनातील अत्यंत महत्वाची होती. ही पध्दत सन १८५० पूर्वीपासून चालू होती. एकमेकांच्या सहकार्याने ही पध्दत चालत असे यात चार बैल जोड्या, चार मोटा व आठ माणसे लागत. ही पध्दत नदीच्या काठावरील सपाट जमिनीवर वापरली जाई.

'कोल्हापूर राज्यातील कृषी जलव्यवस्था' (सन १८५१-१९००) या विषयाच्या अनुषंगाने शोध घेतला असता कोल्हापूर राज्यात शाहूपूर्व काळातही तळ्यांची संख्या जास्त असल्याचे दिसते. नद्या-ओढ्यावर बांध घालून शेतीला पाणी पुरवठा शेतकरी करत होता. त्यामुळे कृषी उत्पादन वाढवण्याकडे त्याही काळात शेतक-यांचा कल होता. पाट, मोट व बुडकी पध्दतीनेही पाणी शेतीला दिले जाई. एकूणच राजर्षी शाहू पूर्वकाळातही शेतीला कृत्रिम पाणी पुरवठा करण्याचा प्रयत्न केला जात होता असे दिसते.

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भारतरत्न डॉ.बाबासाहेब आंबेडकर यांचे आधुनिक भारताच्या उभारणीतील योगदान ऐतिहासिक आणि दूरगामी परिणाम करणारे ठरले आहे. त्यांचे सामाजिक, राजकीय, आर्थिक आादी विषयांवरील विचार हे पथदर्शी आहेत. त्यांनी कृषीविषयक सुधारणा आणि शेतकऱ्यांच्या प्रश्नांबाबत मांडलेले विचार आमच्या काळात अतिशय महत्वपूर्ण आहेत. राज्यशास्त्र, समाजशास्त्र, कायदा, अर्थशास्त्र, मानववंशशास्त्र, साहित्य, पत्रकारिता, इतिहास इत्यादी अनेक क्षेत्रात डॉ.बाबासाहेब आंबेडकरांनी बहुमोल योगदान दिलेल असले तरी ते मुळात एक अर्थशास्त्रज्ञ होते. भारताच्या राज्यघटनेच्या शिल्पकाराबरोबरच ते भारतीय आर्थिक नियोजनाचे आणि जलनितीचे देखील शिल्पकार होते. देशाच्या जलविद्युत आणि कृषीक्षेत्रात शेतकऱ्यांच्या प्रश्नांच्या सोडवणूकीसाठी दिलेले त्यांचे योगदान अतुलनीय आहे. प्रस्तुत लेखामध्ये डॉ.बाबासाहेब आंबेडकर यांनी भारताच्या जलनिती क्षेत्रात दिलेल्या योगदानाचे विश्लेषण दिले आहे.

मुख्य मुद्दे :– डॉ.बाबासाहेब आंबेडकरांची जलनीती, जलसंसाधनांचे संवर्धन, जलविद्युत प्रकल्प, नदी–खोरे विकास, आंतरराज्यीय नदयांचे जाळे.

प्रस्तावना :–

भारताच्या या पावनभूमीवर ज्या अनेक महापुरुषांनी जन्म घेऊन देशाकाठी व समाजासाठी अहोरात्र कार्य करुन राष्ट्रनिष्ठा व सामाजिक बांधिलकी जोपासली. त्यांच्या सेवेचा वारसा आजही देशवासियांसाठी आदर्श, मार्गदर्शन व दिग्दर्शक ठरलेला आहे. अशा या थोर महापुरुषांत डॉ.बाबासाहेब आंबेडकर यांचे नाव सर्वात वर आहे. अशा या थोर महापुरुषांत डॉ.बाबासाहेब आंबेडकर यांचे नाव सर्वात वर आहे. अशा या थोर महापुरुषांत डॉ.बाबासाहेब आंबेडकर यांचे नाव सर्वात वर आहे. उत्पादनाच्या प्रक्रियेतील महत्वाच्या असणाऱ्या वीज व पाणी या दोन उत्पादक घटकांच्या कार्यक्षम संवर्धन वाटप व वितरणासाठी सक्षम अशा तांत्रिक संस्थांची निर्मिती कामगारशक्तीच्या जोडीत करणे हे बाबासाहेबांच चिरस्मरणीय कार्य होय. व्हॉइसरॉय सल्लागार मंडळाचे सदस्य म्हणून काम करताना त्यांनी कामगार कल्याणाच्या जोडीनेच पाणी आणि ऊर्जा या दोन्ही क्षेत्रातही अतिशय महत्वाच योगदान दिले होते. देशात उपलब्ध असणाऱ्या नद्यांचा, नदी खोऱ्यांचा आणि त्यात उपलब्ध असणाऱ्या पाण्याचा वापर सिंचन, वीजनिर्मिती आणि जलवाहतूक अशा तीनही कामांसाठी केला गेला पाहीजे, अशी त्यांची भूमिका होती. दामोदर व्हॅली, ०००० या नदयांच्या खोऱ्यातील बहुउपयोगी नदी व धरण विकास प्रकल्पांसाठी आवश्यक संस्थात्मक यंत्रणांची निर्मिती ही बाबासाहेबांच्या दूरदृष्टीची परिणीती होय. जलवाहूतक सिंचन, पूरनियंत्रण आणि वीजनिर्मिती अशा चारही उद्दिष्टांच्या एकात्मिक पूर्ततेसाठी नदी खोऱ्यांच्या विकासाचे महाकाय प्रकल्प राबविले पाहिजेत, असे त्यांचे मत होते.

संशोधनाची उद्दिष्टे :–

१. डॉ.बाबासाहेब आंबेडकरांच्या जलविषयक धोरणाचा अभ्यास करणे.

२. सद्यस्थितीत जलव्यवस्थापनाच्या स्थितीचे विश्लेषण करणे.

संशोधन पध्दती :–

प्रस्तुत विषयाची मांडणी करण्यासाठी दुय्यम स्त्रोतांचा वापर करण्यात आला असून यात प्रामुख्याने संदर्भग्रंथ, वर्तमानपत्रे, मासिके, अहवाल आणि संकेतस्थळे यांचा वापर करुन माहितीचे संकलन केले आहे. या माहितीचा वापर करुन डॉ.बाबासाहेब आंबेडकर यांनी जलव्यवस्थापन बाबत मांडलेल्या विचारांचे विश्लेषण करण्यात आले आहे.

विषयाचे महत्व :–

आपल्या देशात पाण्याची व विजेची जी समस्या आज भागवते आहे, ती नेमकी नैसर्गिक अथवा मानवनिर्मित आहे यावर मोठी चर्चा होत आहे. मानवाच्या जीवनातील अन्न, वस्त्र, निवारा या तीन प्रमुख गरजा आहेत. परंतु पाणी हेच जीवन असल्याने अत्यंत महत्वाची मानवी गरज बनली आहे. पाण्याचे दैनंदिन जीवनात वापर करत असतांना सर्वांनी एकजुटीने प्रत्येकाने काटेकोरपणे व नियोजनबध्द (जलव्यवस्थापन) वापर करणे आवश्यक आहे.

डॉ.बाबासाहेब आंबेडकर महान नेत्यांचे लक्षण म्हणजे त्यांची दूरदृष्टी, वर्तमान आणि भवितव्यातील समस्या कायमस्वरुपी यशस्वीपणे सोडविण्यासाठी लागणारी असामान्य प्रतिभा आणि उपायांची नेटाने केलेली राबवणूक. स्वतंत्र भारताच्या सर्वांगीण प्रगतीसाठीचा त्यांच्यासमोर एक आराखडा होता. केंद्रीय श्रममंत्री या पदावर असतांनाच त्यांनी भारतातील जलसंपत्तीचे व्यवस्थापन, पर्यावरण आणि उर्जानिर्मिती या संबंधात दामोदर प्रकल्पाची आखणी करुन जो आदर्श घालून दिला तो राष्ट्रीय विकासाचा मोठा पाया होय. त्यांनी जलव्यवस्थापना बाबतीत जे विचार मांडले ते सार्वकालीन उपयुक्ततेचे आहेत. आजच्या राज्यकर्त्यांनी डॉ. बाबासाहेब आंबेडकरांच्या समाजकेंद्रीत तत्वज्ञानाच्या आधारावर राबवला असता तर आज महाराष्ट्रावर जे मानवनिर्मिती दुष्काळाचे संकट कोसळले आहे ते कोसळले नसते असे दुर्दैवाने म्हणावे लागते.

डॉ.बाबासाहेब आंबेडकरांची जलनीती :–

डॉ.बाबासाहेब आंबेडकर सन १९४२ ते १९४६ च्या दरम्यान व्हॉईसरॉयच्या मंत्रीमंडळात सदस्य असतांना त्यांनी देशाच्या विकासाच्या संकल्पना व प्रेरणा दिली. त्यात तांत्रिक संस्थांची निर्मिती, जलसंसाधनांचे संवर्धन, दामोदर नदीखोरे प्रकल्प, महानदी खोरे विकास प्रकल्पात हिराकुड धरणाची निर्मिती, सोननदी प्रकल्प, जलविद्युत प्रकल्प तसेच नदी खोरे प्राधिकरण, सिंचन व विद्युत शक्ती, आंतरराज्यीय नद्यांचे जाळे इ.चा समावेश आहे. १९४२ ते १९४६ या कालावधीत पाण्याचा वापर, पुराचे नियंत्रण, धरणांची निर्मिती, जलविद्युत प्रकल्पांची निर्मिती ही जबाबदारी बाबासाहेबांवर आली होती.

कामगार विभागाची स्थापना :–

मजुरांच्या समस्या जाणून घेण्यासाठी नोव्हेंबर १९३७ मध्ये स्थापन केलेल्या विभागात पाटबंधारे, विद्युत आणि त्यासंबंधीत इतर लोकोपयोगी कामे सुध्दा या नवीन विभागाच्या अखत्यारीत आली. सन १९४२ च्या अगोदर संपूर्ण भारतातील पाण्याचे नियोजन करुन मोठया पाटबंधारे, जलविद्युत विभागाच्या सर्व जबाबदारी स्विकारली. भारताची आर्थिक परिस्थिती त्यावेळी बळकट करण्याचे एक ध्येय होते. भारताला महायुध्दानंतर

प्रगतीच्या दिशेने नेण्यासाठी हा प्रकल्प मोलाची भूमिका वटविणार होता. कामगार विभागाने अखिल भारतीय पाटबंधारे आणि जलवाहतूक विभागाच्या विकासाचे कार्य हाती घेतले.

पाण्यासंबंधी घटनात्मक तरतुदी :–

डॉ.बाबासाहेब आंबेडकर यांनी घटनेचा आराखडा घटना समितीस सादर करतांना पाणी हा विषय केंद्र शासनाच्या अखत्यारीत असावा अशी भूमिका मांडली. त्यामुळे भारतीय राज्यघटनेत पाणी हा विषय क्रमांक ५६ मध्ये अंतर्भूत होवून केंद्रशासनालाही या संबंधी कायदे करण्याचे अधिकार प्राप्त झाले. ही तरतूद भारताच्या राज्यघटनेत कलम २६२ मध्ये समाविष्ट करण्यात आली आहे. याच तरतुदी अंतर्गत आंतरराज्यीय जलविवाद कायदा, नदी खोर प्राधिकरण कायदा १९५६ पारीत करण्यात आला.

पुराच्या पाण्याचा उपयोग :–

भारतातील एकीकडे नद्यांतून वाहून जाणारे प्रचंड पाणी, महापूर व त्यामुळे होणारे प्रचंड जीवित व वित्तहानी आणि दुसरीकडे कोरडवाहू शेती..... भीषण दुष्काळ अशी परिस्थिती. पाणी ही राष्ट्रीय संपत्ती आहे आणि तिच्यावर देशातील प्रत्येक नागरिकाचा बरोबरीचा अधिकार आहे असा बाबासाहेबांचा ठाम सिध्दांत होता. जेव्हा बाबासाहेब उच्च शिक्षणासाठी अमेरिकेत राहिले होते. तेव्हा त्यांनी तेथील टेनेसी खोरे प्रकल्पाच्या सूक्ष्म अभ्यासातून त्या धर्तीवरच भारतात बहुउद्देशीय धरणे बांधणे हिच भारताच्या विकासाची गंगोत्री ठरेल म्हणून दामोदर खोरे प्रकल्पाची आखणी करायला सुरुवात केली कारण दामोदर नदी ही तोवर 'दु:खाची नदी' म्हणूनच ओळखली जात होती. आत्ताचे झारखंड ते बंगालपर्यंत विराट पुरांनी हाहा:कार माजवणारी नदी म्हणून या नदीचा दुलौकिक होता.

पुरातून येणारे अतिरिक्त पाणी समुद्रात वाहून जाऊ देणे असा एका समितीचा अहवाल आलेला होता. भारतीय राजकारण्यांनी धरणांना विरोध केला होता तर इंग्रज दुसऱ्या महायुध्दात अडकून पडले असल्याने त्यांना भारताच्या प्रगतीशी आता काहीही घेणेदेणे उरलेले नव्हते. मात्र बाबासाहेबांनी अत्यंत नेटाने आपले धोरण राबविले. ''अतिरिक्त पाणी ही समस्या नसून ती एक साधनसंपत्ती आहे व तिचा विनियोग येथेच व्हायला हवा. जलसंधारण हेच त्याचे एकमेव उत्तर असू शकते. शेतकऱ्यांचे दारिद्रय दूर करण्यासाठी, उद्योगासाठी, वीजनिर्मिती करण्यासाठी या जलाचा वापर केला गेला नाहीतर आपण आपले सर्वस्व गमावून बसू !'' दामोदर प्रकल्पासाठी ठिकठिकाणी अनेक धरणे बांधण्याच्या जागा निश्चित करण्यापासून ते पूरनियंत्रण, जलवितरण, जलवाहतूक, वीजनिर्मिती ते धरणांपासून होणारे विस्थापन – व्यवस्थापन या सर्व बाबी बाबासाहेबांनी स्वत: लक्ष घालून पूर्ण करुन घेतल्या.

अशाप्रकारे पूर समस्येविषयी व जादा पाण्याविषयी आशादायी व सकारात्मक दृष्टीकोन ठेवून पाणी समस्या सोडविण्यासाठी ते उत्सुक होते. बहुउद्देशीय महानदी खोरे विकासाबद्दल बोलतांना ते म्हणाले, '' इतर प्रगत देशासारखे नदीवर धरणे बांधणे आणि पाण्याची कायमची साठवण करणे आणि त्यांचे बहुउद्देशीय वापर करणे आवश्यक आहे.'' अशा जलाशयातून सिंचन प्रकल्प राबवून वीजनिर्मिती, नौकाविहार करता येते''

दामोदर प्रकल्पाचे प्राथमिक कार्य सुरु असतांनाच त्यांनी ओरिसातील नद्यांचाही विचार सुरु केला. ओरिसातील महापुराचे संकट नित्याचे होते तसेच दुष्काळांचे आणि मलेरियासारख्या साथीच्या रोगांचे. बाबासाहेबांनी पाहिले की, दरवर्षी लक्षावधी लोक या समस्यांनी हकनाक मरत आहेत. १९६६ च्या भीषण दुष्काळात पुरी जिल्हयातील ४०टक्के लोकसंख्या नष्ट झाली होती. हा अनुभव त्यांच्या डोळयासमोर होताच.

महानदी, वैतरणी आणि ब्राम्हणी या नद्यातून वाहून जाणारे जलसंपत्ती अडवली तरच ओरिसातील अन्य कोळसा ते लोहापर्यंतची खनिजे वापरुन अवाढव्य कारखाने उभारता येतील हे त्यांनी ओळखले होते.

बाबासाहेब म्हणाले, '' ओरिसा खनिजसंपत्ती ते जलसंपत्तीने श्रीमंत असूनही लोक मात्र दरिद्री का आहेत याचा विचार केला तर लक्षात येईल की, जलसंपत्तीचाच जोवर वापर योजनाबध्द पध्दतीने केला जात नाही तोवर अन्य संपत्त्या कुचकामी आहेत!'' असे असले तरी त्यांच्यासमोर ठेवलेल्या ओरिसा हुड कमिटीच्या १९३८ च्या अहवालात त्यांनी असे नमुद केले की, पाणी तसेच वाहू देणे इष्ट आहे. यावर भाष्य करतांना ते म्हणतात, ''अतिरिक्त पाणी हा अभिशाप नसून ती त्याची अनुपलब्धता हा खरा अभिशाप आहे हे समितीने लक्षात घेतलेले दिसत नाही. पाणी अभिशाप बनण्याएवढे अतिरिक्त असू शकत नाही. दुष्काळ कशामुळे पडतात? पाण्याचे वितरण समान नाही, एकीकडे ते अतिरिक्त वाटते तर दुसरीकडे त्याचा पुरेपुर अभाव असतो. त्यासाठी पाणी अडविणे व त्याचे संतुलित वितरण करत प्रत्येकापर्यंत पोहचविणे हे आपले कर्तव्य ठरते.

स्वतंत्र भारताचा पहिला प्रकल्प भारताला स्वातंत्र्य मिळाल्यानंतर उत्तर भारतातील विकास व लोककल्याणकारी योजना राबविण्यासाठी सतलज नदीवर १९४८ मध्ये भाक्रा धरण बांधण्यास सुरुवात झाली. १९६३ मध्ये भाक्रा धरणाचे काम पूर्ण झाले. सिंचन व जलविद्युत निर्मितीसाठी हा प्रकल्प ७४० फुट उंच संपूर्ण सिमेंट कॉक्रीटमध्ये बांधला असून ते आशिया खंडातील पहिले आणि जागतिक स्तरावरील दुसरे धरण असून जलविद्युत निर्मिती क्षमता मोठी आहे. स्वातंत्र्यप्राप्ती नंतर अन्नधान्य व वीजेची समस्या असतांना या प्रकल्पाची सुरुवात झाली होती. या धरणाच्या खालच्या बाजूस १३ किमी अंतरावर नानगल धरण बांधले असून या धरणात पुराचे पाणी वळवून साठवले जाते. त्याद्वारे विद्युतनिर्मिती आणि कृषी क्षेत्राचा विकास हा एकमेव उद्देश डॉ. बाबासाहेबांनी ठेवून हा प्रकल्प यशस्वीतेकडे नेला.

दामोदर नदीवर दुसरे धरण १९५३ मध्ये आणि कोनार्क धरण १९५५ मध्ये बांधण्यात आले. दोन धरणे हे भाक्रा नदीवर व दामोदर नदीवर मैथान येथे १९५७ मध्ये व पाणचेट येथे १९५९मध्ये नदीच्या संगमावर धरणे बांधण्यात आले. या चार धरणांचे व्यवस्थापन व नियंत्रण दामोदर व्हॅली कार्पोरेशन तर्फे करण्यात येते. सन १९५५ मध्ये चार धरणांच्या खाली दुर्गापूर येथे दुर्गापूर बंधारा बांधण्यात आला. या प्रकल्पातून बिहार व झारखंड राज्याला कालव्याद्वारे शेती व उद्योगाला पाणीपुरवठा केला जातो. तालिया, मैथान, पाणचेट या ठिकाणी दामोदर खोरे विकास मंडळातर्फे औष्णिक विद्युत निर्मिती प्रकल्प, बोकारो, चंद्रपूर, दुर्गापूर मौजा येथे २७४५ मेगावॅट वीजनिर्मिती क्षमता आहे. बोकारो येथील औष्णिक उर्जा निर्मिती प्रकल्प देशातील सर्वात मोठा प्रकल्प आहे. दामोदर खोरे विकास मंडळामार्फतच औष्णिक वीज निर्मिती केली जाते. नदीच्या वरील खोऱ्यात येणारे जिल्हे हजारी बाग, कोंडाराम, गिरधी, छत्रा, धनाबाद आणि बोकारो तसेच पलमाऊ रांची, लोहारगोंडा, दुमका हे जिल्हे झारखंड राज्यातील नदीखोऱ्याच्या खालच्या भागाचे दोन जिल्हे बरधर्मान, हुगली, पश्चिम बंगाल मधील हावडा, बनकुरा आणि पुरुलिया या जिल्हयांचा काही भाग डिव्हीसी बहुउद्देशीय विकास योजने अंतर्गतच येतो. डॉ.बाबासाहेब आंबेडकर यांच्या विशेष प्रयत्नातून दामोदर खोरे विकास प्रकल्प हा दुष्काळ आणि पूरपरिस्थितीचा सामना करण्यासाठी विशेष कायद्याद्वारे प्रत्यक्षात आणला.

भारतात सध्या इतरही जे बहुउद्देशीय प्रकल्प कार्यान्वित / विकसित केले गेले त्यामागे डॉ. आंबेडकरांची दृष्टी लाभली आहे. कोयना, नागार्जुनसागर, चंबळ नदी, श्रीशैल्यम, अपर–कृष्णा, तुंगभद्रा, बलीमेला, राणाप्रतापसागर, परमलीकुलम–अलियार, कंगसावणीकुमारधरण इत्यादी. यासर्व बहुउद्देशीय प्रकल्पांची एकूण जमीन अंदाजे ९५ दशलक्ष हेक्टर एवढी भरेल तसेच २४ हजार मेगावॅट एवढी जलविद्युत

शक्ती आणि पिण्याचे पाणी पुरवठयाचा पण त्यात समावेश आहे. केंद्र व राज्यसरकार देशातील उपलब्ध नैसर्गिक साधनसामग्रीचा वापर आर्थिक विकासासाठी कसा करता येईल यावर प्रयत्नशील आहेत. डॉ.बाबासाहेब आंबेडकरांनी विकसित केलेल्या 'बहुउद्देशीय जलाशय' आणि 'बहुउद्देशीय नियोजन' या संकल्पनांमुळे देश हरितक्रांतीकडे आणि अन्नसुरक्षिततेकडे प्रगती करत आहे. डॉ.आंबेडकरांचा वैज्ञानिक दृष्टिकोन हा आजच्या प्रकल्पांचा पाया आहे असे म्हणता येईल. बाबासाहेबांशिवाय जलव्यवस्थापनाच्या बाबतीत कुणी सखोल विचार केला नाही आणि तसा दूरदृष्टीपणाही दाखविलेला नाही. त्यादृष्टीने बाबासाहेब खऱ्या अर्थाने या देशाचे हितचिंतक ठरतात.

निष्कर्ष :–

अशाप्रकारे जलसिंचन आणि उर्जानिर्मिती या दोन्ही क्षेत्रात बाबासाहेबांचे खूप मोठे योगदान होते. सध्याच्या स्थितीत भारताच्या राज्यघटनेत पाणी हा राज्याच्या अखत्यारीत असलेल्या विषयांच्या यादीत असल्याने राज्यसरकारला त्यांच्या हद्दीत वाहणाऱ्या नद्यांच्या पाण्याचे नियोजन, आपत्ती व्यवस्थापन तसेच वापर करण्याचा पूर्ण अधिकार आहे. याचा परिणाम देशात असा झाला की, देशात पाण्याच्या नियोजनात समन्वय, एकवाक्यता ठराविक धोरण अस्तित्वात नाही. त्यामुळे राज्या–राज्यात पाणी प्रश्नावर सतत संघर्ष निर्माण होत असतो. उदा. तामिळनाडू, कर्नाटक व आंध्र प्रदेशातील कावेरी नदीच्या पाण्यावरुन उठलेला प्रश्न. भविष्यात असे प्रश्न निर्माण होणार याचा अंदाज घेऊन बाबासाहेबांनी पाण्यासंबंधी सशक्त अधिकार केंद्रशासनास असावे असे आग्रही प्रतिपादन घटना समितीसमोर केले होते.

महाराष्ट्राचा विचार करता पाण्याच्या संतुलित संधारणात व वितरणात आपल्या राजकारण्यांना आलेले घोर अपयश यामुळे आज महाराष्ट्रात दुष्काळ आहे. ''पाण्यावर प्रत्येकाचा हक्क आहे'' या बाबासाहेबांनी दिलेल्या मूलभूत तत्वाचा सर्वांना विसर पडला आहे. बहुतांशी प्रकल्प पश्चिम महाराष्ट्र व फक्त ऊसासाठी निर्माण केले गेले आहेत..... सर्व जनतेच्या व्यापक हितासाठी नाहीत. त्यामुळे अपेक्षित जलवितरण न होता ते विशिष्ट क्षेत्रातच वापरले जाते तर अन्य प्रभाग मात्र तहानलेले राहत आहेत.

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भारतीय राजकीय प्रक्रियेत आरक्षणाचे धोरण हे दलित व मागास समूहाच्या राजकीय सहभागाचे एक महत्त्वपूर्ण साधन म्हणून स्वीकारण्यात आले. लिंग, जात, वर्ण इ. भेदभावांमुळे वंचित राहिलेल्या समाज घटकाला मुख्य प्रवाहात आणण्यासाठी विधायक भेदभावाचे सूत्र स्वीकारले गेले. याच सूत्रानुसार महिला आरक्षणाची चर्चा घटनापरिषदेत झाली. पण घटनापरिषदेतील महिला प्रतिनिधींनी त्यास विरोध केला. १९८० च्या दशकात मात्र महिला चळवळीच्या भूमिकेत बदल झालेला दिसून येतो. या दशकात नियोजनात्मक अर्थव्यवस्थेच्या मर्यादा व त्यातील अंतर्विरोध समोर आले होते. राष्ट्रीय हिताच्या नावाखाली कोणाचे हितसंबंध जोपासले जात आहेत ? असा प्रश्न समाजातील मागास घटक उपस्थित करत होते. मागास जातीच्या सक्रियतेने भारतीय राजकारणाचा चेहरामोहराच बदलून टाकला होता. या पार्श्वभूमीवर एक महत्त्वपूर्ण शक्ती म्हणून स्त्रीचळवळ उदयास येत होती. स्त्री चळवळींने हुंडाप्रथा, बलात्कार, कौटुंबिक हिंसाचार यासारखे प्रश्न राजकीय आखाडयामध्ये आणले. अभिजन वर्ग मात्र या प्रसंगी राजकारण हायजॅक करु पहात होता. मध्यमवर्ग राजकारणाविषयी हेटाळणीच्या भाषेत बोलत होता. जगभरच्या स्त्रीवादी चळवळी छोटया छोटया गटात विभागल्या जात होत्या. याचवेळी भारतामध्ये मात्र निम्नस्तरावरुन महिला आरक्षणाची मागणी बळ धरत होती, हे विशेष. यामागील मुख्य प्रेरणा काय होती, त्याची ऐतिहासिक पार्श्वभूमी काय होती, याचा विचार करणे आवश्यक आहे.

महिला आरक्षणाच्या मागणीची मुख्य प्रेरणा :

व्यक्तीला (स्त्री-पुरुष दोहोंना) सार्वत्रिक प्रौढ मताधिकार मिळवण्यासाठी २० वे शतक उजाडावे लागले. भारतात मात्र वसाहतवादी काळातील विविध चळवळींच्या वारशामुळे स्वातंत्र्यानंतर स्त्री व पुरुषांना मतदानाचा अधिकार एकाचवेळी प्राप्त झाला. स्त्रियांचा मतदानाचा अधिकार मतदान करण्याच्या पलीकडे जाऊ शकला नाही. राजकारणाचा वारसा लाभलेल्या काही मोजक्या महिलाच राजकीय प्रक्रियेत सहभागी होऊ शकल्या. त्यांनी आपल्या कर्तृत्वाचा ठसाही भारतीय राजकारणावर उमटवला. मात्र अशा मोजक्या स्त्री प्रतिनिधींपलीकडे ही संख्या जाऊ शकली नाही. याच महिला प्रतिनिधींच्या विरोधामुळे महिला आरक्षणाची चर्चाही पुढे सरकू शकली नाही. १९७५ साली नेमलेल्या 'कमिटी ऑन दी स्टेटस ऑफ वुमेन इन इंडिया' या समितीमध्येही महिलांच्या राजकीय सहभागावर चर्चा झाली. मात्र समितीच्या आरक्षणाच्या मागणीस वीणा मुझुमदार आणि लतिका सरकार यांनी असहमती दर्शवली. परिणामी १९८० च्या दशकात स्त्री चळवळींनी सत्ता, राजकारण आणि राजकीय व्यवस्थेचे पुरुषसत्तावादी विश्लेषण करुन स्त्री प्रश्नांना राजकीय आराखाडयात आणले. 'खाजगी देखील राजकीय असते' ही घोषणा देत कुटूंबव्यवस्थेवरही प्रश्न उपस्थित केले. लोकशाहीतील प्रतिनिधिक संस्थांचे पुरुषसत्ताक वर्चस्व विश्लेषित केले. नागरिकत्वाच्या संकल्पना, कायदे यांची समीक्षा सुरु केली. या रेटयातून समोर आलेले स्त्रीवादी राजकारण महिला आरक्षणाच्या मागणीस प्रेरणा देणारे ठरले. जहाल स्त्रीवाद्यांनी मातृत्वालाच नकार देत विवाहसंस्था नाकारुन भगिनीभावाचा मुद्दा मांडला. त्यामुळे पितृसत्तेला बसलेला हादरा आणि राजकीय सहभागाची आवश्यकता मान्य करायला लावणाऱ्या ठरावामुळे १९८० नंतर विधेयक मंजुरीच्या दृष्टीने प्रयत्न सुरु झाले. स्त्रीवादी राजकारणाने अभिजन महिलांमध्येही राजकीय जागृतीची स्त्रीवादी जाणीव निर्माण करण्याचा प्रयत्न केला म्हणून आज नेक महिला प्रतिनिधीच या धोरणासाठी सक्रीय होत आहेत ; मग त्या कोणत्याही पक्षाच्या प्रतिनिधी असोत.

स्त्रीवादी राजकारणाबरोबरच आंतरराष्ट्रीय पातळीवर झालेल्या परिषदांमधून महिलांच्या राजकीय सहभागासाठी आरक्षणाच्या धोरणाची शिफारस केली जाते. स्वीडनमध्ये १९७२ साली पक्ष नेतृत्वात महिलांसाठी ४० % आरक्षण देण्यात आले होते. अनेक आंतरराष्ट्रीय संघटनांनी महिला आरक्षणाचा स्वीकार करण्याची शिफारस केली. १९९५ साली बीजिंग येथे चौथी जागतिक महिला परिषद झाली. या परिषदेतही सत्ता संरचनेत आणि निर्णय निर्धारणात महिलांचा अर्थपूर्ण सहभाग असला पाहिजे असा प्रस्ताव मांडण्यात आला होता. राष्ट्रीय विकास निर्देशांकाचा एक घटक म्हणून महिलांचा राजकीय सहभाग विचारात घेण्यास प्रारंभ झाला.

भारतात १९९३ साली स्वीकारलेल्या ७३, ७४ व्या घटनादुरुस्तीमुळे पंचायत राज संस्थामध्ये स्त्रियांना प्रतिनिधीत्वाचा अधिकार उपलब्ध झाला. म्हणून ही घटनादुरुस्ती महिला प्रतिनिधीत्वाच्या इतिहासातील क्रांतीच ठरते. यातून विकसित झालेली महिला नेतृत्व, स्थानिक पातळीवर राजकीय सहभागात अनुभवलेली आव्हाने यामुळे महिलांद्वारे आरक्षणाची मागणी केली जात आहे. महिला नेतृत्वामुळे स्थानिक विकास धोरणाच्या प्राधान्यात झालेला बदल ; स्थानिक राजकारणाच्या प्रारुपात झालेला बदल, भ्रष्टाचार, अनागोंदीपणा यातील झालेली गुणात्मक घट या बाबी महिला नेतृत्वास अधिमान्यता मिळवून देताना दिसून येतात.

वरील प्रश्नाने स्त्रीवादी राजकारण, आंतरराष्ट्रीय दबाव, स्थानिक पातळीवरील महिला नेतृत्वाचा झालेला उदय हे घटक महिला आरक्षण विधेयकास सर्व सामाजिक स्तरातून पाठबळ उपलब्ध करण्यास कारणीभूत ठरले आहेत. प्रत्येक सरकार व राजकीय पक्ष महिला आरक्षणाच्या बाजूने भूमिका घेताना दिसून येतात.

महिला आरक्षणाची उद्दिष्टे :

१) भारतामध्ये स्त्री- पुरुष यांच्यात राजकीय समानता स्थापन करणे.
२) धोरणात्मक निर्णय प्रक्रियेत महिलांना महत्त्वाची भूमिका बजाविण्यासाठी आवश्यक सहभाग देणे.
३) अनुसूचित जाती, अनुसूचित जमाती, इतर मागासवर्गीय व दुर्बल घटकांतील महिलांना प्रतिनिधित्व करण्याची संधी देणे.
४) पुरुषप्रधान राजकीय संस्कृतीला पर्याय निर्माण करणे.
५) महिला सबलीकरणाच्या प्रक्रियेला गती देणे.
६) महिलांमध्ये राजकीय जागृती करणे.
७) महिलांच्या सामाजिक, आर्थिक व राजकीय अडचणी सोडवणे.

महिला प्रतिनिधित्वाचा ऐतिहासिक आढावा :

लोक प्रतिनिधित्वाची संकल्पना पाश्चात्य देशात औद्योगिक क्रांतीनंतर उदयास आलेल्या लोकशाही शासनपध्दतीतून आकारास आली. दीर्घकाळ 'लोक' ही संकल्पना पुरुषांपुरतीच मर्यादित राहिली. मानवी जीवनाची सार्वजनिक व खाजगी अशी विभागणी करण्यात आली आणि सार्वजनिक जीवन म्हणजे राजकीय जीवन धकाधकीचे, असुरक्षित असते म्हणून पुरुषांपुरते मर्यादित ठेवण्यात आले. याउलट खाजगी क्षेत्र सुरक्षित असते असे मानून स्त्रियांना त्यात बंदिस्त ठेवले गेले. परिणामी स्त्रियांना राजकीय हक्क देखील उशिरा मिळाल्याचे दिसून येते. भारतात वसाहतवादी काळात राजाराम मोहन रॉय, महात्मा फुले, सावित्रीबाई फुले, ईश्वरचंद्र विद्यासागर, ताराबाई शिंदे, न्या. रानडे, आगरकर, पेरियार, महात्मा गाधी, डॉ. बाबासाहेब आंबेडकर यांच्या योगादानातून स्त्रीला शिक्षणाची व सार्वजनिक क्षेत्रातील सहभागाची संधी उपलब्ध झाली. स्वातंत्र्योत्तर काळात देशातील सर्व पदावर महिला पोचू शकल्या. मात्र ज्या कौटूंबिक पार्श्वभुमी लाभली आहे त्यांनाच ती संधी मिळाली. सर्वांनाच तशी अनुकूल परिस्थिती लाभली नाही. म्हणून प्रातिनिधिक संस्थामध्ये महिलांचे प्रतिनिधित्व अत्यल्प राहिले.

ऐतिहासिक घटनाक्रम

- १९३५ चा कायदा- महिलांसाठी वेगळे मतदारसंघ निर्माण करण्यास तत्कालीन महिला नेतृत्वाचा विरोध.
- ९ नोव्हेंबर १९४८- घटनेतील आरक्षणाच्या तरतुदीस घटनापरिषदेतील महिला सदस्यांचा विरोध.
- १९७५- 'कमिटी ऑन दी स्टेटस ऑफ वुमेन इन इंडिया' या समितीमध्ये झालेल्या महिलांच्या मर्यादित राजकीय सहभागावरील चर्चेत महिला आरक्षणाचा विचार करण्यात आला. मात्र वीणा मुझुमदार आणि लतिका सरकार यांच्या असहमतीमुळे आरक्षणाच्या मागणीस नकार.
- १९८७- कर्नाटक व गुजरातमध्ये महिला आरक्षण धोरणाची अंमलबजावणी सुरु.
- १९८८- 'नॅशनल पर्सपेक्टिव प्लॅन' द्वारा जिल्हा व पंचायत पातळीवर ३० % महिला आरक्षणाची शिफारस.
- १९९३- ७३ वी ७४ वी घटनादुरुस्ती करुन स्थानिक स्वराज्य संस्थांत ३३ % आरक्षणाची तरतूद करण्यात आली.
- १९९५- बीजिंग येथील आंतरराष्ट्रीय महिला परिषदेत महिला आरक्षण विधेयकाच्या आवश्यकतेची शिफारस.
- १२ सप्टेंबर १९९६- देवेगौडा सरकारतर्फे '८१ वे घटनादुरुस्ती विधेयक' संसदेसमोर मांडण्यात आले. विधेयक संयुक्त समितीकडे पाठवले.
- ९ डिसेंबर १९९६- गीता मुखर्जी यांच्या अध्यक्षतेखालील समितीचा अहवाल.
- १९९८ - निर्वाचन आयोगाने पक्षांतर्गत आरक्षणाचा प्रस्ताव मांडला.
- १९९८- सर्व महिला संघटनांच्या १०,००० महिलांचा संसदेवर मोर्चा.
- १९९८- भाजप सरकारकडून ८४ वी घटनादुरुस्ती विधेयक मांडण्यात आले. त्यालाही विरोध.
- २००५- संयुक्त पुरोगामी आघाडी सरकारच्या कायदामंत्र्यांनी द्विसदस्यीय मतदारसंघाचा प्रस्ताव मांडला.
- ६ मे २००८- संयुक्त पुरोगामी आघाडी सरकारने १०८ वे घटनादुरुस्ती विधेयक राज्यसभेत मांडले.
- १७ डिसेंबर २००९ जयंती नटराजन समितीने विधेयकाला मान्यता दिली.

१९५२ च्या सार्वत्रिक निवडणुकीनंतर स्थापन झालेल्या पहिल्या लोकसभेतील स्त्री प्रतिनिधित्वाचे प्रमाण ४.४% होते. १९७० च्या दशकापर्यंत धीम्यागतीने आलेख चढता राहिला. १९९७० च्या दशकात मात्र लोकसभेतील महिला प्रतिनिधित्व घटलेले निदर्शनास येते. याचे कारण पाहता इंदिरा गांधींचे एककल्ली नेतृत्व, नवीन महिला नेतृत्व घडवण्याऱ्या प्रयत्नांचा अभाव यामुळे पक्षांतर्गत लोकशाही नाहीशी होऊन पक्षामध्ये अनुग्रह पध्दती निर्माण झाली. परिणामी महिलांना पक्षात स्थान मिळवणे कठीण बनले. म्हणून या काळात महिला प्रतिनिधित्वात घट झालेली दिसून येते. (पहा तक्ता क्र. १) लोकसभेबरोबरच राज्यसभेतील महिला प्रतिनिधित्वाच्या प्रमाणातही घट झालेली दिसून येते. १९६८ साली २२ महिला सदस्या असलेल्या राज्यसभेत १९७०च्या दशकात १४ ते १७ सदस्या इतकी घट झाली होती. (पहा तक्ता क्र. २) याला प्रतिक्रिया म्हणून अनेक महिला आघाडयांचा उदय झालेला दिसून येतो. त्यामधूनच शेतकरी संघटनेतली महिला आघाडी, कम्युनिस्ट पार्टी ऑफ इंडियाची महिला आघाडी, ऑल इंडिया डेमॉक्रॅटिक विमेन्स असोसिएशन इ. चा उदय झालेला दिसतो. यातूनही नवीन नेतृत्व उदयाला आले. तसेच पक्षीय प्रारुपातही बदल झाला. त्यातून पुन्हा महिला नेतृत्वास संधी मिळाली. परिणामी १९८० नंतर लोकसभा सदस्यांत महिलांचे प्रमाण वाढण्यास मदत झाल्याचे दिसून येते. मात्र महिला उमेदवारीत ज्या प्रमाणात वाढ होताना दिसते त्या प्रमाणात सभागृहातील सदस्या संख्येत वाढ होताना दिसत नाही. राजकीय पक्ष विरोधी उमेदवाराच्या मताचे विभाजन करण्यासाठी अपक्ष उमेदवारांस

प्रेरणा देतात. त्यामध्ये महिला उमेदवारांचे प्रमाण बरेच असल्याचे दिसून येते. म्हणजे पुरुष उमेदवार विजयी करण्याकरता राजकीय पक्ष महिलांचा वापर करतांना दिसतात. २००४ च्या लोकसभेतही फक्त ४६ महिला सदस्या आहेत.

तक्ता क्र. १ - लोकसभेतील महिला प्रतिनिधित्व (१९५२ ते २००९)

लोकसभा	एकूण सदस्य	महिला सदस्य	टक्केवारी
१९५२-५७	४९९	२२	४.४
१९५७-६२	५००	२७	५.७
१९६२-६७	५०३	३४	६.७
१९६७-७०	५२३	३१	५.९
१९७१-७७	५२१	२२	४.२
१९७७-७९	५४४	१९	३.४
१९८०-८४	५४४	२८	५.१
१९८४-८९	५४४	४४	८.१
१९८९-९१	५२९	२८	५.२
१९९१-९६	५१४	३९	७.१
१९९६-९७	५४४	४०	७.२
१९९८-९९	५४४	४४	८.८
१९९९-२००४	५४४	४९	९.२
२००४-२००९	५४४	४६	८.३
२००९-२०१४	५४४	५९	११
२०१४.....	५४४	६६	१२.१५

तक्ता क्र. २ - राज्यसभेतील महिला प्रतिनिधित्व (१९५२ ते २०१३)

राज्यसभा	एकूण सदस्य	महिला सदस्य
१९५२	२१६	१५
१९५६	२३२	२०
१९६०	२३६	२४
१९६४	२३८	२१
१९६८	२४०	२२
१९७०	२४०	१४
१९७२	२४३	१८
१९७४	२४३	१७
१९७८	२४४	२५
१९८२	२४४	२४
१९८६	२४४	२८
१९९०	२४५	२४
१९९३	२३३	१७
१९९८	२४५	१८
२००४	२४५	२५
२०१३	२४४	२७
२०१४	२४४	२९

आज निवडणूक प्रक्रियेचे बदलते स्वरुप, वाढती गुन्हेगारी, हिंसक मार्गाचा वापर आणि प्रचार मोहिमांचे बदलते स्वरुप सुध्दा महिलांच्या राजकीय सहभागावर परिणाम करणारे घटक ठरले आहेत.

आंतरराष्ट्रीय संदर्भात भारताची स्थिती :

भारतातील महिलांच्या राजकीय सहभागचा आंतरराष्ट्रीय संदर्भात विचार करता तुलनेने चांगली स्थिती असली तरी अनेक मागास राष्ट्रे याबाबतीत भारतपेक्षा आघाडीवर आहेत हे लक्षात येते. सर्वप्रथम १९७२ साली स्वीडनमध्ये पक्षनेतृत्वात महिलांसाठी ४०% आरक्षण देण्यात आले. आज स्वीडनच्या संसदेत ४५% महिला प्रतिनिधी आहेत. इंटर पार्लमेंटरी युनियनने केलेल्या जगातील १८० संसदांच्या सर्वेक्षणानुसार भारताच्या १३ व्या लोकसभेचा (१९९९) क्रमांक जगामध्ये ८५ वा होता. 'इंटर पार्लमेंटरी युनियन' च्या यादीत पहिल्या २० क्रमांकामध्ये असलेल्या देशांनी महिलांसाठी

राखीव कोटा स्वीकारलेला आहे. जगात पहिला क्रमांक असलेल्या रवांडाच्या ' चेंबर ऑफ डेप्युटीज' मध्ये महिलांचे ४८.८% प्रतिनिधित्व आहे. तरीही तेथे महिलांसाठी ३० % राखीव कोटा कायम आहे. ऑस्ट्रीया, डेन्मार्क, फिनलंड, जर्मनी, आइसलँड, मोझाम्बिक, नेदरलँड, नार्वे, द.आफ्रिका, स्पेन, स्वीडन या देशामध्ये पक्षपातळीवर राखीव कोटा ठेवलेला आहे.

दुसरीकडे सर्वांत मोठया लोकशाहीवादी राष्ट्रांपैकी अमेरिकेत १९१७-२००० या काळात १९३ महिलांना प्रतिनिधित्व मिळाले. भारतात मात्र १९४७-२००० या काळात ३६५ महिलांना प्रतिनिधित्व मिळाले आहे. देशाच्या सर्वश्रेष्ट पदातील राष्ट्रपतीपद, पंतप्रधानपद आणि लोकसभा सभापतीपदी महिलांची निवड झाली. पण अमेरिकेत अद्याप राष्ट्राध्यक्षपदी महिलेस संधी मिळाली नाही. म्हणून भारताची स्थिती तुलनेने बरी म्हणता येईल. पण १९८३ साली केवळ ५% प्रतिनिधित्व असलेल्या अमेरिकेने २००४ साली १६% प्रतिनिधित्वापर्यंत मजल मारली आहे. पण भारतास मात्र अद्याप १०% चा आकडा ओलांडता आला नाही ही चिंताजनक बाब आहे. भारताच्या शेजारील राष्ट्रांमध्ये सुध्दा महिला प्रतिनिधित्वाचे प्रमाण भारतापेक्षा चांगले आढळते. धार्मिक कट्टरता असलेल्या पाकिस्तानमध्ये २२.५% महिला प्रतिनिधित्व आहे. अफगाणिस्तानात २७% प्रतिनिधित्व आहे. तसेच नुकतेच माओवादी क्रांती घडून आलेल्या नेपाळामध्ये प्रमाणशीर प्रतिनिधित्वाद्वारे १/३ महिला प्रतिनिधित्वाच्या तत्त्वाची अंमलबजावणी केली गेली. भारताच्या दृष्टीने ही अनुकरणीय बाब आहे.

इंटर पार्लमेंटरी युनियन, द सोशलिस्ट इंटरनॅशनल, द कौन्सिल ऑफ युरोप, द युरोपीनयन युनियन, द ऑर्गनायझेशन ऑफ सिक्युरिटी अॅन्ड को-ऑपरेशन इन युरोप, द कॉमनवेल्थ, द आफ्रिकन युनियन व साऊथ आफ्रिकन डेव्हलपमेंट कम्युनिटी, द ऑर्गनायझेशन ऑफ आफ्रिकन स्टेट या आंतरराष्ट्रीय संघटनांनीही महिला आरक्षण धोरणाच्या तरतुदीची शिफारस केली आहे. जगातील स्त्रीवादी संघटनांनी स्थानिक ते राष्ट्रीय राजकारणातील ३०% आरक्षणाच्या मागणीचा प्रस्ताव संयुक्त राष्ट्र संघटनेच्या नेतृत्वाखालील कोअॅलीशन प्रोव्हिजन अॅथॉरिटीकडे मांडला आहे. १९९५ साली बीजिंग येथील चौथ्या आंतरराष्ट्रीय परिषदेतही असा प्रस्ताव मांडण्यात आला होता. संयुक्त राष्ट्र संघटनेतही यावर चर्चा होते. मात्र संयुक्त राष्ट्रसंघटनेच्या 'कन्व्हेन्शन ऑन दी इलिमीनेशन ऑफ ऑल फॉर्म्स ऑफ डिस्क्रीमीनेशन अगेन्स्ट विमेन' नेच या प्रस्तावास मान्यता दिली नाही.

स्थानिक स्वराज्य संस्थांतील परिणामकारकता :

स्थानिक स्वराज्य संस्था या लोकशाही विकेंद्रीकरणाच्या व राजकीय सहभागाच्या यंत्रणा मानल्या जातात. ७३,७४ व्या घटनादुरुस्तीने या संस्थाना घटनात्मक दर्जा बहाल करण्यात आला. यापूर्वी नियमित निवडणुकांचा अभाव, विशिष्ट जातीचे वर्चस्व असल्यामुळे या संस्था जणू जातपंचायतीची भूमिका पार पाडत होत्या. पण १९९३ साली अनुसूचित जाती, जमाती, इतर मागास वर्ग आणि महिलांना आरक्षणाची तरतूद केली गेली. त्यामुळे पंचायत राज संस्थेला खऱ्या अर्थाने लोकशाही स्वरुप प्राप्त झाले. अलीकडील काही अभ्यासांतून समोर आलेले निष्कर्ष सकारात्मक आहेत. इरम क्लॉट्स यांच्या मते, "महिला प्रतिनिधींचा विकासकामाचा अजेंडा हा पुरुषांपेक्षा वेगळा आहे. महिला प्रतिनिधी शिक्षणावरील खर्च, सामाजिक कार्यक्रम राबवणे, महिला अधिकाराचे रक्षण करणारे कायदे बनवणे, नागरिकांच्या दैनंदिन गरजा यांना प्राधान्य देताना दिसतात." (१९६७-९९ पर्यंतच्या धोरणाचा अभ्यास करुन काढलेली आकडेवारी) शिवाय कर्नाटक, आंध्रप्रदेश, महाराष्ट्र, पश्चिम बंगाल, केरळ या पाच राज्यातील केलेल्या अभ्यासातून, "महिला सदस्य या निधीचा वापर योग्य त्याच कामासाठी करतात. पाणी पुरवठयाच्या समस्या, महिला व बालकांच्या आरोग्याचे प्रश्न, रेशनकार्ड, रस्ते, शाळा इ. ना प्राधान्य देतात. शिवाय पंचायत राजसंस्थातील महिलांच्या सहभागाने भ्रष्टाचार कमी होतो," असे समोर आले आहे. ५२१२ ग्रामपंचायतीच्या केलेल्या अभ्यासानुसार पुरुष नेतृत्वाखाली

केल्या जाणाऱ्या खर्चपेक्षा महिला नेतृत्वाखालील खर्च ६% ने कमी आहे असे आढळून आले आहे. महिला नेतृत्वातील पंचायत संस्थांमध्ये उधळपट्टी कमी होते असा निष्कर्ष समोर आला आहे.

वरीलप्रमाणे महिला नेतृत्वाचा सकारात्मक हस्तक्षेप हा लोकांची अधिमान्यता मिळवण्यात यशस्वी झाला आहे. याचे उदाहरण म्हणजे बिहारमध्ये पंचायतराज संस्थात ५४% महिला प्रतिनिधी आहेत. कर्नाटकात ४३% प्रतिनिधित्व आहे. म्हणूनच आज जगभर अराजकीयीकरणाची लाट पसरत असताना, महिला संघटनांचे विभजन होत असताना, मध्यमवर्ग राजकारणाची हेटाळणी करताना महिलांच्या राजकीय सहभागाची मागणी मात्र तळपातळीपासून जोर धरताना दिसते.

वरील सकारात्मक परिणामांबरोबरच जातीव्यवस्थेचा प्रभाव, पितृसत्ताक मानसिकतेमुळे पंचायत राज संस्थात महिलांचा सहभाग म्हणजे 'जुनीच भूमिका- नवीन उत्तरदायित्व' अशी अवस्था झाली आहे. ही वास्तवताही मान्य करावी लागेल. अज्ञानामुळे त्यांची फसवणूक करणे, महिलेच्या नावाने नेतृत्व स्वत:कडेच घेणे असे प्रकार घडतात. उमेदवारीच्या पात्रता निकषाबाबत (उदा. गुन्ह्याच्या नोंदीचा प्रश्न, उचलेली कर्जे, दोन अपत्यांच्या मर्यादेचे नियम, अविश्वास ठराव) महिलाच बळी ठरतात. अशा आव्हानांवर मात करण्यासाठी राज्यविधानसभा आणि संसदेतील प्रतिनिधित्वासाठी आरक्षण विधेयकाची मागणी महिला संघटना लावून धरताना दिसतात. केरळ, बिहारसारख्या राज्यात स्थानिक संस्थात महिला प्रतिनिधित्व यशस्वी झाले असले तरी राज्य-विधिमंडळ आणि संसदेतील प्रतिनिधित्व ५% चा आकडा ओलांडत नाही. म्हणजे लोकमान्यता आहे पण राजकीय इच्छशक्ती व राजकीय पक्षातील पितृसत्ता यामुळे हे विधेयक रेंगाळते असे म्हणता येईल.

विधेयकाची वाटचाल :

महिला आरक्षणाविषयी १९८० च्या दशकापर्यंत महिला प्रतिनिधींचाच दृष्टिकोन नकारात्मक राहिला. घटनापरिषेदतील विरोधा-बरोबरच १९७५ साली नेमलेल्या 'कमिटी ऑन द स्टेटस ऑफ वुमेन इन इंडिया' या समितीतही महिला आरक्षण विधेयकास नकार देण्यात आला होता. राजीव गांधी सरकारने सर्वप्रथम सर्व प्रतिनिधीगृहात महिलांसाठी ३०% आरक्षण असावे असा प्रस्ताव मांडला होता. सर्वप्रथम कर्नाटकने पंचायत स्तरावर २५% महिला आरक्षणाची तरतूद केली आणि देशातील महिला आरक्षण धोरण स्वीकारणारे ते पहिले राज्य ठरले. त्यानंतर व्ही.पी.सिंग यांनी १/३ प्रतिनिधित्वाची कल्पना मांडली. (नॅशनल पर्स्पेक्टिव्ह प्लॅनतर्फे १९८८ साली महिला आरक्षणासाठी शिफारस केली होती.)

१९९३ साली पी.व्ही. नरसिंहराव सरकारतर्फे १/३ आरक्षणाचे विधेयक मांडण्यात आले. ७३ व ७४ व्या घटनादुरुस्तीने पंचायत राज स्तरावर ३३% महिला आरक्षणाचे धोरण स्वीकारले गेले. पंचायत स्तरावर मिळालेल्या संधीने महिलांच्या राजकीय सहभागास प्रेरणा मिळाली. तथापि संसद व विधीमंडळातील महिला आरक्षणास मान्यता देण्यात आली नाही. त्यानंतर हे विधेयक सातत्याने चर्चेचा विषय बनले. कोणताही पक्ष उघडरित्या आरक्षण धोरणाच्या विरोधात भूमिका घेत नाही. तथापि आरक्षण तत्त्वास पाठिंबा दर्शवत विधेयकाच्या विरोधात भूमिका घेतली जाऊ लागली. या परस्पर विरोधी भूमिकेमुळे विधेयक चर्चेत राहिले व त्यातील अनेक मर्यादा उघड करत त्याला पर्यायही मांडले गेले. १२ सप्टेंबर १९९६ रोजी देवेगौडा सरकारने ८१ व्या घटनादुरुस्ती विधेयकाच्या स्वरुपात महिला आरक्षणाचा प्रस्ताव सभागृहासमोर ठेवला. १/३ जागा महिलांसाठी आरक्षित असाव्यात आणि मतदारसंघ फिरत्या पध्दतीने निश्चित केले जावेत अशी मागणी करणारे ते विधेयक होते. महिला आरक्षणावर सर्व पक्षांची सहमती होती. पण विधेकाबाबतीतील मतभेदांमुळे विधेयक संयुक्त समितीकडे सोपवण्यात आले. गीता मुखर्जी यांच्या अध्यक्षतेखालील या समितीने आपला अहवाल ९ डिसेंबर १९९६ रोजी सादर केला. याच समितीने तयार केलेले विधेयक नंतर सभागृहात चर्चेस आणले गेले. १९९८ सालीच निर्वाचन आयोगानेही पक्षांतर्गत महिला आरक्षणाचा प्रस्ताव मांडला जो स्वीडनमध्ये यशस्वी झाला.

त्याचबरोबर दबावगट म्हणून देशातील १०,००० महिलांचा मोर्चा संसदेवर नेण्यात आला होता. या सर्व दबावापोटी अटल बिहारी वाजपेयी सरकारनेही १९९८ साली ८४ वी घटनादुरुस्ती विधेयक सभागृहात मांडले. पण शरद यादव, लालूप्रसाद यादव, मुलायमसिंग, भाजपच्या उमा भारती सारख्या अनेक नेत्यांनी 'कोटयांतर्गत कोटया' ची मागणी करत विधेयकावर आक्षेप घेतले. सभागृहात विधेयक सादर करण्यास विरोध करुन त्याबाबत आक्रमण भूमिका घेतली. त्यानंतर २००५ साली संयुक्त पुरोगामी आघाडी सरकारच्या कायदा मंत्र्यांनी द्विसदस्यीय प्रतिनिधींचा प्रस्ताव सभागृहासमोर मांडला होता. यावेळी मात्र ६ मे २००८ रोजी सर्व पक्षातील महिला सदस्यांनी एकत्र येऊन पूर्वतयारीसह १०८ वे घटना दुरुस्ती विधेयक राज्यसभेत मांडण्यात यश मिळवले. त्यावर चर्चा अपेक्षित असल्याचे मत महिला सदस्यांनी मांडले आहे. गीता मुखर्जी आयोगाने बनवलेला प्रस्तावच जशाचा तसा सभागृहासमोर मांडण्यात आला. राज्यसभेने विधेयकाला संसदीय स्थायी समितीकडे अध्ययनासाठी पाठविले. या समितीच्या अध्यक्षा जयंती नटराजन यांनी १७ डिसेंबर २००९ रोजी विधेयकाला मान्यता दिली. त्यानंतर राज्यसभेने ९ मार्च २०१० रोजी या विधेयकाला मान्यता दिली. तथापि, लोकसभेने अद्यापही या विधेयकाला संमती दिलेली नाही.

महिला आरक्षण विधेयकातील प्रमुख तरतुदी :

(१) संसद आणि राज्यविधीमंडळातील (दिल्ली विधानसभेसह) एक तृतीयांश जागा महिलांसाठी राखीव करण्यात येतील. संसदेने निर्धारित केलेल्या सक्षम अधिसत्तेकडून आरक्षित जागांचे वाटप करण्यात येईल.

(२) महिलांसाठी आरक्षित असलेल्या जागा पैकी एक तृतीयांश जागा अनुसूचित जाती व अनुसूचित जमातींच्या महिलांसाठी आरक्षित असाव्यात.

(३) घटक राज्य व केंद्रशासित प्रदेशांमधून प्रत्यक्ष निवडणुकीद्वारे लोकसभेसाठी निवडून जाणाऱ्या एकूण संख्येपैकी एकतृतीयांश जागा महिलांसाठी फिरत्या पध्दतीने (By Rotation) आरक्षित असतील.

(४) एखाद्या घटकराज्यात वा केंद्रशासित प्रदेशामध्ये लोकसभेची केवळ एकच जागा असेल तर दर ३ सार्वत्रिक निवडणूकांच्या साखळीमध्ये पहिल्यावेळेस ती जागा महिलांसाठी आरक्षित असेल. जर २ जागा असतील तर ३ सार्वत्रिक निवडणूकांमध्ये १ जागा महिलांसाठी राखीव असेल. अनुसूचित जाती / जमातींच्या जागांसाठीदेखील हाच नियम असेल. लोकसभेतील ॲग्लो इंडियन समाजासाठी राखीव असलेल्या २ जागांपैकी प्रत्येक ३ सार्वत्रिक निवडणूकांच्या साखळीत २ निवडणूकांसाठी १ जागा महिलांसाठी आधरित असेल.

(५) ॲग्लो इंडियन समाजाच्या महिलांसाठीसुध्दा आरक्षण लागु करावे.

(६) महिला आरक्षण विधेयक सुरुवातीच्या १५ वर्षांसाठी लागु असेल.

विधेयकावरील आक्षेप व राजकीय पक्षांची भूमिका :

एकूण महिला आरक्षणावर तीन वेगवेगळया भुमिका दिसून येतात. या भूमिकेतील वेगळेपणामुळे सभागृहात सादर केलेल्या विधेयकावर विविध आक्षेप घेतले गेले. त्यामध्ये मूळ आरक्षण धोरणासच विरोध करणारा एक गट आहे. त्यांच्यामते हे आरक्षण म्हणजे घटनेतील समतेच्या तत्त्वास हरताळ फासणारे धोरण आहे. शिवाय महिला म्हणून सामाजिक दृष्टया मागास असलेला एकसंघ असा गट नाही. महिला म्हणून इतर समूहापेक्षा वेगळे असे हितसंबंध असून शकत नाहीत. या प्रकारचे आक्षेप सर्वच प्रकारच्या आरक्षण धोरणावर घेतले जातात.

आरक्षणाचे समर्थन करणारे पण प्रस्तुत विधेयकास विरोध करणाऱ्यांमध्ये इतर मागासवर्गाचे नेतृत्व करणारे पक्ष आणि दलित नेत्यांचा समावेश होतो. त्यांनी घेतलेले आक्षेप पुढीलप्रमाणे आहेत.

- शरद यादव (जनता दल संयुक्त) यांच्या मते, "प्रस्तुत विधेयक उच्च जातीय महिलांनाच सभागृहात संधी उपलब्ध करुन देईल. यातून पाश्चात्त्यीकरण झालेल्या हिप्पीकटच्या अभिजन वर्गातील महिलांनीच सभागृह भरुन जाईल."
- मुलायमसिंग यादव (समाजवादी पक्ष) आजचे विधेयकाचे स्वरुप हे दलित व अल्पसंख्याकांच्या विरोधी आहे. हा पक्ष असा आक्षेप घेऊन कोटयांतर्गत कोटयाची मागणी करतो.
- उभा भारती- दलित, मागास जातीतील महिला या दुहेरी शोषित आहेत म्हणून त्यांना स्वतंत्र कोटा हवा पण मुस्लिमांना आरक्षण नको, कार ते राज्यघटनेच्या विरोधात आहे.
- मायावती (बसपा)- महिलांसाठी ५०% आरक्षण कोटा ठेवावा व त्याअंतर्गत दलित, मागस व अल्पसंख्याक महिलासाठी कोटयांतर्गत कोटा ठेवण्यात यावा.

सभागृहातील मागास जातींच्या वाढत्या वर्चस्वास शह देऊन उच्च जातीय राजकारणास बळकटी देण्याच्या दृष्टिकोनातून विधेयक आणले जात आहे अशी भीती दलित मागास जातींना वाटते.

महिला आरक्षणाच्या धोरणाचे समर्थन करणारे, सभागृहात मांडलेल्या विधेयकास पाठींबा दर्शविणारे पण कोटयांतर्गत कोटयात विरोध दर्शविणारे वर्ग व पक्ष यांचे आक्षेप वेगळे आहेत. कोटयांतर्गत कोटा ठेवायचा झाल्यास धार्मिक अल्पसंख्याकांमधील महिलांसाठी जो कोटा निर्माण करावा लागतो त्यास भाजपचा विरोध आहे. त्यांच्यामते धर्माधारित आरक्षणाचे धोरण हे राज्यघटनेच्या विरोधात आहे व त्यास अल्पसंख्याकांचे लागूलचालन म्हणावे लागेल. आणि हिंदू धर्मासाठी ते धोकादायक आहे असे आरोप कोटयांतर्गत कोटयाच्या विरोधी घेतले जातात.

राजकीय पक्षांनी घेतलेले वरील आक्षेप व त्यांची भूमिका लक्षात घेता व आजच्या सत्ताधारी पक्षाची धोरणे पाहिल्यास असे दिसून येते की आरक्षणाच्या धोरणाकडे समतेच्या, स्त्रीमुक्तीच्या दृष्टीने पाहण्याऐवजी जागतिक बँकेच्या संदर्भात या संकल्पना वापरुन व नवीन आर्थिक धोरणाच्या यशस्वितेचे साधन म्हणून ही धोरणे राबवण्याचा प्रयत्न केला जात आहे. शिवाय बिगर शासकीय संस्थांनी संघटना व राजकीय आघडयांना पर्यायी अवकाश उपलब्ध करुन दिला आहे. त्यात उच्चवर्णीय महिला मोठया प्रमाणात दिसून येतात. समेच्या तत्त्वापेक्षा आंतरराष्ट्रीय स्तरावरुन आलेल्या धोरणाचे त्यांना जास्त महत्त्व वाटते. त्यासाठी ते या धोरणास प्राधान्य देताना दिसून येतात.

मार्क्सवाद्यांचा या धोरणास पाठिंबा आहेच. त्याचबरोबर कोटयांतर्गत कोटयाच्या धोरणास प्रथमत: मान्यता मिळणे कठीण असल्यामुळे सभागृहात विधेयक चर्चेला आल्यानंतर सर्व मुद्दयांचा विचार केला जावा. त्यासाठी विधेयक सभागृहासमोर येणे सर्वाधिक महत्त्वाचे असल्याचे मत वृंदा कारत (सीपीएमच्या महिला आघाडीच्या उपाध्यक्ष) यांनी व्यक्त केले. वरील भूमिका व आक्षेप लक्षात घेऊन विधेयकास चर्चेसाठी सभागृहासमोर येऊ देणे गरजेचे आहे. या धोरणाच्या अंमलबजावणीसाठी जे पर्याय मांडले गेले आहेत त्यावरही चर्चा होऊन अंतिम निष्कर्ष चर्चेनेच समोर येऊ शकतात.

महिला आरक्षण : पर्यायी प्रारुपे

भारतीय समाजातील स्तरीकरणाची गुंतागुंत लक्षात घेता वंचित समूहांच्या राजकीय सहभागासाठी १९८० च्या दशकापासून चर्चेत राहिलेल्या या धोरणावर अनेक मतप्रवाह निर्माण झाले. यातून अनेक पर्यायी प्रारुपही मांडले गेले व त्यांच्या मर्यादाही दाखवल्या गेल्या. त्या पर्यायी प्रारुपांची तोंड ओळख पुढीलप्रमाणे करुन घेता येईल.

१) त्रिसदस्यीय मतदार संघाचे प्रारुप :

१९९३ सालापूर्वी स्थानिक संस्थातील आरक्षणाच्या धोरणावर शेतकरी संघटनेच्या महिला आघाडीने मांडलेले प्रारुप हे एक प्रारुप होय.

अ) प्रत्येक मतदारास तीन उमेदवार निवडीसाठी तीन मताचा अधिकार असेल.

ब) यातील एक मत महिला उमेदवार निवडीसाठी असेल, उर्वरित दोन मते खुल्या पध्दतीने पुरुष किंवा महिला उमेदवार निवडीसाठी असतील.

क) प्रत्येक मतदारसंघातून एक महिला सदस्य व इतर दोन सदस्य (खुल्या पध्दतीने) निवडले जातील.

या प्रारुपात अनेक मर्यादा असल्याने हे प्रारुप मागे पडले.

२) पक्षपातळीवरील आरक्षणाचे प्रारुप

१९९८ साली निर्वाचन आयोगाने पक्षपातळीवरील आरक्षणाच्या प्रारुपाचा प्रस्ताव मांडला. निर्वाचन सुधारणा कायद्यांतर्गत १९५१ प्रतिनिधित्वाच्या कायद्यामध्ये सुधारणा करुन राजकीय पक्षांच्या तिकिट वितरणामध्ये महिलांना आरक्षणाची तरतूद केली पाहिजे असे हे प्रारुप सुचविते. या प्रकारचे प्रारुप स्वीडनमध्ये यशस्वी झाले आहे. सन २००० साली मानुसीच्या संपादक मधु किश्वर यांनीही हा प्रस्ताव मांडला त्यांच्या मते, "आरक्षणाची जबाबदारी संसदेची नसून ती मान्यताप्राप्त राजकीय पक्षांची आहे. म्हणून प्रत्येक पक्षानी मतदार संघात १/३ महिला उमेदवारच दिले पाहिजेत. तसेच फोरम फॉर डेमॉक्रॅटिक रिफॉर्मने ही याच प्रारुपाची संकल्पना मांडली आहे.

या प्रकारच्या प्रारुपावरील मुख्य आक्षेप म्हणजे महिलांना उमेदवारीची हमी मिळेल पण विजयाची हमी मिळणार नाही. १९९० नंतर अपक्ष महिला उमेदवारांची संख्या वाढताना दिसते. त्यांना राजकीय पक्षांचीच प्रेरणा आहे. मात्र त्यांचा उपयोग विरोधी मते विभागण्यासाठी केला जातो. म्हणून महिला उमेदवारांच्या विजयाचे प्रमाण कमी आहे.शिवाय राजकीय पक्ष पुरुषप्रधान व्यवस्थेचे वाहक असल्यामुळे महिला उमेदवारांची वाढ ही पक्षीय श्रेणीबध्दतेला आव्हानच वाटते म्हणून या प्रारुपावर मर्यादा येतील असा अक्षेप घेतला जातो.म्हणून भारतीय समाजव्यवस्थेचे वास्तव लक्षात घेतल्यास या प्रकारचे प्रारुप महिलांच्या राजकीय सहभागास प्रेरणा देणारे असण्याऐवजी पुरुषी वर्चस्व वाढवणारेच असेल.

३) द्विसदस्यीय मतदारसंघाचे प्रारुप

२००३ मध्ये चारपक्षीय बैठकीत हे प्रारुप चर्चिले गेले. यानुसार १/३ मतदारसंघ द्विप्रतिनिधिक करण्यात यावेत. ते १/३ मतदारसंघ फिरते असावेत. त्या मतदारसंघातून एक पुरुष व एक महिला प्रतिनिधी निवडले जातील. यासाठी प्रतिनिधीची संख्या ५४५ वरुन ७२६ पर्यंत वाढवावी लागेल. मतदारसंघ पुनर्रचना करुन वाढीव सदस्य निश्चित केले जावेत. या प्रारुपामुळे महिलांना राजकीय सहभागास अवकाश उपलब्ध होईल. हे प्रारुप २००५ साली पुरोगामी आघाडीच्या कायदेमंत्र्यांनी सभागृहासमोर मांडले होते.तथापि यासाइी २०२५ पर्यंत संसद सदस्यांची संख्या वाढवता येणार नाही अशी असलेली घटनात्मक तरतूद बदलावी लागेल. शिवाय मतदार संघ पुनर्रचनेची पूर्ण झालेली प्रक्रिया ही पुन्हा बदलावी लागेल. शिवाय मुख्य आक्षेप म्हणजे महिलांचे सदस्यत्व दुय्यम असेल.

तथापि उपरोक्त चर्चिलेल्या कोणत्याही प्रारुपातून कोटयांतर्गत कोटा या प्रश्नावर उत्तर मिळत नाही ; जो आज मुख्य प्रश्न बनला आहे. या सर्व प्रकारच्या प्रारुपांमुळे निर्णय निर्धारणासाठी पर्याय उपलब्ध झाले. प्रमाणशीर प्रतिनिधित्वाद्वारे निवडीचा प्रस्तावही मांडला जात आहे. पण भारतीय वास्तवात त्याच्या अंमलबजावणीत अनेक मर्यादा येतात.

समारोप :

स्त्रीवादी संघटनानी संसदेतील महिला आरक्षणाचा मुद्दा सलग १५ वर्षापासून लावून धरला आहे. चर्चासत्र, वादविवाद आयोजित करुन हा प्रश्न ज्वलंत ठेवला गेला. परिणामी प्रत्येक निवडणुकीत राजकीय पक्षांना, सत्ताधारी शासनव्यवस्थेला या प्रश्नाची दखल घ्यावी लागली आहे. कोणताही राजकीय पक्ष असो त्यांना आरक्षणाच्या धोरणाची आवश्यकता मान्य करावी लागत आहे, मग त्यामागील भूमिका कोणतीही असो.

संसदेमध्ये महिलांचा सहभाग हा केवळ महिलांचे प्रश्न मांडण्याकरता नाही तर लोकशाही प्रक्रियेला बळकटी आणण्यासाठीही आवश्यक आहे. सभागृहातील कामकाजास व धोरणांस अर्थपूर्णता प्राप्त करुन देणे व योग्य निर्देश देण्यासाठी महिलांचा सहभाग आवश्यक आहे, हे पटवून देण्यात स्त्रीवादी संघटनांना यश आले आहे. कोणताही राजकीय पक्ष आज महिला आरक्षणाच्या धोरणाविरोधात भुमिका घेऊ शकत नाही. पण स्त्रीवादी संघटना उच्चजातीयांच्या

प्रश्नांपुरत्या मर्यादित राहिल्या. तसेच मध्यमवर्गीय जाणिवांत अडकल्या आहेत. म्हणून दलित, मागास जातीत त्यांच्याविषयी साशंकता निर्माण झाली आहे. प्रस्तुत आरक्षण म्हणजे संसदेतील मागास जातीच्या वाढत्या वर्चस्वास शह देण्याचे प्रयत्न आहेत अशी त्यांची प्रतिक्रया आहे. या कळीच्या प्रश्नांची सार्थ उकल करणे हे महिला आरक्षणाच्या विधेयकासमोरील आव्हान आहे. या प्रश्नाची दखल घेतल्यास आरक्षण विधेयक पुढचा टप्पा गाठणे शक्य आहे.

या आरक्षणाच्या जोरावर प्रस्थापित राजकीय चौकटीत शासनसत्तेची सुत्रे महिलांच्या हाती येतीलही, पण राष्ट्रीय शासन व्यवस्थाच जागतिक भांडवलशाहीच्या नियंत्रणाखाली जात आहे. जागतिक पातळीवर रँक वाढवण्यासाठी, लोकशाहीची औपचारिकता पूर्ण करण्यासाठी केवळ औपचारिकरीत्या संस्थात्क सहभागाला महत्त्व दिले जात आहे. ती संस्थात्मक गरज आरक्षणाच्या धोरणाने पुर्ण होऊ शकते. पण त्यातून महिलांच्या मुक्तीदायी राजकरणास किती अवकाश उपलब्ध होईल ? या विचार करणे आवश्यक आहे.

तसेच निवडणूक प्रक्रियेचा विचार करता निवडणुका म्हणजे भांडवली गुंतवणूक झाली आहे. आक्रमक, हिंसक मार्गाचा अवलंब केल्याशिवाय प्रसिध्दी मिळत नाही ही कल्पना रुजत चालली आहे. म्हणून प्रत्येक राजकीय पक्षामध्ये धाकदपटशाही संस्कृती विकसित होत आहे. अशावेळी आरक्षणाची संधी निम्नस्तरावरील लोकांपर्यंत पोहोचेल काय ? आणि सभागृहातील बदलती कामकाज पध्दती महिला सदस्यांस सक्रीय होण्याची संधी देईल काय ? याचाही विचार व्हावा.

हे सर्व प्रश्न उपस्थित होऊनही सद्य:परिस्थितीत उपलब्ध असलेल्या अवकाशाचा (स्पेस) वापर केल्यास राजकीय व्यवस्थेतील महिलांच्या हस्तक्षेपाचे सकारात्मक फायदे मिळू शकतात. महिलांच्या आरक्षणाच्या परिणामातून पंचायत राज पातळीवर हे अनुभवायला मिळाले आहे. तसेच आरक्षणाच्या बळावर विचारप्रणाली आणि अस्मिता (आयडियालॉजी आणि आयडेंटिटी) या दोन्हींना प्राधान्य देणारे राजकारण विकसित करणे शक्य बनते. असे झाले तरच लोकशाहीभिमुख राजकारणासाठी आवश्यक राजकीय व्यवस्थेतील हस्तक्षेपाचे एक महत्त्वपुर्ण साधन म्हणून महिलांचा सहभाग परिणामकारक ठरु शकतो.

संदर्भ ग्रंथ :

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महात्मा जोतिराव फुले यांचे सामाजिक कार्य

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प्रस्तावनाः–

महात्मा फुले हे आधुनिक महाराष्ट्रातील एक श्रेष्ठ समाजचिंतक होते. त्यांनी शेतकरी, कष्टकरी, बहुजन समाज, दलित महिला यांच्यावरील अन्यायाला वाचा फोडली. सनातनी विचारावर टिकेचे आसूड ओढले. शिक्षण हे सर्वांगिण सुधारणेचे प्रवेशद्वार आहे अशी त्यांची धारणा होती. व हे द्वार त्यांनी शुद्रांना व अतिशूद्र मानल्या जाणाऱ्या स्त्रियांना खुले करून दिले. दलित शोषित वर्गाला त्यांचे मानवी हक्क मिळवून देण्यासाठी ते आयुष्यभर लढले. ते मानवतावादाचे उपासक होते. एकोणिसाव्या शतकामध्ये महाराष्ट्रात बहुजन समाजाला जागृत करून त्यांना आपल्या न्याय हक्कासाठी संघर्ष करण्याची शिकवण महात्मा फुले यांनी दिली होती. महात्मा फुले म्हणजे बहुजन समाजाच्या शिक्षणासाठी टाहो फोडणारे प्रथम पुरूष होते. स्वातंत्र्य, समता व बंधुत्व या तत्वावर त्यांची नितांत निष्ठा होती. सामाजिक विशमतेविरूध्द त्यांनी आवाज उठविला तेंव्हा त्यांच्या या सामाजिक विचाराची व कार्याची समाजाला ओळख व्हावी, या हेतूने व शोधनिबंधातून सविस्तर माहिती दिलेली आहे.

महात्मा फुले यांचे सामाजिक विचार व कार्य :–

जोतिबा फुले यांनी शिक्षण संपल्यानंतर सरकारी नोकरी न करता घरचा धंदा करण्यास सुरूवात केली. परंतु त्यांचे मन त्यात रमत नव्हते. लोकसेवा व लोककल्याण याविषयीचे विचार त्याच्या मनात घोळत होते. याच वेळी एक घटना घडली ती म्हणजे जोतिबा फुले एका ब्राह्मण मित्राच्या लग्नाच्या गेले. त्यावेळी निघालेल्या मिरवणूकीत सनातनी ब्राह्मणांनी जोतिबांना ओळखले व त्यांचा अपमान केला. जोतीबाचा हा झालेला अपमान मनात सलू लागला. त्या लग्नाच्या मिरवणूकीतून ते रागाने बाहेर पडले व घरी तडक निघून गेले. त्यांच्या मनात समाजातील विषमतेबद्दल चिड निर्माण झाली. सामाजिक न्यायासाठी संघर्ष केलाच पाहिजे असे म्हणून त्यांनी सामाजिक कार्य सुरू केले.[१] यामध्ये स्त्री उध्दाराचे कार्य, अस्पृशांच्या उध्दाराचे कार्य, सत्यशोधक समाजाची स्थापना व शिक्षण विषयीचे विचार यांचा समावेश होतो.

एकोणीसाव्या शतकातील महात्मा फुले हे एक श्रेष्ठ समाजक्रांतीकारक होते. जातीव्यवस्था, वर्णव्यवस्था, शूद्रातिशुद्र, स्त्री-सुधारणा, शिक्षण इत्यादी महत्वपूर्ण विषयावर त्यांनी अतिशय मूलगामी स्वरुपाचे विचार मांडले आहेत.[२] शोषित, पिडीत, उपेक्षित लोकांच्या दुःखाच भान हेच त्यांना कळलेलं सत्यज्ञान आहे. कारण सत्य समजल्याशिवाय ज्ञान निर्माण होत नाही आणि ज्ञान प्राप्तीशिवाय सत्य विचाराची सत्य आचरणाची, सत्य इतरांना सांगण्याची ओढ निर्माण होत नाही या पातळीवर जाणे म्हणजेच सत्य विचाराला, सत्य वर्तनाच्या झाडाला आलेली फळे आहेत हेच महात्मा फुले आपल्या भाषणातून सांगत आहेत[३] मुठभर माणसांच्या पोटांची सोय लावणारा धर्मच असू शकत नाही. हे महात्मा फुले यांना जाणवलेल सत्य माणसाला जीवनात सुख हवे असेल तर सत्यवर्तन हाच त्या सुखाचा राजमार्ग आहे.[४]

स्त्री उध्दाराचे कार्य –

भारतीय समाजाने स्त्रियांना सामाजिक समतेपासून व शिक्षणापासून वंचित ठेवले होते. जोतिबांना वाटत होते की, स्वाभिमान जागृत करण्यासाठी शिक्षण ही गरजेचे आहे. शिक्षणामुळे अज्ञान दूर होऊन समाजात सर्व सुधारणा होण्यास मदत होते. म्हणूनच स्त्रियांच्यात शिक्षणाचा प्रसार केला. त्यांनी स्त्रियांच्या उध्दारासाठी स्त्रीशिक्षण, विधवा विवाह, बालहत्या प्रतिबंध, केशवपन इ.बाबत महत्वाचे कार्य केले. 'जिच्या हाती पाळण्याची दोरी, ती जगाते उध्दरी' या सत्याचा प्रत्यय जोतिबांना आला होता. म्हणून स्त्रियांना शिक्षण देण्याचे ठरविले.[५]

पुण्यात इ.स. १८४८ मध्ये मुलींच्यासाठी एक शाळा सुरु केली. तेथे अस्पृश्य समाजातील स्त्रियांना शिक्षण दिले जात होते. त्या शाळेत जोतिबा स्वतः शिक्षकाचे काम करीत असत. तर स्त्रीशिक्षिका म्हणून आपली पत्नी सावित्रीबाईंना तयार केले. त्यामुळे सनातनी लोकांनी या पती-पत्नीला खूपच त्रास दिला. तरीही जोतिबांनी न डगमगता आपले कार्य नेटाने चालू ठेवले होते. ही मुलींची शाळा बंद पडली तेंव्हा जोतिबांनी इ. स. १८५१ मध्ये बुधवार पेठेत दुसरी मुलींची शाळा काढली. याच वर्षी रास्ता पेठेत तिसरी शाळा व इ.स. १८५२ मध्ये वेताळ पेठेत चौथी मुलींची शाळा सुरु केली. त्यांनी काढलेल्या या शाळेस सरकारचेही सहकार्य मिळाले.[६]

जोतिबांनी समाजातील विधवा स्त्रीवर होणारे अन्याय रोखण्यासाठी विधवा पुनर्विवाहाचा पुरस्कार केला. इ.स.१८६४ मध्ये पुण्यातील गोखले यांच्या बागेत एक विधवा पुनर्विवाह घडवून आणला. तेंव्हा काही विधवांचे पाऊल वाकडे पडून समाजात जगने अवघड होत असे. तेव्हा भ्रूणहत्या, आत्महत्या असे प्रकार घडत असत. यापासून विधवांची सुटका व्हावी म्हणून जोतिबांनी इ.स.१८६३ मध्ये विधवांना गुप्तपणे येऊन बाळंत होण्यासाठी व आपले मूल तेथे ठेवण्यासाठी बालहत्या प्रतिबंधक गृह उघडण्यात आले. यातील काशीबाई नावाच्या विधवेचा मुलगा यशवंत हा जोतिबांनी दत्तक घेतला. तो ब्राम्हण जातीतील होता अशाप्रकारे स्त्रियांसाठी जोतिबांनी केलेले कार्य समाजक्रांती घडवून आणणारे होते.

अस्पृशांच्या उध्दाराचे कार्य –

इ.स.१८५२ मध्ये अस्पृश्यांच्यासाठी वेताळ पेठेत स्वखर्चाने एक शाळा काढली. इ.स.१८५३ मध्ये काही मित्रांच्या सहाय्याने 'महार, मांग इत्यादी लोकांस विद्या शिकविण्याकरीता मंडळी' या नावाची संस्था काढली. त्यांनी सुरु केलेल्या या कार्यास सर्व शिक्षणप्रेमींनी सहकार्य केले. अशाप्रकारे त्यांनी इ.स.१८५८ पर्यंत पुण्यात तीन शाळा सुरु केल्या उच्च वर्णियाकडून या अस्पृश्यांना वाईट वागणूक मिळत होती. या अस्पृश्यांना कोणत्याही क्षेत्रात कसलेही अधिकार नव्हते त्यांना उपेक्षितच जीवन जगावे लागत होते. म्हणूनच महात्मा फुले यांनी या समाजाला अंधकारातून बाहेर काढण्याकरीता अनेक ग्रंथ व काव्यावर आधारित पुस्तके लिहिली. तसेच 'गुलामगिरी' या ग्रंथातून उच्च वर्णियावर कठोर टिका केली आहे. तसेच अस्पृश्यांनी आपले अज्ञान घालवावयाचे असेल तर शिक्षणाशिवाय तरणोपाय नाही असा ही संदेश दिला आहे.[७]

सत्यशोधक समाज –

महात्मा फुले यांनी आपले विचार समाजापर्यंत पोहचावेत यासाठी सतत पंधरा वर्षे जाहीर सभा, पत्रके आणि पुस्तिका याद्वारा व्यक्त केले होते. कनिष्ठ वर्गाना शिक्षणाचे महत्व पटवून ते त्यांनी आपल्या मुलांना द्यावे. असा ते उपदेश करीत राहिले होते. देवाच्या आणि धर्माच्या नावाखाली भटभिक्षुकांनी व शास्त्री पंडितांनी धार्मिक ग्रंथाच्याद्वारा त्यांच्या मानेभोवती मानसिक गुलामगिरीचे पाश गुंडाळले होते. त्यांच्यावर लादलेली

गुलामगिरी व त्यांच्यात प्रस्तुत केलेल्या दुष्ट चालीरिती व धर्मभोळया वेडगळ समजुती झुगारुन स्वतःस मुक्त करावे असा त्यांनी सतत आक्रोश चालविला होता.

महात्मा फुले यांनी कनिष्ठ वर्गातील लोकांच्या मनावर असे ठसविण्याचा प्रयत्न केला की, ब्राम्हणी शास्त्रांनी त्यांच्यावर लादलेली मानसिक गुलामगिरी ही काही ललाट लिखित नाही तसेच ती देवनिर्मित नाही. जन्मतःच ती गुलामगिरी त्याच्याबरोबर येते ही कल्पना अत्यंत चुकीची आहे. सर्वसामान्य वर्गामध्ये त्यांनी आत्मविश्वास आणि आत्मसम्मान या विषयीची जाणीव जागृती करण्याचा त्यांनी प्रयत्न केला. त्यांनी समता, बंधुता व स्वातंत्र्य हे विचार रुजविण्यासाठी सन १८७३ मध्ये सत्यशोधक समाज स्थापन केला. हा समाज स्थापन करण्यामागचा त्यांचा हेतू सर्व जाती धर्माच्या लोकांना व्यासपीठ उपलब्ध व्हावे व समाजजागृतीचे कार्य व्हावे हा होता. अशाप्रकारे कनिष्ठ वर्गाला मानसिक गुलामगिरीतून मुक्त करणारी ती एक प्रकारची चळवळच महात्मा फुले यांनी सुरु केलेली होती.

सत्यशोधक समाजाची तत्वे पुढीलप्रमाणे होती.

सर्व माणसे एकाच देवाची लेकरे आहेत व देव त्यांचा आई-बाप आहे. त्याप्रमाणे देवाची प्रार्थना करण्यास पुरोहित किंवा गुरु यांची आवश्कता नाही. ही दोन्ही तत्वे मान्य झाल्यास सत्यशोधक समाजाचे सभासद होता येत होते या समाजामार्फत दारु बंदी, सक्तीचे शिक्षण, स्वदेशी वस्तू वापरण्यास प्रोत्साहन देणे, ब्राम्हणाची धार्मिक क्षेत्रातील पुरोहितगिरी जुगारुन देणे, कुटूंबियातील लग्ने अल्पखर्चात करण्याची व्यवस्था करणे, ज्योतिष, भूते आणि संबंध यांच्या भितीपासून लोकांना मुक्त करणे इत्यादी गोष्टी संबंधित चर्चा होत असे. अशाप्रकारे सत्यशोधक समाजाने जातीभेद, मूर्तीपूजा यांच्या विरुध्द मुख्य प्रचार सुरु केला होता.[८]

शिक्षण विषयक विचार व कार्य –

महात्मा यांचे शिक्षण विषयक विचार अत्यंत वेगळे होते. त्यांच्यामते बहुजन समाज, स्त्रिया, दलित यांच्या मुक्ती लढयाचे पहिले पाऊल शिक्षण होते. शिक्षण म्हणजे समाज क्रांतीची तयारी हा त्यांचा दृष्टीकोन होता. कष्टकऱ्यांना शिक्षण मिळाले तर ते माणूस म्हणून उभे राहतील. जग, समाज, समजण्यासाठी त्यांना साधने मिळतील. लढा देण्यासाठी हत्यार मिळेल अशी धारणा त्यांची होती. उच्च शिक्षणापेक्षा प्राथमिक शिक्षणावर जास्त जोर दिला. हे शिक्षण सर्व मुलांमुर्लींना मिळाले पाहिजे अशी भूमिका त्यांनी घेतली. बहुजन समाजाला शिक्षण मिळाले तर शूद्र, अतिशूद्र स्त्रिया अन्यायाविरोधी लढयात संघटीत होतील असा महत्वपूर्ण विचार महात्मा फुले यांनी मांडला.

अस्पृश्य आणि स्त्री हे दोन्ही समाजाचे घटक आधुनिक ज्ञानापासून वंचित राहिले याचे प्रमुख कारण म्हणजे सगळा हिंदू समाज अंधश्रध्देत जखडला गेला होता. अस्पृश्य व स्त्रियां यांना विद्येचा अधिकार नाही असे उच्च वर्णिय वर्गाचे मत होते. स्त्री शिकली तर कुटूंब व्यवस्था मोडेल, ती कुमार्गाला लागेल इत्यादी अतार्किक कल्पनामुळे स्त्रीला शिक्षणाचा हक्क नाकारला होता. या उलट स्त्री शिकली तर घर शाळा बनेल कारण आईच मुलांची पहिली गुरु असे विचार महात्मा फुले यांनी मांडले आहेत. महात्मा फुले हे सामाजिक कृतिशील विचारांचे होते.[९]

शेतकरी कामकरी यांचे शिक्षण –

शेतकऱ्यांच्या मुलांना शिक्षणात गोडी निर्माण व्हावी यासाठी कार्यात्मक शिक्षणावर महात्मा फुले यांनी भर दिला. शेतीस उपयोगी शिक्षण मिळाले तर शेतकऱ्यांची आर्थिक स्थिती ही सुधारेल. यासाठी त्यांच्या

अभ्यासक्रमात इतर सर्व साधारण विषयांबरोबरच शेतकी आणि आरोग्य यांच्या मुलभूत ज्ञानाचा अंर्तभाव केला पाहिजे. अभ्यासक्रमात मोडी, बाळबोध, लेखन – वाचन, हिशोब, सर्वसाधारण इतिहास, भूगोल, व्याकरण यांचे प्राथमिक ज्ञान तसेच निती आणि आरोग्य या संबंधीचे सोपे धडे अंर्तभूत करावे. विद्यार्थ्यांना शेतकीच्या पाठांच्या जोडीने प्रत्यक्ष व्यवहारीक शिक्षण देता यावे म्हणून, ''आदर्श शेतीची छोटीशी योजना आखल्यास फायदेशीर ठरेल.'' अशी महात्मा फुले यांनी शिक्षणाबाबत भूमिका घेतली होती. शेतकरी व कामकरी यांनी आपली मुले शाळेत पाठविली नाहीत तर केवळ त्या कुटूंबाचे व समाजाचे नुकसान होईल. त्याचप्रमाणे देशाचेही नुकसान होईल हे विचार महात्मा फुले यांनी मांडले आहेत.

इ.स.१८४८ मध्ये पुणे येथे महात्मा फुले यांनी मुर्लींची पहिली शाळा बुधवार पेठेतील भिडे यांच्या वाडयात सुरु केली. महात्मा फुले दाम्पत्याने शाळा काढल्या. इ.स.१८४८ ते १८५२ या चार वर्षांच्या कालावधीत पुणे आणि पुण्याच्या ग्रामीण परिसरात एकूण १८ शाळा काढल्या आणि त्या यशस्वीपणे चालविल्या. या शाळा चालविण्यासाठी त्यांनी अविश्रांतपणे परिश्रम केले. त्यांनी रात्र दिवस तहान भूक विसरून परोपकारी कृत्याचा पिच्छा न सोडता हा ज्ञानदानाचा यज्ञ अहोरात्र प्रज्वलित ठेवला. फुले दाम्पत्यांचे हे कार्य म्हणजे या दाम्पत्यांनी घडवून आणलेला एक चमत्कार होता. कारण त्या काळात अशा शाळा चालविणे या अशक्य कोटीतील गोष्टी होत्या.

महात्मा फुले दाम्पत्याने शाळा काढल्या, परंतु शाळांची जाळी विणीत ते बसले नाहीत. शिक्षण हे समाज परिवर्तनाचे साधन आहे. शिक्षणातून त्यांना समाज जागृत करावयाचा होता. सामाजिक रूढी, परंपरा, भोळया समजूती व अंधश्रध्दा त्यांना नाहिश्या करावयाच्या होत्या. महात्मा फुले यांनी जाती संस्था परंपरागत रूढी, सामाजिक, धार्मिक आणि शिक्षण क्षेत्रात मोलाचे कार्य केले त्यात शैक्षणिक मते स्पष्ट झालेली आहेत. प्राथमिक शिक्षण सक्तीचे केले जावे ही मागणी करणारे महात्मा फुले हे पहिले भारतीय होते.[१०]

महात्मा फुले यांचे अंधश्रध्दा निर्मूलनाचे कार्य :-

समाजात धर्माच्या नावाखाली सुरू असलेल्या अपप्रकारांचा महात्मा फुले यांनी जाहिर निषेध केला होता. अनिष्ठ कल्पना मधील फोलपणा त्यांनी अनेक युक्तीवादासह पटवून दिला. तर कर्मकांड, मूर्तीपूजा, फलनिष्पत्ती, बुवाबाजी व अवतार कथा वगैरे वर फुले यांनी तार्किक व व्यवहारिक प्रहार केले होते. महात्मा फुले यांनी सत्यशोधक समाजामार्फत अंधश्रध्दा निर्मूलनाबाबत कार्य हाती घेतले होते. समाजाच्या विविध स्तरातून त्यांच्या या कार्यालया चांगला प्रतिसाद मिळाला होता. त्यांच्या कार्यकर्त्यांमध्ये सरकारी अधिकारी, व्यापारी, डॉक्टर, कंत्राटदार, सुशिक्षित, व्यवसायिक यांच्यापासून ते शेतकरी, शेतमजूर आणि सामान्य व्यापाऱ्यांपर्यंतच्या लोकांचा समावेश होता. अंधश्रध्दा निर्मलनाचे कार्य हाती घेतल्यानंतर त्यांचे अनेकांषी हितसंबंध दुखावले होते. परंतु त्याचा विचार न करता त्यांनी आपले कार्य तसेच पुढे चालू ठेवले होते. त्यांनी अंधश्रध्देमुळे लोकांची कशी फसवणूक होते हे पटवून दिले आहे.

महात्मा फुले यांनी ओळखले होते की, अंधश्रध्देचे खरे मुळ अज्ञानात आहे आणि अज्ञान दूर होताच अंधश्रध्दा दूर होईल. यासाठी अज्ञान दूर करण्याचे त्यांनी मोठया प्रमाणावर प्रयत्न केले होते. अंधश्रध्दामुळे शुद्रातिशुद्र वर्गाची ऐहिक पिछेहाट झाली होती. हा कार्यकारणभाव महात्मा फुले यांनी स्पष्टपणे मांडलेला दिसून येतो. दैन्यदारिद्रयाचा विसर पडण्यासाठी लोक भ्रामक समजुतींना व अंधश्रदांना जवळ करतात. अंधश्रध्दा बहुतांशी दुःखी, कष्टी मनाला खोटा दिलास देते. त्या आधाराची गरज नाहिशी व्हायचे असेल तर ज्या दैन्यापोटी ती निर्माण होते तेच संपवावे लागेल. दारिद्रय, आर्थिक विषमता, शोषण आणि मागासलेपणा

संपवण्याच्या क्रांतीकारक चळवळीशी अंधश्रध्दा निर्मुलनाची जुळणी झाली तरच अंधश्रध्दा नष्ट होवू शकेल. म. फुले यांनी अंधश्रध्दा निर्मुलनाचे हाती घेतलेले कार्य प्रत्यक्ष क्रियाशील झाले नाही, कारण त्यांच्या पश्चात स्थितीवादी प्रवाहच उत्तरोत्तर प्रबळ ठरलेला दिसतो. त्यामुळेच त्यांच्या या चळवळीचे यश हे अल्पजीवी ठरलेले दिसते[११]

मूल्यमापन –

महात्मा फुले हे नुसते बोलघेवडे नव्हते तर कर्ते सुधारक होते. बहुजन समाजाच्या शिक्षणासाठी अविरत झगडणारे ते ऋषी होते. त्यांचे व्यक्तिमत्व प्रत्यक्ष कृती करणारे विकसनशील असे होते. त्यांनी समाजातील बऱ्या वाईट प्रवर्त्तींचा अन्वयार्थ लावण्याचा प्रयत्न केला. प्रत्येक गोष्टींच्या मुळाशी जाऊन त्यावर चिंतनशीलपणे ते विचार करीत असत. म्हणूनच ते महाराष्ट्राच्या सामाजिक प्रबोधनाला वेगळी दिशा दाखविली. हे प्रबोधन करीत असताना त्यांना अत्यंत अडचणींना तोंड द्यावे लागते. त्यासाठी अनेक हालअपेष्टा सहन केल्या. तरीही ते आपल्या ध्येयापासून कधीच विचलीत झाले नाहीत.

महात्मा फुले हे आधुनिक महाराष्ट्रातील एक श्रेष्ठ समाजचिंतक होते. त्यांनी शेतकरी, कष्टकरी, बहुजन समाज, दलित महिला यांच्यावरील अन्यायाला वाचा फोडली. सनातनी विचारावर टिकेचे आसूड ओढले, शिक्षण हे सर्वांगिण सुधारणेचे प्रवेशद्वार आहे अशी त्यांची धारणा होती व हे द्वार त्यांनी शूद्रांना व अतिशूद्र मानल्या जाणाऱ्या स्त्रियांना खुले करुन दिले. दलित व शोषित वर्गाला त्यांचे मानवी हक्क मिळवून देण्यासाठी ते आयुष्यभर लढले ते मानवतावादाचे उपासक होते. म्हणून महाराष्ट्राच्या इतिहासात महात्मा फुले यांचे स्थान अढळ आहे.

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आटपाडीतील शेळी मेंढी बाजार

प्रा. डी. डीण जाधव
श्रीमंत बाबासाहेब देशमुख महाविद्यालय आटपाडी
ताः आटपाडी जिः सांगली

महाराष्ट्रातील सांगली जिल्याच्या उत्तरेकडील आटपाडी तालुका हा सहयाद्री पर्वतातील महादेव डोंगर रांगेच्या उत्तर बाजूस असून माणनदीच्या खो–यात आटपाडी तालुक्याचे स्थान आहे. आटपाडी हे तालुक्याचे ठिकाण असून १७ २७′ ४८′′ उत्तर अक्षवृत्त व ७४ ७६′ 23′′पूर्व रेखावृत्तावर वसलेले आहे. आटपाडी ताल्युक्याचे एकूण क्षेत्रफळ ८७१७१ हेक्टर इतके आहे आटपाडी तालुक्याचे एकूण ७६ गावे आहेत तालुक्याच्या अर्थकारणामध्ये डाळींब व कापूस ही पिके महत्वाची आहेत शेतीला पूरक व्यवसाय म्हणून शेळी मेंढी पालन व्यवसाय महत्वाचा आहे.

आटपाडी तालुका हा पर्जन्यछायेच्या प्रदेशात येत असल्याने येथे वार्षिक सरासरी पर्जन्यमान २७ ते ७० सें. मी. इतका आहे. तालूक्यामध्ये खरीप व रब्बीची ज्वारी व बाजरी ही पिके पर्जन्यावर आधारीत घेतली जातात. त्यामुळे खरीपाच्या व रब्बीच्या पिकांचे उत्पादन घटत आहे त्यामुळे येथील शेतकरी पिढयान पिढया शेळी मेंढी पालन व्यवसाय करीत आहे.

आठवडा बाजार

आठवडयाच्या प्रत्येक शनिवारी आटपाडी येथे शेळया मेंढयाचा बाजार भरतो . बाजार सकाळी ७:०० वाजता ते दुपारी १२:०० पर्यंत असतो या ठिकाणी बोकड, बकरा, शेळया, मेंढया मोठया प्रमाणात विक्रीसाठी खेडयातून येतात . स्थानीक व्यापारी आणि दुस–या जिल्यातील व राज्यातील व्यापारीही मोठया संख्येने येथे खरेदीसाठी येतात मोठया ओढयापात्रात शेळया मेंढयांचा बाजार भरलेला असतो.

व्यापार

आटपाडी येथील शेळया मेंढया बोकड व बकरा यांना सांगली, कोल्हापूर, सातारा, पूणे, मुंबई येथे मटणासाठी मोठी मागणी आहे. तसेच कर्नाटकमधील बेळगाव, मंगलोर, हुबळी, धारवाड आणि गोवा येथेही मोठी मागणी आहे. प्रत्येक शनीवारी येथून ९० ते १०० टेंपो पिकप गाडया भरून जात आहेत प्रत्येक गाडीमध्ये सरासरी ७०ते १०० हे प्राणी भरले जातात एकूण विचार करता प्रत्येक शनिवारी आटपाडीतून सरासरी ८००० शेळया मेंढया बोकड बक–यांची विक्री होते.

शेळया मेंढयाची किंमत

बोकडाची किंमत ही साधारण त्याच्या वजनावर निश्चीत केली जाते सदर प्राण्यांचे दर हे जात व प्रकारावर अवलंबून आहेत ते दर खालील प्रमाणे

अं न	प्रकार	सरासरी किमंत रू मध्ये
१	बोकड	.४००० ते १००००
२	बकरे	२००० ते ७०००
३	पाळीव शेळी	५००० ते १५०००
४	पाळीव मेंढी	४००० ते १२०००
५	मटन शेळी	२००० ते ५०००
६	मटण मेंढी	२००० ते ६०००

वर्षिक शेळया मेंढयांची यात्रा

आटपाडीमध्ये कार्तिक पैर्णिमेला जणावराची यात्रा भरते . शेळया मेंढयांची यात्रा पहिले तिन दिवस चांगले यात्रेच्या काळात मोठया प्रमाणात शेळया मेंढयाची खरेदी विक्री होत असते. यात्रेमध्ये मांसासाठी आठवढा बाजाराप्रमाणेच सर्व दर असतात परंतू पाळीव प्राणयांचे दर त्यांच्या जातिनुसार असतात प्रजोउत्पादन करण्यासाठी माडग्याळ बक–याचा दर हा त्याच्या वयानुसार असतो.

अं . न	वय	किंमत रू मध्ये
१	२ महीने ते ६महीने	१०००० ते ५००००
२	६महीन ते १वर्ष	५०००० ते १०००००
३	१वर्ष ते ३वर्ष	१००००० ते १२५००००
४	३ वर्षाच्या पुढे	२०००० ते ४००००

यावेळी पश्चिीम महाराष्ट्र व कर्नाटकातून मेंढपाळ खरेदी विक्रीसाठी येत असतात व जातीवंत बकरे खरेदी करणे हेच त्यांचे वैशिष्टय आहे . बक–याचा नाकपुडीचा आकार. त्याच्या अंगावरील विशिष्ट ठिकाणचे तांबूस रंगाचे चट्टे. पोपटाच्या चोचीसारका तोंडाचा आकार यावर त्याची किंमत वाढत जाते अरविद गळवे रा. गळवेवाडी यांनी एक वर्ष वयाचा बकरा रू १३५००० रू विकला तर २ महीने वयाचा बकरा रू ६०००० रूपयेला विकत घेतला मेंढपाळाची मुलाखत घेतली असता त्यांनी सांगीतले की माडग्याळ जातीच्या पिलाची वाढ लवकर होते व वजनही चांगले भरते त्यामुळे सध्या माडग्याळ जातीचा जास्त मागणी आहे.

मागणीचे कारणे

आटपाडी परिसरातील मटणाला जास्त मागणीची कारणे खालील प्रमाणे

1) पावसाचे प्रमाण कमी असल्याने वाळलेला चारा शेळया मेंढया खातात
2) खुरटया वनस्पती असल्याने शेळया मेंढयाचे ते मुख्य खादय आहे.
3) नैसर्गीक वनस्पती या आर्युवेदीक तसेच सकस असतात
4) दिवसभर फिरून चरावे लागते
5) बाभूळ बोर सारख्या काटेरी वनस्पतीचा ढाळा पाडून तो चारा म्हणून शेळयामेंढयांना दिला जातो
6) बोर , लिंब , पिपरन , आंबा , वढ , शेवरी व इतर जंगली झाडांचा पाला हे प्राणी खातात
7) दिवसभर फिरून खावे लागत असल्याने शरीर घट्ट बनते
8) आटपाडी ताल्युक्यात आरोग्यदाई वातावरण आहे
9) देशी शेळी देशी मेंढी हे या तालुक्याचे वैशिष्टय आहे
10) मांसाची चव स्वादीस्ट आहे.

वरील सर्व कारणामुळे व्यापारी वर्ग आटपाडीकडे आकर्षीत झाला आहे. कोल्हापूर , बेळगाव , धारवाड , गोवा या ठिकाणी आटपाडीची बोलाई प्रसिध्द आहे. पुण्यामध्ये पिंपरी चिंचवड येथे माणदेशी मटण शॉप खास माणदेशी मांसासाठी प्रसिध्द आहे.

पर्यटन आकर्षणाचे प्राकृतिक घटक

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प्रस्तावना –

पर्यटन हा सध्या जगातील सर्वात वेगाने वाढणारा व्यवसाय बनला आहे. काही देशांची अर्थव्यवस्था पर्यटन व्यवसायावर अवलंबून आहे.भारतात पर्यटन वेगाने वाढत असून या वाढीचे मुख्य कारण म्हणजे देशातील निसर्ग संपन्न प्रदेश, उंच सखल डोंगर द-या, समृध्द जंगले, धवधबे, हवामान, समुद्र किनारे, खाडया, नद्या, गरम पाण्याचे झरे, जंगल सफारी इत्यादीमूळे देशातील व परदेशातील पर्यटक अशा ठिकाणी मोठया संख्येने भेटी देतात.

प्राचीन काळापासून मानवाला प्रवासाविषयी आकर्षण आहे.सुरूवातीला प्रवास कोणताही उद्देश न ठेवता होत असे.नंतर मात्र नवीन प्रदेश जाणून घेणे किंवा अभ्यासासाठी प्रवास होवू लागला.याशिवाय, निसर्ग सौंदर्य पाहणे अशा कारणांनी प्रवास होवू लागला.

अभ्यासाची उद्दिष्टये –

१) पर्यटन आकर्षणाचे घटक समजावून घेणे
२) पर्यटन आकर्षणाच्या प्राकृतिक घटकांची ओळख करून देणे

पर्यटन आकर्षणाचे प्राकृतिक घटक

पर्यटन आकर्षणामध्ये प्राकृतिक/भौगोलिक/नैसर्गिक घटक महत्वाचे आहेत.वेगवेगळया भौगोलिक स्थानानुसार सृष्टी सौंदर्य हे भिन्न भिन्न प्रकारचे असते.पर्यटक त्यांच्या आवडीनुसार अशा स्थळांची निवड करतो.प्राकृतिक आकर्षणामध्ये खालील घटक महत्वाचे आहेत.

१) हवामान –

ज्याठिकाणी आरोग्यदायी व आल्हाददायक हवामान असते, तेथे पर्यटक आकर्षिले जातात.जगात वेगवेगळया प्रकारच्या हवामानात लोक राहतात.समशितोष्ण हवामानात राहणा-या लोकांना सूर्यप्रकाश व उबदार हवेचे आकर्षण असते.गरम व उबदार ठिकाणी राहणारे पर्यटक थंड हवेच्या ठिकाणी जाताना दिसून येतात.भारतातील सिमला, मनाली, दार्जिलिंग, महाबळेश्वर, माथेरान अशा थंड हवेच्या ठिकाणी पर्यटक आकर्षित होतात.

२) समुद्र किनारे –

समुद्राचे आकर्षण तर सर्वांनाच असते.समुद्र किनारी शांत व आल्हाददायक वातावरण असते.सागराचे विशाल रूप, उसळणा-या लाटा, फेसाळणारे पाणी, किना-यावरील वाळू, सूर्योदय व सूर्यास्तावेळी लाल गुलाबी रंगाचे क्षितीज यामुळे अनेक पर्यटक समुद्र किनारी भेटी देतात.महाराष्ट्रात श्री क्षेत्र गणपतीपुळे, वेळणेश्वर, जयगड बीच, विजयदुर्ग, सिंधुदूर्ग अशा ठिकाणी महाराष्ट्र पर्यटन विकास महामंडळाने अनेक सुविधा उपलब्ध करून दिल्या आहेत.न्यूझीलंड व अंदमान ही बेटे

पर्यटनाच्या दृष्टीने समृध्द झाली आहेत.गोव्यातील बीच अतिशय सुंदर असून येथील किनारे, नारळ, पाम, या वृक्षांनी आच्छादलेले पांढ-या मुलायम वाळूचे संचयन अतिशय नयनरम्य आहे.

३) धबधबे –

पर्यटकांचे गर्दी करण्याचे ठिकाण म्हणजे नैसर्गिक धबधबे जगातील धबधब्याच्या ठिकाणी पर्यटक नेहमीच भेटी देत असतात.उंचीवरून खाली पडणारे पांढरे शुभ्र पाणी पाहून पर्यटक देहभान विसरून जातात.नायगारा हा धबधबा जगातील पर्यटकांचे प्रमुख आकर्षण आहे.भारतात गिरसप्पा(जोग) फॉल्स, दूधसागर, नागार्जुन सागर, गोकाक धबधबा, मार्लेश्वर येथील धबधबा, भंडारदरा धबधबा, आंबोली धबधबा निसर्ग सौंदर्याने नटलेले असून पर्यटकांना आकर्षित करतात.

४) सरोवरे –

नैसर्गिकरित्या खोलगट भागात पाण्याचे संचयन होऊन सरोवरांची निर्मिती होते.हिमालय पर्वतात अनेक जग प्रसिध्द सरोवरे आहेत.राजस्थानमधील उदयपूरचे सरोवर, जम्मु काश्मीरमधील दाल सरोवर, तिबेटमधील मानस सरोवर जगप्रसिध्द आहेत.अमेरिका व कॅनडा सीमेवरील ग्रेट लेक्स, मध्य आफ्रिकेतील व्हिक्टोरिया सरोवर पर्यटकांची आकर्षण केंद्रे आहेत.येथील नौकानयन व शिडाच्या होडयांच्या शर्यती असा आनंद लुटण्यासाठी पर्यटक भेटी देतात.

५) गरम पाण्याचे झरे –

काही प्रदेशातील गरम पाण्याच्या झ-यामुळे देखील अशा ठिकाणी पर्यटक मोठया संख्येने भेटी देतात.सिमल्याजवळ मनीकरण, डेहराडून, महाराष्ट्रातील
ठाणे जिल्हयातील वज्रेश्वरी येथे तसेच कोकणात अनेक ठिकाणी गरम पाण्याचे झरे असून या
नैसर्गिक पाण्याच्या उद्रेकामुळे पर्यटक नेहमीच आकर्षित होतात.

६) नैसर्गिक सृष्टी सौंदर्य -

पर्यटनाचा आत्मा म्हणजे नैसर्गिक सृष्टी सौंदर्य होय.नद्या, सरोवरे, धबधबे, जंगले, वाळवंट, उंच शिखरे अशा ठिकाणचे नैसर्गिक सृष्टी सौंदर्य पर्यटकांना आकर्षित करीत असते.उंच शिखरे साहसी पर्यटकांच्या दृष्टीने महत्त्वाची असतात.दुर्गम जंगलांमुळे सृष्टी सौंदर्य निर्माण होते.घनदाट व हिरवी जंगले, विविध वेली, रंगीबेरंगी फुले, विविध प्रकारचे पक्षी, प्राणी पर्यटकांना आकर्षित करतात.

७) जंगल सफारी –

जास्त पावसाच्या प्रदेशात जंगलांचे प्रमाण जास्त असते.जंगल क्षेत्रात जे पर्यटन आयोजित केले जाते त्यास जंगल सफारी पर्यटन म्हणतात.जंगल सफारीमुळे जंगलातील विविध पक्षी, प्राणी जवळून पाहता येतात.भारतात उटी, सिमला, दार्जिलिंग, आसाम अशा ठिकाणी जंगल सफारी करण्याच्या दृष्टीने पर्यटक आकर्षित होतात.अनेक पर्यटक जंगल सफारी करण्यासाठी जंगलात भेटी देतात.

निष्कर्ष -

मानवाला नैसर्गिक सृष्टी सौंदर्याचे सर्वात अधिक आकर्षण असते.त्यामुळे पर्यटक सर्वात प्रथम विविध प्रकारच्या सृष्टी सौंदर्याने नटलेल्या ठिकाणांना भेटी देणे पसंत करतो.अशा नैसर्गिक ठिकाणचे वातावरण शांत, प्रसन्न, मनाला मोहून टाकणारे असते.त्यामुळे पर्यटकांना मनसोक्त आनंद मिळतो.

संदर्भ -

१. भाटिया ए.के. – टुरिझम डेव्हलपमेंट प्रिन्सिपल्स ॲंड प्रॅक्टिसेस
२. के.ए.खतिब – पर्यटन भूगोल
३. कपूर विमलकुमार – पर्यटन स्थल एवं मानव संसाधन विकास
४. शर्मा व्ही.एम. – टुरिझम इन इंडिया

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दुष्काळग्रस्त माण तालुक्यातील शेती विकासाच्या समस्यांचा भौगोलिक अभ्यास

विशाल सर्जेराव घोलप
संशोधक विद्यार्थी,
भूगोल अधिविभाग,
शिवाजी विद्यापीठ, कोल्हापूर

प्रस्तावना –

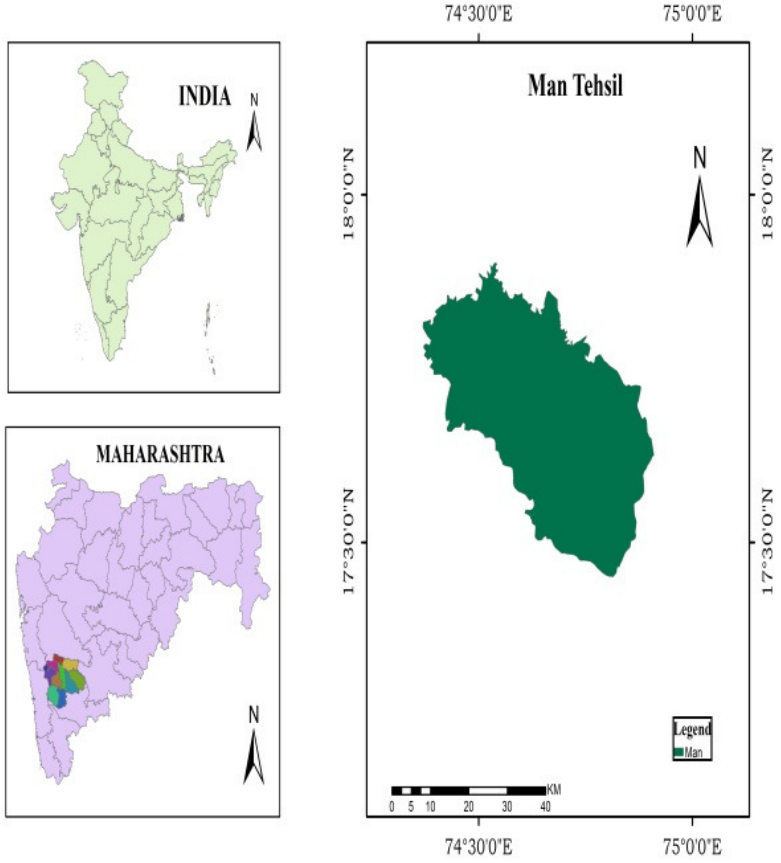
माण तालुका हा महाराष्ट्र राज्यातील सातारा जिल्हयातील फलटणच्या उपविभागामध्ये माण तालुका हा येतो. माण तालुक्याला दहिवडी या नावाने ओळखले जाते, कारण माणगंगा ही मूळ नदी असल्यामुळे ती दहिवडी तालुक्यातून अनेक गावामधून वाहात जाते. त्यामुळे दहिवडी तालुक्याला माण तालुका असे नांव ठेवण्यात आले आहे. माणगंगा ही नदी दुष्काळी भागात असल्यामुळे तिचा फायदा कृषि क्षेत्राला झालेला दिसून येत नाही. सातारा जिल्हयातील पश्चिम भाग हा खटाव, पुसेसावळी, फलटण हे तालुके दुष्काळी भाग म्हणून ओळखले जातात. तेथील भाग हा उंच व सकल असल्यामुळे, त्याचप्रमाणे पावसाचे प्रमाण कमी असल्यामुळे व दुष्काळी बनलेला दिसून येतो. या कारणामुळे माण तालुक्यातील परिस्थिती अषी निर्माण झाली की, त्याचा परिणाम तेथील शेती विकासावर, प्राणी व व्यक्ती समूहावर झालेला दिसून येतो. साधारणः महाराष्ट्रातील एकूण जिल्हयापैकी १५ जिल्हे हे पूर्णपणे दुष्काळी जिल्हे असलेले दिसून येतात. त्यापैकी सातारा जिल्हयातील माण हा तालुका जास्त दुष्काळी पटटा म्हणून ओळखला जातो. या दुष्काळामुळे पाण्याची टंचाई निर्माण होतेच पण, जनावरांच्या पिण्याचा प्रष्न, पीके उद्योग धंदयांना बांधकामासाठी तसेच शेतमजूराला त्याचा तोटा होतो. त्यामुळे त्या ठिकाणाच्या विकासावर ब्रेक लागलेला दिसून येतो.

अभ्यासक्षेत्र –

अभ्यासासाठी महाराष्ट्र राज्यातील सातारा जिल्हयातील माण तालुक्याचा अभ्यासक्षेत्र म्हणून निवड केलेली आहे. महाराष्ट्राचे भौगोलिक क्षेत्र ३०७७१३ चौ.कि.मी. आहे. पैकी माण तालुक्याचे भौगोलिक क्षेत्र हे ५५६ चौ. कि.मी. आहे. माण तालुक्यातील अक्षांष उत्तर १७०४२' २७.६३ तर रेखावृत्त हे पूर्व ७४०३२' ३८.६५२ एवढी आहे. सन २००१ च्या जनगणनेनुसार माण तालुक्याची लोकसंख्या ही १९६५९८ एवढी आहे. तसेच माण तालुक्यातील वार्षिक सरासरी पर्जन्य हे ५४२.८ मि.मी. इतके आहे तर सरासरी वार्षिक तापमान हे १५ अंष से. ते ४५ अंष से. आढळते.

सातारा जिल्यातील माण तालुका हा दुष्काळी तालुका म्हणून ओळखला जातो. माण हे दहिवडीस्थित असून तेथून कोरेगांव हे २८ कि. मी. अंतरावर आहे. पूर्वला ४० कि.मी. अंतरावर सातारा शहर आहे तर दहिवडी ते फलटण हे ४० कि.मी. चे अंतर आहे. तसेच शिखर शिंगणापूर हे देवस्थान २२ कि.मी. अंतरावर आहे व म्हसवड शहर की ज्या ठिकाणी सिध्दनाथ व जोगेष्वरी देवांचे प्राचीन मंदिर हे २६ कि.मी. अंतरावर आहे. त्याचबरोबर माण तालुक्यात माणगंगा ही नदी दहिवडी तालुक्यातून वाहात जाते, त्यामुळे दहिवडी तालुक्याला माण नदीचे नांव देण्यात आले आहे. माणगंगा नदीने एकूण ३.०१ कि.मी. क्षेत्र दहिवडी तालुक्यात व्यापलेले आहे.

LOCATION MAP OF STUDY AREA



परवलीचे शब्द –

दुष्काळ

उददीष्टे –

1. माण तालुक्यातील दुष्काळाचा अभ्यास करणे
2. शेतीविकास क्षेत्रावर झालेला फरक
3. दुष्काळामुळे व्यक्ती व प्राण्यांवर झालेला परिणाम
4. दुष्काळावरील उपाययोजना

अभ्यास पध्दती –

सदर पेपर हा प्राथमिक, दुय्यम व इतर व्हेबसाईटच्या साधन सामग्रीषी आधारीत असून माण तालुक्यातील दुष्काळाचा शेतक-यांवर, व्यक्तीवर, प्राण्यांवर तसेच शेतीविकासावर होणारा परिणाम व त्यावर उपाय योजनांच्या अभ्यासाच्या हेतूने तयार केलेला आहे. तरी या शोध निबंधातून शेतीविकासाच्या समस्या व त्याच्यावर उपाय योजनांचा अभ्यास केलेला दिसून येतो.

नैसर्गिक समस्या –

माण तालुक्याचे भौगोलिक क्षेत्र ५५६ चौ.कि.मी. एवढे आहे. माण तालुक महादेव डोंगराळ स्थित आहे. तसेच पठाराच्या किना-याला उत्तर बाजूने सोलापूर जिल्हयातील सांगोला प्रदेषाच्या खालच्या भागात

खराब स्थळ आहे. तसेच हा तालुका महाराष्ट्रातील दक्षिणेकडील दुष्काळाच्या क्षेत्राखाली येतो. तालुक्यातील सरासरी वार्षिक पर्जन्य ४६५ ते ५०० मि.मी. आहे. गेल्या दहा वर्षात पावसाची सर्वाधिक तीव्रता ६० मि.ली. /तास आहे आणि गेल्या दहा वर्षात २४ तासामध्ये सर्वाधिक पाऊस १५० मि.ली. आहे. दक्षिण-पष्चिम आणि उत्तर पूर्व मान्सून मधून या क्षेत्राला सर्व पर्जन्यवृष्टी मिळते. तसेच सिंचन आयोगाने यात तालुक्याला कायमस्वरुपी दुष्काळी क्षेत्र म्हणून संबोधित केले आहे. तसेच तेथील हवामान कोरडया व उष्ण स्वरुपाचे असल्यामुळे तेथील शेती विकासावर, प्राणी व मानवी जीवनावर त्याचा गंभीर परिणाम झालेला दिसून येतो. त्याचप्रमाणे उच्च तापमान स्थितीमुळे कमी पाऊस व कमी आर्द्रता, जास्त तापमानामुळे मातीचा दर्जा यांचा परिणाम पिकांच्या विकासावर तसेच नैसर्गिक वनस्पती आणि मानवी जीवनावर देखील दिसून येतो.

आर्थिक समस्या –

पष्चिम महाराष्ट्रात माण तालुका पावसाच्या फक्त सावलीखाली येतो. तसेच पिण्यासाठी व कृषि पध्दतीसाठी पाण्याची उपलब्धता कमी होणे हे या क्षेत्रातील एक मुलभूत समस्या आहे. निव्वळ पेरणीच्या ८६. ७४ टक्के क्षेत्र कायमस्वरुपी कोरडया जमीनीवर शेती केली जाते. ज्वारी, बाजरी, डाळी आणि तेलबिया यांसारख्या पिकांचे स्वरुप दुष्काळग्रस्त भागांच्या पिकांच्या स्वरुपात उभे राहिलेले दिसून येते, तसेच या कोरडया जमीनीच्या पिकांचे नमुने देखील दुष्काळ आणि दुष्काळग्रस्त परिस्थितीच्या समस्यांना तोंड देतात. दुष्काळाच्या तीव्रतेची तीव्रता कमी करण्यासाठी सिंचनाच्या विविध माध्यमांदवारे शेतीसाठी पाणी उपलब्ध करुन देणे हाच एकमेव उपाय आहे. परंतु केवळ १३.२६ टक्के जमीन चांगल्या पध्दतीने नदया तसेच अभ्यासाच्या क्षेत्रातील टाक्यांकडून सिंचनादवारे सिंचीत केली जाते, परंतु याच क्षेत्रातील उपलब्ध असलेल्या सर्व सुविधा पावसाच्या स्थितीवर अवलंबून आहे. जेंव्हा जेंव्हा समान वितरणासह पुरेसा पाऊस मिळतो तेंव्हा सिंचनाच्या सर्व माध्यमावर उल्लेख केल्याप्रमाणे मान्सूनचा कालावधी फक्त यशस्वी रित्या शेतकरी यांनी वापरला पाहिजे. या क्षेत्राच्या कोरडया जमीनीवरील पिकांच्या पध्दतीमध्ये, सिंचन सुविधा आणि परंपरागत शेती पध्दतीचा अभाव असल्यामुळे उत्पादन क्षमता कमी राहिलेली आहे आणि त्याचा परिणाम म्हणून शेतकरी यांना दुष्काळी परिस्थितीषी झगडावे लागते.

सामाजिक समस्या –

माण तालुक्यात दुष्काळाची स्थिती आणि दुष्काळ यामुळे या क्षेत्रात पाण्याची कमतरतेची समस्या कायमस्वरुपी असते. तसेच भारतातील कृषि विकासामध्ये मोठा अडथळा आणणारा हिंदू कायदा, या हिंदू कायद्यामुळे जमीनीचे तुकडीकरण होत गेले व त्याचा फटका शेती विकासाला बसला. तसेच शेती पध्दतीमध्ये आधुनिक तंत्रज्ञान व रासायनिक बी-बियाणांच्या वापराचा परिणाम वाढलेला दिसून येतो. माण तालुका हा नेहमी दुष्काळग्रस्त क्षेत्र असल्यामुळे तेथे पाणी कमतरतेची समस्या निर्माण होते आणि शेती उत्पादनामध्ये मोठया प्रमाणावर त्याचा परिणाम होतो. म्हणून या क्षेत्रामध्ये शेतकरी फाटीलवादी प्रवृत्तीकडे वळतो.

उपाय योजना –

१. दुष्काळी क्षेत्रासाठी मुख्य सरकारी धोरण अवलंबणे आवश्यक आहे
२. मृदा संरक्षण पध्दती हाताळणे
३. नवीन कृषि पध्दतीची माहिती घेणे

४. दुष्काळ लढण्याच्या कार्यक्रमाचा वापर करणे
५. दुष्काळापासून खरीप पिकांची बचत करणे
६. रब्बी पिकांसाठी पूर्व पेरणी सिंचन पुरविणे
७. लहान शेतक-यांचा विकास व दुष्काळाच्या क्षेत्रासाठी कार्यक्रमातून सूचना व उपाय लागू करणे

निष्कर्ष –

माण तालुका हा दुष्काळग्रस्त भागात मोडतो की ज्यामुळे तेथील नैसर्गिक, सामाजिक, आर्थिक आणि इतर तांत्रिक घटकांच्या शेतीविकास पध्दतीवर परिणाम होतो. सामान्यतः बाजरी, खरीप ज्वारी आणि रब्बी ज्वारी या पिकांसाठी पावसाची लागवड केलेली पिके या भागातील प्रमुख पिके आहेत. दुष्काळाच्या परिस्थितीमुळे या क्षेत्राचा पिकांच्या विकासावर नेहमीच अडथळा येतो व म्हणून तेथे ही पिके कमी स्वरुपात येतात व कमी पाऊस न झाल्याने ती जळून जातात. त्यामुळे महाराष्ट्र सरकारकडून विषेषतः दुष्काळग्रस्त भागासाठी विविध प्रकल्पांचा उपयोग नद्यांदवारे शेतीमध्ये पाणी पुरविले जावे आणि त्यानंतर भविष्यात दुष्काळग्रस्त भागात पिकांचे अगर शेतीविकासांचे स्वरुप बदलले जाऊ शकते.

संदर्भ –

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जागतिकीकरण, शेती आणि ग्रामीण विकास

प्रा. स्मिता प्रकाश मोहिते
अर्थशास्त्र विभाग,
मुधोजी महाविद्यालय, फलटण

प्रास्ताविक :–

२० व्या शतकाच्या शेवटच्या दशकात जागतिक अर्थव्यवस्थेमध्ये काही मोठे बदल घडून आले. साधारण: १९८५ नंतर वेगाने घडून आलेल्या बदलांना जागतिकीकरण असे नांव मिळाले. त्यामुळे बहुतेक सर्व देशांच्या अर्थ व्यवस्था प्रभावित झाल्या. भारत हा देखील खेडयांचा देश असल्यामुळे तेथील ग्रामीण भागातील जनतेचा मुख्य व्यवसाय शेती हा आहे. ग्रामीण जनतेचा सर्वांगीण विकास म्हणजे ग्रामीण विकास होय! आणि या ग्रामीण विकासांतर्गत शेती क्षेत्राचा विकास घडवून आणावयाचा असेल तर त्यासाठी जागतिकीकरणाचा आधार घेऊन शेती क्षेत्राचा विकास घडवून आणता येऊ शकेल. त्यासाठी शासनाने स्वतंत्र कृषि विषयक धोरण निर्माण करणे गरजेचे आहे, तरच शेतीचा विकास होईल. कारण शेतीचा विकास झाला की, आपोआपच ग्रामीण विकास घडून येईल. जागतिकीकरणाचा शेती व ग्रामीण विकासावर परिणाम झाला तसेच शेतमाल निर्यात धोरण या सर्व घटना व घडामोडींचा आढावा माझ्या प्रस्तुत शोधनिबंधात घेतला आहे.

शोधनिबंधाची उददीष्टे –

१. जागतिकीकरणाचा शेती व ग्रामीण विकासांवर झालेल्या परिणामांचा आढावा घेणे.
२. शेतमाल निर्यात रचना यांचा अभ्यास करणे.

तथ्य संकलन पध्दती –

या शोधनिबंधासाठी दुय्यम साधन सामग्रीचा माहिती संकलनासाठी उपयोग करण्यात आलेला आहे. यामध्ये पुस्तके, मासिके तसेच इंटरनेटचा वापर करुन माहिती मिळविलेली आहे.

अभ्यासाचे महत्व –

जागतिकीकरणामुळे कृषि क्षेत्रावर अनुकूल तसेच प्रतिकुल परिणाम झाले. जागतिकीकरणाचा कृषि क्षेत्राला निश्चितच फायदा होईल. कृषि क्षेत्राचा विकास झाला की, ग्रामीण भागाचा सर्वांगीण विकास होऊ शकतो. या अभ्यासातून शेतमाल निर्यातीची रचना सहज समजू शकते. तसेच औद्योगिक धोरणानंतर जागतिकीकरणाचा प्राथमिक क्षेत्रावर झालेल्या परिणामांचा आढावा मूल्यमापनाच्या दृष्टिने उपयुक्त ठरेल.

जागतिकीकरणाचा शेती व ग्रामीण विकासावरील परिणाम –

विकसनशील देशांचा जेंव्हा विकास होऊ लागतो, तेंव्हा तेथील राष्ट्रीय उत्पन्न, निर्यात उत्पन्न वगैरे घटकांमधील शेतीचा वाटा कमी होत जातो. ही वस्तुस्थिती असली तरी भारतासारख्या देशात शेतीचे महत्व कमी होत नाही. कारण तिच्या मध्ये गुंतलेल्या बहुसंख्य लोकांच्या जीवनाचा ग्रामीण अर्थ व्यवस्थेचा आधार शेती हाच असतो.

जागतिकीकरणाच्या माध्यमातून येत असलेल्या औद्योगिकरणाचा शेती व ग्रामीण विकासाशी दुहेरी संबंध आहे. जागतिकीकरणाचा विशेष फायदा विकसीत देशांना झाला, मात्र विकसनशील राष्ट्रातील शेतक–यांपुढे आर्थिक समस्या अजूनही निर्माण होत आहेत. त्यामुळे विकसनशील राष्ट्रांना जागतिकीकरण काही वेळा शेती आणि ग्रामीण विकासासाठी प्रतिकुल ठरलेली आहे.

जागतिकीकरणामुळे शेती व ग्रामीण विकास यांच्यावर होत असलेले गंभीर परिणाम पुढील प्रमाणे आहेत –

१. शेतजमीनीचा पर्यायी वापर – वाढत्या लोकसंख्येच्या या काळात शेतीमध्ये विस्तृत लागवडीला वाव नसल्यामुळेच सखोल शेतीवर भर देणे सुरु झाले. जर जागतिकीकरणामुळे उपलब्ध शेतजमीन पर्यायी

उपयोगांकडे वळली तर त्यांचे गंभीर परिणाम ग्रामीण क्षेत्रावर होतील. अनेक देशातील बहुराष्ट्रीय कंपन्यांनी दीर्घ मुदतीच्या करारावर शेती घेऊन लागवड केली, मात्र त्यामुळे जमीनीचा कस जाण्याची शक्यता निर्माण झाली.

२. दारिद्रयात वाढीची शक्यता – जागतिकीकरण म्हणजे विकसनशील देशाचा वेगाने विकास म्हंटले जाते, ही गोष्ट मर्यादित अर्थाने शहरी भागाला लागू असू शकते परंतु बहुसंख्य अशा सर्वसामान्य वर्गाला जागतिकीकरणाने काय दिले हा खरा प्रश्न आहे. अजूनही दारिद्रय रेषेखाली जीवन जगणा–या लोकांचे प्रमाण कमी झालेले नाही.

३. बहुराष्ट्रीय कंपन्यांचा शिरकाव – जागतिकीकरणामुळे अनेक बहुराष्ट्रीय कंपन्यांनी भारतीय बाजारपेठेत शिरकाव केलेला आहे. यामधील कारगील सीडस, बेजो शितल सीडस, हिंदुस्तान लिवर यांसारख्या बहुराष्ट्रीय कंपन्या शेतीसाठी लागणा–या बी–बियाणांच्या बाजारात उतरल्या आहेत. या कंपन्यांची आर्थिक ताकत प्रचंड आहे. या बहुराष्ट्रिय कंपन्या पेटंट मिळवून शेतक–यांना जास्त किमतीला विकून फायदा मिळवित आहेत.

४. शेतीच्या उत्पादन खर्चात वाढ – भारतातील शेतजमीनीचे मोठया प्रमाणात तुकडीकरण झालेले आहे. त्यामुळे यंत्रांचा अधिक कार्यक्षमतेने वापर करता येत नाही. त्यामुळे बहुसंख्य धारण क्षेत्र शेती करणारांना ही परवडेनाशी झालेली आहे.

५. शेतमाल निर्यातीचा प्रश्न – जागतिकीकरणामुळे आयात निर्यात निर्बंध अतिशय शिथिल झाले असून याचा फायदा विकसनशील देशातील शेतमाल निर्यातीला होईल असे म्हंटले जाते, मात्र जागतिक व्यापाराची सर्व सुत्रे विकसीत देशांकडे असल्यामुळे अनुदानामधील नियम विकसीत देश डावलत आहे व स्वत:च्या शेतीचा फायदा करीत आहेत, त्यामुळे विकसनशील देशामध्ये शेतक–यांना शेतमालाची निर्यात करणे अशक्य झाले आहे.

६. बौध्दिक संपदा व शेती – जागतिक व्यापर संघटनेच्या कायद्यानुसार निरनिराळया देशामध्ये बौध्दिक संपदा अधिकाराचे कायदे अस्तित्वात आले आहेत, मात्र शेती क्षेत्रातील संशोधन हे अधिक खर्चिक असल्याने बहुराष्ट्रीय कंपन्याच ते करु शकतील, त्याचा वापर करण्यासाठी रॉयल्टीच्या रुपाने करोडो रुपये द्यावे लागतात हे भारतीय शेतक–याला परवडण्यासारखे नाही, तसेच कायद्याची जाणीव नसल्यामुळे भारतीय शेतकरी वाणाची नोंदणी करण्याच्या भानगडीत पडत नाही. त्यामुळे विकसीत राष्ट्रच याचा फायदा उठवितात.

भारताच्या शेतमाल निर्यातीची रचना –

स्वातंत्रेतर काळात देशाच्या सर्वांगीण विकासाची गरज म्हणून भारताच्या आयातीचे प्रमाण वाढतच राहीले, मात्र याच काळात आर्थिक स्वावलंबनाचे उददीष्ट ठरविल्याने अनेक उत्पादनाबाबत आयात पर्यायीकरणाचे धोरण राबविण्यात आले. १९९१ नंतर बदललेल्या मुक्त परकीय व्यापार धोरणाचा अनुकूल परिणाम झाला. निर्यातवाढीच्या प्रयत्नांना यश येऊ लागले.

शेती संबंधीत उत्पादने –

चहा, कॉफी, तंबाखू, काजू, काजूगर, मसाले, साखर, तेलबिया, वनस्पती तेल, कापूस, तांदूळ, फळे, भाजीपाला इ.

भारताच्या निर्यातीची रचना – तक्ता क्र. १

वस्तुगट	१९८०–८१	१९९३–९४	२००५–०६
शेती व शेतीसंबंधी उत्पादने	२०५७ (३०.६ टक्के)	१५३१५ (२२.०० टक्के)	४५१५४ (९.९ टक्के)

(Source RBI Bulletin 2005)

तक्ता क्र. १ मधील दर्शविलेल्या भारताच्या निर्यातीच्या रचनेवरुन स्पष्ट होते की, एकूण निर्यातीमध्ये आर्थिक उदारीकरणापूर्वी शेती व शेतीसंबंधित उत्पादनाच्या निर्यातीचे प्रमाण लक्षणीय होते, मात्र त्यामध्ये घट होत आहे. सन १९८०–८१ व १९९३–९४ अनुक्रमे ३३.६ टक्के व २२ टक्के होते ते सन २००५–०६ मध्ये ९.९ टक्के पर्यंत कमी झाले. सन १९९१ नंतर भारताच्या निर्यात रचनेत वेगाने बदल होत गेला.

आज जागतिक बाजारपेठेत भारताच्या आयात निर्यातीत भक्कम अशी स्थिती आहे. भारतातून एकूण ७५०० पेक्षा जास्त वस्तू १९० देशांना निर्यात होतात. आपल्या देशातून ७५ टक्के निर्यात फक्त ५ राज्ये मिळून करतात. त्यात महाराष्ट्र (२२.३ टक्के), गुजरात (१७.२ टक्के), कर्नाटक (१२.७ टक्के), तमिळनाडू (११.५ टक्के), तेलंगाणा (६.४ टक्के) यांचा समावेश होतो.

भारत आंतरराष्ट्रीय व्यापाराच्या तुलनेत निर्यातीमध्ये १७ व्या स्थानावर आहे. नोव्हेंबर २०१६ ते नोव्हेंबर २०१७ या वर्षात १९.०२ लाख करोड रुपये इतकी निर्यात देशातून झाली.

भारताच्या निर्यात रचनेत मुलभूत बदल होत असला तरी एकूण निर्यातीमध्ये कोणत्या वस्तुंची निर्यात अधिक होते हे समजावून घेणे निर्यात रचनेच्या अभ्यासात महत्वाचे आहे.

भारतातील प्रमुख वस्तुंची वार्षिक निर्यात (कोटीमध्ये) –

वस्तु	१९८५–८६	१९९०–९१	१९९३–९४	२००५–०६
कॉफी	२६५	२५२	५५५	१५७७
चहा	६२६	१०७०	९७८	१६३२
फळे व भाजीपाला	२०६	३३५	७२७	२१०२
कापूस व सूती कापड	५७४	२१००	४८३७	१७१०२
तंबाखू	१७०	२६३	४६१	१३३०
काजूगर	२२५	४४०	१०४४	२५७०
तांदूळ	१९६	१९६	१२८७	७१७४

(Source RBI Bulletin 2005)

- २०१५–२०१६ मधील कॉफीची निर्यात सरासरी ३.१६ लाख टन इतकी झाली. २०१७–१८ मध्ये हेच प्रमाण ३.९५ लाख टन इतके झाले.
- २०१४ मध्ये तांदूळ ११५ लाख टन निर्यात झाला व येत्या काही वर्षात तेच उत्पादन १२४ लाख टनापर्यंत पोहोचले आहे.
- २०१४–१५ मध्ये भारतातून फळे, भाजीपाला व फुले यांची ११६६३ कोटींची निर्यात झाली. त्यापैकी महाराष्ट्रातून ४८५३ कोटीची निर्यात झाली.
- भारताने २०१४–१५ मध्ये १३४३२२ टन काजूची निर्यात केली व त्यासाठी ५५४२ कोटींचा खर्च करण्यात आला. परिमाणाच्या तुलनेत १७ टक्के जास्त होता.
- एप्रिल २०११ मध्ये चहाचे उत्पादन ६ कोटी ८७ लाख किलो ग्रॅम झाले. चालू वर्षात हेच प्रमाण १३ लाख ६६ हजार कि.ग्रॅ. इतके झाले.

वरील सर्व सांख्यिकीय अहवालावरुन एवढे लक्षात येते की, सर्व शेतमाल उत्पादनाच्या घटकामध्ये वाढ झाल्याचे दिसून येते. जागतिकीकरणाचा शेतमाल आंतरराष्ट्रीय व्यापारावर अनुकूल परिणाम झाल्याचे दिसून येते. आंतरराष्ट्रीय बाजारपेठेत एक प्रमुख निर्यातदार देश बनण्याच्या मार्गावर भारत देश आहे.

अनुमान आणि निष्कर्ष :

जागतिक व्यापार संघटनेच्या माध्यमातून १९९५ मध्ये डंकेल प्रस्तावामध्ये प्रथमच शेती व शेती व्यापार यांचा समावेश करण्यात आला. प्रत्येक राष्ट्राने आपले शेती विषयक धोरण क्रमाक्रमाने असे बदलावे की, शेती

उत्पादनाच्या व्यापारावर कुठलीही कृत्रिम बंधने राहणार नाहीत. शेतमालाच्या आयात निर्यातीवरील बंधने कमी करावीत. आंतरराष्ट्रीय व्यापार शक्यतो खुला ठेवावा. भारत हा केवळ पारंपारीक वस्तुंचीच निर्यात करीत आहे, मात्र. या सर्व घटकांमध्ये विशेषीकरण करणे गरजेचे आहे. तरच भारताची निर्यात अधिक होऊन परकीय चलनात वाढ घडून येईल. शेतमालासंबंधीत संकरीत बियाणांचा शोध लावून त्यावरती पेटंट मिळविण्याचा प्रयत्न करणे गरजेचे आहे. तरच आंतरराष्ट्रीय व्यापाराच्या स्पर्धेत देश टिकू शकेल. या सर्व गोष्टींचा विचार करुन उत्पादन घेतल्यास भारताची निर्यात क्षमता अजून वाढीस लागेल व भारताला निर्यात व्यापारात अव्वल येण्यास वेळ लागणार नाही.

शेतमाल निर्यातवाढीसाठी उपाययोजना –

१. उत्पादन प्रक्रियेत खाजगी गुंतवणूक आकर्षित करणे
२. जागतिक मूल्य साखळीत भारतीय शेतकरी व कृषि उत्पादकांना एकत्र आणणे
३. परदेशी बाजारपेठेत शेतक–यांना निर्यातसंधी उपलब्ध करुन देणे
४. शेतमालामध्ये वैविधीकरण व मूल्यवर्धित कृषि निर्यातीला चालना देणे

संदर्भ ग्रंथ सूची –

१. कृषि अर्थशास्त्र, डॉ. वसुधा पुरोहित
२. आंतरराष्ट्रीय अर्थशास्त्र – दुरस्थ शिक्षण
३. http://dasgviard-commerce.gov.in/import -export
४. www.enam.gov.in

अवर्षण एक आपत्ती

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अपुऱ्या पडणाऱ्या पावसामुळे जी परिस्थिती निर्माण होते त्याला अवर्षण किंवा दुष्काळ असे म्हणतात. हि मानवी समाजावर ओढावणारी अत्यंत भयानक नैसर्गीक पर्यावरणीय आपत्ती आहे. ज्या देशाची कृषी अर्थव्यवस्था पूर्णपणे पर्जन्यमानावर अवलंबून आहे. त्या देशात अवर्षणामुळे अतोनात नुकसान होते. अवर्षण या नैसर्गीक आपत्तीचा कालावधी, विचलीतता तसेच सुरवात व अखेर हे अनिश्चित स्वरुपाचे असते.

प्रस्तावनाः-

महाराष्ट्र हे भारतातील विकासाच्या संदर्भात आघाडीवर असणारे राज्य आहे. भारताच्या आर्थिक विकासात महाराष्ट्राता वाटा हा सर्वात जास्त असतो. महाराष्ट्र राज्याने आर्थिक, सामाजीक, राजकीय, शैक्षणिक, तांत्रीक अशा सर्वच क्षेत्रात प्रगती केलेली आहे. कृषी क्षेत्रातही महाराष्ट्राची वाटचाल दमदार आहे. कृषी क्षेत्र हे पुर्णपणे पावसावर अवलंबून असते. पावसाच्या अनिश्चततेमुळे त्याचा परिणाम कृषी उत्पादनावर होत असतो. देशातील एकूण धरणापैकी ४० % धरणे महाराष्ट्रात आहेत असे असले तरी सिचंन क्षमता सर्वात कमी महाराष्ट्राची आहे.

सदर संशोधनात महाराष्ट्रातील अवर्षणग्रस्त समस्येवर प्रकाश टाकण्याचा प्रयत्न केला गेला आहे. तब्बल ५२ % महाराष्ट्र अवर्षणग्रस्त आहे. राज्यातल्य ३०७ लाख हेक्टरपैकी १५८ लाख हेक्टर क्षेत्र अवर्षणग्रस्त आहे.

संशोधनाचे उद्देशः-

2) अवर्षण, अवर्षणाचे प्रकार यांचा अभ्यास करणे.
3) अवर्षणाची कारणे व परिणाम यांचा अभ्यास करणे.
4) महाराष्ट्रातील अवर्षणग्रस्त प्रदेश यांचा अभ्यास करणे.
5) अवर्षण समस्येवरील उपाय योजनांचा अभ्यास करणे.

अवर्षणाचा अर्थः-

अवर्षण संकल्पना भिन्न प्रदेशात वेगवेगळ्या अर्थाने वापरली जाते. हवामान, भूमीवापर, शेतीपध्दती इतर आर्थीक व्यवसाय इत्यादी घटकांवर अवर्षणाची संकल्पना अवलंबून आहे. अवर्षण म्हणजे पावसाची कमतरता असा सर्वसाधारण अर्थ लावला जातो. एखाद्या प्रदेशातील अवर्षण परिस्थिती दुसऱ्या प्रदेशातील सामान्य किंवा अनुकूल परिस्थिती ठरु शकेल. त्यासाठी अवर्षणाचे मूल्यनिर्धारण पावसाच्या प्रमाणानुसार करण्याऐवजी जलसंतुलन (Water Balance)यानुसार करने उचित ठरते.

अवर्षणाची व्याख्याः-

१) वनस्पती जीवन व पीके करपून जाण्याइतका प्रदीर्घ असलेला कोरडा काळ म्हणजे अवर्षण- जॅकी स्मिथ.

२) डब्ल्यू. जी. मूर यांच्या मते पावसाअभावी शुष्कता निर्माण करणारा प्रदीर्घ कोरडा काळ म्हणजे अवर्षण होय.

अवर्षणाचे प्रकारः-

भारतीय कृषी आयोगाने १९७६ मध्ये भारतातील अवर्षणाचा सविस्तर अभ्यास करुन अवर्षणाचे पुढील तीन प्रकार पाडलेले आहेत.

B. वातावरणीय अवर्षण (Meteorological Drought):-

एखाद्या प्रदेशात जेव्हा सरासरी पर्जन्यापेक्षा २५% किंवा त्यापेक्षाही कमी पाउस पडतो तेव्हा त्याला वातावरणीय अवर्षण म्हणतात.

C. जलीय अवर्षण (Hydrological Drought):-

एखाद्या प्रदेशात वातावरणीय अवर्षण फार काळ टिकल्यास तेथे जलीय अवर्षण निर्माण होते. भूपृष्ठावर पाण्याचे प्रमाण कमी होते व त्याचा परिणाम होउन जलाशये , सरोवरे, ओढे, नाले, नद्या कोरड्या पडतात. तसेच झरे वाहण्याचे बंद होतात.

D. कृषीविषयक अवर्षण (Agricultural Drought):-

जेव्हा पिकांची वाढ होत असताना जमिनीतील ओलावा व पावसाव्दारे होणारा पाण्याचा पुरवठा पुरेश्या प्रमाणात होत नाही तेव्हा त्याला कृषीविषयक अवर्षण असे म्हणतात.

अवर्षणाची कारणेः-

प्रत्येक प्रदेशात अवर्षणाची कारणीमीमांसा भिन्न भिन्न प्रकारे केली जाते. पावसाची कमतरता, वनस्पती व शेतीचा नाश, गुरे व प्राणी यांचा उपासमारीने मृत्यू व मानवी हानी यासाठी कारण ठरणाऱ्या हवामान व जलचक्र यातील बिघाड ज्यामुळे निर्माण होतात ते घटक म्हणजे अवर्षणाची कारणे आहेत.

१) वृक्षतोडः-

झाडांच्या आच्छादनामूळे जमिनीवरुन वाहणाऱ्या पाण्यास प्रतिबंध होतो. पाणी जमिनीत मुरण्याचे प्रमाण वाढते. वनस्पतीची पाने बाष्पोच्छवास करतात. त्यामूळे हवेतील बाष्पाचे प्रमाण वाढते व पाउस पडण्यास मदत होते. वनतोडीमूळे जमिनीतील पाण्याचे बाष्पीभवननामुळे भूजल पातळीत घट होते.

२) अनिश्चित मान्सून पर्जन्यः-

महाराष्ट्रात मान्सूनच्या वाऱ्यापासून पाउस पडतो. हा पाउस काही ठरावीक काळातच पडतो. बऱ्याच वेळा मान्सून उशीरा सुरु होतो किंवा त्यामध्ये खंडही पडतो त्यामूळे एकूण पाउस कमी पडतो व अवर्षण निर्माण होते.

३) जास्त तापमानः-

महाराष्ट्राच्या काही भागात तापमान जास्त आढळून येते. जास्त तापमान अवर्षणास कारणीभूत ठरते. पर्जन्य छायेच्या प्रदेशात तापमान जास्त व कमी पाउस अशी स्थिती असते. जो पाउस पडतो त्यातील बरेच पाणी वाहून जाते. व जे पाणी शिल्लक राहते त्याचे जास्त तापमानामूळे बाष्पीभवन होते. त्यामूळे अवर्षण निर्माण होते.

४) जास्त पर्जन्यः-

अवर्षण फक्त पाउस कमी पडल्यामूळेच निर्माण होते असे नाही तर प्रमाणापेक्षा जास्त पाउस पडल्यामूळेही अवर्षण निर्माण होते यालाच ओला दुष्काळ असे म्हणतात. कोरड्या दुष्काळापेक्षा असे अवर्षण कमी हानीकारक असते. शेतातील उभ्या पिकांचे नुकसान होउन शेती उत्पादनात घट होतो.

५) ओझनचा क्षयः-

विविध प्रकारच्या कारणांमूळे ओझनच्या प्रमाणात घट होत आहे. भूपृष्ठापासून ४० कि.मी. उंचीवर ओझन वायूचा थर आहे. त्यामूळे खालच्या थरामध्ये हवेच्या अभिसरण क्रियेत अडथळे निर्माण होतात. अभिसरण क्रियेत अडथळे आल्यामूळे परिणाम ढगांची निर्मीती, वहन व सांद्रीभवन यावर मोठ्या प्रमाणात होतो. त्यामूळे पर्जन्याचे प्रमाण कमी होते.

६) भूजलाचा अति वापरः-

लोकसंख्या वाढल्यामुळे मानवाच्या गरजाही वाढल्या आहेत. आणि वाढलेल्या लोकसंख्येला अन्नाचा पुरवठा करण्यासाठी शेतीचे उत्पादन वाढवणे भाग आहे. त्यामुळे जास्तीत जास्त क्षेत्र शेतीखाली आणण्यासाठी भुर्गभातील पाण्याचा वापर प्रमाणापेक्षा जास्त वाढतो. भुजल साठे कमी कमी होत चालले आहेत यामुळे अवर्षण जाणवते.

७) मृदा धूपः-

वनतोड, अतिचराई, जोरदार वारे, पूर अशा अनेक कारणांनी मृदेची धूप होते. मृदेच्या धूपेमुळे वरचा थर वाहून जातो व खाली नापीक मृदा शिल्लक राहते या मृदेतून पिकांचे उत्पादन कमी प्रमाणात निघते. शेती व्यवसायात पिछेहाट होते अन्नधान्याचा तुटवडा निर्माण होतो. म्हणजेच अवर्षणासारखी स्थिती निर्माण होते.

८) जलसिंचन व जलसाठे यातील दूरदृष्टीचा अभावः-

देशातील एकूण धरणापैकी चाळीस टक्केधरणे हि महाराष्ट्र राज्यात आहेत. असे जरी असले तरी सिंचन क्षेत्रात आपण खूप मागे आहोत. प्रत्येक वर्षी धरणाच्या पाणलोट क्षेत्रात पाउस पडतो. पण योग्य त्या नियोजनाअभावी त्या पाण्याचा वापर प्रशासनाला करता येत नाही त्यामूळे पाणी असूनही त्याचे योग्य प्रकारे नियोजन न झाल्याने पाणी टंचाई सारख्या समस्येला सामोरे जावे लागते.

९) इतर कारणेः-

वरील कारणाव्यतिरिक्त गाळ संचयनामुळे जलाशयांची पाणी साठविण्याची क्षमता कमी होते. उन्हाळा व हिवाळा ऋतूतील कालव्याव्दारे होणाऱ्या पाण्याच्या वाटपाची असमानता, विषम भूरचना, उपलब्ध पाण्याचा अर्निबंध वापर इत्यादी कारणे देखील अवर्षण निर्मीतीस कारणीभूत ठरतात.

अवर्षणाचा परिणामः-

अवर्षणाचे परिणाम अतिषय व्यापक असून परिसंस्था, वनस्पती, प्राणी, कृषी, लोकसंख्या, मानवजीवन, अर्थव्यवस्था व राजकिय स्थिती अशा सर्व क्षेत्रात अवर्षणामुळे गंभीर परिणाम होत असतात.

१) बेकारीः-

अवर्षणामुळे पाण्यवर अवलंबुन असणारे व्यवसाय उदा. शेती, दुग्धव्यवसाय, उद्योगधंदे बंद पडतात. त्यामुळे या व्यवसायात गुंतलेले लोक बेकार होतात.

२) स्थलांतरः-

अवर्षणग्रस्त प्रदेशांत शेती व्यवसाय बंद पडतो. तसेच कृषी मालावर आधारित उद्योग व पाण्यावर अवलंबून असणारे उद्योग बंद पडतात. या सर्व परिस्थितीमूळे मानव व जनावरे यांचे अवर्षणग्रस्त प्रदेशातून दुसरीकडे स्थलांतर होते. सातारा, सांगली व सोलापूर जिल्ह्यातील अवर्षणग्रस्त भागातील लोकांनी रोजगारासाठी पुणे व मुंबई कडे स्थलांतर केलेले आहे.

३) पाण्याची टंचाईः-

अवर्षणामूळे पाण्याची तीव्र अशी टंचाई निर्माण होते. माणसे व जनावरांना पिण्याचे पाणी मिळत नाही. पाण्यासाठी दाही दिशा भटकावे लागते. अनेक उद्योगधंदे पाण्याअभावी बंद पडतात.

४) अन्नधान्याचा तुटवडाः-

पाण्याच्या कमतरतेमूळे शेतीचे उत्पादन कमी होते. पिके जळून जातात, अन्नधान्याचा तुटवडा निर्माण होतो. अन्नाच्या टंचाईमूळे उपासमार, अर्धपोषण, कुपोषण, भूकबळी या जीवघेण्या समस्या निर्माण होतात.

५) भुजल पातळीत घटः-

अवर्षणाच्या वेळी पाण्याची टंचाई निर्माण होते. अशा वेळेस मानव जमिनीतील पाण्याचा जास्तीत जास्त उपसा करतो. पाण्याच्या कमतरतेमुळे भुगर्भात येणाऱ्या पाण्याचे प्रमाण मात्र कमी झालेले असते. या परिस्थितीमूळे भुजल पातळी खालावते. विहिरीचे पाणी आटते व झरे वाहण्याचे बंद होतात.

६) मृदा धूपः-

अवर्षणामूळे मृदा कोरड्या पडतात. या कोरड्या मृदा उष्णतेने मोठ्या प्रमाणात तापतात. त्यामूळे मृदा धूप मोठ्या प्रमाणात होते. एखाद्या भागात जर वारंवार अवर्षण निर्माण होत असेल तर तेथे जमिनीची धूप प्रचंड प्रमाणात होउन मृदा नापीक बनते.

७) वनस्पती जीवनावरील परिणामः-

अवर्षणांनी वनस्पती जीवनाची हानी होते. वनस्पती करपून जातात. वनस्पती जीवनाचा ऱ्हास होतो. मोठ्या वृक्षांच्या जागी खुरट्या वनस्पती वाढू लागतात. नष्ट होतात. वनस्पतीच्या अनेक जाती नष्ट होतात. वनस्पती जीवनातील विविधता नष्ट होते.

८) प्राणी जीवनावरील परिणामः-

अवर्षणामुळे वनांचा नाश होतो. पाणवठे नष्ट होतात. तहान व भूक यामूळे प्राण्यांच्या अनेक जाती उपासमारीने नामशेष होतात. गुरे-ढोरे मरतात. पक्षी स्थलांतर करतात. अनेक प्राणी स्थलांतर करतात. जलचर प्राणी नष्ट होतात.

९) अर्थव्यवस्थेवरील परिणामः-

अवर्षणामूळे प्रदेशाच्या अर्थव्यवस्थेवर परिणाम होतो. कृषी उत्पादनात घट, औद्योगिक उत्पादनात घट, अन्नधान्य टंचाई, भाववाढ इत्यादी आर्थीक समस्या निर्माण होतात. जीवनावश्यक वस्तूंची टंचाई निर्माण होते. आर्थीक नियोजनात खंड पडतो.

महाराष्ट्रातील अवर्षणग्रस्त प्रदेशः-

भारतीय जलसिंचन आयोगानुसार ७५ सें.मी. पेक्षा कमी पाउस पडणारा प्रदेश अवर्षणग्रस्त म्हणून ओळखला जतो. जेव्हा सरासरी पर्जन्यापेक्षा ५९०% पाउस कमी पडतो तेव्हा जे अवर्षण निर्माण होते त्याला 'प्रखर अवर्षण' म्हणतात. तसेच जेव्हा एखाद्या प्रदेशात पर्जन्यात २० ते ३०% घट होते तेव्हा जे अवर्षण निर्माण होते त्याला मध्यम अवर्षण असे म्हणतात.

महाराष्ट्राच्या एकुण क्षेत्रापैकी ५२% महाराष्ट्र अवर्षणग्रस्त आहे. राज्यातल्या ३०७ लाख हेक्टर पैकी १५८ लाख हेक्टर अवर्षणग्रस्त आहे. विदर्भ, मराठवाडा, खानदेश व पश्चिम महाराष्ट्राचा पूर्व भाग हा पूर्ण दुष्काळी आहे.



अवर्षण समस्येवरील उपायः-

भारतात १९७४ साली अवर्षण निर्मूलन कार्यक्रम केंद्र सरकार मार्फत राबवण्यात आलेला आहे. अवर्षण हि नैसर्गीक आपत्ती आहे. तथापी त्याला काही मानवसुध्दा जबाबदार आहे. भूमी, उपलब्ध पाणी व अन्य संसाधनांचे नियोजन व व्यवस्थापन करणे आवश्यक आहे. त्या दृष्टीने अवर्षण समस्येवर पुढील उपाय सुचविले जातात.

१) भूमी उपयोजना सर्वेक्षणः-

प्रत्येकाने आपआपल्या क्षेत्रातील जमीनीचे उपयोजन, सर्वेक्षण करुन त्या संदर्भात पुनर्रचना करने आवश्यक असते. त्यामध्ये शेती योग्य भुमी किती आहे? किती जमीन पडीक आहे ? किती उपयोगात आलेली आहे ? इत्यादी संदर्भात सर्वेक्षण आवश्यक आहे.

२) मृदा संवर्धनः-

पाणलोट विकास कार्यक्रमांतर्गत लहान पाणलोट सोडून उतारावर बांध बंदिस्ती करणे, जमिनीचे सपाटीकरण करणे, ओढ्यावर, नाल्यांवर लहान मोठे बांध घालून पाणी जिरविणे यामुळे जमीनीची धूप कमी होउन मृदा संवर्धन होते.

३) वृक्षरोपणः-

अवर्षणास कारणीभूत असलेली मुख्य परिस्थिती म्हणजे वृक्षांचा अभाव होय. जंगलतोड किंवा वृक्ष अभावामुळे वादळी पावसाचे पाणी वाहून जाते आणि जमिनीची झिजही होते. वृक्षारोपण झाले तर जमीन व वाळूचे वाहणे थांबेल तसेच वाहून जाणारा पाणी जमिनीमध्ये आत शिरुन भूजल पातळीत वाढ होईल.

४) सामाजिक वनीकरणः-

सामाजीक वनीकरणामुळे वृक्षारोपण, वृक्षसंवर्धन उत्तम प्रकारे होते. त्यामध्ये एकाच प्रकारची झाडे न लावता भिन्न भिन्न प्रकारचे वृक्षारोपण होते सामाजिक वनीकरणाने अवर्षण टाळता येते.

५) मिश्र शेतीः-

जमिनीत शेतीपीक पध्दतीत अदला बदल केला तर पिकापासून अधिक प्रमाणीत आणि उत्तम प्रकारे उत्पादन निघते. संपूर्ण शेतीत एकाच प्रकारचे पीक घेण्याऐवजी भिन्न भिन्न उत्पादनास प्राधान्य द्यावे. शिवाय शेतीवर गाई, म्हशी, मेंढ्या, शेळया, कोंबडीपालन इत्यादी व्यवसाय सुध्दा करावेत.

६) सुधारित गवत लागवडः-

अवर्षणावर मात करण्यासाठी योग्य स्वरुपाचा सुधारित गवताची लागवड केली तर पशुचारा तयार होतो. त्यासाठी सुबाभुल, अंजन, शेवरी इत्यादीची लागवड करावी तसेच जमीनीचा कस टिकवून ठेवावा.

७) जल योजनाः-

जल योजने अंतर्गत नदी नाल्यांचे किंवा धरणाचे पाणी अवर्षणग्रस्त भागाकडे वळवावे व तो प्रदेश सुपीक करावा.

८) आधुनिक सिंचन पध्दतीचा वापरः-

पाणी पुरवठ्याची सोय असेल तर पाणी वापर पाटातून न करता (I) तुषार (II) ठिबक (III) आळे पध्दतीने किंवा मटक्या पध्दतीने करावा. शिवाय पाण्याची वाफ होउ नये म्हणून पाचूरासारखे आच्छादन पसरावे.

९) जनजागृतीः-

सामाजीक परिवर्तन घडवून आणण्यासाठी उपयुक्त शिक्षण, कुऱ्हाडबंदी, चराईबंदी, गोबर गॅस, सौरचूल, पाणीनासाडी, धान्यनासाडी, आरोग्यसंवर्धक, नशाबंदी, कोर्ट बंदीव्दारे जनजागृती करत गावाचा विकास करता येईल.

वरील प्रकारच्या उपाययोजना राबवून अवर्षणावरती मात करता येते.

निष्कर्षः-

अवर्षण हि नैसर्गीक समस्या असली तरी तिचा सामना मानव जातीसच करायचा आहे. महाराष्ट्रात राजकीय, प्रशासकीय आणि समाज व्यवस्था यांच्याकडून पाणी टंचाई हा विषय आता चित्रपट आणि माध्यमाकडे चालला आहे. 'डिलिव्हरींह्रग चेंज फाउंडेशन' पाण्यासाठी काम आणि संशोधन चालवले आहे. अभिनेता अमिर खान यांनी 'पाणी फाउंडेशनच्या' माध्यमातून पाण्यासाठी कार्य सुरू केले आहे. सयाजी शिंदे यांनीही पाण्याची मोहीम चालवली आहे. तसेच नाना पाटेकर व मकरंद अनासपुरे यांनीही 'नाम' च्या माध्यमातून प्रबोधन करताना दिसत आहे.

आज महाराष्ट्रात जलयुक्त शिवार सारखी चळवळ सुरु केलेली आहे. ओढ्याचे रुंदीकरण व खोलीकरण करुन पाणी शिवारातच साठवून त्याचे संवर्धनाचे काम चालू आहे आणि या योजनेचा चांगल्या प्रकारे परिणाम जाणवू लागला आहे.

संदर्भ सूचीः-

१. भारताचा भूगोल- एच. के. डोइफोडे
२. पर्यावरण भूगोलशास्त्र- डॉ. विठ्ठल घारपुरे
३. भारताचा प्रादेशिक भूगोल- प्रा. ए. पी. चौधरी, अर्चना चौधरी, डॉ. अंकुशराव आहेर
४. पाणी आजचं उद्याचं- पोपटराव पवार(सकाळमधील लेख)
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वेदनेच्या हुंकारातून जन्मलेली कादंबरी – बारोमास

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एकोणिसावे शतक हे स्थित्यंतराचे युग मानले जाते. सर्वार्थाने समाज ढवळून निघाला होता. समाजात जी परिवर्तने होत होती त्याचा परिणाम साहित्यावरही झालेला दिसून येतो. मराठी साहित्यातही परिवर्तने झाली. जसजसा काळ बदलला तसतसे मराठी साहित्य व्यापक होत गेले.वेगवेगळया साहित्य प्रवाहांनी आपले स्वतंत्र स्थान निर्माण केले. ग्रामीण, दलित, स्त्रीवादी, आदिवासी, जनवादी या साहित्य प्रवाहांनी मराठी साहित्याचे दालन समृध्द केले.

साधारणपणे १९२५ पासून 'ग्रामीण' ही संज्ञा रुढ अर्थाने मानली गेली असली तरी ग्रामीणत्वाच्या खुणा प्राचीन काळातच पहायला मिळतात. कारण आपला देश खेडयांचा देश म्हणून ओळखला जातो. खेडे म्हणजे ग्राम . यातूनच ग्रामीण जीवनाची नव्याने ओळख झाली. निसर्ग, शेती आणि शेतकरी हे ग्रामीण जीवनाचे प्रमुख घटक असून निसर्ग हा शेतक–याला मिळालेले वरदान आहे. पण हाच निसर्ग कधी कधी शापसुध्दा ठरतो. बदलत्या काळानुसार निसर्गाचीही ऋतुचक्रे बदललेली आहेत, याचा परिणाम शेतीवर होतो आजच्या या आधुनिकीकरणाच्या युगात शेती हा व्यवसाय दुय्यम होताना दिसतो. शेतकरी हा जगाचा पोशिंदा असूनही त्याच्या समोरील समस्या अधिक तीव्र झाल्या असून तो एका विळख्यात सापडल्याने आपल्या जीवनाचा अंत करतो. एकीकडे निसर्गाची अवकृपा तर दुसरीकडे सावकारी पाश. या गर्तेत सापडलेला शेतकरी हतबल होवून जिवंतपणीच मरणयातना भोगत असतो. या सा–या प्रश्नांचे चिंतन ग्रामीण साहित्यात होताना दिसते.

एकोणिसाव्या शतकात महात्मा फुल्यांनी 'शेतक–याचा आसूड' हा ग्रंथ रचून शेतक–यांची दुरावस्था व त्याची कारणे व उपाय यांचे विचारमंथन प्रस्तुत ग्रंथातून केले आहे. महात्मा फुल्यांच्या विचाराने प्रेरित होवून कृष्णराव भालेरावांनी दीनबंधूमधून 'बळीबा पाटील' ही कादंबरी चार भागात प्रकाशित करुन शेतक–यांच्या व्यथावेदना मांडल्या. विसाव्या शतकाच्या प्रारंभी धनुर्धारी यांनी 'पिराजी पाटील' या कादंबरीतून दुष्काळाचे चित्रण करुन शेतक–यांच्या परवडीचे चित्रण केले आहे.

स्वातंत्रपूर्व काळात गांधीजीनी खेडयाकडे वळण्यास सांगितले त्यांच्या विचाराने सारा समाज ढवळून निघाला. त्यानिमित्ताने ग्रामीण जीवनातील प्रश्न ऐरणीवर आले. ग्रामीण संस्कृती, निसर्ग, शेती, शेतकरी, दुष्काळ या विषयावर लेखन होवू लागले. र.वा. दिघ्यांच्या 'पाणकळा,' 'पड रे पाण्या' या कादंब–या महत्त्वाच्या ठरतात. स्वातंत्र्यानंतर व्यंकटेश माडगूळकरानी 'बनगरवाडी' लिहून माणदेशातल्या दुष्काळाची झळ कशी असते याचा प्रत्यय आणून दिला आहे.

काळाच्या ओघात ग्रामीण जीवन बदलले शहरीकरणाचे वारे या खेडयाना लागले पाश्चात्य जीवनशैली, भांडवलशाही, आधुनिकीकरण, यांत्रिकीकरणामुळे ग्रामीण कृषिसंस्कृतीची वाताहात होताना दिसते. याचे चित्रण ग्रामीण कादंब–यामध्ये पहायला मिळते. आनंद यादव 'गोतावळा', रा.रं. बोराडे 'चारापाणी' मोहन पाटील 'साखरफेरा' अशा अनेक कादंब–यामधून लेखकांनी ग्रामीण जीवनातले धगधगते वास्तव मांडून एक नवा आयाम

निर्माण केला आहे. आजच्या पिढीतील एक सक्षम ग्रामीण लेखक सदानंद देशमुख यांची 'बारोमास' ही कादंबरी मैलावरचा दगड ठरलेली कादंबरी वाचकांच्या काळजाला भिडणारी आहे.

बारा महिने तन, मन,धनाने शेतात राबणा—या शेतक—याचे दु:ख, त्यांचे प्रश्न दारिद्रयाची कारणे याची पूर्ण जाण लेखकाला असल्याने कृषिजीवनातील गावगाडयातील जागतिकीकरणामुळे होणारे बदल सूक्ष्मपणे टिपले आहेत. शेतकरी जेव्हा आत्महत्येचा मार्ग स्वीकारतो तेव्हा तो अनेक समस्यांनी ग्रासलेला असतो. शेती हा असा एक व्यवसाय आहे की त्यातून लाभ होईल याची खात्री देता येत नाही याउलट तोटाच अधिक होतो. कारण एकीकडे संपूर्ण शेती ही निसर्गावर अवलंबून असतेच परंतु दुसरीकडे सावकारांची टांगती तलवार सतत मानेवर लटकत असते. निसर्गाच्या लहरीपणामुळे सावकाराच्या कर्जाचा डोंगर दिवसेदिवस वाढतच जातो. पडतझडत जे उत्पन्न काढतो त्याला हमी भाव नसतो व्यापारी तो माल कवडीमोलाने खरेदी करतात. त्याच्या कष्टाची माती होते. सध्या त्यांना वाली कुणीच नाही सरकार हात झाडून मोकळे होते. जागतिकीकरणाच्या महाकाय विषारी सागरात तो सापडतो आणि त्यातच त्याचा अंत होतो चार वर्तमानपत्रात त्याच्या मृत्यूची बातमी येते चर्चा झडतात पुन्हा त्याचे नावही निघत नाही. हे वास्तव नाकारुन चालणार नाही. याच धरतीवर विचारमंथन करायला लावणारी कादंबरी म्हणजे बारोमास.

या कादंबरीचा नायक 'एकनाथ' हा सांजोळ या गावातील सव्वीस एकर जमीन असणा—या सुभानराव या शेतक—याचा मुलगा आहे. तो एम.ए. बी. एड. असूनही अनेक ठिकाणी मुलाखती देवूनही डोनेशनअभावी नोकरी लागत नाही. शेवटी शेती करण्याचा निर्णय घेतो. त्याची पत्नी अलका ही शहरातील श्रीमंत घरातील मुलगी असल्यामुळे खेडयात संसार करताना अनेक गोष्टीशी तडजोड करावी लागते तीही शिकलेली असते. परंतु शहरी व ग्रामीण संस्कृतीमध्ये फरक असल्याने सासू—सुनेमध्ये सतत खटके उडत राहतात. येथे वैचारिक संघर्ष पहायला मिळतो. धाकटा षऊ मधु पदवीधर असूनही नोकरी मिळत नाही तो वाममार्गाला लागतो. पैशासाठी शेतातील बांधवरील झाडे तोडून विकतो. बनुबा या भोंदुच्या नादी लागून गावातील इतर सुशिक्षित बेरोजगार तरुणांना एकत्रित करुन एक टोळी तयार करतो आणि गुप्तधन शोधण्याच्या मागे लागतो. काहीतरी धन आपल्यालाही मिळेल या आशेवर आलेल्या दिपक पवाराच्या अंगावर प्रेताचा सापळा पडतो. या धक्क्यातून तो सावरु न शकल्याने त्याचे मानसिक संतुलन बिघडते आणि तो कायमचा मनोरुग्ण होतो. मधुच्या ठिकाणी झटपट श्रीमंत होण्याची चंगळवादी प्रवृत्ती दिसून येते. तो इतका विद्रोही होतो की मोठया भावजयीवर हात उचलतो त्याचा असा परिणाम होतो की मोठया भावाचा संसार उद्ध्वस्त होतो. त्याची पत्नी अलका घराला शाप देवून कायमची माहेरी निघून जाते. नोकरीसाठी पैसे भरण्यासाठी आईवडिलांची इच्छा नसतानाही मधु दगडू महाकाळ या सावकाराकडे दोन लाख रुपयात शेती गहाण ठेवतो. दुर्दैवाने नोकरीचे अमिष दाखविणारा दलाल सुरेश हा पैसे घेवून फरार होतो. नायकाची बहीण मंगल हिचाही शेतकरी नवरा कर्जाला कंटाळून गळफास घेवून आत्महत्या करतो.

अशा सा—या विवंचनेत अडकलेल्या एकनाथच्या आयुष्याच्या चिंध्या झालेल्या असतात तरीही शेतक—यांचे प्रश्न सोडविण्यासाठी संघटनेत सामील होतो. संघटनेच्या मोर्चावर पोलिसांचा हल्ला होतो आणि त्याला अटक होते.

एकंदरित एकनाथ हा अत्यंत सोशिक सहनशील वृत्तीचा आहे. त्याचे शेतीवर, आपल्या आईवडिलांवर, पत्नीवर जीवापाड प्रेम आहे परंतु तो परिस्थितीने इतका पिचला आहे की आईवडिलांच स्वप्न पूर्ण करु शकत नाही. पती म्हणून पत्नीच्या अपेक्षा पूर्ण करु शकला नाही याची खंत त्याच्या मनाला असते.

आयुष्यभर मुलांसाठी खास्ता खावूनही म्हातारपणी सुखाचे दोन घाससुध्दा खावू शकत नाहीत दोन्ही मुलांना पदवीपर्यंत शिक्षण देवूनही वशिला पैसा नसल्याने दोन्ही मुलांच्या दोन त–हा झालेल्या उघडया डोळयांनी पहाव्या लागतात. हे त्याचं फार मोठ दुर्दैवच म्हणावं लागेल. या सर्व परिस्थितीने सुभानराव कोलमडून पडतात आणि त्यांना नैराशेचे झटके येतात आणि एक दिवस आत्महत्या करुन आपले जीवन संपवतात. शेवंतामायचा आक्रोश मनाला अस्वस्थ करणारा आहे. त्यांची आत्महत्या ही लेखकाने कादंबरीच्या शेवटी सूचकतेने करुन कादंबरीला एका वेगळया उंचीवर नेवून ठेवले आहे.

"शेतीला आलेली अवकळा, दुष्काळ, सावकार, व्यापार–दलांलानी शेतक–यांची केलेली लूट यात पिचलेला एकनाथ, परिस्थितीपुढे हतबल झालेले म्हातारे आईवडील–शेवंतामाय व सुभानराव , उद्ध्वस्त झालेलं कुटुंब ही शोकांतिका कोणा एका शेतक–याची नसून समग्र शेतक–याची शोकांतिका आहे. या कादंबरीसंदर्भात डॉ. रंगनाथ पाठारे म्हणतात, ''आजच्या खेडयातील शेतक–याच्या विस्कटत चाललेल्या वास्तवाच्या व्यापक पटावर बारोमास उभी आहे....''

निष्कर्ष–

१. बारोमास ही निसर्ग, नियती, व्यक्ती आणि समाज यांच्यातील मानसिक संघर्ष रेखाटणारी कादंबरी आहे.
२. शेतीव्यवसाय, मुक्त अर्थव्यवस्था, भांडवलशाही, सुंशिक्षित बेरोजगारी, या बाबीवर सखोल चिंतन करुन वैश्विक भाष्य केले आहे.
३. शहरी व ग्रामीण संस्कृतीमधील भेद स्पष्ट करुन ग्रामीण मागासलेपणाची कारणमीमांसा केली आहे.

संदर्भ–

१. **सदानंद देशमुख– बारोमास, कॉन्टिनेन्टल** प्रकाशन, पुणे, प्रथमावृत्ती–२००४.
२. डॉ. आनंद यादव– ग्रामीण साहित्य स्वरुप आणि समस्या, मेहता पब्लिकेशन हाऊस, पुणे, प्रथमावृत्ती– १९७९.
३. डॉ. रंगनाथ पाठारे– **बारोमास, तृतीय** आवृत्ती–२००७, पृ.३५१वरुन उध्दृत.
४. संपादक–भानू काळे, अंतर्नाद, दिवाळी अंक २००७.

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शेती व ग्रामीण विकास नियोजन : दुष्काळमुक्तीसाठी प्रत्येकाचा पुढाकार हवा

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प्रस्तावना व समस्याविधान :

'तिसरे महायुध्द झाले तर ते पाण्यासाठीच होईल' या जगाच्या भवितव्यातून संपूर्ण जगच आज दुष्काळाच्या समस्येने ग्रासले आहे हे स्पष्ट होते. पृथ्वीवर 71 टक्के पाणी व केवळ 29 टक्के जमिन आहे. मात्र समुद्राचे पाणी पिण्यास उपयुक्त नाही. जे गोडे पाणी आहे ते, केवळ पावसाच्या स्त्रोताद्वारेच उपलब्ध होते. हा पाऊस लहरी झाला आहे. त्यास मानवाचा लहरीपणा जबाबदार नाही काय ? मानवाने निसर्गावर मात करण्याचा चालविलेला प्रयत्न आपणास दुष्काळाच्या खाईत लोटत नाही कशावरून ? मानव कधी जागृत होणार आहे ? तो आपल्या चुकांमधून काही शिकणार आहे की नाही ?.....अश्या अनेक प्रश्नांची उत्तरे आपणांस शोधाविच लागणार आहेत. त्याशिवाय आपण दुष्काळ निवारण करून कृषी व ग्रामीण विकास साधू शकणार नाही हे नक्की.

उद्दिष्टे :

1. कृषी, ग्रामीण विकास आणि दुष्काळ निवारण याचा अभ्यास करणे.
2. कृषी, ग्रामीण विकास आणि दुष्काळ यातील परस्परसंबंध अभ्यासणे.
3. दुष्काळ दूर करण्यासाठी कायमस्वरूपी उपाययोजना सुचविणे.

गृहितक :

1. दुष्काळ ही मानवी देणगी आहे.
2. दुष्काळ दूर करून पून्हा सुजलाम् सुफलाम् भारत निर्माण करणे आपणांस शक्य नाही.
3. दुष्काळ मुक्ती साठी मानवी वर्तन सुधारण्याची व सुनियोजित प्रयत्नांची गरज आहे.

शेती आणि दुष्काळाचा अतिशय निकटचा संबंध आहे. नव्हे आज शेती म्हटले की, दुष्काळ डोळयासमोर येतो. एवढा दुष्काळ शेतीशी जोडला गेला आहे. एखादे वर्ष अपवाद वगळता दुष्काळ शेतकऱ्यांच्या पाचवीला पुंजलेला आहे. शेती व शेतकऱ्यांच्या समृध्दीशिवाय ग्रामीण विकासाची कल्पनाच करता येत नाही. आपली संपूर्ण व्यवस्था कृषिधारित आहे. आणि कृषीसमृध्दी सिंचनावर अवलंबून आहे. आपण पाहतो आहोत की, ज्यावर्षी दुष्काळ पडतो त्यावर्षी ग्रामीण अर्थकारण बिघडलेले असते. विशेषतः 2015–16, 2018–19 ही वर्षे. खेडयाकडूंन बेराजगारांचे लोंढेच्या लोंढे शहराकडे वळतात. या बेरोजगारांना रोजगार पूरविण्याची क्षमता भारतीय शेतीत आहे. मात्र त्यासाठी शेती सिंचनाची सुविधा उपलब्ध हवी. हि सिंचन सुविधा दुष्काळामुळे मिळू शकत नाही. हा दुष्काळ मिटविण्याची ताकद मनुष्यातच आहे. त्यासाठी गरज आहे ती, प्रत्येक व्यक्तीने नियोजनबध्द प्रयत्न करण्याची. मी पाण्याचा अपव्यय करणार नाही, मी रेन वाटर हार्व्हेस्टिंग करेण, पावसाच्या पाण्याचा प्रत्येक थेंब जमिनीत मूरवेण, झाडे तोडणार नाही, झाडे लावणार व वाढवणार, शासनाच्या प्रत्येक योजनेत सक्रिय, सकारात्मक सहभाग घेईन, पर्यावरणास कसल्याही प्रकारची हानी पोहचविणार नाही अशी कृती आपण करणे आवश्यक आहे.

शेती आणि अर्ध बेरोजगारी याचाही निकटचा संबंध आहे. आपली शेती मौसमी पावसावर अवलंबून असल्यामूळे जून ते ऑक्टोबर असे मोजकेच महिने शेतीतून रोजगार उपलब्ध होतो. याच शेतीला जर बारा महिने सिंचनाची सुविधा उपलब्ध झाली तर, शेतीतून वर्षभर रोजगार प्राप्त होतो. गावाकडून शहराकडे जाणारे बेरोजगारांचे लोंढे थांबवून खऱ्या अर्थाने ग्रामीण विकास झाला असे म्हणता येईल. यासाठी दुष्काळ निवारणाची गरज नव्हे काय ?

आपल्या देशात सर्वात अधिक दयनीय अवस्था कोणाची असेल तर, ती शेतकऱ्याची आहे. व्यापारी, कामगार, नौकरदार, कारागीर..... हे सर्व समाजघटक समाधानी आहेत, मात्र शेतकरी ? शेतकरी अजिबात सुखी नाही. तो निसर्गाचा व व्यवस्थेचा शोषित आहे. त्याची ही अवस्था तो स्वतःच बदलू शकतो. शेतकऱ्याचे काही चुकीचे निर्णय याला जबाबदार आहेत. आपण निसर्गाला ओरबाडत आहोत म्हणून निसर्ग, पर्यावरणाचा असमतोल निर्माण झाला आहे. तो दुष्काळाच्या रूपाने समोर येत आहे. पूर्वी एकत्र कुंटूंबपध्दत होती.... आता बहुतांश शेतकरी मजूरांवर अवलंबून आहेत.... जनावरांची संख्या मोठी होती. शेण, मुत यांचा खत म्हणून वापर व्हायचा. आता रासायनिक खतांचा वापर होत आहे. त्यामुळे शेतीचा पोत खराब झाला आहे. आपणांस कधी कधी असे वाटते की, शेतकरी स्वार्थी झाला आहे ? त्यास किती सांगितलं की, रासायनिक खतांच्या भरमसाट वापरामुळे आपणास अनुत्पादकतेकडे/विनाषाकडे जावे लागत आहे. तर तो मानावयास तयार होत नाही. त्यास हे सर्व कळते पण वळत नाही अशी स्थिती आहे. त्याने रासायनिक खतांचा वापर बंद केला तर उत्पादनात घट येण्याची भिती त्यास वाटते. मग आपण कसे जगावे ? आपल्यावरील सर्व जबाबदाऱ्या कश्या पार पाडाव्यात ? यातून तो रासायनिक शेती सोडू शकत नाही. म्हणून गरज आहे ती, शेतीस जोडधंद्याची जोड देण्याची. शेतीशिवाय इतर उत्पन्नाचे मार्ग त्यास धूंडाळता आले पाहिजेत. जसे दुग्धव्यवसाय, सेंद्रिय खत निर्मिती, गांडूळ खत निर्मिती, ईमू पालन, वराह पालन, ससे पालन, कुक्कुटपालन, किराणा दुकान, पिठाची गिरणी...ईत्यादी अनेक जोडव्यवसाय करण्याची गरज आहे.

महाराष्ट्रात कोकण, सहयाद्री पर्वत रांगात नैसर्गिक भु–रचनेमूळे ढग, हवा आडून पाऊस अधिक प्रमाणात पडतो. मात्र मध्य महाराष्ट्रात पठारी प्रदेशामुळे, वनाच्या अभावामुळे हे जलयुक्त ढग आढण्यास कारणच राहत नाही. पाऊस पडला तर तो असाच कमी अधिक. यावर प्राध्यापक बिराजदार व्ही.एन. लातूर यांनी सांगितलेला उपाय कठिण मात्र अशक्य नाही. ते म्हणतात, जश्या सहयाद्रीच्या पर्वतरांगा आहेत तशी उंच शिखरे आपल्या प्रदेशात तयार करणे. यामुळे ढग अडून येथे पाऊस पडेल.

दुष्काळ पडल्यानंतर त्यावर उपाययोजना करण्याऐवजी दुष्काळ पडणाराच नाही अशी परिस्थिती निर्माण केली जाऊ शकते. ते आपल्या हातात आहे. दुष्काळ दुष्काळ म्हणून टाहो फोडत न बसता दुष्काळासारख्या संकटाचे संधीत रूपांतर करता आले पाहिजे. दुष्काळाने कोरडे पडलेले तलाव गाळ–माती उपसण्यासाठी व भविष्यात पाणीसाठा वाढविण्यासाठी सुवर्णसंधीच असते. सिंचनाच्या व पाणी पुरवठयाच्या विहीरी दुष्काळात कोरडयाठाक पडल्या तर त्यांची खोली वाढविण्यासाठी दुष्काळ संधीच ठरतो. इज्राईलसारखा देश कमीत कमी पाऊस असतानाही निर्यातदार होतो. आपल्या देशात तर त्यापेक्षा अधिक पाऊस पडतो. आपण पावसाच्या पाण्याचा पडणारा प्रत्येक थेंब जमिनीत मुरविला पाहिज. तरच दुष्काळमुक्ती शक्य आहे.

मातीशिवाय शेती शक्य आहे मात्र पाण्याशिवाय शेती शक्य नाही. शेतकरी हे पक्के जानून आहे. त्यामुळे आता शेतकऱ्यांनीच आपल्या शेतीस लागणाऱ्या पाण्यासाठी पुढाकार घ्यावा लागणार आहे. आपल्या एकूण धारण क्षेत्रापैकी 25 टक्के जमिनीवर केवळ जंगल आणि जंगल वाढवावे. तर 25 टक्के क्षेत्रावर शेततळे अर्थात आपल्या शेतातील सर्व पाणी अडवून ठेवावे लागेल. राहिलेल्या 50 टक्के

क्षेत्रात शेती करावी. प्रत्येक शेतकऱ्याने हे धोरण राबविल्यास त्यास दुष्काळास सामोरे जावे लागणार नाही तसेच उठसूठ शासनाच्या मदतीची वाट पाहावी लागणार नाही.

शासनाच्या विविध योजना, आदर्श ग्राम स्पर्धा, पुरस्कार.....यामुळे ग्राम पंचायती आता जागृत होवून घरा–घराचे सांडपाणी शोषखड्डयांत सोडून मूरवत आहेत..... अनेक ठिकाणी रेन वाटर हार्वेस्टिंग केले जात आहे, विंधन विहीर पूर्नभरण.....आदि प्रयत्नच आपणास दुष्काळापासून दूर ठेवू शकणार आहेत. 'गाव करील ते राव काय करील' या उक्तीनुसार सर्व गावकरी मिळून जे ग्रामीण विकासाचे शिवधनुष्य पेलू शकतात ते एकटया शासनाच्याने अजिबात शक्य नाही. अण्णा हजारेंच्या राळेगणसिध्दीचे उदाहरण घ्या. सर्व गावकऱ्यांनी एकत्र येवून अण्णांच्या दाखविलेल्या मार्गावर मार्गक्रमण केले म्हणून बरडी/मुरमाड भाग आज सुजलाम् सुफलाम् झाला आहे. त्यांनी गावात स्वयंस्फूर्तीने कुऱ्हाडबंदी, गुटखाबंदी, दारूबंदी, चराईबंदी यशस्वी करून ग्रामीण विकासास चालना दिली आहे.

जागतिक तापमानवाढीमूळे जगापूढेच नव्हे तर मानवजातीच्या अस्तित्वापूढे प्रश्नचिन्ह निर्माण केले आहे. या तापमानवाढीस प्रदुषण सर्वाधिक जबाबदार आहे. हे प्रदूषण कमी करण्यासाठी डिझेल, पेट्रोलचे ज्वलन थांबवायला हवे. त्यासाठी सौरउर्जा, पवनउर्जा यांचा वापर केंद्रस्थानी यायला हवा.

फ्री डेटा स्पर्धा :

जागतिकीकरणाचा परिणाम म्हणून मोबाईल कंपन्यांनमध्ये फ्री डेटा देण्याची स्पर्धाच लागली आहे. अनंतकाळापर्यंत मिळणाऱ्या या फ्री डेटामूळे आजची तरूणपिढी केवळ मोबाईलमध्येच व्यस्त आहे. फ्री डेटा द्यायला हरकत नाही मात्र त्यास काही तासांची, वेळेची मर्यादा असावी. ही वेळ निवडण्याचे स्वातंत्र्य ग्राहकास असावे. संस्थेच्या स्तरावर अधिक वेळ फ्री डेटा देण्यास हरकत नाही. मात्र वैयक्तिक स्तरावरही तो दिल्यामुळे तरूणपिढीस विधायक कार्य करण्यासाठी वेळच नाही. या डेटावर काही बंधन टाकली तर तरूणवर्ग राष्ट्रबांधणीच्या कार्यात, झाडे लावणे, वाढविणे अश्या विधायक कार्यासाठी वेळ देवू शकेल.

गृहितकांची पडताळणी :

1. दुष्काळ ही मानवी देणगी आहे, हे गृहितक सत्य सिध्द झाले आहे. मानव नैसर्गिक घटकांचा राक्षसी वापर करत असल्यामुळे पर्यावरण बिघडून दुष्काळ पडत आहे.
2. दुष्काळ दूर करून पून्हा सुजलाम् सुफलाम् भारत निर्माण करणे शक्य नाही, हे गृहितक असत्य सिध्द झाले आहे. मानवाने जर आपली कृती सुधारली, निसर्गाचे संवर्धन केले, गरजा मर्यादित ठेवल्या, पाण्याचा प्रत्येक थेंब जमिनीत मूरविला तर, भारत पुन्हा सुजालाम् सुफलाम् होवू शकतो.
3. दुष्काळमुक्तीसाठी मानवी वर्तन सुधारण्याची व सुनियोजित प्रयत्नांची गरज आहे, हे गृहितक सत्य सिध्द झाले आहे. आज मानव आपल्या अनेक कृतीतून दुष्काळास निमंत्रण देत आहे. तो जर शाश्वत विकासाच्या आराखडयानुसार कृती करू लागला तर, दुष्काळ निवारण अशक्य नाही.

निष्कर्ष :

'तुझे आहे तुजपाशी परी तु जागा विसरलाशी' याप्रमाणे दुष्काळाची जरी वेगवेगळी कारणे असली तरी आता आपणालाच स्वतः त्यासाठी प्रत्येक पाऊलागणीस जाणीवपूर्वक प्रयत्न करावे लागणार आहेत. 'जो बित गई सो बित गई', जे झाले त्याचा अधिक विचार न करता भविष्यकाळ

कसा उज्वल करता येईल यासाठी मार्गक्रमण करणे आपल्या हातात आहे. आपण आपल्या चुकांमधून जर धडा घेतला तर, हे ही नसे थोडेसे. 'कल करे सो आज कर, आज करे सो अब, पल मे प्रलय हो जायेगा, फिर करेगा कब', याप्रमाणे 'अभी नही तो कभी नहीं' नुसार आपणांस सर्वांना मिळून पर्यावरण संवर्धनासाठी कार्य करावेच लागेल. अन्यथा फार विलंब झालेला असेल.

शिफारसी :

1. गावोगावी होणाऱ्या सिमेंट रस्त्यांच्या बांधणीवर बंदी आणून त्याऐवजी सिमेंटच्या पेवर ब्लॉक चे रस्ते बांधणे. यामुळे घराच्या छतावरचे पाणी सिमेंट रस्त्यावर, रस्त्यावरचे गटारात, गटारातले नदीला, नदीचे समुद्राला मिळत होते. हे पाणी जमिनीत मुरण्यासाठी सिमेंट कॉक्रीटच्या रस्त्याऐवजी पेवर ब्लॉक चे रस्ते बांधणे आवश्यक आहे. या रस्त्यातील सांधीतून पाणी मुरवून आपण दुष्काळावर मात करू शकतो.
2. मद्यनिर्मीती उद्योग, ऊस, केळी तसेच जादा पाणी लागणाऱ्या पिकांना पुरविण्यात येणारा पाणी पुरवठा बंद करावा.
3. दुष्काळ निवारणासाठी कायमस्वरूपी नियोजन करण्याची गरज आहे.
4. नदीजोड प्रकल्प राबवून सतत पूर येणाऱ्या उत्तरेकडील नद्या दुष्काळग्रस्त भागाकडे वळवल्या जाणे आवश्यक.
5. रासायनिक शेती ऐवजी सेंद्रिय शेतीस प्राधान्य द्यावे.
6. अंबाजोगाई आणि परिसरात अगदी उदात्त भावनेने कार्य करणाऱ्या मानवलोक सारख्या स्वयंसेवी संस्थांसारखे कार्य इतर संस्थाकडून तळागळातील गरजूंपर्यंत पोहचविण्याची गरज आहे.
7. समस्त महाजन, महाराष्ट्र जैन संघटना यांच्याकडून झालेले दुष्काळमुक्तीसाठीचे, तलाव गाळमुक्त करण्याचे व इतर कार्य प्रेरणादायी व दिशादर्शक आहे. या पावलावर पाऊल टाकून इतरांनी चालावे म्हणून अश्या संस्थांना व्यापक पुरस्कार देवून गौरविण्यात यावे.
8. ठिबक सिंचन, सुक्ष्म सिंचनावरील अनुदान वाढविण्यात यावे तसेच ठिबकशिवाय ऊस व तत्सम शेतीस परवाणगी नाकारण्यात यावी.

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फलटण संस्थानातील कृषी विकासाचा आढवा

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फलटण संस्थान महाराष्ट्रातील सातारा जिल्हयातील एक प्राचीन संस्थान असून त्याचा प्रारंभ १३ व्या शतकात झालेला आहे. अशा संस्थानची स्थापना सन १२८४ मध्ये पहिला निंबराज (परमार) याने केली. या संस्थानात एकूण २५ राज्यकर्ते होऊन गेले. या फलटण संस्थानावर नाईक निंबाळकर घराण्याची सत्ता होती. फलटण संस्थानातील पहिला निंबराज ते २५ वे राज्यकर्ते श्रीमंत मालोजीराजे यांच्यापर्यंत सर्व सत्ताधिशांनी आपापल्या कारकिर्द संस्थानातील कृषीक्षेत्रात अतिशय महत्वपूर्ण विकास (सुधारणा) घडवून आणलेला दिसतो.[१]

फलटण संस्थानची सीमा :–

फलटण संस्थानची सनद महमंद तुघलकाने श्रीमंत निंबराज दुसरा यास सन १३२७ मध्ये दिली. व संस्थानची सरहद्द पुढीलप्रमाणे ठरवून दिल्या. पूर्वेस रायदंडचा विठोबा सध्याचा माळशिरस तालुका, पश्चिमेस सरहद्देचा ओढा सध्याचा खंडाळा तालुका, दक्षिणेस सह्याद्री पर्वताची रांग, तर उत्तरेस पूर्ववाहिनी निरा नदी. या संस्थानचे एकूण क्षेत्रफळ ३९७ चौरस मैल आहे. [२]

फलटण संस्थानातील लोकांचा मुख्य व्यवसाय शेतीचा होता. शेकडा ९० : लोक शेतीचा धंदा करत होते. संस्थानातील शेतीचे एकूण क्षेत्रफळ २१४६२८ एकर होते. त्यापैकी १८५५९० एकर जमीन शेतीकडे लागण झालेली होती. त्यापैकी १७२७४८ एकर जमीन जिरायताकडे होती व १२८४२ एकर जमीन बागायताकडे होती. ज्वारी, बाजरी, करडी, हरभरा, ही जिराईतातील पिके तर गहू, भुईमूग, मिरची, ऊस ही बागाईतीची मुख्य पिके होती. संस्थानात काही ठिकाणी बंधारे, पाट, विहीरी खणल्या होत्या. संस्थानात एकूण १८९६–९७ मध्ये २२१८ विहीरी होत्या.[३]

अशा महत्वपूर्ण फलटण संस्थानात शेतीच्या बाबतीत विकास करण्यासाठी अनेक सत्ताधिशांनी आपापल्या कारकिर्दीत अनेक सुधारणा घडवून आणलेल्या दिसतात. त्यामध्ये बागाईत शेतीला उत्तेजन,शेतकऱ्यांना सवलती, कर्जपुरवठा, बि–बियाणे, औजारे यांचा पुरवठा करण्यात आलेला होता.

श्रीमंत निंबराज दुसरा यांचे शेती विषयक सुधारणा (इ.स.१३२७ ते १३४३) :–

निंबराज दुसरा याने इ.स.१३३० मध्ये फलटण राजधानीची स्थापना केली. पूर्वीचे फलटण जहागिरीचे मुळगाव निंबळक हे होते. फलटण संस्थानात पुर्वी प्रचंड झाडी होती. वस्ती विशेष नव्हती. त्यामुळे निंबराज नाईकांनी जमीन साफ करण्यासाठी लोकांन प्रोस्ताहन दिले. जो मनुष्य जितकी झाडी तोडून जमीन साफ करील त्याखालील जमीन दहा वर्षाच्या कराराने वहिवाटावी. त्याच्या मालकी हक्कासाठी सरकारात थोडा कर भरावा. ज्यांना झाडी तोडून जमीन साफ करण्याची ऐपत नसेल त्यांना श्रीमंत निंबराज नाईकांनी तगाईच्या स्वरुपात कर्ज दिले. त्यामुळे जमीन लागवडीखाली आली. याशिवाय संस्थानात नवीन गावे बसवून प्रत्येक गावच्या सीमा ठरवून प्रत्येक गावाला शंभर ते सव्वाशे एकर चावर जमीन देण्यात आली. गावच्या कारभारासाठी पाटील, कुलकर्णी, देशपांडे या वतनादाराच्या नेमणूका केल्या त्यामुळे शेतीच्या बाबतीत त्यांच्या काळात विकास घडून

आला. याशिवाय श्रीमंत निंबराज दुसरे हे आपल्या संस्थानात दौरे काढून आपल्या प्रजेची स्वत: विचारपूस करीत त्यामुळे शेतकऱ्यावर अन्याय जुलूम झाले नाहीत.[४]

श्रीमंत साहेबजीबाई उर्फ बयासाहेब व शेतीसुधारणा :–

फलटण संस्थानच्या सत्ताधिशांनी श्रीमंत साहेबजीबाई यांनी सन १८२८ ते १८५३ या काळात राज्यकारभार करुन शेतीच्या विकासात भर घातली. त्यांनी आपल्या संस्थानात महसूल व्यवस्था चांगली करुन आपल्या संस्थानचे उत्पन्न चांगले वाढविले. सन १८४१–४२ मध्ये संस्थानचे उत्पन्न ६४२० रुपये होते ते १८४२–४३ मध्ये २६९४८ रुपये इतके वाढविले हाते. त्यामुळे शेती व्यवसायात चांगली सुधारणा होऊन संस्थानावर कसलेही कर्ज नव्हते.[५]

श्रीमंत मुधोजी महाराज व शेतीसुधारणा :–

फलटण संस्थानचे २४ व राज्यकर्ते श्रीमंत मुधोजी महाराज यांनी इ.स.१८६० ते १९१६ या काळात राज्यकारभार केला. त्यांच्याच काळात फलटण संस्थानच्या आधुनिकीकरणाला सुरुवात झाली. त्यांनी शेती क्षेत्रात बहुमोल सुधारणा केल्या.

श्रीमंत मुधोजीरावांनी ब्रिटीश अधिकाऱ्यांच्या मार्गदर्शनानुसार जमिनीचा सर्व्हे करुन जमीनीच्या प्रतवारीनुसार महसूल ठरविण्यात आला. गावपातळीवर जमीन महसूल वसुल करण्याचे काम गावतलाठी करीत असत. त्यास मुलकी पाटील मदत करीत असत. मामलतदार हा संस्थानच्या मुख्य कारभाराच्या अधिपत्याखाली वसुलाचे काम करीत असे. संस्थानातील शेतसाऱ्याचे दर निश्चित करण्यासाठी पाच गट पाडण्यात आले होते. सन १८८३–८४ मध्ये प्रथमच श्रीमंत मुधोजीराजे यांनी स्वत:काही गावांना भेटी देऊन तेथील पाहणी करुन जमाबंदीचे काम स्वत: केले व रयतेला दिलेल्या जमा पावत्या तपासून पाहिल्या.[६]

याशिवाय फलटण संस्थानातील सततच्या दुष्काळामुळे शेतकरी सावकाराच्या कर्जामुळे कर्जबाजारी झाला. अशावेळी श्रीमंत मुधोजी महाराजांनी शेतकऱ्यांना शेतीसाठी कर्जपुरवठा केला. तसेच शेतकऱ्यांचे कर्ज माफ करण्यात आले होते. तसेच विहीरी खोदण्यासाठी शेतकरी वर्गाला तगाईच्या स्वरुपात कर्ज पुरवठा करुन १८९८ मध्ये फलटण संस्थानात २२१८ विहीरी होत्या. त्यासाही २०,००० (वीस हजार) रुपये तगाईच्या स्वरुपात देण्यात आले होते काही ठिकाणी बंधारे व पाट बांधले होते. श्रीमंत मुधोजीरावांनी शेतीमध्ये नवीन तंत्र व आधुनिक शास्त्रीय माहितीचा प्रसार करणे यासाठी शेतकरी सभेची स्थापना १८९९ मध्ये केली होती.[७]

फलटण संस्थानात १८९६ मध्ये दुष्काळ पडला त्यावेळी श्रीमंत मुधोजी महाराजांनी बाणगंगा नदीवर बांधारा बांधला त्यासाठी १५५९ रुपये १४ आणे ११ पै. खर्च केला. या बंधाऱ्यामुळे ५०० एकर जमिनीला पाणी मिळू लागले. संस्थानातील कापडगाव येथील ओढयावर एक बंधारा बांधला त्यामुळे ३०० एकर जमीन सिंचनाखाली आली. तसेच कोरेगाव येथे ही एक बंधारा बांधण्यात येऊन तेथील जमीन सिंचनाखाली आली.[८] शेतीचा विकास व्हावा यासाठी श्रीमंत मुधोजी महाराज यांनी शेतकऱ्यांना शेतसाऱ्यात सुट दिली. त्यामुळे त्यांच्या काळात शेतीचा विकास घडून आला.

श्रीमंत मालोजीराजे व शेतीसुधारणा :–

फलटण संस्थानचे शेवटचे व २५ वे राज्यकर्ते श्रीमंत मालोजीराजे यांनी सन १९१७ ते १९४८ या काळात राज्यकारभार करुन आपले संस्थान अधिक प्रगत बनविले. प्रजेचे कल्याण हेच आपले कल्याण ही श्रीमंत मालोजीराजांची भावना असल्याने त्यांनी शेती सुधारण्यासाठी विशेष प्रयत्न केले. आपल्या संस्थानातील

शेतकरी वर्गाला भांडवल पुरवठा करण्यासाठी सहकारी चळवळीचा प्रसार करुन सन १९१८ मध्ये 'दि फलटण बॅकेची' स्थापना केली. पुढे ही बॅक सन १९२६ मध्ये श्री लक्ष्मी सेंट्रल को–ऑप बॅकेत विलीन केली.[९] या बॅकेमार्फत प्रत्येक गावातील सहकारी सोसायटयांना कर्जपुरवठा केला. श्रीमंत मालोजीराजांनी ब्रिटीश सरकारबरोबर कारभार करुन निरा उजवा कालवा आणला त्यामुळे ३३ गावांना शेतीसाठी पाणी मिळु लागले. तसेच संस्थानातील इतर गावात ही लहान बंधारे

फलटण संस्थानातून निरा उजवा कालवा गेल्यामुळे ऊसाचे उत्पन्न वाढविण्याच्या हेतूने पाडेगाव येथे १ आक्टों १९३१ रोजी ऊस संशोधन केंद्राची स्थापना केली. त्यासाठी स्वत:ची १०५ एकर जमीन दिली. हे महाराष्ट्रातील पहिले ऊस संशोधन केंद्र होय.[१०] तसेच शेतीचे उत्पन्न वाढविण्यासाठी व शेतकऱ्यांना अल्पदराने व चांगल्या दर्जाचे साहित्य मिळावे या हेतुने श्रीमंत मालोजीरावांनी बी–खते–आऊते विक्रीचे सहकारी तत्वावरील पहिले दुकान काढले. सन १९३८ मध्ये ११० एकराचे सीड फार्मची स्थापना करण्यात आली. यामध्ये वेगवेगळे बी–बियाणे तयार करण्यात येते होते.

सन १९२५ मध्ये फलटण संस्थानातील ३५ गावांना निराज उजवा कालव्याचे पाणी मिळाल्याने ऊसाचे उतन्न वाढले त्यामुळे पिंपळाचीवाडी येथे मुंबईचे मफतलाल व आपटे यांच्या साहाय्याने ८ मार्च १९३३ मध्ये 'दि फलटण शुगर वर्क्सची स्थापना केली.'[११] सन १९४२ मध्ये श्रीमंत मालोजीराजांनी ७९३८६ रुपये खर्च करुन गोखळी, पिंपरद, जिंती, होळ या गावी ऊस गुऱ्हाळे सुरु केली.

साखरवाडी येथील साखर कारखान्यापासून संस्थानचे उत्पन्न वाढले. त्यामुळे आपल्या संस्थानची सर्वांगीण प्रगती होण्यासाठी २१ नोव्हेंबर १९४४ मध्ये थोर अर्थतज्ञ धनंजयराव गाडगीळ यांच्या अध्यक्षतेखाली एक पुर्नघटना सिमिती स्थापन केली. अशारितीने श्रीमंत मालोजीराजांनी शेतीचा विकास होण्यासाठी प्रयत्न केलेला होते.

फलटण संस्थानातील कृषी प्रदर्शने :–

फलटण संस्थानातील लोकांचा मुख्य धंदा शेतकीचा होता. त्यामुळे संस्थानच्या स्थापनेपासून ते १९४८ पर्यंत अनेक सत्तधिशांनी शेतीमध्ये सुधारणा होण्यासाठी प्रयत्न केलेले दिसून येतात. त्यामधील शेतकी प्रदर्शन हा एक त्यातील महत्वाचा भाग आहे. संस्थानातील शेतकीच्या कामाला उत्तेजन मिळावे, शेतीत न होणारी धान्ये, भाजीपाला, फळफळाव शेतकऱ्यांनी पिकवावी, शेतकीची जुन्या तऱ्हेची आडते आहेत त्यात सुधारणा व्हावी, जनावरांची निगा चांगली ठेवून ती चांगली निपजावी, हा या प्रदर्शनाचा मुळ उददेश होता. त्यासाठी संस्थानचे कारभारी यांच्या अध्यक्षतेखाली २५ सदस्यांची एक कमेटी स्थापन करण्यात आली होती.[१२]

फलटण संस्थानात पहिले प्रदर्शन श्रीमंत मुधोजी महाराजांनी सन १८९४ मध्ये मुधोजी हायस्कुलच्या मैदानावर भरवलेले होते. पुढे ते दरसाल रामजत्रेच्या दुसऱ्या नागेश्वर मंदिरा जवळच्या धर्मशाळेत भरत होते. त्यासाठी तेथे एक मोठा मंडप उभारण्यात येत होता. प्रदर्शनात गाई, बैल, घोडे, म्हैशी, बकरी सर्व प्रकारची धान्ये, भाजीपाला, फळफळाव, मागावरचे कापड, कारागीर व कला कौशल्याचे पदार्थ मांडलेले असतात. प्रदर्शन संपल्यानंतर तेथे एक दरबार भरवून तेथील शेतकऱ्यांना शेतीची माहिती देण्यासाठी मुधोजी हायस्कुलमधील कृषी पदवी घेतलेले शिक्षक आपले निंबध वाचून दाखवित असत. बऱ्याच ठिकाणी शेतकऱ्यांना उत्तेजनाबददल बक्षीस देण्यात येत होते. सन १८९८ मध्ये एकूण ५१ बक्षिसे वाटण्यात आली होती. तेथेच दुसऱ्या दिवशी मल्लांच्या कुस्तींच्या स्पर्धा होत असत. या प्रदर्शनाच्या खर्चासाठी फलटण संस्थान अधिपती प्रदर्शन कमिटीला दरवर्षी २०० रुपये देत असत.[१३]

पुढे संस्थानच्या हददीतून निरा उजवा कालवा गेल्यामुळे शेती व्यवसायात वाढ झाली व कृषी प्रदर्शन श्रीमंत मालोजीराजे यांच्या काळात मोठया प्रमाणात भरली जाऊ लागली.

१९२९ मधील शेतकी प्रदर्शन :–

१ डिसेंबर १९२९ रोजी श्रीराम प्रभू रथोत्सवा प्रसंगी श्रीमंत मालोजीरांनी पहिले शेतकी प्रदर्शन भरविले होते. या प्रदर्शनाचे उदघाटन समारंभ साताराचे कलेक्टर व पोलिटिकल एजंट मॉटिथरसाहेब यांच्या हस्ते झाले. हे प्रदर्शन एकूण ५ दिवस चालले होते. या प्रदर्शनाला फलटण संस्थानातील व बाहेरील २०,००० लोकांनी भेट दिली होती. या प्रदर्शनासाठी पुणे येथील शेतकी कॉलेज, बारामती येथील शेतकीतील तज्ञ मंडळी, इरिगेशन खाते इ. तज्ञ मंडळी आली होती प्रदर्शनात खालील विभाग पाडण्यात आले होते.

१) फळफळांचा विभाग – एकाच खुटास २ घड आलेली केळी, संत्री, मोसंबी, डाळिंब, कागदी लिंबे, पपई, पेरु, चिकू, अननस, अंजीर.

२) भाजीपाला विभाग – कोबी, वांगी, टोमॅटो, कांदा, भोपळे इतर भाजीपाला.

३) फळफळावापासून तयार केलेल्या टिकाऊ जिनसांचा विभाग – लिंबाचा मुरंबा, कवढाचे साठे, आंब्यापासून तयार केलेल्या जिनसा, चिंचेचे तिखट वर्षभर टिकणारे पदार्थ ठेवण्यात आले होते.

४) उभ्या पिकांचा विभाग – ऊसाचे प्रकार, मिरची, तंबाखू, साळ, भुईमूग, मका, हरभरातील वगैरे.

५) धान्य – बी बियाणे विभाग – हरभरा, ज्वारी, खपली, गहू, बाजरी.

६) वनस्पती संग्रहाचा विभाग – माणसाच्या व जनावरांच्या निरनिराळया रोगावर वनस्पतीचा उपयोग कसा करावा.

७) कापसाचा विभाग – एन.आर.वॅनिला क्रॉस, कुमठा, क्रोमिला जाती.

८) कृषि संशोधन विभाग – मुंबई सरकारचे एकॉनॉमिक बोटॅनिस्ट यांनी ठेवला होता.

९) दुध दुभत्यांचा विभाग – जनावरांच्या दुधात वाढ होण्यासाठी त्यांचा खुराक, दुधात पायाचा किती अंश आहे व ताक करण्याचे यंत्र ठेवण्यात आले होते.

१०) खतांचा विभाग, ११) मुंबई इलाखा शेतकी खात्याचा विभाग, १२) लेकव्हाइटिंग डिव्हीजनाचा विभाग, १३) स्पेशल इरिगेशन विभाग, १४) आऊतांचा विभाग,

१५) सहकारी विभाग – याशिवाय पाणी उपसणारी यंत्रे, ट्रॅक्टर, नांगर, जमिनीतील पाणी दाखविणारी यंत्रे हे ठेवले होते. प्रदर्शनात प्रत्येक मालाचे नंबर काढून श्रीमंत मालोजीराजे यांच्या हस्ते बक्षीस देण्यात येत होते. तसेच प्रदर्शन पाहण्यासाठी आलेल्या लोकांची करमणूक करण्याकरीता, कुस्त्या, दांडपटटे, लाठी, बोथाठी, मलखांब, पोवाडे, नकला, सिनेमा, रेडिओ, जलसे इ. कार्यक्रम ठेवण्यात येत होते.[१४]

समारोप :–

श्रीमंत निंबराज दुसरा पासून ते श्रीमंत मालोजीरावांच्या पर्यंत प्रत्येक सत्ताधिशांनी आपल्या संस्थानातील शेतीचा विकास होण्यासाठी फार मोठे प्रयत्न केलेले दिसून येतात. तसेच जमीन महसूल वाढविणे, शेतकऱ्यांना तगाईचा स्वरुपात कर्ज पुरवठा करणे, दुष्काळात कर्जमाफी व शेतसाऱ्यात सुट देणे, बागाईत शेतीला उत्तेजन देणे सहकारी सोसायटींचे जाळे निर्माण करणे यासाठी प्रयत्न करुन शेतीत नवीन पध्दतीची माहिती होण्यासाठी कृषी प्रदर्शनाचे आयोजन करण्यात आले होते. त्यामुळे फलटण संस्थानाची सर्वांगीण प्रगती झाल्याचे दिसून येते.

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जि. औरंगाबाद. ४३१११२

प्रस्तावना:—

जगात 'भारत' हा कृषी प्रधान देश म्हणून ओळखल्या जातो. भारतात जवळपास ५९ टक्के लोक व्यवसाय दृष्टीकोनातून कृषी क्षेत्रावर अवलंबून आहे. आर्थिक विकासाच्या हेतूने तर कृषी क्षेत्रास अनन्य साधारण महत्व आहे. शेती, उद्योग व सेवा हे तिन्ही क्षेत्र परस्परावलंबी आहे. मानवाला आवश्यक असणाऱ्या दैनदिन गरजांची पूर्तता प्रामुख्याने कृषी क्षेत्राद्वारेच पूर्ण केली जाते. एका बाजूला जीवनावश्यक गरजाची पूर्तता करणे व दुसऱ्या बाजूला देशाच्या औद्योगिकरणास सहाय्य करणे अशी दुहेरी भुमिका कृषी क्षेत्रास वठवावी लागते. मनुष्य आपल्या आवश्यक गरजांची पुर्तता करण्यासाठी सतत प्रयत्नशिल असतो. प्रत्येक व्यक्तीच्या हातुन अन्न, वस्त्र व निवारा या करीता विशिष्ठ आर्थिक क्रिया पूर्ण होते. त्याचप्रमाणे प्रत्येक समाज बदलत्या काळानुसार आपल्याकडील असणाऱ्या साधनातुनच अर्थाजन करित राहीला आहे. आदिवासी समाज सुध्दा याला अपवाद नाही.

आदिवासी लोकांचे जिवनमान तसेच आर्थिक क्रिया व शहरी लोकांचे जिवनमान व आर्थिक क्रिया पध्दती यात खुप मोठा फरक दिसून येतो. आदिवासींची एकूणच अर्थव्यवस्था जंगलाशी संबधीत आहे. जसे जंगलातील पशु, पक्षी, फुले, फळे, वृक्ष, तलाव, नदी, कंद, रानमेवा इत्यांदीशी आदिवासीचे जीवन निगडीत असून या संबधीच्या आर्थिक क्रिया करतांना अपार कष्ट व परिश्रम करावे लागते. आदिवासीच्या गरजा हया इतर समाजापेक्षा मर्यादित आहे. आजही आदिवासी समाज हा व्यापारी दृष्टीकोनातुन कोणत्याही आर्थिक हालचाली करतांना दिसून येत नाही. केवळ जगण्यापूरत्या गरजांची पूर्तता करण्यातच तो व्यस्त असतो.

संशोधन विषयाची उद्दीष्टे

१. प्रगत व अप्रगत समाजांच्या अर्थव्यवस्थाचे तुलनात्मक अध्ययन करणे.
२. यवतमाळ जिल्हयातील आदिवासींचा आर्थिक दृष्टीकोनातुन अभ्यास करणे.
३. यवतमाळ जिल्हयातील आदिवासी शेतकऱ्यांचा सामाजिक व आर्थिक जिवनाचा अभ्यास करणे.

अर्थव्यवस्था म्हणजे काय?

प्रत्येक व्यक्ती आर्थिक दृष्टीकोनातुनच प्रत्यक्ष व अप्रत्यक्ष हालचाल करित असतो. ते केवळ पोट भरण्यासाठी आज आणि उद्यासाठी सुध्दा, भुक लागली नसती तर मानवाने कोणत्याही प्रकारचे कष्ट, श्रम केले नसते. जर मानवाला पोट नसते तर तो आळशी झाला असता ही गोष्ट त्रिकाल सत्य आहे. म्हणूनच तो पोट भरण्यासाठी साधनाची जुळवाजुळव, इतराशी सहवास साधने, एकमेकांशी विनिमय करणे या माध्यमातुन होणाऱ्या आर्थिक क्रियाला 'अर्थव्यवस्था' असे म्हणता येईल.

डॉ. मजुमदार आणि डॉ. मदन यांच्या मते, 'मानवी जिवनातील दैनदिन महत्तम गरजा या कमीत—कमी प्रयत्नातुन भागविण्यासाठी मानवी संबध आणि मानवाच्या प्रत्यत्नाना, नियमित आणि संघटित करणे म्हणजे अर्थव्यवस्था होय.'

आदिवासीची अर्थव्यवस्था

मानवी समाजातील आर्थिक क्रियांचा फार मोठा ऐतिहासीक बदल होत गेलेला आहे. त्या तुलनेत आदिवासी समाज मात्र आजही आद्यपाषण युगातील (शिकार करणे, खाद्य संकलन, मासेमारी, जंगली

जिवनमान) परंपरेतुन बाहेर पडल्याचे दिसुन येत नाही. प्रत्येक आदिवासीनी आपल्या गरजांची पूर्तता करताना कोणत्या ना कोणत्या व्यवस्थेचा स्विकार केला आहे. म्हणूनच आदिवासी समाजाची अर्थव्यवस्था एक सारखी नाही. आदिवासी वास्तव्यास असलेल्या विवीध भागातील भौगोलीक पर्यावरणाच्या भिन्नते नुसारच आपले अर्थाजन करून उदनिर्वाह करित असतो. सामाजिक, सांस्कृतीक, धार्मिक, आर्थिक परंपरेनुसार आपले जिवनमान व्यथित करणे व या परंपरांना अबाधित ठेवणे हेच आदिवासीचे ध्येय असते.

आदिवासीच्या अर्थव्यवस्थेची प्रमुख वैशिष्टये:–

आदिवासींच्या उदरनिर्वाहाचे प्रमुख साधन म्हणजे जंगलच होय. म्हणून आदिवासी समाज जंगलाना 'अन्नदाता' म्हणतात. पशु, पक्षी, वनस्पती, नद्या, जंगले, डोंगर या माध्यमातुन त्यांना जो पैसा मिळतात त्यातुन आपल्या जिवनावश्यक वस्तु खरेदी करून जिवन जगतात.

१) केवळ जिवननिवार्हाचा दृष्टीकोन–

आपल्या संस्कृतीचे जतन करणे, विध्वसंक, विघातक कृता न करता अपार कष्टातुन किमान जिवन जगणे हेच आदिवासीचे ध्येय असल्यामुळे हा समाज अजुनही प्रगत समाजाशी जुळवून घेऊ शकत नाही.

२) शिकार व मासेमारी –

अन्न संकलनासाठी समुहीक पध्दतीत शिकार केली जाते. कारण शिकारीसाठी संघटीत प्रयत्न करावे लागते. शिकारीसाठी भाला, बाण, कुऱ्हाड, कोयता, विळा इत्यादी तसेच मासेमारी सुध्दा केली जाते.

३) पशुपालन –

आजच्या काळात पशुपालन करणे हा शेती क्षेत्रपुरक समजल्या जाते. पशुपालन हा मानवाच्या इतिहासातील प्रगतीचा महत्वाचा टप्पा समजला जातो.

४) हस्तकला –

आदिवासी समाजात हस्तकलेला अन्यन साधारण महत्व आहे. आदिवासी समाजात हस्तकलेतुन विवीध आवश्यक वस्तूचे उत्पादन केल्या जाते. जसे बांबुपासून टोपल्या, चटया, वाद्ये, प्याले बणविणे, जंगलातील वेलीपासून दोरी बनविणे मातीची भांडे बनविणे, अशाप्रकारे विवीध कलाकृतीपासून साहित्य तयार केले जात. सभोवतालच्या परिसरातुन उपलब्ध होणाऱ्या साधनामधून आदिवासी हस्तकलेच्या वस्तू निर्माण करतात.

५) सामुदायीक आर्थिक जिवन –

दऱ्या, खोऱ्यात, जंगलात आदिवासी समाज समुहाने राहत असल्यामुळे कोणताही निर्णय हा एकटयाने न घेता समुहाने घेतला जातो. जंगलातुन कंदमुळे, फळे, मध, वनऔषधी गोळा करण्यासाठी सामुदायीकरित्या जातात तसेच सामुहीक पध्दतीत एकनिष्ठ असल्यामुळे त्यांच्यात एकता दिसून येते.

६) संपत्तीच्या संचयनाचा अभाव –

आदिवासीना केवळ उरनिर्वाहापूरतेच उत्पादन मिळत असल्यामुळे त्यांच्या समोर व्यावसायीक दृष्टीकोन असूच शकत नाही. म्हणून त्यांच्यात संपत्ती संचयनाचा अभाव दिसून येतो. भविष्यकालीन जिवनापेक्षा वर्तमानकालीन जिवन जगण्यावर जास्त भर दिल्या जातो.

७) श्रमविभाजन –

आज प्रत्येक समाजामध्ये श्रमविभाजनाची प्रक्रिया दिसुन येत असली तरी श्रमविभाजनातुन उदरनिर्वाहाची प्रक्रीया ही आदिवासीची फार जुनी आहे. पुरूषांनी शरीरशक्तीची कामे करावी तर स्त्रियांनी घरकाम करून मध काढणे, मोह फुले गोळा करणे, कपडे शिवणे इत्यादी हलक्या कामात सहकार्य करणे इत्यादी.

८) पैशाचा किंवा भांडवलाचा अभाव –

आज कोणत्याही प्रकारचा व्यवसाय करायचा असेल तर भांडवलाची गरज पडते त्याशिवाय व्यवसाय सुरू होत नाही. परंतु आदिवासी समाज उदरनिर्वाहापूरतेच उत्पादन मिळवित असल्यामूळे त्यांच्याकडे शिल्लकी भांडवल उपलब्ध नसते परिणामी व्यवसाय किंवा धंदा सुरू करता येत नाही.

९) औद्योगीक क्षेत्रातील रोजगार –

आधुनिक काळामध्ये उद्योगधंदा ही महत्वाची आर्थिक क्रिया आहे. अंश:ता आदिवासी समाज त्यास स्पर्श करतांना दिसतो. तसेच त्यात रोजगार करण्यासाठी प्रयत्नशील आहे. उदा. आसामच्या चहा व कॉफीच्या संथाळ गोंड जमातीचे लोक लोखंड, कोळसा व मॅग्णीज खाणीत काम करतात. जंगलतोड, वाहतूक, रस्ताबांधणी, पुलबांधणी कामाकरिता आदिवासी अकुशल कामगार म्हनुन काम करतात.

अशाप्रकारे वरिलप्रमाणे आदिवासीच्या अर्थव्यवस्थेचे विवेचन केले आहे.

यवतमाळ जिल्हयातील आदिवासी शेतकरी

२०११ च्या जणगणनेनुसार महाराष्ट्रात यवतमाळ जिल्हयाची लोकसंख्या ८.८६ टक्के एवढी आहे तर यवतमाळ जिल्हयाच्या एकुण लोकसंख्येच्या तुलनेत आदिवासी समाजाची लोकसंख्या १९ टक्के आहे. यवतमाळ जिल्हयाचे प्राकृतीक स्तरानुसार तिन भाग पडतात. डोंगराळ भाग, पठारी भाग, मैदानी भाग, जिल्हयाचे हवामान कोरडे व विषम स्वरूपाचे आहे. विदर्भामध्ये भौगोलीक क्षेत्रफळाच्या दृष्टीने यवतमाळ जिल्हा सर्वात मोठा आहे. यवतमाळ जिल्हयात खरीप पिकामध्ये ज्वारी, कापूस, भुईमूंग, सोयाबीन तर रब्बी पिकामध्ये हरभरा, गहु हि पिके घेतली जातात. पुसद, उमरखेड, महागाव या तालुक्यात उसाची बागायती पिके जास्त प्रमाणात घेतली जाते. यवतमाळ जिल्हा उत्तर अक्षावर १९°.२६ ते २०°.४२ आणि पूर्व रेखाशावर ७७°.१८ ते ७८°. २७ असा वसलेल आहे. जिल्हयाच्या उत्तरेकडे अमरावती व वर्धा जिल्हा, पूर्वेकडे चंद्रपूर जिल्हा तर दक्षिणेच्या भागास आंध्रप्रदेश व नांदेड जिल्हा आहे. परभणी व अकोला जिल्हा पश्चिमेकडून वेढलेला आहे. राज्याच्या तुलनेत ४.४९ टक्के (३२५८२ चौ.कि.) क्षेत्रफळ यवतमाळ जिल्हयाचे आहे. राज्याच्या एकूण ३५ जिल्हयापैकी यवतमाळ जिल्हयाचा क्षेत्रफळाच्या बाबतीत सहावा क्रमांक लागतो.

यवतमाळ जिल्हयात एकूण १६ तालुके व राजस्व उपविभाग दारव्हा, पुसद, वणी, यवतमाळ व केळापूर, यवतमाळ जिल्हयात एकूण २१३० गावे येतात. झरीजामणी, पांढरकवडा (केळापूर), आर्णी, राळेगांव, कळंब, वणी, घाटंजी, बाभुळगांव या तालुक्यामध्ये सर्वाधिक आदिवासी लोकसंख्या अधिवास करते. या तालुक्यात प्रामुख्याने गोंड, राजगोंड, कोलम, परधान, आंध, पारधी, दडवे गोंड, मोकाशी गोंड अशा आदिवासीच्या जमाती व उपजमाती राहतात. म्हणूनच यवतमाळ जिल्हयातील एकूण मतदार संघापैकी राळेगांव व पांढरकवडा (आर्णी) हे दोन मतदार संघ आदिवासी जमातीकरिता राखीव आहे. महाराष्ट्रातील यवतमाळ जिल्हा हा शेतकऱ्यांचा आत्महत्याग्रस्त जिल्हा म्हणून ओळखल्या जातो. या जिल्हयात सर्वात जास्त शेतकऱ्यांनी विवीध कारणांनी आत्महत्या केल्या आहे. यात आदिवासी शेतकऱ्यांचा सुंध्दा समावेश आहे.

तालुकानिहाय एकूण लोकसंख्या, आदिवासीची एकुण लोकसंख्या व आदिवासी शेतकऱ्यांची आकडेवारी

अ.क्र.	यवतमाळ जिल्हयातील तालुके	यवतमाळ जिल्हयातील एकूण लोकसंख्या	यवतमाळ जिल्हयातील आदिवासींची लोकसंख्या	यवतमाळ जिल्हयातील आदिवासी शेतकऱ्याची लोकसंख्या
१	नेर	१२०२३२	८१३४	३२५३
२	बाभुळगांव	८८१७३	१६९४०	६७७६
३	कळंब	१०३०२४	३१८१२	१२७२४
४	यवतमाळ	३८२९६५	६५५१०	२६२०४
५	दारव्हा	१९११०३	१५४४०	६१७६

६	दिग्रस	१५४१२२	२०५४७	८२१८
७	पुसद	३४११८६	५१०८९	२०४३५
८	उमरखेड	२५९३५७	३४९१९	१३९६७
९	महागांव	१९०२५२	२६७७६	१०७१०
१०	आर्णी	१६१८३३	२७९२९	१११७८
११	घाटंजी	१३८५८७	४००५६	१६०२२
१२	केळापूर	१५६७८३	५६६१६	२२६४६
१३	राळेगांव	११२२०३	३२४८५	१२९९४
१४	मारेगांव	७८७१३	२६२८९	१०५१६
१५	झरी जामणी	८०१४७	३०९५३	१२३८१
१६	वणी	२१३६६८	२८५६२	११४२५
एकूण		२७,७२३४८	५१४०५७	२०५६२५

वरिल तक्त्याद्वारे यवतमाळ जिल्हयातील एकूण लोकसंख्येच्या तुलनेत जिल्हयातील आदिवासी एकूण लोकसंख्या लक्षात घेऊन त्यातुन अंदाजे ४० टक्के लहान मोठया आदिवासी शेतकऱ्यांची संख्या दर्शविली आहे. तर ४५ टक्के शेतमजूरी करणरी आदिवासी लोकसंख्या व बाकी इतर लहान मोठे व्यवसाय व नोकरी करणारी लोकसंख्या असल्याचे दिसून येते. यवतमाळ जिल्हयात आदिवासी अल्पभुधारक शेतकऱ्यांची संख्या अधिक असून मोठया शेतकऱ्यांची संख्या फारच कमी आहे.

अतिशय प्राचीन काळी मानव समाजाला अन्न मिळविण्यासाठी भटकंती करावी लागे. त्यातच शेतीचा शोध लागल्यानंतर भटकंती बंद होऊन एका ठिकाणी घर बाधुंन राहावे लागले. आजही महाराष्ट्रात भुमिहीन जमाती आहेत. जसे पारधी कैकाडी, बंजारा इत्यादी जमाती आजही भटक्या अवस्थेत आहे. अलिकडच्या काळात जिवन जगण्यासाठी बहुतांश आदिवासी शेतीवर निर्भर राहुन शेतीच्या ठिकाणी स्थिर झाले आहे. उदरनिर्वाहापूरती शेती करणे एवढेच उद्देश ठेवून आदिवासी शेतकरी शेती कसत असतो. त्यांचे शेतीचे ठिकाण अतिदुर्गम भागात, डोंगराळ व जंगलाच्या ठिकाणी असते. शेती व्यवसाया व्यतीरिक्त कोणत्याही व्यवसायावर त्यांचे वर्चस्व नाही. यवतमाळ जिल्हयात अल्पभुधारक आदिवासी शेतकरी खुप मोठया प्रमाणात असल्यामुळे त्यांच्या शेतात कायमच्या सुधारणा झाल्या नाही. जलसिंचनाच्या अपुऱ्या सोयीमुळे सुध्दा आदिवासी शेतकरी मोठया प्रमाणात उत्पादन घेऊ शकत नाही. आदिवासीची बहुतांश शेती डोंगराळ भागात पहाडी भागात असल्यामुळे त्याचे दरडोई उत्पन्न खुपच कमी आहे. पैशा अभावी शेतात शेणखताचा वापर करू शकत नाही. भांडवल व ज्ञानाच्या अभावामुळे आदिवासी शेतकरी नवीन यंत्रसामग्रीचा तंत्राचा वापर करू शकत नाही. कौटुंबिक व सामाजिक चाली रितीमुळे हा शेतकरी आधिक–धिक कर्जात बुडाल्याचे दिसून येते. या एकूणच परिस्थितीमुळे यवतमाळ जिल्हयातील आदिवासी शेतकरी सुध्दा आत्महत्येला बळी पडतो. २६ ते ३५ वयोगटातील शेतकऱ्यांनीच जास्त आत्महत्या केल्याचे जाणवते. महाराष्ट्रामध्ये शेतकरी आत्महत्येचे प्रमाण यवतमाळ जिल्हयात दर एक लाख व्यक्तीचे मार्ग ३० आहे- (NCRB)

यवतमाळ जिल्हयातील आदिवासी शेतकऱ्यांच्या समस्या –

अशिक्षीतपणा, कर्जबाजारीपणा, परंपरागत शंती वेसनाधीनता, निर्सगाचा लहरीपना, परंपरागत साधनांचा वापर केल्यामुळे उत्पादनात घट, भांडवलाचा अभाव, विवीध शासकीय योजनेचा लाभ खऱ्या आदिवासी

शेतकऱ्यांना मिळत नाही, आदिवासी लोकांच्या संपर्काचा अभाव, शेतकऱ्यांचा राहणीमानाचा स्तर दिवसेंदिवस खालवत चालला आहे, कर्जा पोटी शेतीतील ८० टक्के उत्पादन सावकाराकडे दिल्या जाते.

समस्येवरील उपाययोजना –

१. आदिवासी शेतकऱ्यांच्या शेतीमध्ये सिंचन सुविधा उपलब्ध करून द्याव्या.
२. विवीध शासकीय योजनाद्वारे शेतीचर अवजारे, डिझेल पंप, पी.व्ही. पाईप उपलब्ध करून द्यावेत.
३. आदिवासी शेतकऱ्यांना नविन तंत्राची माहिती होणयाकरिता शासकीय स्तरावरून त्यांचे प्रशिक्षण वर्ग घ्यावे.
४. प्रगतशील समाजाने आदिवासींना सन्मानाने जवळ करून त्यांच्या उणिवा सांगाव्यात
५. नव–नविन बी–बीयाणे, रासायणिक खताचा, जमिन कसण्याच्या नविन पध्दतीचा वापर करून उत्पादनात वाढ करावी.
६. आदिवासी शेतकऱ्यांनी शासकीय योजनांचा लाभ घेतल्यानंतर केंद्र सरकार, राज्यसरकार तसेच सामाजिक संस्थानाकडून त्यांच्या जिवनमानात काही बदल झाला का? याची चौकीशी करावी. त्यांच्या जिवनात काही सकारात्मक बदल न झाल्यास त्यावरील उपाययोजना सुचवाव्यात.
७. आदिवासी शेतकऱ्यांनी घेतलेल्या कर्जाचा व योजनांचा फायदा किंवा वापर त्या–त्या विशिष्ट कारणानुसारच करायला पाहिजे.
८. आदिवासी शेतकऱ्यांच्या जमिनीचे माती परिक्षण करून त्यांच्या दर हेक्टरी उत्पादनात वाढ होईल अशी व्यवस्था करावी.
९. आदिवासी शेतकऱ्यांनी सुध्दा शासनाच्या योजनांना सकारात्मक प्रतिसाद देऊन आपली उन्नती साधावी.

यवतमाळ जिल्हयातील आदिवासी शेतकऱ्यांच्या परिस्थीतीचे शासनाने नियंत्रण व नियमन करून त्यांच्या सामाजिक, आर्थिक, संस्कृतीक विकासाकडे प्राधान्य क्रमाने लक्ष देणे गरजेचे आहे. देशाच्या कृषी क्षेत्राच्या प्रगतीत आदिवासी शेतकऱ्यांचे देखील योगदान तितकेच महत्वाचे आहे.

संदर्भ सूची

१. आदिवासीची ओळख : डॉ. बी.एन. ठाकरे, पिंपळापूरे डिस्ट्रीब्युटर्स नागपूर, प्रथम आवृत्ती. २०१४.
२. आदिवासी समाज : प्राचार्य, डॉ. संभाजी देसाई, प्रशांत पब्लिकेशन, औरंगाबाद, तृतीय आवृत्ती २०१५.
३. महाराष्ट्राची अर्थव्यवस्था : डॉ. माधव बिरादार, विद्या बुक्स पब्लिशर्स औरंगाबाद, द्वितीय आवृत्ती २०१८.
४. विदर्भातील शेतकऱ्यांच्या विवीध समस्या, चर्चासत्र स्मरणिका शिवाजी महाविद्यालय, अकोला.
५. आदिवासी समाजाचे समाजशास्त्र : डॉ. प्रदिप आगलावे, साईनार्थ प्रकाशन नागपूर, पाचवी आव्त्ती २०१२.

ग्रामीण भागाच्या विकासात शैक्षणिक ग्रंथालयाचे महत्व

प्रा.आनंद ग. पवार
ग्रंथपाल
मुधोजी कॉलेज, फलटण

सारांश :

ग्रंथालये ही शिक्षण संस्थेतील अत्यंत महत्वाचा घटक असतो. भारतात स्वातंत्र्य प्राप्तीनंतर शिक्षणाचा मोठ्या प्रमाणावर प्रचार व प्रसार झाला. देशाच्या ग्रामीण भागात सर्वत्र शिक्षणाचा प्रसार झाल्यामुळे समाजात शिक्षणाचे महत्व वाढले. आधुनिक काळात तर सर्वत्र शैक्षणिक क्रांती झाल्याचे दिसत आहे. यामुळे ग्रामीण भागाचा मोठ्या प्रमाणावर विकास होत आहे. ग्रामीण विकासात शैक्षणिक ग्रंथालयांचे फार मोठे योगदान आहे. आधुनिक माहिती तंत्रज्ञानाच्या युगात ही शैक्षणिक ग्रंथालये अद्ययावत झालेली आहेत. ग्रंथालयांद्वारा दिल्या जाणाऱ्या विविध सेवा व सुविधांच्या माध्यमातून शैक्षणिक क्षेत्रात महत्वपूर्ण कार्य घडले. सदरचा शोध निबंधात ग्रामीण भागाच्या शैक्षणिक विकासात ग्रंथालयांचे महत्व वर्णन केलेले आहे.

प्रस्तावना :

आधुनिक युगात ज्ञान हा महत्वाचा घटक आहे. आधुनिक समाज हा ज्ञानाधिष्ठीत समाज आहे. ;ज्ञदवूसमकहम ैवबपमजलद्ध ज्ञानामुळे माणूस, समाज आणि राष्ट्र समृद्ध होत असते. हे ज्ञान मिळविण्याचा उत्तम मार्ग म्हणजे शिक्षण होय. हे शिक्षण शाळेमध्ये, महाविद्यालयांमध्ये, विद्यापीठामध्ये आणि रोजच्या व्यवहारामध्ये मिळते. शिक्षणामुळे समाजामध्ये प्रगती आणि बदल होतो. त्यामुळे माणसाच्या व्यक्तीमत्वामध्ये बदल घडतो व माणूस कर्तृत्ववान होतो.

शिक्षणाचे प्रामुख्याने दोन प्रकार आहेत.

१) औपचारिक शिक्षण (Formal education) हे आपण शाळेमध्ये किंवा महाविद्यालयाच्या वर्गात बसून घेतो.

२) अनौपचारिक शिक्षण जे आपण आपल्या पालकांच्याकडून आणि इतरांकडून कुठल्याही वर्गात न जाता घेतो. यादृष्टीने शैक्षणिक संस्था म्हणजेच शाळा-महाविद्यालये ही औपचारिक शिक्षण देणाऱ्या संस्था आहेत.

शैक्षणिक ग्रंथालये :

शिक्षण या संज्ञेचा अर्थ आपण पाहिला आता शैक्षणिक ग्रंथालये म्हणजे काय ते पाहूयात. शैक्षणिक ग्रंथालये म्हणजे शैक्षणिक संस्थांशी संबंधित अथवा त्यांचा भाग म्हणून काम करणाऱ्या शाळा, महाविद्यालये, विद्यापीठे तसेच इतर संस्थांची ग्रंथालये म्हणजे शैक्षणिक ग्रंथालये होत.

शिक्षण संस्थेतील विद्यार्थी आणि शिक्षक यांच्या वाचनविषयक गरजा भागविण्यासाठी स्थापन केलेले ग्रंथालय म्हणजे शैक्षणिक ग्रंथालय होय.

शैक्षणिक ग्रंथालय ही विद्यार्थी, अध्यापक, संशोधक आणि प्रशासनाला आधार देणारी संस्था आहे.

भारताच्या स्वातंत्र्य प्राप्तीनंतर संपूर्ण देशात शिक्षणाचा प्रचार व प्रसार झाला. देशाच्या ग्रामीण भागाच्या शैक्षणिक विकासाकरिता अनेक शिक्षण संस्था स्थापन झाल्या. विविध स्तरांवर विविध शाळा, माध्यमिक विद्यालये तसेच महाविद्यालये स्थापन झाली. अनेक विद्यापीठ स्थापन झाली. शिक्षणाचा मोठ्या प्रमाणावर प्रसार झाला.

समाजात शैक्षणिक जागृती निर्माण होऊन शिक्षणाचे महत्व वाढत गेले. ग्रामीण जनता सुशिक्षित होऊ लागली व समाजाचा शिक्षणामुळे सर्व क्षेत्रात विकास होऊ लागला. ज्ञानाधारित समाज, विकसनशिल समाज व्यवस्था निर्माण होऊ लागली. यामध्ये शैक्षणिक ग्रंथालयांचे मोठे योगदान आहे.

शैक्षणिक ग्रंथालयांचे कार्य आणि महत्व :

शैक्षणिक ग्रंथालये ही शिक्षण संस्थेचाच एक भाग म्हणून कार्य करीत असतात. शिक्षण संस्थेच्या स्थापनेत ग्रंथालय हा महत्वाचा घटक असतो. विविध शाळा, महाविद्यालयांमध्ये स्थापनेपासून ग्रंथालयांची उभारणी झालेली आहे. अनेक शिक्षण संस्थांची सुसज्ज ग्रंथालये आहेत. ग्रामीण भागातील विद्यार्थी व वाचकांना शैक्षणिक संस्थांची ग्रंथालये हा फार मोठा आधार असतो.

शैक्षणिक ग्रंथालयांमध्ये प्रामुख्याने शिक्षक, प्राध्यापक व विद्यार्थी तसेच इतर वाचक हे ग्रंथालयाचे सभासद असतात. या ग्रंथालय वाचकांना आवश्यक असणारे विविध प्रकारचे वाचन साहित्य मुद्रीत व इलेक्ट्रहनिक स्वरुपात आधुनिक तंत्रज्ञानाच्या साधनांचा वापर करुन ग्रंथालयात संग्रहित केले जाते. वाचकांच्या मागणीप्रमाणे योग्य त्या वाचकाला योग्य तो ग्रंथ/ माहिती, योग्य त्या वेळी व योग्य त्या ठिकाणी देण्याचे महत्वपूर्ण कार्य ग्रंथालये करतात. त्यादृष्टीने आधुनिक शैक्षणिक ग्रंथालये अद्ययावत असणे गरजेचे आहे.

शैक्षणिक ग्रंथालयांचा संग्रह :

शैक्षणिक ग्रंथालये विविध प्रकारच्या माहितीचा संग्रह करीत असतात. शैक्षणिक ग्रंथालयांचे पारंपारिक स्वरुप बदलून आधुनिक काळात ही ग्रंथालये माहिती केंद्र (Information Centers) बनली आहेत.

आधुनिक काळात माहितीचे महत्व सतत वाढत असल्यामुळे विज्ञान, तंत्रज्ञान, सामाजिक, आर्थिक सर्वच क्षेत्रात माहितीची भूमिका असते. माहिती ही एक शक्ती आहे. आणि ती विकासाची किल्ली आहे. यादृ ष्टीने ग्रंथालये आपल्या वाचकांच्या वाचन विषयक गरजांचा अभ्यास करुन वाचकांना वेळोवेळी आवश्यक असलेल्या माहितीचा विविध स्वरुपात संग्रह करीत असतात.

ग्रंथालयात प्रामुख्याने शब्दकोश, ज्ञानकोश, वार्षिके, निर्देशिका, हस्तलिखीते, भौगोलिक संदर्भ साधने, चरित्र ग्रंथ, क्रमिक पुस्तके, विविध विषयांवर सखोल माहिती देणारे संदर्भ ग्रंथ, सीडी, डीव्हीडी, इंटरनेट तसेच विविध ग्रंथालय नेटवर्क इत्यादी सर्व माध्यमांद्वारे ग्रंथालये आधुनिक काळात आपल्या वाचकांच्या वाचनविषयक गरजा पूर्ण करीत असतात.

वाचकांच्या माहिती विषयक गरजा तत्परतेने पूर्ण करण्याकरिता ग्रंथालये विविध प्रकारच्या माहिती सेवा पुरवितात. त्या पुढीलप्रमाणे–

ग्रंथालयाद्वारा दिल्या जाणाऱ्या सेवा :

१) ग्रंथ/माहिती संग्रहाचा विकास करणे
२) ग्रंथ देव-घेव सेवा
३) ग्रंथालय अभ्यासिका
४) संदर्भ सेवा
५) प्रचलित जागरुकता सेवा(CAS)
६) माहितीचे निवडक प्रसारण (SDI)
७) झेरॉक्स (प्रतिलिपी) सेवा

८) इंटरनेट शोध सेवा
९) निर्देशन आणि सार सेवा
१०) भाषांतर सेवा
११) ग्रंथ प्रदर्शन
१२) ग्रंथालय परिचय कार्यक्रम (Library Orientation)
१३) नेटवर्क सेवा आणि रिसोर्स शेअरिंग सेवा
१४) संशोधन कार्यास सहाय्यक सेवा
१५) वाचन संस्कृती वृद्धींगत करण्याकरिता विविध उपक्रम

या विविध प्रकारच्या ग्रंथालयीन सेवांद्वारे शैक्षणिक ग्रंथालये समाजात शिक्षण कार्यात मदत करीत असतात यामुळे शैक्षणिक विकास घडून येतो. ग्रंथालयांद्वारा समाजातील सर्वच घटकांना आवश्यकतेप्रमाणे विविध प्रकारच्या माहितीचा पुरवठा केला जातो, त्यामुळे सामाजिक विकासात ग्रंथालयांची भूमिका महत्वाची ठरते.

सारांश :

आधुनिक युग हे माहितीचे युग आहे. आधुनिक काळात माहितीला अनन्यसाधारण महत्व असून त्याचा परिणाम सर्वच क्षेत्रात झाल्याचे दिसते. शैक्षणिक व सामाजिक प्रगती साधण्याकरीता आधुनिक शैक्षणिक ग्रंथालयांची भूमिका महत्वाची आहे.

शैक्षणिक ग्रंथालयांद्वारा अधिक अद्ययावत व परिणामकारक ग्रंथालयीन सेवा दिल्या जाणे गरजेचे आहे. त्यादृष्टीने या सेवा समाजातील सर्वच घटकांची माहिती विषयक गरज पूर्ण करु शकतील यादृष्टीने प्रयत्न झाल्यास ग्रामीण विकासात शैक्षणिक ग्रंथालयांची भूमिका महत्वाची ठरेल.

संदर्भ ग्रंथ सूची :

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बदलत्या कृषी जीवनाचे काव्यात्म हुंकार

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समीर गांधी कला महाविद्यालय,
माळशिरस, जि. सोलापूर

प्रास्ताविक :

'सिझर कर म्हणतेय माती' हा कल्पना दुधाळ यांचा पहिलाच कवितासंग्रह अनेक पुरस्कारांचा मानकरी ठरला. सन २०१० मध्ये या कवितासंग्रहाची पहिली आवृत्ती निघाली. या संग्रहात समकालिन कृषी जीवनाचे रेखाटन करणाऱ्या कवयित्री सहजपणे वास्तवाचे चित्र डोळ्यासमोर उभे करतात.

'सिझर कर म्हणतेय माती' या कवितासंग्रहात कवयित्रीने 'वरचा बांध : अस्तित्व', 'मधला बांध : सहज गं...', 'खालचा बांध : चिखलात कोरलेले ठसे...' या तीन विभागामध्ये कविता लिहिलेल्या आहेत. या कवितांमधून त्यांनी आधुनिक जगात शेतकऱ्यांच्या बदलेल्या कृषी जीवनाचे रेखाटन करताना, समकालिन वास्तवाचे भान ठेवून बदलेल्या ग्रामिण संस्कृतीचे दर्शन घडविलेले आहे.

बदलते कृषी जीवन :

नव्या कृषी संस्कृतीत अनेक जीवघेणे बदल घडलेले आहेत. ते सर्व बदल कल्पना दुधाळ यांच्या कवितेत उमटताना दिसतात. पिकणारी राने, शिवारे कचरा डेपो होत आहेत. त्यात आधुनिक नवनव्या गोष्टींचे संक्रमण झालेले आहे.

''खाद्यपदार्थांच्या रिकाम्या पिशव्या...
गुटख्यांच्या पुड्या...
क्रीम... शाम्पू... कंडोम... पॅड्सचे पुडके...
फुटलेल्या बाटल्या...'' (खत) (पृ.२२)

हा सगळा कचरा खतावाटे शेतात पसरतो. नांगरात, कुदळीत, खोऱ्यात अडकतो. पिकाच्या मुळ्या मातीपर्यंत पोहोचून अन्नद्रव्य शोषतात. तेव्हा गुणसूत्रातून वेगळंच काहीतरी बाहेर येईल. ही जुन्या सेंद्रिय शेतीची नवी ओळख आहे, असे कवयित्रीला वाटते.

शेतकऱ्यांच्या आत्महत्यांचा प्रश्न आज प्रत्येकाला अस्वस्थ करीत असताना संवेदनशील मनाच्या कवयित्री देखील या समस्येतील वास्तव आपणासमोर मांडताना म्हणतात,

''अठराविश्व दारिद्र्य, गावाला तसं नवं नव्हतं
कर्जापायी फाशी घेणं, गावाला कधीच ठावं नव्हतं.'' (कुसळाचं गाव) (पृ.७७)

दुष्काळ तसा ग्रामिण शेतकऱ्यांच्या पाचवीलाच पुजलेला असतो. रानात कुसळंच उगवायची. गायीगुरं कुसळंच खायची. चार थेंब पडलेच तर करडईचं पिक यायचं. हुलगा, मटकी, पिकायची. पण मन कणखर होतं. कितीही संकटं आली तरी शेतकरी फाशी घ्यायचा नाही. आता गुरांच्या दावणीचं दावं शेतकऱ्याच्या गळ्यात पडत आहे, याची खंत कवयित्री व्यक्त करतात. त्या कोणतंही रडगाणं गात नाहीत. ''गावामधलं पोर आता कार्व्हर झालं पाहिजे, प्रयोगाचं पिक लावून बांडगूळ काढलं पाहिजे.'' असा आशावाद त्या व्यक्त करतात.

बदलेल्या ग्रामिण संस्कृतीत ज्ञानगंगा खेडोपाडी पोहोचली. मातीत जन्म जावू नये म्हणून बापाने गरिबी सहन करीत मुलाला शिकविले. पण पदवी घेवून आलेल्या पोराला शिवार नकोसे वाटते, जनावरांबद्दल लळा राहत नाही. धुळीत माखलेल्या गावाबद्दल, माणसांबद्दल आस्था राहत नाही. चकचकीत तोंडवळ्याच्या शहाराकडेच त्याची ओढ राहते. त्याविषयी कल्पना दुधाळ म्हणतात,

''शिपयाच्या जागेसाठी पोरानं, एकर विकायचा विषय काढला,
तसा बाप ताडकन उठला, विहिर खणल्यागत...'' (काय चुकलं) (पृ.२३)

पोराच्या आधुनिक विचाराने बापाला वेदना होतात. 'शिक्षणाच्या शहाणपणाने पोराचे विश्व बदलले' याची जाणीव बापाला होते. स्क्रिनवर झळकणारे बाजारभाव वाचून काहीही मिळत नाही. पांढऱ्यावर काळं करण्यापेक्षा काळ्यातून हिरवं काढ, निदान पोट तरी भरेल! हे बापाचे तत्वज्ञान आदिम मानवाच्या जीवनचक्रातील मूळ गाभ्यावर प्रकाश टाकणारे आहे. शहरात जाऊन साहेब झालेल्या मुलाला गावी यायला वेळ नाही. तो आईबापांना विसरत चालला आहे. पण त्याचे अगतिक, वृध्द झालेले वडील मुलाच्या प्रेमासाठी आसुसलेले असताना म्हणतात,

''साहेब झालेल्या पोरा तू, खीनभर घरला येऊन जा,
तुटायला झालंय दावं आता, तोंड तरी दावून जा...'' (सायेब) (पृ.८४)

अशाप्रकारच्या कवितांमधून कवियित्री सामाजिक वास्तवाशी सहकंप होतात. ''सामाजिक वास्तवाशी सहकंप होण्याची शक्ती ज्याच्या प्रतिभेत असेल, त्याच कविच्या हातून उत्कृष्ट सामाजिक जाणिवेची कविता निर्माण होण्याची शक्यता आहे.''[१] हे गो. वि. करंदीकर यांनी नमूद केलेले विधान कल्पना दुधाळ यांच्या बदलत्या कृषी जीवनातील सामाजिक वास्तवतेशी मिळते जुळते आहे.

स्त्री जीवन :

एक सर्जनशील मनाची शेतीत राबणारी स्त्री या संग्रहाच्या पानोपानी पहायला मिळते. स्त्रियांचा खास वैशिष्ट्यपूर्ण अनुभव त्या मांडतात. लहानपणीच ग्रामिण मुलीच्या हातावर, चेहऱ्यावर गोंदतात. कारण व्यक्ती मेल्यानंतर तिच्या अंगावरील अलंकार, कपडे काढून घेतात पण अंगावरचे गोंदण मात्र बरोबर येते. म्हणून गोंदवून घ्यावे असे पुर्वी मानत असत. या गोंदणाच्या अनुभवावर भावतरल कविता कवियित्री लिहितात.

'उलटं काळीज' ही कविता मुलींच्या लैंगिक शोषणावर झगझगीत प्रकाश टाकते. केवळ 'नर, मादी' एवढाच दृष्टिकोन बाळगणाऱ्या पुरूषांना स्त्री केवळ मादीरूपातच दिसते. मिळेल तसे, मिळेल तेव्हा शोषण करणे एवढाच त्यांचा हेतु असतो. जे घडेल ते निमूटपणे सोसणे किंवा स्वतःचाच जीव देणे इतकेच स्त्रीच्या हाती उरते. आषाढ महिन्यात शिवारातल्या देवांना नैवेद्य घेऊन एक कोवळी पोर मोठ्या उत्साहात निघालेली असते. तिच्यावर टपलेल्या नराधमांनी तिला खसकन ओढलं. ऊसाच्या फडात नेलं अन् आपला कार्यभाग उरकला. त्यावेळी शेवरीवरच्या भोरड्यांनी गलका केला पण पोरीचा आवाज सुध्दा निघाला नाही. याविषयी चिड व्यक्त करताना कवयित्री म्हणतात,

''तेव्हा नव्हता जागा... बांधावरचा शेंदऱ्या म्हसोबा
...शीवंवरची लक्ष्मीआई ...आणि विहिरीतल्या साती आसरा'' (बैल) (पृ.६७)

ग्रामिण भागामध्ये आजही मनगटशाहीच्या बळावर धनदांडगे लोक गोरगरीब, अबला स्त्रियांवर शतकानुशतके अन्याय, अत्याचार करीत असतात. पैशाच्या व पौरूषत्वाच्या अहंकाराने ते बेताल झालेले असतात. त्यांच्या बेधुंद वासनेने कितीतरी स्त्रीयांच्या शिलाचे लचके तोडले जातात. अशा प्रकारांमुळे कवियित्रीचे संवेदनशील मन बेताल, अत्याचारी लोकांविरूध्द विद्रोह करताना म्हणते,

''लोखंडी साखळ्यांनी बैल ओढून बांधलाच पाहिजे,
उताणा पाडून डांबलाच पाहिजे,
नाहीतर... त्याच्या वासनेच्या बळी झालेल्या, गायींची रानवटी खोंडं,
चेंगरून टाकतील आख्खं जग...'' (बैल) (पृ.५४)

''समाजव्यवस्थेतील अन्यायावर व रूढींवर प्रहार करणे आणि व्यापक राष्ट्रीय दृष्टीकोनातून मानवतावादाचा पुरस्कार करणे, हे सामाजिक कवितेचे गुण होत.''[२] ही वा. भा. पाठक यांनी सामाजिक कवितेविषयी केलेली मीमांसा सामाजिक अत्याचाराविरूध्द बंड पुकारणाऱ्या कल्पना दुधाळ यांच्या कवितेला तंतोतंत जुळते.

कवियित्रींना 'बाय आणि गाय' यामध्ये फार साम्य वाटते. गरीब, दावणीला बांधलेल्या, मुक्या गायीचे जगणे आणि बाईचे जगणे सारखेच आहे असे त्यांना वाटते. गाय, बाय आणि पृथ्वीमाय एकरूप आहेत. तिघींचेही प्रयोजन पुरूषप्रधान आणि अपत्यसापेक्ष आहे. ज्या दिवशी तिघी नापिक होतील त्या दिवशी त्यांच्या जगण्याचे प्रयोजन संपेल. इथे सर्जनाला महत्व नाही. फक्त उत्पादनाला महत्व आहे. ही ओरबडणारी संस्कृती आहे, असे दुधाळ यांना वाटते. त्यामुळे या संस्कृतीची खंत, चीड कवितेत दिसते. गाय कवियित्रीला म्हणते,

''बाई गं... तू काय नी मी काय, जन्मभर दावणीला बांधलेलो...
शरीरातून शरीर बाहेर पडलं,
आणि रूजव्याची माती नापीक झाली की, पडिकात कुणी फिरकत नाही.''
(बाय आणि गाय) (पृ.५६)

समारोप :

'सिझर कर म्हणतेय माती' हा कवितासंग्रह शेती आणि शेतकरी यांच्या समकालीन समस्या मांडताना विद्रोही वाटेने जाताना दिसतो. कृषी, कृषी संस्कृतीतील बदल, जागतिकीकरण यासारख्या विषयांवर कवियित्री अत्यंत वास्तवपणे लिहितात, ''सऱ्या, वरंबे ओढलेल्या रानात दिसायचं आणि माती ग्लोबल झाली असं वाटायचं.''[३] साध्या, सोप्या भाषेतील त्यांच्या कविता वाचकाच्या मनाचा तळ गाळतात. भारतीय संस्कृतीच्या कितीतरी खुणा त्यांच्या कवितांमध्ये पानोपानी विखुरल्या आहेत. एक सर्जनशील मनाची, शेतीत राबणारी स्त्री या सर्व कवितेत पहायला मिळते. तसेच कल्पना दुधाळ यांचे सामाजिक भानही या कवितासंग्रहातून जाणवत राहते.

कल्पना दुधाळ यांचा गौरव करताना उत्तम कांबळे म्हणतात, ''एक बहुआयामी आणि अस्वस्थ श्वास सोडणारी कल्पनाची कविता प्रत्येकाला अस्वस्थ करते. मोठा पिसारा घेऊन ती जागतिकीकरणाला आणि शेतकऱ्याच्या आत्महत्यांना पकडते. विशेष म्हणजे वाचकांना पकडून त्याला विचार करायला लावते.''[४]

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माण तालुक्यातील बिदाल या गावाचा दुष्काळी भागातील पाणी व शेती नियोजनाचा विकास : एक भौगोलिक अभ्यास

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सारांश –

दुष्काळाचा पर्यावरण तसेच अर्थव्यवस्थेंवर दीर्घकालीन प्रभाव पडतो. दुष्काळ व्यवस्थापन आणि दुष्परिणामांचे दुष्परिणाम अभ्यासणे हा उद्देश आहे. कृषिक्षेत्रात निवडक तर्कशुध्द निर्णय घेण्याकरीता स्थानिक पातळी तीव्रता आणि दुष्काळ संबंधित माहितीची कालावधी आहे. दुष्काळग्रस्त माहिती निष्कर्ष तंत्रज्ञानासह दुष्काळांचे निरीक्षण व मूल्यांकन करण्यासाठी नवीन विशेषाधिकार आहे. या पेपरमध्ये कृषिसंबंधी चर्चा केली आहे. दुष्काळग्रस्त समस्या दुष्काळाच्या काळात लोकांना तोंड द्यावे लागते. अनेक समस्या निर्माण होतात. उदा. प्शुसाठी अन्न आणि चारा दुष्काळाच्या काळात रोजगार संधी कमी होतातत्र स्थलांतराचा प्रश्न निर्माण होतो. माण तालुक्यातील दुष्काळी प्रश्न क्षेत्रातील बिदाल गावचे शेतकरी नियोजन पध्दतीने शेतीचा विकास केलेले आहे. ते इतर गावापुढील एक आदर्श निर्माण करणारे आहे. हे संशोधन पेपर मधून सिध्द होतो.

प्रास्ताविक –

पुरान कथा व ऐतिहासिक वाड़मयातून अवर्षणाचे उल्लेख आढळतात. चालू शतकामध्ये तर अवर्षणाची आपत्ती दिवसेंदिवस जगभर वाढतच आहे. भारतामध्ये वार्षिक सरासरी पर्जन्यमान ७५ सेमी पेक्षा कमी असणारे प्रदेश अवर्षणग्रस्त म्हणून वर्गीकृत केले आहेत. भारताच्या एकूण क्षेत्रापैकी ३५ टक्के क्षेत्र अवर्षणग्रस्त आहे. ७५ ते १०० सेमी वार्षिक सरासरी पर्जन्यमान असणारा ८५.५ टक्के भाग संक्रमीत अवर्षणग्रस्त प्रदेश म्हणून ओळखला जातो. भारतात एकूण ५० टक्के पेक्षा जास्त क्षेत्र सिंचन क्षेत्र वगळून हे अवर्षणग्रस्त आहे. भारतातील अवर्षणाची वर्षे व ठराविक प्रदेशातील अवर्षण वर्ष आढळतो. पृथ्वी सर्व बाबतीत विविधतेने नटलेली आहे. प्रदेशपटले नैसर्गिक परिस्थिती, मृदा, जलसंपदा, बनस्पती, प्राणी, हवामान वगैरे गोष्टीमध्ये भिन्नता आहे. यामुळे पृथ्वीवर निरनिराळ्या प्रदेशात वास्तव्य करून असलेल्या मानवी जीवनातही भिन्नता आढळते. सजीवाची निर्मिती ही निसर्गाने मानवाला दिलेली एक मोठी देणगीच आहे. परंतु निसर्गाने मानवाला एक अमूल्य अशी देणगी दिलेली आहे ती म्हणजे बुध्दीमत्ता. बुध्दी आणि वैचारिक क्षमतेमुळेच मानव सुरूवातीपासून आपल्या अस्तित्वासाठी निसर्गाशी संघर्ष आणि वेळप्रसंगी तडजोड करत आला आहे. अशाचप्रकारे माण तालुक्यातील बिदाल या गावातील अनेक खडतर अपत्त्या पार करुन पर्जन्य जलसंधारणाचे नियोजन करून शेतीचा विकास घडविण्याचे स्वत:चे श्रेष्ठत्व प्रस्थापित केले आहे आणि जीवनमानही परिवर्तन झाले आहे. जेव्हा आवश्यकतेपेक्षा कमी पाऊस पडल्याने जमिनीतील ओलावा कमी होवून पिकांची वाढ खुंटते व नंतर पिके वाळू लागतात अशा कृषी विषयक अवर्षण दुष्काळ माण तालुक्यातील एक सातत्याने उद्भवणारी नैसर्गिक समस्या आहे.

अभ्यास पध्दती –

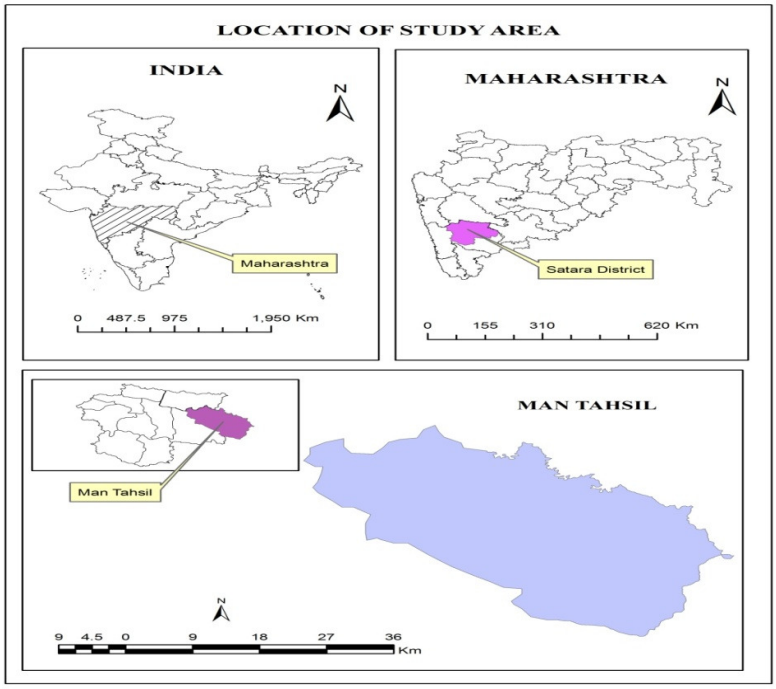
प्रस्तुत अभ्यासात प्राथमिक माहितीवर अधिक भर दिलेला आहे. तर दुय्यम स्तरावरील माहितरचा पायाभूत विषय माहितीसाठी आधार घेतला आहे. या माहितीच्या संकलनासाठी वार्षिक अहवाल, गॅझेटिअर इतर

अनुषगिक पुस्तके, संशोधनात्मक पत्रिका, लेख यांचा उपयोग केला आहे. प्रत्यक्ष भेटून मुलाखती, निरीक्षण, चर्चा करुन माहिती मिळविली.

अभ्यास क्षेत्र –

प्रस्तुत अभ्यासासाठी सातारा जिल्ह्यातील माण तालुक्यातील बिदाल या गावाची निवड केलेली आहे. सातारा जिल्ह्यातील माण तालुका कोरडवाहू व अवर्षण प्रवणग्रस्त म्हणून ओळखला जातो.

अक्षवृत्तीय विस्तार – बिदाल हे गाव माण तालुक्याच्या ठिकाणापासून वायव्येला ५ किमी अंतरावर आहे या गावाचा अक्षवृत्तीय विस्तार १७°१४' उत्तर अक्षांश व रेखावृत्तीय विस्तार ७४°३४'पूर्व रेखांश आहे. या गावाचे एकूण भौगोलिक क्षेत्रफळ २४८६ हेक्टर इतके असून गावातील एकूण खातेदारांची सांख्या ३३२२ आहे. २०१६ च्या खरीप हंगामात लागवडी खालील जमीन २०३७ हेक्टर व रब्बी हंगामात लागवडी खालील जमिन ८१० हेक्टर असा आहे. गावातील कार्यरत विहीरींची संख्या ३०० इतकी आहे. बिदाल गावाची एकूण लोकसंख्या ५९७४ (२०११) इतकी असून गावातील एकणू कुटुंब संख्या१२२६ आहे. या गावाचे सरासरी पर्जन्यमान ४०० ते ५०० मिमी असून वार्षिक सरासरी तापमान ३५ अंश सेत्र आहे. माण तालुक्यात नेहमी दुष्काळाचा सामना करावा लागत असल्याने या गावात पावसाचे प्रमाण अत्यंत कमी व अनियमित स्वरुपाचे आहे.



उद्दिष्ट्ये –

१) माण तालुक्यातील दुष्काळी प्रवणक्षेत्र ओळखणे.

२) दुष्काळी प्रवण क्षेत्रातील बिदाल या गावच्या भौगोलिक स्थितीचा अभ्यास करणे.

३) पर्जन्य जलसंचयनामुळे उपलब्ध पाण्याच्या उपाययोजनांची माहिती घेणे.

४) बिदाल येथील पर्जन्य जलसंचनाचा सामाजिक विकासातील महत्व स्पष्ट करणे.

विषय विवेचन –

माण तालुक्यातील बिदाल या गावातील दुष्काळी प्रवण क्षेत्रातीलनियोजन पध्दतीने जल व्यवस्थापन केले तर शेतीचा विकास होऊ शकतो. तसेच प्रदेशाचा विकास होऊ शकतो. संशोधनामधून दुष्काळग्रस्त समस्यावर मात करण्यासाठी केलेला नियोजन पध्दतीने शेती हाच महत्त्वाचा उद्देश आहे.

गृहितके –

- महाराष्ट्रात अनेक जिल्ह्यातील विविध तालुके दुष्काळी प्रवण क्षेत्रातील आहे.
- सातारा जिल्ह्यातील माण तालुका दुष्काळी प्रवण क्षेत्रातील आहेत्र
- माण तालुक्यातील बिदाल हे गाव कृषीचा विकास झालेपासून तालुक्यातील अनेक गाव विकास होणे बाकी आहे.

जनसंख्या –

सातारा जिल्ह्यातील माण तालुका जनसंख्या म्हणून गणण्यात आली आहे.

न्यादर्श –

सदर संशोधकाने संशोधनासाठी बिदाल माण या गावाची निवड केली आहे.

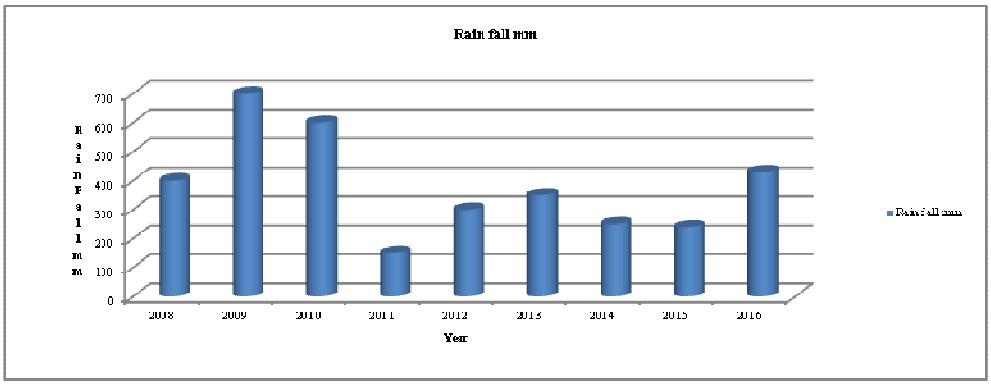
विषय विवेचन –

१. **माण तालुक्यातील दुष्काळी प्रवण क्षेत्र**– माण तालुक्यातील वार्षिक सरासरी पर्जन्य अतिशय कमी प्रमाणात आढळतो. २९सेमी दतका पाऊस पडतो. महाराष्ट्रातील सर्वात कमी पावसाचे ठिकाण म्हणून ओळखला जातो. माण तालुक्यात एकूण ७ सर्कल असून एकूण १०७ गांवे आहेत. दुष्काळ ही हवामान व वातावरण या घटकाव्दारे उद्भवणारी समस्या आहे. एखाद्या प्रदेशात जेव्हा सरासरीपेक्षा २५ टक्के कमी पाऊस पडून त्याचा शेती आणि पाण्याच्या उपलब्धतेवर गंभीर परिणाम होतो आणि ही स्थिती अधिक तीव्र झाल्यास लोक प्राणास मुकतात, तेव्हा त्यास अवर्षण किंव दुष्काळ असे म्हणतात. माण तालुक्यात आवश्यकतेपेक्षाा खूप कमी पाऊस पडतो तेव्हा त्याचा पिकावर परिणाम होऊन पिके वाळू लागतात, पिकास पुरूसे पाणी उपलब्ध होत नाही. त्याचा परिणाम या ठिकाणी सातत्याने दिसून येतो. तरी माण तालुक्यातील बिदाल हे गाव उपलब्ध पाण्याचे नियोजन करुन शेती विकास घडवून आणले आहे.

२. **दुष्काळी प्रवण क्षेत्रातील बिदाल या गावाच्या भौगोलिक स्थितीचा अभ्यास –** प्राकृतिक रचना या गावातील माण नदीच्या प्रमुख जलप्रवाहाला अनुसरुन गावाचा उतार पूर्व दिशेला आढळतो. या गावाची समुद्रसपाटी पासूनची उंची सरासरी ५५० ते ६५० मीटर एवढी आहे. या गावाची भूस्तर रचना ही दख्खनच्या पठारावरील बेसॉल्ट या अग्निजन्य खडकापासून बनलेली आहे.

हवामान – बिदाल या गावाचे हवामान उष्ण व कोरड्या स्वरुपाचे असून हे गाव मान्सुनच्या पर्जन्यछायेच्या प्रदेशात येते. बिदाल या गावाचे सन २००८ ते २०१६ पर्जन्य व तापमान आकृतीमध्ये स्पष्ट केले आहे.

वर्ष	२००८	२००९	२०१०	२०११	२०१२	२०१३	२०१४	२०१५	२०१६
पर्जन्य मि.मी.	४००	७००	६००	१५०	३००	३५०	२५०	२४०	४३०

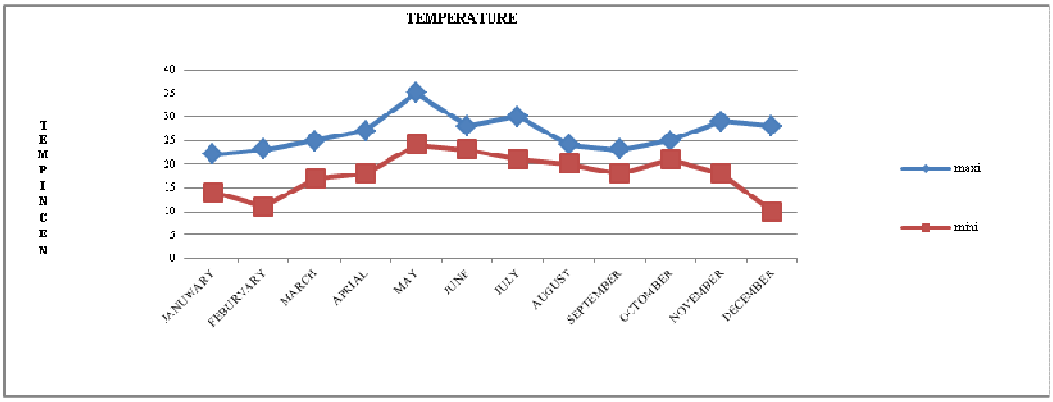


आकृती

बिदाल गावाचे वार्षिक सरासरी तापमान सन – २०१५–१६

महिने	जने.	फेब्रु	मार्च	एप्रिल	मे	जून	जूलै	ऑग.	सप्टें.	ऑक्टो.	नोव्हे.	डिसे.
क्माल तपमान	२२	२३	२५	२७	३५	२८	३०	२४	२३	२५	२९	२८
किमान तापमान	१४	११	१७	१८	२४	२३	२१	२०	१८	२१	१८	१०

आकृती –



मृदा व पिके – बिदाल गावाच्या नदीच्या व ओढ्याच्या चिंचोळ्या खो–यात काळी मृदा अल्प प्रमाणात आढळते. गावाच्या सभोवतालच्या परिसरात मोठ्या प्रमाणात मुरमाड पाण्याचा निचरा होणारी व फळबांगेसाठी योग्य मृदा आढळते. शेती हा गावातील मुख्य व्यवसाय असून बागायती क्षेत्रात कांदा, ज्वारी, बाजरी उस, गहु, मका, भुईमुग, बटाटा इ. पिके घेतली जातात. गावातील पाणलोट क्षेत्र विकास कार्यक्रमामुळे हे शक्य झाले आहे.

नैसर्गिक वनस्पती – काटेरी उष्णकटीबंधीय पानझडी वनस्पती असून बाभूळ, बोर, निवडूंग, खैर, वड, चिंच, कडुनिंब इत्यादी समावेश होतो. गावाचा एकूण भौगोलिक क्षेत्रफळापैकी ५५ हे १९ आर एवढे क्षेत्र जंगल व्याप्त आहे.

३. बिदाल या गावातील वार्षिक पर्जन्य जल संचनामुळे उपलब्ध पाण्याच्या उपयोगाची माहिती खालील तक्तेचे आधारे स्पष्ट करता येईल.



संदर्भ स्त्रोत: पाणी फाउंडेशन बिदाल

बिदाल या गावातील पाणी धारण करण्याचे उपाययोजनेस एकूण संख्या ९९ इतकी असून यापैकी ३६ मातीनाला बांध उपलब्ध आहे. पाण्याचा उपलब्ध साठा कमी असतानाही २२ प्रकारे सिमेंट नाला बांधलेले आहेत हे विषय पाणी धारण क्षमतेसाठी एकूण ३ पाझर तलाव अस्तित्वात आहेत. वरील आकडेवरून बिदाल गावातील पाण्याची सद्यस्थिती व त्यावर उपलब्ध असलेले स्त्रोत याव्दारे शेतीसाठीचे पाणी व आधारीत असणारे विकास यांचा अंदाजाव्दारे शेतीचा विकास दिसून येतो.

४. बिदाल या गावातील पर्जन्य जलसिंचनाचा सामाजिक विकासातील महत्व स्पष्ट करतो येईल.

- लोकांची एकमेकांबद्दल असणरी आपूलकीची भावना वाढली.
- ग्रामसभेबद्दल लोकांची साक्षरता वाढली.
- ग्रामसभेतील स्त्रियांचा सहभाग वाढला.
- बरेच जुने अंतर्गत वाद मिटले.
- गावातील युवकांना गावासाठी काम करण्याची संधी मिळाली, त्यामुळे त्या सुवकांना योग्य दिशा मिळाली.
- नैसर्गित संसाधने बददल लोकांमध्ये जागरूकता निर्माण झालीत्र
- युवकामध्ये पर्यावरण दृष्टीकोन तसेच शाश्वत शेतीची संकल्पना निर्माण झाली.

वरीलप्रमाणे सामाजिक परिवर्तन बिदाल या गावात दिसून आहे.

निष्कर्ष –

- बिदाल गाव पर्जन्यछायेच्या प्रदेशातील माण तालुक्यातील एक दुष्काळी गाव आहे.
- पर्जन्याचे अत्यल्प प्रमाण असून कायमस्वरूपी जलस्त्रोत उपलब्ध कमी प्रमाणात आढळतो.
- पर्जन्य पाण्याचे योग्यप्रकारे नियोजन करून शेतीचा विकास झालेले दिसून आले.
- पर्जन्याचे पाणी अडविण्यासाठी विविध उपाययोजना केलेले आहे उदा. बंडींग, शेततळे, पाझर तलाव.
- जलसंधारण प्रकल्पाचे विकास या गावात मोठ्या प्रमाणात झाले असून जास्तीत जास्त जमीन शेतीखाली आणून शेतीचा विकास झालेले दिसून आले.
- लोक व शासन स्तरावरून जलसंधारण योजनेबाबत पाणी फाऊंडेशन याबाबत लोकांना महत्त्व पटवून वैयक्तिकरीत्या जनजागृती झाले आहे.
- अवर्षणग्रस्त प्रदेशात अवर्षणाला तोंड देता येईल अशा पिकांची लागवड केली आहे.
- सामाजिक वनीकरण सारखे कार्यक्रम राबविले.
- पाणी पुरवठ्याचे व्यवस्थापन केले व शेती परिसंस्थेत पाण्याचे संतूलन राखले.
- जनजागृती चेतवून अवर्षणासाठी नियोजन कार्यक्रम कृतीशिल केले.
- मर्यादित पाण्याचा उपयोग शास्त्रीय पध्दतीने करून पाण्याचा अपव्यय टाळले.

संदर्भ –

१. बिदाल ग्रामपंचायत कार्यालयातील लेखी स्वरूपात मिळालेली माहिती.
२. महाराष्ट्र पाठ्यपुस्तक संशोधन मंडळ पुणे सातारा जिल्हा इयत्ता ३ री चे पाठ्यपस्तक
३. ४७के/७ भूस्थलदर्शक नकाशा व सातारा जिल्हा गॅझेटिअर
४. पाणी फाऊंडेशन बिदाल.
५. प्रा. के.ए.खतीब, उपयोजित भूगोल, प्रकाशन–मेहता पब्लिशिंग हाऊस (फेब्रुवारी २००८)
६. प्रा. माजिद हुसैन, कृषि भूगोल, रावत पब्लिकेशन, जयपूर
७. प्रा. मानवी व आर्थिक भूगोल डॉ.व्ही.जे.पाटील, प्रशांत पब्लिकेशन – (२०१३)
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महाराष्ट्रातील शेतीचा विकास व शेतीच्या समस्या

प्रा. प्रदीप उत्तमराव सावंत
भूगोल विभाग प्रमुख
सरदार बाबासाहेब माने महाविद्यालय, रहिमतपूर

प्रस्तावना :

शेती हा भारतीय अर्थव्यवस्थेचा विकासाचा मुलाधार आहे. भारत हा शेतीप्रधान देश आहे, भारतीय अर्थव्यवस्था ही जगातील काही महत्त्वाच्या कृषी अर्थव्यवस्थांपैकी एक आहे. शेती केवळ अन्नधान्य आणि जीवनावश्यक वस्तुंचाच पुरवठा करणे असे नाही तर देशाच्या आर्थिक विकासात व सामाजिक संक्रमणातही शेतीचा मोठा वाटा आहे. स्वतंत्र प्राप्तीनंतर कृषी क्षेत्राने लक्षणीय विकास केला आहे. गेल्या काही दशकात शेती क्षेत्रात झालेली प्रगत ही एक मोठी यशोगाथा आहे. भारताच्या विकासात नेहमीच कृषी क्षेत्राची भूमिका महत्त्वाची राहिली आहे.

माहिती संकलन :

प्रस्तुत शोध निबंध प्राथमिक व दुय्यम आकडेवारीवर आधारीत आहे. शेती संदर्भात जिल्हा कृषी अधीक्षक कार्यालय, महाराष्ट्र शासन व सातारा जिल्हा सामाजिक व आर्थिक समालोचन अहवालातून संकलीत केलेली आहे.

महाराष्ट्रातील कृषी विकास :

महाराष्ट्रातील कृषी विकास हा ग्रामीण अर्थव्यवस्थेचा एक महत्त्वचा भाग बनलेला आहे. महाराष्ट्रातील ६५ ते ७० टक्के लोक शेती व त्यावर आधारीत उद्योगधंदयावर आधारीत आपली उपजिवीका करतात. देशाच्या राष्ट्रीय उत्पन्नात शेती व्यवसायातून पडणारी भर कमी होत आहे. पण शेतीवर अवलंबून असणारी लोकसंख्येचे प्रमाण मात्र कमी झालेले नाही. बदलत्या परिस्थितीमध्ये शेती हा सर्व घटकांचा मुख्य गाभा आहे. त्यामुळे शेती क्षेत्राचा विकास करण्याशिवाय पर्याय राहत नाही. तसेच त्याशिवाय ग्रामीण क्षेत्राचा सर्वांगीण विकास होणार नाही.

प्राकृतीक, आर्थिक, सांस्कृतीक व सामाजिक घटकांचा शेती उत्पादकतेवर परिणाम होत असतो. यामध्ये लहरी मान्सून, जलसिंचनाचा अभाव, अमर्यादीत रासायनिक खतांचा वापर, क्षारयुक्त आम्ल जमीन, जमिनीची धूप, पिकांवरील टोळधाड, रोग, जमिनीचे तुकडेकरण, आधुनिक तंत्रज्ञानाचा अभाव, दळणवळण व बाजारपेठांचा अभाव, परंपरागत व जुनाट शेती पद्धती, वरील सर्व घटकांमुळे शेती उत्पादकतेवर परिणात होत आहे. अप्रत्यक्षरित्या कृषी विकासावर परिणाम झालेला दिसून येतो.

कृषी विकासासाठी रचनात्मक कार्यक्रम :

स्वातंत्र्य प्राप्तीनंतर उत्पादन वाढविणे आणि पर्यायाने उत्पादकतेत वाढ करणे त्या दृष्टीकोनातून खालील घटकांच्या बाबतीत विचार करणे गरजेचे आहे. जमीन सुधारणा कार्यक्रम हरितक्रांती, कोरडवाहू शेतीचा विकास, आधुनिक तंत्रज्ञानाचा वापर, बी-बियाणांचा वापर, पीक संरक्षण, अवर्षण प्रवण क्षेत्र कार्यक्रम, शुष्क कृषी प्रदेशाचा विकास, कृषी विषयक जिल्हास्तरीय मार्गदर्शन मेळावे, कृषी संशोधन शाळा, माती परीक्षण, एकात्मीक कीड व्यवस्थापन, सेंद्रीय खतांचा वापर, कृषी उत्पादनांसाठी विक्री व्यवस्था, बाजारपेठांचा विकास,

जाहीराती, शासकीय योजनांची माहिती, आधुनिक जलसिंचनाच्या सुविधा, शेतकऱ्यांची शेतीतील साक्षरता या सर्व घटकांच्या माध्यमातून शेती विकासाठी रचनात्मक कार्यक्रम बनविण्यासाठी गरज निर्माण झालेली आहे.

शेतीतील पिकांचे उत्पादन व उत्पादकता :

कोरडवाहू शेतीतील अन्नधान्याची उत्पादकता राष्ट्रीय सरासरीपेक्षा कमी अशी महाराष्ट्राची स्थिती आहे. पीक लावगडीखालील निव्वळ क्षेत्राच्या बाबतीत महाराष्ट्राचा भारतात दुसरा क्रमांक लागतो. महाराष्ट्राचा सर्व पिकांची दर हेक्टरी उत्पादकता राष्ट्रीय सरासरीपेक्षा कमी आहे. येथील शेती मुख्यतः मोसमी पावसावर आवलंबून आहे. विदर्भ, मराठवाडयातील फार मोठे क्षेत्र कमी पाऊस व पर्जन्यछायेच्या प्रदेशात आहे. एकूण लागवडीच्या क्षेत्रापैकी फक्त १३ प्रतिशत क्षेत्र ओलीताखाली होते. आज ते १६ प्रतिशतपर्यत वाढले आहे. त्यामुळे शेती उत्पादकतेत घट होत आहे.

हरीतक्रांतीच्या पर्वामध्ये महाराश्ट्रात कुंठितावस्था दिसते. एकूण उत्पादन व दर हेक्टरी उत्पादकता यात राज्यात दरवर्शी मोठा चढउतार दिसून येतो. षेतीमध्ये संस्थात्मक व तांत्रिक सुधारणा करुन ५० वर्शामध्ये उत्पादन वाढीसाठी प्रयत्न केले जाते. प्रत्यक्षात मात्र त्यामुहे षेतीची उत्पादकता वाढलेली नाही. राज्यातील हवामान जमिनीचा कस, पावसाची षक्यता हे सर्व विचारात घेवून अधिक उत्पादनासाठी प्रयत्न करणे गरजेचे आहे.

महाराश्ट्रातील षेतीची सध्यस्थिती :

महाराश्ट्रात जमिनीचे वर्गीकरण पाहिल्यास असे आढळून येते की, राज्याचे भौगोलिक क्षेत्र ३.८ लाख चौ.कि.मी. असून त्यापैकी निव्वळ कृशी खालील जमीन १.७७ लाख चौ.कि.मी. म्हणजे ५७.५० होते. १७.३ टक्के जलसिंचनाखालील दिसून येते. महाराश्ट्र राज्यात ८२.७ टक्के एवडे क्षेत्र षेतीखालील क्षेत्र प्रत्यक्षात पावसावर अवलंबून आहे. फक्त १/३ क्षेत्र पर्जन्य छायेखालील आहे. कृशी क्षेत्राचा वाटा १.२ टक्के एवढा आहे. महाराश्ट्रात उत्पादकता वृद्वी कार्यक्रम राबविण्यात आला. परिणामी कृशी उत्पादन मोठया प्रमाणात झाला.

नवीन आर्थिक धोरणानंतरचा षेती विकास :

पिकांखालील क्षेत्र, उत्पादन आणि उत्पन्न यातील वार्शिक चक्रीय वृद्धीदर मोजण्यात आला. या कालखंडातील विविध पिकांचा अभ्यास केल्यास ऊस, सोयाबीन, हरभरा, तेलबिया, कापूस पिकांचे उत्पादन वाढलेले दिसून आले. एकूण कालखंडामध्ये अन्नधान्य पिकापेक्षा बिगर अन्नधान्य पिकांचे उत्पादन वाढलेले दिसते.

पिकांच्या रचनेनुसार उत्पन्न, उत्पादन आणि गारपीट व नुकसानीची आकडेवारी

पिक	उत्पादन २०११-१२	उत्पादन २०१३-१३	गारपीट नुकसान २०१३-१४
कडधान्ये ला. मे. टन	१०५	८३	२१३
डाळी ला. मे.टन	२३	२२	३
तेलबिया ला. मे. टन	४५	५२	११
कापूस ला. मे.टन	६८	६९	२१
ऊस ला. मे.टन	८९५	५९७	२१२

पिकांखालील क्षेत्राच्या बाबतीत तेलबिया, ऊस, सोयाबीन, हरभरा, कापूस, सुर्यफूल या पिकाखालील क्षेत्र वाढल्याचे दिसून येते. या काळात सोयाबीन, ऊस एकूण डाळी, हरभरा, तूर या पिकांखालील क्षेत्र वाढलेले दिसते. विशेष म्हणजे अन्नधान्यापेक्षा बिगर अन्नधान्य खालील नगदी पिकाचे क्षेत्र वाढल्याने दिसते. कारण अन्नधान्य पिकांपासून मिळणाऱ्या फायद्यांपेक्षा नगदी पिकांपासून मिळणारा आर्थिक फायदा जास्त आहे.

याच दरम्यान उत्पादकतेच्या बाबतीत ऊस उत्पादकता सर्वाधीक वाढलेली दिसते. त्या खालोखाल सोयाबीन, तेलबिया, बाजरी, गहू, डाळींचे उत्पादन वाढलेले दिसते.

शेतीच्या समस्या :

- ❖ लहरी मान्सूनच्या प्रभावाने जलसिंचनाचा अभाव.
- ❖ जमिनीची धूप, जंगलतोड.
- ❖ अमर्यादीत रासायनीक खतांचा वापर
- ❖ शेतकऱ्यांतील माती परीक्षणाबद्दल अनास्था
- ❖ क्षारयुक्त आम्ली जमिनी वाढ
- ❖ कीटकनाशकांचा वाढता वापर
- ❖ पिकांवरील तुकडीकरण, अपुरे भांडवल
- ❖ परंपरागत व जुनाट शेती पद्धती

संदर्भ ग्रंथ :

१. जिल्हा कृषी अधिक्षक कार्यालय, सातारा अहवाल
२. सामाजिक व आर्थिक समायोजन अहवाल महाराष्ट्र राज्य
३. सातारा गॅझेटियर
४. प्रा. के. अे. खतिब, कृषी भूगोल, मेहता पब्लिकेशन

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कृषी पर्यटन व्यवसायाचा विकास : रत्नागिरी जिल्हा.

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सारांश :

करमणूक, विरंगुळा, मौजमजा करणे मानवी स्वाभावाचा गुणधर्म आहे. पर्यटनाच्या निमित्ताने मानव हजारो किलोमीटर प्रवास करुन आपले ध्येय पूर्ण करतोच. अशावेळी कधीही पैशाचा विचार करत नाही. भारतासारख्या विकसनशील, कृषीप्रधान अर्थव्यवस्था असलेल्या देशामध्ये पर्यटन व्यवसाय झपाटयाने वाढत आहे. लहान मुलांपासून वृध्दापर्यंत सर्वांनाच फिरायला आवडते. त्यामधूनच पर्यटनाला पूरक असणारे व्यवसाय साहजिकच निर्माण होत असतात.

प्रस्तावना :

रत्नागिरी जिल्हा नैसर्गिक व सांस्कृतिक विविधतेच्या बाबतीत अग्रेसर असल्यानेच पर्यटन जिल्हा म्हणून जाहिर करण्यात आलेला आहे. मानवी संस्कृतीचा एक अविभाज्य घटक म्हणून यात्रा, सहलींकडे पाहिले जाते. पर्यटनही सर्वाची आज एक गरज बनली आहे. म्हणून वृक्षवल्ली, वनौषधी, फुले, बांबूची बेटे, आंबा-काजू, नारळ-पोफळींच्या बागा, समुद्रकिनारे या साऱ्यांचा आस्वाद घ्यायला सर्वांनाच आवडते. जिल्ह्यामध्ये उंच-सखल प्रदेश, खाड्या, सह्याद्री पर्वतामधून उगम पावणाऱ्या व अरबी समुद्राला जावून मिळणाऱ्या नद्या, आंबोली, दाजीपूर अशी थड हवेची ठिकाणे, किल्ले अशा अनेक भौगोलिक घटकांची समृध्दी आहे.

महाराष्ट्रातील रत्नागिरी जिल्ह्यामध्ये भौगोलिक विविधता आहे. आर्थिक विकास करण्याच्या दृष्टीने पर्यटन जिल्हा म्हणूनही जाहिर केला आहे. कृषी पर्यटनाच्या विकासासाठी अनुकूल वातावरण जिल्ह्यामध्ये असल्याने अभ्यासक्षेत्रासाठी रत्नागिरी जिल्ह्याची निवड केली आहे. रत्नागिरी जिल्ह्याचे स्थान १६°.३६ ते १६°.०४ उत्तर अक्षांस आणि ७३°.१९ ते ७४°.१३ पूर्व रखांश यांच्या दरम्यान आहे. जिल्ह्याचे क्षेत्रफळ ८२०८ चौ.कि.मी. असून लांबी दक्षिणोत्तर सुमारे २८० कि.मी. सह्याद्रीच्या पश्चिमेला व अरबी समुद्राच्या पूर्वेला असणारा चिंचोळी दक्षिण कोकणातील शेवटचा जिल्हा म्हणजे रत्नागिरी होय.

अभ्यासक्षेत्र :

कृषी पयटनाच्या विकासासाठी अनुकूल वातावरण जिल्ह्यामध्ये असल्याने अभ्यासक्षेत्रासाठी रत्नागिरी जिल्ह्याची निवड केली आहे. महाराष्ट्रातील रत्नागिरी जिल्ह्यामध्ये भौगोलिक विविधता आहे. आर्थिक विकास करण्याच्या दृष्टीने पर्यटनाला चालना मिळत असून पर्यटन जिल्हा म्हणूनही जाहिर केला आहे.

उद्दीष्टे :

१. पर्यटन संकल्पना स्पष्ट करणे.
२. कृषी पर्यटनाची वैशिष्ट्ये जाणून घेणे.

३. कृषी पर्यनातील फायद्याची माहिती घेणे.

४. रत्नागिरी जिल्ह्यातील कृषी पर्यटनास असलेला वाव शोधणे.

गृहितक :

रत्नागिरी जिल्ह्यात कृषी पर्यटन विकासासाठी फार मोठी संधी आहे.

संशोधन पध्दती व माहिती स्त्रोत :

संशोधनासाठी साधारणपणे अस्तित्वात असणाऱ्या हॉटेल? रिसॉर्ट, बीचेसवर रेस्टॉरंटचे मालक त्याचबरोबर येणारे पर्यटन यांच्याशी संवाद साधून माहितीचे संकलन करण्यात आलेले आहे. प्रत्यक्ष शेतीवरील परिश्रम करणारा शेतकरी, त्यांना मिळणारे उत्पन्न व कृषी पर्यटनाचा विकास केल्यानंतर मिळणारे उत्पन्न याबाबतीत शेतकऱ्यांची घेतलेल्या मुलाखती यामधून वर्णनात्मक पध्दतीने माहिती जाणून घेतलेली आहे. तसेच काही दुय्यम प्रकारची माहिती मासिके, वर्तमानपत्रे व संदर्भ ग्रंथामधून मिळवलेली आहे.

पर्यटन संकल्पना :

दुसऱ्या महायुध्दानंतर दिर्घ अंतराच्या पर्यटनास प्रोत्साहन मिळाले. प्राचीन काळातील व्यापारासाठी प्रवास ही संकल्पना आज बदललेली दिसते. वाहतूक साधनांच्या क्रांतीमुळेच व्यवसायाला चालना मिळालेली दिसते. नैसर्गिक प्रदेश, उपक्षित भाग आज पर्यटनामुळे विकसित दिसतात. पर्यटनाला नव्या वाटा अनेक तरुण-तरुणींना व्यवसायाची नीवन संधी उपलब्ध आहेत.

पर्यटनाचे अनेक प्रकार प्रदेशनिहाय निर्माण झाले आहेत. पर्यटन म्हणजे एका ठिकाणापासून दुसऱ्या प्रदेशात केलेले स्थलांतर अथवा हालचाल होय घराबाहेर पडून एच्छिक, ठराविक कालावधीसाठी मनोरंजानासाठी केलेली क्रिया होय.

कृषी पर्यटन म्हणजे उत्तम शेती पाहण्याचे, अनुभवण्याचे, हिरवळीचा आनंद मनमुराद लुटण्याचे माफक पैसे पर्यटकांकडून घेणे होय. शेतकऱ्यांने आपल्या शेतावर फळाफुलाच्या सान्निध्यात आनंददायी शिक्षण प्रक्रिया व मौज, निसर्गाचा अनुभव व उपभोग यांचे वास्तव दृश्य आणि वास्तव्य असा बहुरंगी साधलेला मिलाफ म्हणजे कृषी पर्यटन म्हणता येईल.

कृषी पर्यटनाची वैशिष्टये :

कृषी पर्यटनावर अनेक घटकांचा प्रभाव पडतो. आज पर्यटन हा आर्थिक व्यवसाय बनलेला आहे. निरनिराळ्या घटकांचा अविष्कार म्हणजे पर्यटन होय. वास्तवरुपी अनेक वैशिष्ट्यांचा मिलाफ कृषी पर्यटनामध्ये पहावयास मिळतो.

१. भारतीय संस्कृती ही जगात कुठेही आढळत नाही. त्यामुळे निश्चितपणे आपल्या संस्कृतीचे प्रदर्शन, जतन व संवर्धन होवू शकते.

२. शेतकऱ्यांला पर्यटन केंद्र उभरण्यासाठी तसेच विकासासाठी अतिरिक्त गुंतवणूकीची आवश्कता भासत नाही.

३. शेती व निसर्ग यांचा जवळचा संबंध आहे. पर्यावरण हा मानवाचा मित्र असल्यामुळे पर्यावरण संतुलन राखण्यास निश्चितच मदत होते.

४. मानवी तंत्रज्ञान, ज्ञान व संपत्तीचे शहरी भागाकडून ग्रामीण भागाकडे स्थलांतर होईल.

५. शहरी भागातील महागड्या पर्यटनाचा आनंद लुटण्याऐवजी ग्रामीण भागातील कमी खर्चिक पर्यटन स्थळे सर्वसाधारण जनतेसाठी पर्वणी ठरतील.

६. कृषी मालाची थेट विक्रि झाल्याने अत्यंत वाजवी दरामध्ये ग्राहकांना वस्तू अथवा कृषी माल मिळेल.

७. शेती सुंदर नीटनेटकी वर्षभर हिरवीगार राहिल.

कृषी पर्यटन :

अरबी समुद्राचं सान्निध्य लाभलेल्या केरळ राज्यात देखील कृषी पर्यटन केंद्र विकसीत केले जात आहे. शहरी लोकांना अथवा पर्यटकांना नेहमीच ग्रामीण भागातील शेतीविषयी कुतूहल असते. शेतीसंबंधी नाविण्यपूर्ण उपक्रम सुरु करुन कृषी पर्यटनास चालना देणे गरजेचे आहेञ थायलंड, मलेशिया इत्यादी देशांत ज्याप्रमाणे कृषी पर्यटन वाढत आहे. त्याप्रकारे रत्नागिरी जिल्ह्यामध्ये कृषी पर्यटनासाठी अनुकूल भौगोलिक परिस्थिती आहे.

आपल्या शेतीचा काही भाग जाणीव पूर्वक पर्यटनाच्यादृष्टीने विकसीत करणे म्हणजे कृषी पर्यटन होय. वनौषधींची लागवड फळझाडे, फुलझाडे जरबेरासारखी फूले यांची लागवड केली पाहिजे. पंचतारांकित हॉटेलांमध्ये लागणाऱ्या भाज्यांचे शेतात उत्पादन घेतले पाहिजे. त्याचबरोबर बायोगॅस प्रकल्प, गांडूळ खत, कुक्कुटपालन, इमु पालन मत्स्यबीज उत्पादन केंद्रे मिठागरे व मधुमाशा पालन इत्यादीसारखे उपक्रम राबवून अर्थाजन केले पाहिजे. उत्पादन व विक्रि शेतावरच केल्यास ग्राहकांनी स्वस्त दरामध्ये गरजेच्या वस्तू व शेतकऱ्यांना रोख पैसा मिळेल खेळते भांडवल उपलब्ध झाल्याने अनेक सोयीसुविधा निर्माण करता येतील. प्रदुषण विरहित वातावरण असेल तर पर्यटकांचा ओध वाढल्याशिवाय राहणार नाही. जांभूळ, आंबा, काजू, आवळा, कोकम अशी अनेक फळे तयेख त्स फळापासून बनणारा सिरप, लोणचे, सॉस इत्यादी उत्पादने पर्यटकांना ताज्या स्वरुपात देता येतील. परंतू या सर्वांसाठी सअे उपक्रम हाती घेणे अत्यावश्यक आहे. येणाऱ्या पर्यटकांना राहण्यासाठी निवास व भोजनाची योग्य व्यवस्था करुन घ्यावी लागेल.

शासनाच्या योजना :

केंद्र व राज्य सरकारच्या पर्यटन विभागामार्फत सार्वजनिक भौतिक सुविधा उदा. रस्ते, विज, पाणी, रेल्वे वाहतूक इत्यादी प्राधान्याने राबविल्या जात आहेत. कृषी पर्यटकांना आकर्षित करण्यासाठी शासनामार्फत शेतकऱ्यांना महार्भमण योजना सुरु झालेली आहे. शेती, निसर्ग, ऐतिहासिक वारसा, कला हस्तकला, जंगले, पर्यावरण असे विविध घटक या महार्भमण योजनेत अंतर्भू आहेत. महाराष्ट्र पर्यटन विकास महामंडळाची निवास व न्याहरी योजना ही शेतकऱ्यांना फायदेशीर व वरदान ठरलेली आहे. यामध्ये सर्व प्रकारच्या कर सवलती असून शेतकऱ्यांना प्राध्यान्य दिलेले आहे.

कृषी पर्यटन व्यवसायामध्ये लाखो रुपयांची उपाबल होण्याची शक्यता असल्याने ग्रामीण भागातील जनतेच्या उन्नतीचा हा एक नवा मार्ग आहे. पर्यटनाकडे पूरक व्यवसाय म्हणून न पाहता मुख्य व्यवसाय म्हणून पाहिल्यास कृषी पर्यटनाला चांगले दिवस येतील व अनेक फायदे शेतकरी व समाजाला होतील. ग्रामीण भागाचा विकास साधण्यासाठी कृषी पर्यटनाशिवाय पर्याय नाही.

कृषी पर्यटन व्यवसायामध्ये लाखो रुपयांची उपाबल होण्याची शक्ता असल्याने ग्रामीण भागातील जनतेच्या उन्नतीचा हा एक नवा मार्ग आहे. पर्यटनाकडे पूरक व्यवसाय म्हणून न पाहता

मुख्य व्यवसाय म्हणून पाहिल्यास कृषी पर्यटनाला चांगले दिवस येतील व अनेक फायदे शेतकरी व समाजाला होतील. ग्रामीण भागाचा विकासा साधण्यासाठी कृषी पर्यटनाशिवाय पर्याय नाही.

१. अनेक वर्ष पडिक असलेली जमीन, तोट्यात चालणाऱ्या शेतीमधून उत्पादन वाढेल. शेतकऱ्यांच्या नफ्यात वाढ होईल. स्थानिक शेतीमधून उत्पादित होणाऱ्या वस्तूंची विक्रि वाढेल.
२. संपूर्ण जिल्ह्यामध्ये रोजगार उपलब्ध झाल्याने स्थानिक गरजू व बेकार लोकांना कायमचे काम मिळेल.
३. विविध मार्गांनी शेतकऱ्यांना पैसा मिळाल्याने त्यांचे राहणीमान उंचावले.
४. कृषी पर्यटनामुळे रस्ते, वीज, पाणी, स्वच्छता, आरोग्य केंद्र यांच्यामध्ये सुधारणा होईल.
५. पर्यावरणाचे संवर्धन होवून त्यामध्ये संतुलन राखले जाईल.

सारांश / निष्कर्ष :

स्वत:च्या अर्थाजनासाठी निसर्गाचा उपभोग घेणे हे साहजिकच आहे. माणूस हा निसर्गाचा एक अविभाज्य घटक आहे. पर्यावरण, सजीवसृष्टी आणि मानव यांचा दैनंदिन संबंध येतो. म्हणूनच जिल्ह्यात असणारी साधनसंपत्ती भौगोलिक परिस्थितीशी मिळतेजुळते घेवून स्वत: अनेक उपक्रम राबविले पाहिजेत. व्यवसाय व उत्पादन्नाचे साधन म्हणून कृषी पयटकांचाही ओढा आकर्षित होईल. खऱ्या अर्थाने दक्षिण कोकणातील सर्वच शेतकऱ्यांना कृषी पर्यटनाच्या विकासासाठी उपलब्ध असणारी मोठी संधी खूपच लाभदायक ठरेल.

संदर्भ ग्रंथ :-

१. पर्यटन भूगोल - डॉ. विठ्ठल घारपूरे
२. कृषी विज्ञान केंद्र - सिंधुदुर्ग.
३. पर्यनातील करिअर - आनंद मापुस्कर
४. पर्यटन भूगोल - डॉ. एस. बी. शिंदे
५. कोकणातील पर्यटन - प्र. के. घाणेकर

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