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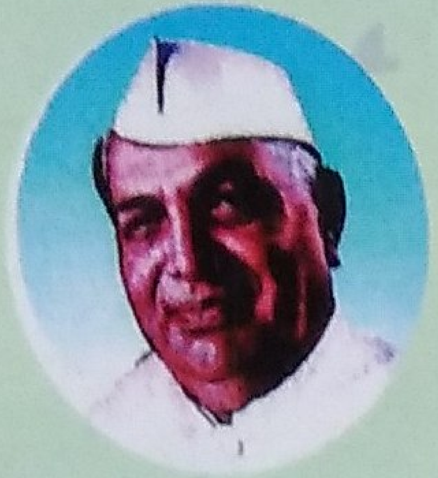

Shivaji Vidyapeeth Bhoogol Shikshak Sangh KOLHAPUR

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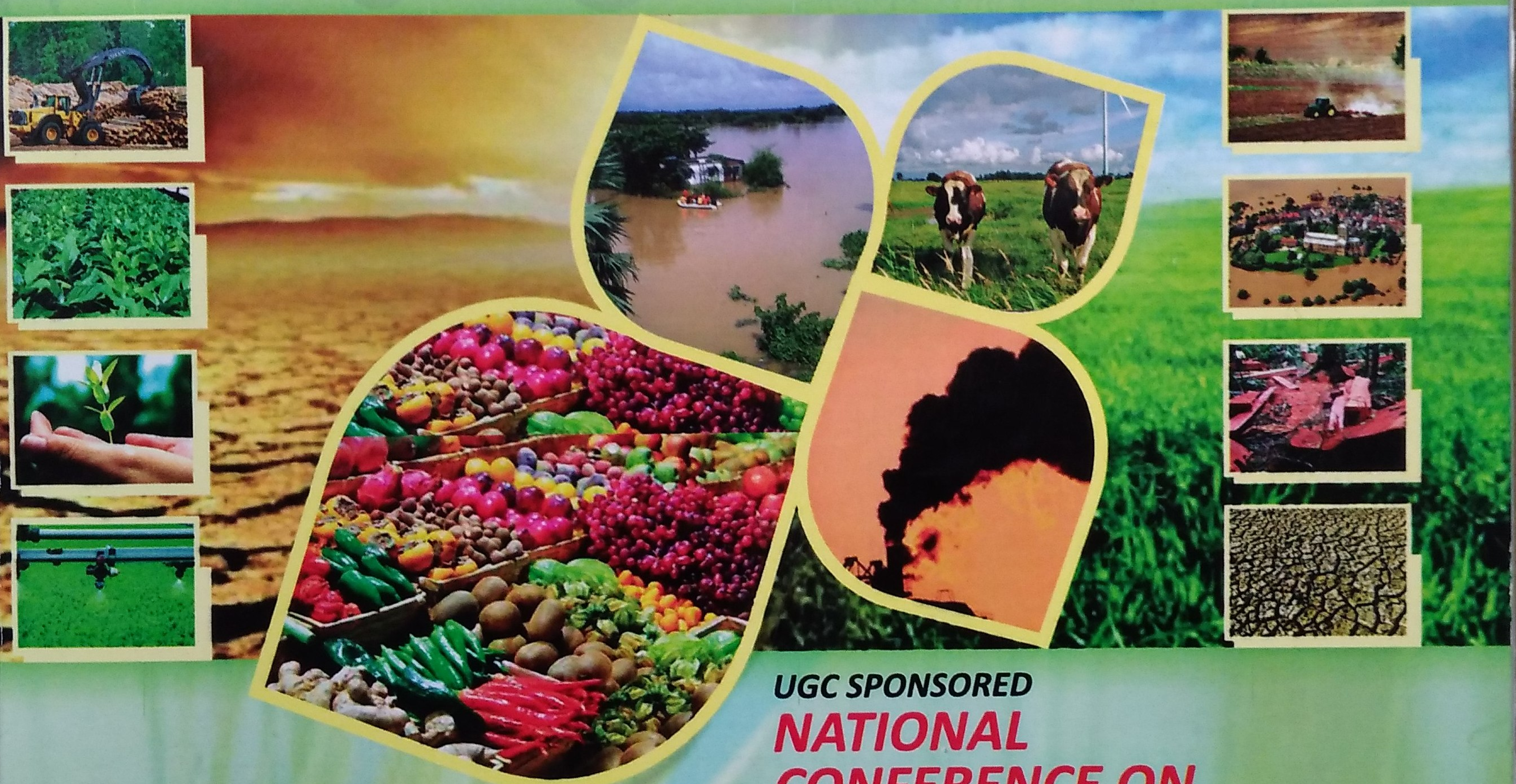

UGC SPONSORED

NATIONAL CONFERENCE ON

"ENVIRONMENTAL ISSUES OF AGRICULTURE DEVELOPMENT IN INDIA"

11th & 12th August, 2016

Editor,

Dr. Arun B. Patil

Organized by

Department of Geography

ARTS & COMMERCE COLLEGE, ASTHA

In Association with

Shivaji Vidyapeeth Bhoogol Shikshak Sangh, Kolhapur.

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● PROCEEDING BOOK ●

◆EDITOR◆

DR. ARUN B. PATIL

◆ORGANIZED BY◆

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ARTS & COMMERCE COLLEGE, ASHTA
IN ASSOCIATION WITH
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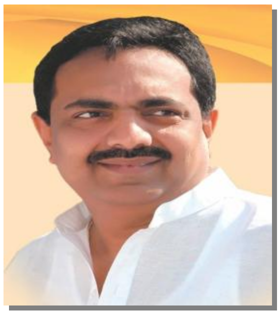

Maharashtra Vidhansabha

Jayant Patil
M.L.A.
283, Islampur Vidhansabha constituency

Date.

Message

I am happy to learn that department of Geography, Arts and Commerce College, Ashta of our Kasegaon Education Society is organizing two day national conference on `Environmental Issue of Agriculture Development in India' on 11th and 12th August, 2016. Now- a- days exploitation of natural resources is becoming a very serious threat to the environment. It leads to irreparable damage to the environment as well as non availability of natural resources. Also it is observed by many research institutes that the exploitation of natural resources has greatly increased in 21st century. The resources are extracted on wide scale which is hazardous to the world.

I congratulate the principal and convener for selecting such topic as theme of the conference. It will definitely help the researchers, academicians and stakeholders to think in a different manner and try to implement the conclusions arrived at.

I wish the conference a great success and once again congratulate the department of Geography, Arts and Commerce College, Ashta for organizing national conference on such an important topic.

Jayant Patil

Hon. Jayant Patil
MLA, Islampur

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Vice-Chancellor

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MESSAGE

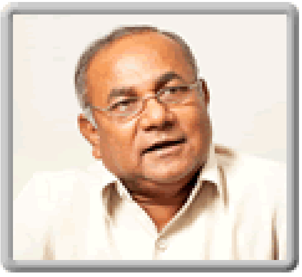
I am indeed happy to know that the Department of Geography, Arts & Commerce College, Ashta, Dist. Sangli is organizing a UGC Sponsored National Conference on "Environmental Issues of Agriculture Development in India" on 11th and 12th August, 2016.

The theme and sub-themes on which the conference is being organized are very vital in the present day context and I congratulate the Principal and all his colleagues for organizing the conference on this very important topic. I am sure that the main theme and the sub-themes will be widely discussed in the Conference. I also hope that large number of participants will actively take part and the Conference will have meaningful interaction.

I wish the National Conference a very grand success.

KOLHAPUR
Date: 04/08/2016

(Devanand Shinde)
Vice-Chancellor



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Message

It gives me great pleasure to know that the department of Geography, Arts and Commerce College, Ashta of our institution is organizing two day national conference on `Environmental Issues of Agriculture Development in Inida` on 11th and 12th August,2016. I really feel that the theme selected for the present conference is most relevant in present situation. Today the world is facing various problems such as fluctuating and unexpected climatic conditions leading to various environmental problems. This has adversely affected the agricultural sector. Therefore, I personally feel the conference will deal with all these problems and bring about fruitful results.

On behalf of Kasegaon Education Society I wish this conference great success.

Prin. R.D.Sawant
Secretary,
Kasegaon Education Society,
Kasegaon, Dist.Sangli.

MESSAGE

Dr. B.N. Gophane
President
Maharashtra Bhogolshastra Parishad, Pune
Ex. Management Council Member
and Chairman Board of Studies in
Geography and Meteorology,
Shivaji University, Kolhapur
And
Head Deptt. Of Gegoraphy
Venutai Chavan College, Karad

It gives me great pleasure and proud that the Kasegaon Education Society, a pioneering in educational services to the rural sectors of Sangli district is organizing two days National conference through Department of Geography, Arts and Commerce College Ashta in between 11 & 12 Aug. 2016. I congratulate the organizing committee particularly Dr. Arun Patil, Head Deptt. Of Geography and convener of this conference.

The theme "Environmental Issues of Agriculture Development in India" is taken for presentation and discussion is very much appropriate as the sanstha and college *itself* is having agricultural background. Agriculture, is supposed to be a fundamental *way of life of Indian* farmers, is transforming from primitive to modern and traditional to *technical*. This transformation has indeed reflected by environmental infrastructure at *spatial* as *well* as temporal level. The degraded environmental situation has created *different challenges*. These issues should be considered at brainstorming level.

I believe in that the two days meet of scholars will come out with concrete proposals and action strategies' in this regard.

Wish the National conference a very grand

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MESSAGE

Dr. V.G.Kale,
Principal,
Arts and Commerce College, Ashta.

Dear delegates, colleagues and friends,

I am very pleased to welcome you all at UGC sponsored National Conference on " Environmental Issues of Agricultural Development in India" organized by our college on 11th and 12th August, 2016.

I feel that the theme of this conference is relevant to the present situation of development that is linked to environmental issues. We are aware of the great damage done to environment through exploitation of natural resources and also through an ever increasing use of chemicals to increase agricultural produce. As a result of this, irreparable damage has been done to the environment, thereby endangering the very existence of all living beings. There are unpredictable climatic changes and fluctuations that have been a matter of great concern for all of us. Therefore, there is an urgent need to undertake steps to conserve the natural resources that have so far been over polluted and exploited to a great extent. I hope that through a discussion of all the relevant issues the conference can arrive at some positive results that would help towards a sustainable development of natural resources.

I am sincerely thankful to all those who have helped us in the organization of this conference. I also thank all the guests of honor, the resource persons, the delegates, research students and stakeholders who have participated in this conference. I thank the UGC for its financial support.

I once again warmly welcome all the guests, the resource persons, the delegates and research students to this conference and hope that the conference would be a great success.

Dr. V.G.Kale,
Principal,
Arts and Commerce College,
Ashta.

Editorial ……..

Dr. Arun Patil
Convener

We are very pleased to present this proceeding of the national Conference on "Environmental Issues of Agricultural Development in India". We sincerely hope that the purpose of the Conference has been served through a thorough discussion of a number of issues presented by the resource Persons and participants of this Conference.

The Department of Geography of Arts and Commerce College, Ashta has always been actively organizing different academic and co-curricular activities that would help to enhance the knowledge of students and researchers. This Conference aimed at providing a platform to academicians, researchers, students and stakeholders to discuss varied issues regarding agriculture and environment so as to arrive at some positive results. We, as inhabitants of this earth, are well aware of the significance of environment for the existence of all living beings. We also know that speedy development is significantly linked with self-sufficiency in agricultural production. In order to be self-sufficient in agricultural produce there has been widespread use of chemical fertilizers and pesticides which have adversely affected the environment by polluting natural resources like water, air and soil. In addition to this, widespread deforestation and natural calamities such as flood, earthquake, and conflagration of forests have caused irreparable damage to the environment. This has led to serious problems such as fluctuations in climatic conditions causing destruction of flora and fauna, soil erosion and depletion of groundwater resources. It was felt that a conference to discuss the various issues regarding impact of environmental changes on agriculture sector would be the need of the day.

We have received research papers on a number of important issues on agriculture and environment that have affected development in India. The presentation of the papers and a discussion of the relevant matters has been a fruitful endeavor.

We take this opportunity to thank all those institutions and persons who have been helpful in making the Conference a success. We thank the University Grants

Commission, New Delhi and Western Regional Office, Pune and Prof. (Dr.) Devanand Shinde, Vice-Chancellor, Shivaji University, Kolhapur for providing the requisite financial assistance for this conference. We owe special thanks to Shri Shamrao Patil President, Prin. R.D.Sawant Secretary and Prin. R.M.Kurlapakar Joint Secretary, Kasegaon Education Society;, Rajarambapu Institute of Technology, Rajarambapu Patil Dudh Sangh Ltd., Islampur and Rajarambapu Sahakari Bank Ltd., Peth and Omkar Trading Company Islampur for their kind assistance. We sincerely thank the Principal of our college; Dr. V.G. Kale for his guidance and encouragement.

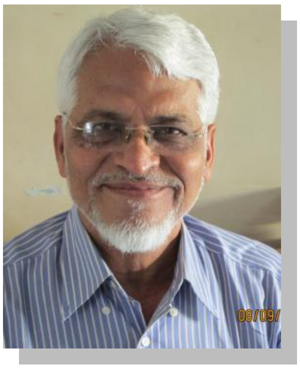
We thank Dr. B.N. Gophane, Dr. K.R. Jadhav, Dr. C. V. Mane, Dr. B.S. Jadhav for their support and guidance.

We thank all the eminent persons who have been instrumental in making this conference a success. We express our gratitude for the co-operation and help received from all colleagues, organizing committee members and all those who have contributed research articles. We also thank the non-teaching faculty for their support and help. We would also like to thank Mr. Nandkumar Desai and the staff of Shreekant Computers for their co-operation and efforts to print this Proceeding within the stipulated and limited time span.

In this Proceeding we have included various articles on a number of relevant issues. We would like to declare that the final responsibility of the facts, figures and opinions expressed in the research papers and articles lies with the concerned authors. We have taken utmost care to avoid printing mistakes in this Proceeding. However, we apologize for any mistakes that may have occurred unknowingly.

Dr. Arun Patil
Convener

Keynote Address



Praveen G. Saptarshi
Professor Emeritus
Savitribai Phule Pune University,
Pune

ENVIRONMENTAL ISSUES OF AGRICULTURE DEVELOPMENT IN INDIA

It is indeed a relevant theme. Chosen for the present conference. I hope the teaching community , research scholar and planners should discuss the issues and guide the policy maker across political parties. First I would like to discuss environmental issues due to impact of irrigation, market oriented agriculture and international trade. Second part of my deliberation would attempt the address policy issues associated with agricultural activities in future.

It is no doubt that we have achieved agricultural development mainly due to "Green Revolution" in our country observed in later half of last century. With due respect to the planners like swaminathan and kwrian I would like to pose a question, "How green is the Green Revolution?" Do you accept the productivity of agricultural is a prime criterion to consider its achievement? It we carry out research with such questions in mind our findings would be similar as stated here.

Our green revolution is based on developing water resources through dams, canals, ponds, as well as groundwater. Once irrigation facility is provided use of fertilizers increases steeply. This is followed by heavy use of pesticides. These are the three main reasons creating environmental issues.

Irrigation Development and Environmental Issues

Irrigation has been practiced in India traditionally. Use of groundwater for agriculture is not a new thing. However, technological support for fetching groundwater for agriculture has created severs issues. When we were getting ground water from the wells up to 80 to 100 feet and that too from dug wells environmental impact was very low or low enough to regenerate ground water source. We started lifting water deep into ground by tube wells and bore wells. The technological support in 80s and 90s was improved so much so that we started fetching groundwater even at more than 500 feet. Bore wells in Maharashtra are being deepened every year. Such wells are no more a capital assets for farmers but recurring expenditure. It is interesting finding that groundwater has gone down in the areas of canal irrigation. In a scientific study it observed that depth of ground water and proportion of area under sugar cane have been significantly associated. Why it is so? The areas benefited by canal irrigation and cash crop cultivation enhanced the process of capital formation. Therefore farmers in the irrigated areas could spend on technology support to constrict bore wells more deep. Thus, the canals, instead of acting as recharging factors acted as a factor responsible for deterioration of ground water.

Canal irrigation is a modern facility and so is the case of lift irrigation. It might have been simple to state that canals have shown positive impact on agricultural development. However, several studies in economics, commerce management and geography have shown that capital investment made to construct dams and canals have not been recovered even in long period of 60 to 80 years. This means that beneficiaries of canal irrigation have not paid off the expenditure. Furthermore, environmental issues live depletion of biodiversity in the catchment areas, agricultural diversity in the command areas, soil degradation, increasing proportion of wasteland mainly due to increase in salinity, increase in TDS of ground water, etc. have become sever during green revolution

Soil resource is popularly called as natural capital. It the capital is being reduced the sustainability is at high risk.

Fertilizers for Agricultural Productivity of Industry

Any simple stude can trace the trend of use of fertilizers in our country. It is observed that this component of green revolution has been increased exponentially in the last seven to eight decades. This has benefited more to the fertilizer manufacturing industries than agriculture. Further, this has increased import of oil products pressurizing value of rupee. This economic dimension must be understood. by geographers.

It is also said that prices of agricultural goods have been increase in the period of green revolution. It created direct impact on people below poverty as steeple food grains like Jawar, Bajra, Rice become inaccessible to them. Thus, green revolution has diverted money from rural sector to urban by way of fertilizers.

Role of Pesticides in soil degradation and creating ecological issues

The pesticides are responsible for adding heavy metal traces in soils, plants, animal products and ultimately to human beings. It adds bio-accumulative elements in plant and animal bodies. It affects genitically and hence it is necessary to avoid or at least reduce the use of pesticides as advocated by several environmental scientists. Equally important is the socio-political aspects of manufacturing pesticides. Mast of the multinational companies producing pesticides are producing chemical weapons secretly. This is the impact posing threat to very existence of human race.

What is the way out?

The ill impacts of agricultural development are mainly suffered by rural sector by rural sector and mainly lower section of society. On the other hand, benefits of agricultural development are being enjoyed by the rich societies in India and ultimately developed world. Keeping this social view in mind it is necessary to start social revolution aiming at retaining benefits of agricultural development in rural sector. Export of sugar may be considered on the basis of environmental studies, as export of water of the rate of less than a cent per liter to developed countries. This kind of antisocial plan must be demolished in democratic way.

Suggested Programmers

May suggest following programmers for achieving agricultural development in true sense.

1. Organic Farming:

Benefits of organic farming are beyond doubts and hence I would not discuss it in this brief note. I would appeal to the students and teachers to develop plot in the college premises which would eventually act as leading demonstrative centre for appropriate out rich programmers.

2. Water Resource Development and Social Management

Developing water resource is a task that can be achieved. What is important is to distribute is socially and judiciously so that benefits of development can be shared by all sections of society. Further, water requirement for agriculture should not increase beyond critical level so that drinking water resources would be dried up. These principles must be adopted while planning water resource development.

3. Market for whom?

Market has played important role in agricultural development. Some has worked against the farmers at times. Who dictates the market forces and for whom? We should understand this and design the strategy for agricultural development. Geographers can do it because they have ability to understand social, political, economic and environmental dimensions of agriculture.

Dr. Praveen Saptarshi
Pune.

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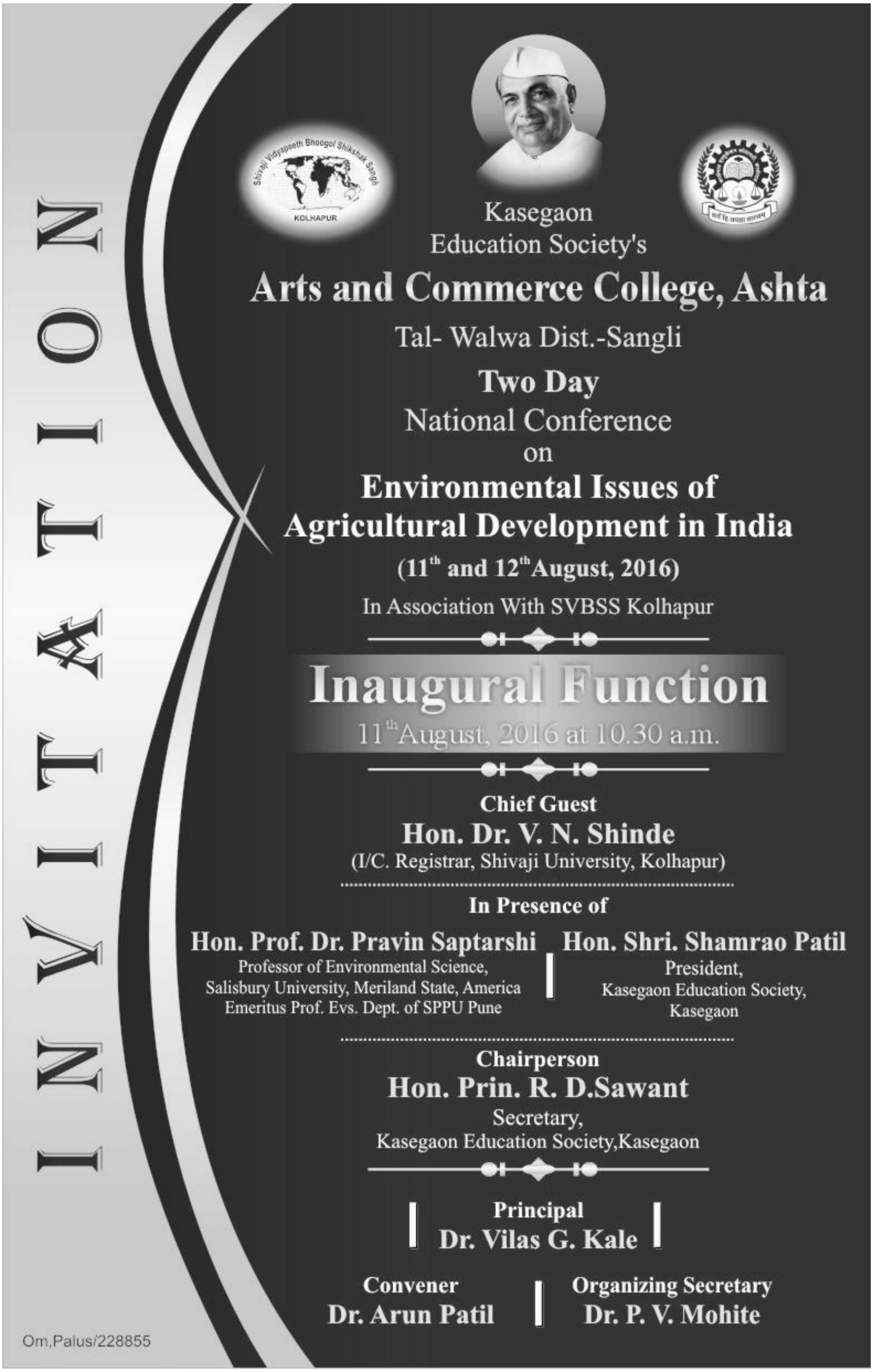

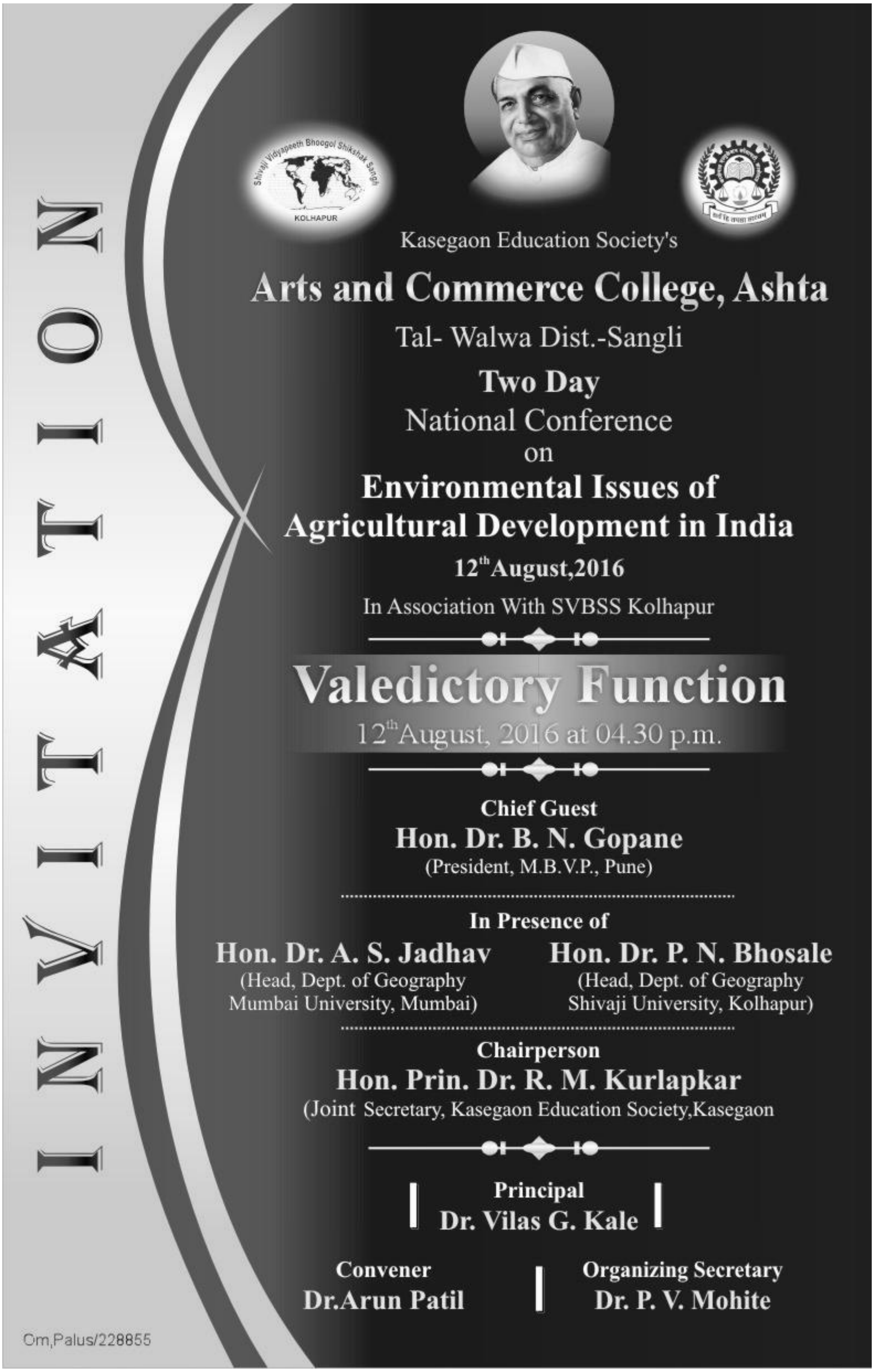
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Kasegaon Education Society's
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National Conference
on
Environmental Issues of
Agricultural Development in India
12th August,2016
In Association With SVBSS Kolhapur
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(President, M.B.V.P., Pune)
In Presence of
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(Head, Dept. of Geography
Mumbai University, Mumbai)
Hon. Dr. P. N. Bhosale
(Head, Dept. of Geography
Shivaji University, Kolhapur)
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Principal
Dr. Vilas G. Kale
Convener
Dr.Arun Patil
Organizing Secretary
Dr. P. V. Mohite
Om,Palus/228855

INDEX

THE SHRINKING SOUTH WEST MONSOON IN AHMEDNAGAR DISTRICT OF MAHARASHTRA, INDIA

DR. GATADE D. G.* **MR. S. B. SASANE.****

* Head and Associate Professor, Department of Geography, D. P. Bhosale College, Koregaon, Dist. Satara

** Ph.D. Research Fellow, Department of Geography, Shivaji University, Kolhapur.

ABSTRACT

In present paper an attempt has been made to investigate change in South West Manson applying Departure Index (DI) for Ahmednagar District. The result shows shrinking trends (Negative) in all tahsils, the highest declining trend was observed in Shevgaon tahsil (70 per cent) followed by Parner, Pathardi and Kopergaon (60 per cent). Similarly, the 50 per cent shrinking rainy days shows by Nagar, Shrigonda, Karjat, Newasa, Rahuri, Akole, Sangamner and Shrirampur tahsils. The result of study clearly points out that all tahsils in district experienced shrinking rainy days during 2005 to 2014 period. This is wake call for entire district and need to hour to put steps for counter the shrinking rainy days.

Key words – Monsoon, Rainy days, Shrinking trend, Departure Index

INTRODUCTION

Agriculture is still backbone of Indian economy and dependence of agriculture on monsoon rainfall is well known. The Indian Meteorological Department (IMD) defines it as the seasonal reversal of the direction of winds along the shores of the Indian Ocean, especially in the Arabian Sea, which blow from the southwest for half of the year and from the northeast for the other half. Normally, the southwest monsoon can be expected to "burst" onto the western coast of India (Kerala) at the beginning of June and to cover the entire country by mid-July. Its withdrawal from India typically starts at the beginning of September and finishes by the beginning of October. The most part of India receives about 80 per cent annual rainfall from southwest monsoon (June – September). The all-India level summer monsoon rainfall doesn't show any significant trend (Rajeevan et. al., 2006) but at regional and local level it sharply observed. The many attempt has been made to study Indian monsoon viz., *Parthasarathy and Mooley, 1978;* [*Chowdhury and Abhayankar, 1979; Syroka and Toumi, 2002; Syroka and Toumi, 2004; Goswami and Xavier, 2005; Rajeevan et. al., 2006; Annalisa and Antonio, 2007.*

Therefore, the present study focuses on to identify change in southwest monsoon in terms of amount of rainfall and rainy day applying departure index in Ahmednagar district because 73 per cent agricultural land is rain fed and about 80 per cent rural population depends on agriculture.

STUDY REGION

Ahmednagar is the largest district of Maharashtra State with geographical area of 17, 418 sq. km. which is 5.66% of area of Maharashtra State. It lies between 18° 2' to 19° 9' N latitude and 73° 9' to 75° 5' E longitude with covering 14 tahsils. According to 2011 Census The population of district is 45, 43,083 and out of total workers 75. 42% are engaged in agriculture. The district has 12, 56,500 ha Net Cropped Area (NCA) out of 3, 30,000 ha area (26.27 %) is under canal and well irrigation and remaining about 9, 26,500 ha. (73.73 %) area is rain fed. Therefore agricultural operations are mainly depends on SW Monsoon, but rainfall in district is highly variable. The average annual rainfall in the district is 568.7 mm and it decreases rapidly from the west towards east. About 77% of the annual rainfall in the district is received during the SW monsoon season, September being the rainiest month and remaining months receiving unevenly. Since three-four decades SW monsoon showing shrinking trends in term of amount of rain fall as well as rainy days.

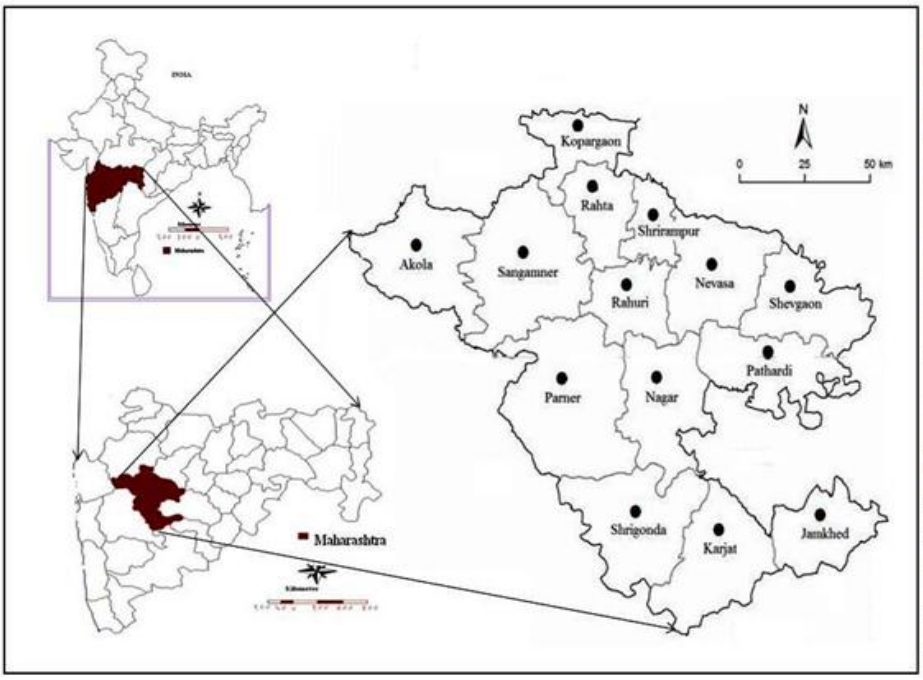

Fig. 1: Raingauge Stations in Ahmednagar District

RESARCH METHODOLOGY

The data retarding rainy days in South West Monsoon recorded at 14 Raingauge stations covering Ahmednagar district were collected from the Indian Meteorological Department, Pune during the period of 2001 to 2014. The shrinking in SWM identified on the basis of rainy days deficiency from normal rainy days (Table 1). The criteria is based upon the percentage of rainy days departure from mean and is computed as

$$DI = \left[\frac{\text{Rainy Days} - \text{Mean Rainy Days}}{\text{Mean Rainy Days}}\right] * 100$$

On the basis of the percentage of departure from mean rainy days (Table 1) the year wise shrinking SWM trends was plotted with help of Excel.

RESULT AND DISCUSSION

The departure index (DI) has been calculated by percentage departures of rainy days from mean for SW Monsoon season during 2005 to 2014. A rainy day is considered as per IMD criteria, if the amount of rainfall is received 2.5 mm. or more in a day, is considered as rainy day.

Table 1:
Percentage Departure of Rainy Days from Mean in Ahmednagar District

Sr. No.	Tahsil	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
1	Nagar	-23.33	6.67	6.67	-16.67	-3.33	70.00	-6.67	-53.33	13.33	10.00
2	Parner	19.35	41.94	-9.68	-22.58	-6.45	35.48	3.23	-58.06	6.45	-16.13
3	Shrigonda	-7.14	21.43	10.71	-10.71	7.14	28.57	-10.71	-53.57	21.43	-3.57
4	Karjat	13.33	20.00	3.33	-6.67	-3.33	46.67	-20.00	-66.67	16.67	-6.67
5	Jamkhed	-8.82	11.76	-8.82	8.82	-5.88	41.18	5.88	-61.76	23.53	-11.76
6	Shevgaon	-29.63	-7.41	-33.33	-18.52	-18.52	74.07	44.44	-29.63	48.15	-14.81
7	Pathardi	-42.31	-3.85	-3.85	-3.85	15.38	38.46	0.00	-53.85	42.31	-7.69
8	Newasa	-26.67	16.67	-10.00	3.33	-26.67	56.67	10.00	-23.33	6.67	0.00
9	Rahuri	-25.93	7.41	0.00	-14.81	-14.81	44.44	22.22	-33.33	11.11	-14.81
10	Sangamner	32.14	35.71	-17.86	7.14	-35.71	10.71	-7.14	-32.14	0.00	-10.71
11	Akole	13.95	18.60	6.98	-16.28	-20.93	-25.58	-34.88	-30.23	65.12	30.23
12	Kopargaon	25.00	32.14	25.00	-7.14	-28.57	28.57	-14.29	-10.71	-7.14	-42.86
13	Shrirampur	-14.81	11.11	14.81	3.70	-22.22	48.15	-3.70	-18.52	7.41	-14.81
14	Rahata	3.57	7.14	10.71	-21.43	-50.00	42.86	3.57	7.14	10.71	-28.57

(Source: Computed by Researcher)

Examination of the number of rainy days and departure index over Ahmednagar district in SW Monsoon season (June-September) shows deceasing trends for 7 out of 10 years during 2005 to 2014. In terms of spatial departure of rainy days from mean in 2005, Pathardi, Shevgaon, Nagar, Rahuri, Newasa, Shrirampur, Shrigonda and Jamkhed tahsil indicates negative trend (Shrinking Trend) in rainy days from normal (Fig.1) while during 2006 only Shevgaon and Pathardi recorded negative trend from normal (Fig.2).

The Fig. 3 shows shrinking trend in rainy days during SW Monsoon season, especially in Shevgaon, Sangamner, Jamkhed, Newasa, Parner and Pathardi whereas in 2008 Nagar, Parner, Shrigonda, Karjat, Shevgaon, Pathardi, Rahuri, Akole, Kopergaon and Rahata experienced shrinking trend (Fig.4). During SW Monsoon in 2009, except Shrigonda and Pathardi tahsils reaming 12 tahsils indicate negative rainy day as compared to normal but in 2010 only one Akole tehsil recorded negative trend of rainy days. There is a sharp shrinking rainy days trend show by Fig 8, only Rahata point out decrease in rainy days and all reaming tahsils indicate shrinking rainy days. In 2014 except Nagar and Akole reaming 12 tahsils show shrinking rainy days trend.

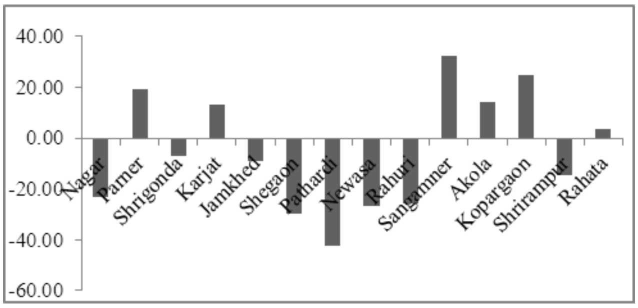

Fig. 1: Percentage Departure of Rainy Days from Mean in Ahmednagar District- 2005

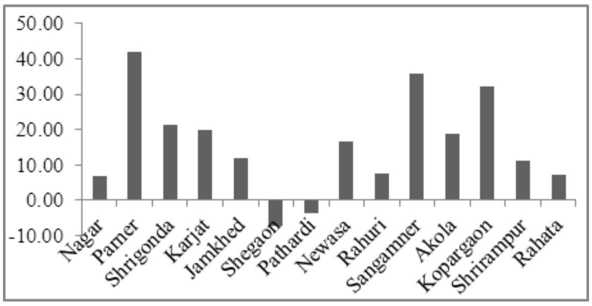

Fig. 2: Percentage Departure of Rainy Days from Mean in Ahmednagar District- 2006

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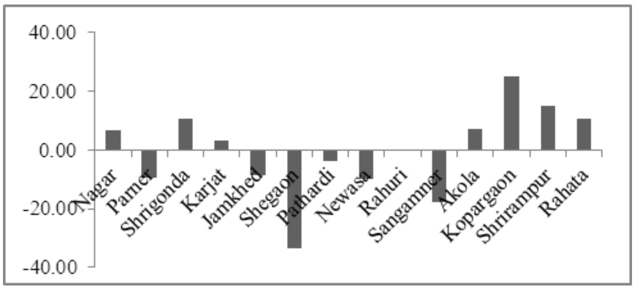

Fig. 3: Percentage Departure of Rainy Days from Mean in Ahmednagar District- 2007

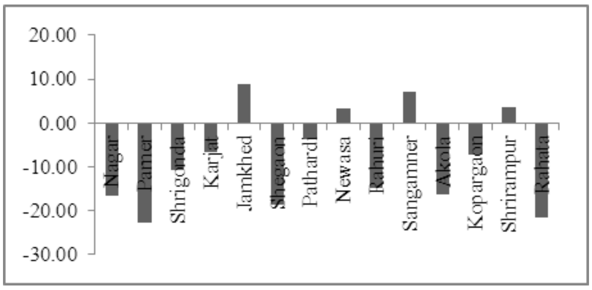

Fig. 4: Percentage Departure of Rainy Days from Mean in Ahmednagar District- 2008

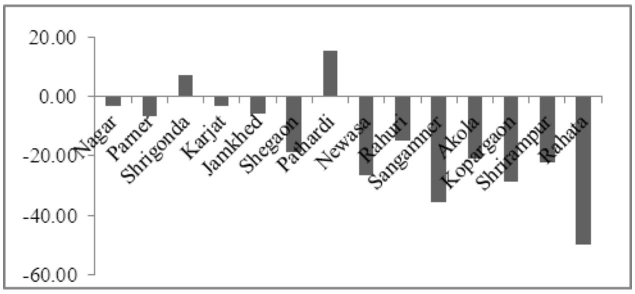

Fig. 5: Percentage Departure of Rainy Days from Mean in Ahmednagar District- 2009

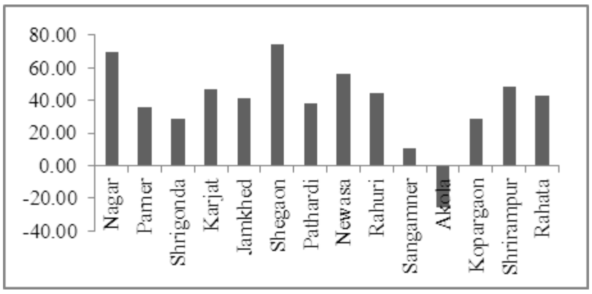

Fig. 6: Percentage Departure of Rainy Days from Mean in Ahmednagar District- 2010

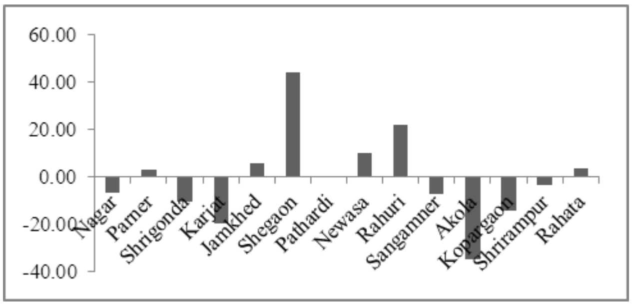

Fig. 7: Percentage Departure of Rainy Days from Mean in Ahmednagar District- 2011

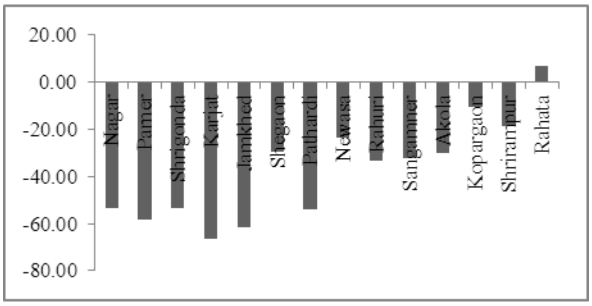

Fig. 8: Percentage Departure of Rainy Days from Mean in Ahmednagar District- 2012

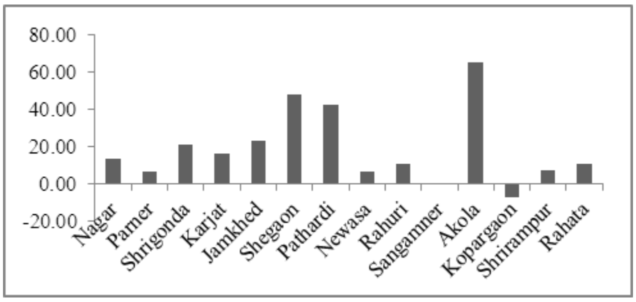

Fig. 9: Percentage Departure of Rainy Days from Mean in Ahmednagar District- 2013

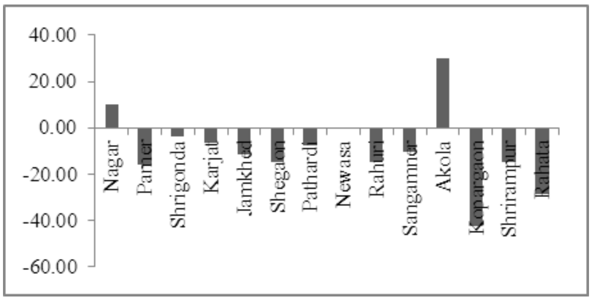

Fig. 10: Percentage Departure of Rainy Days from Mean in Ahmednagar District- 2014

Table 2
Shrinking SW Monsoon in Ahmednagar District during 2005 to 201

Sr. No.	Stations (observation years)	Positive Rainy Days From Normal Year	Negative Rainy Days From Normal Year	Overall Shrinking trend in SW Monsoon (%)
1	Nagar (10)	5	5 (2005, 2008, 2009, 2011, 2012)	**50**
2	Parner (10)	4	6 (2007, 2008, 2009, 2011, 2012,2014)	**60**
3	Shrigonda (10)	5	5 (2005, 2008, 2011, 2012,2014)	**50**
4	Karjat (10)	5	5 (2008, 2009, 2011, 2012,2014)	**50**
5	Jamkhed (10)	4	6 (2005, 2007 2009, 2011, 2012, 2014)	**60**
6	Shevgaon (10)	3	7 (2005, 2006, 2007, 2008, 2009, 2012, 2014)	**70**
7	Pathardi (10)	4	6 (2005, 2006, 2007, 2008, 2012, 2014)	**60**
8	Newasa (10)	5	5 (2005, 2007, 2009, 2012,2014)	**50**
9	Rahuri (10)	5	5 (2005, 2008, 2009, 2012,2014)	**50**
10	Sangamner (10)	5	5 (2007, 2009, 2011, 2012,2014)	**50**
11	Akole (10)	5	5 (2008, 2009, 2010, 2012,2012)	**50**
12	Kopargaon (10)	4	6 (2008, 2009, 2011, 2012, 2013, 2014)	**60**
13	Shrirampur (10)	5	5 (2005, 2009, 2011, 2012, 2014)	**50**
14	Rahata (10)	7	3(2008, 2009, 2014)	**30**

(Source: Computed by Researchers)

CONCLUSION

In Ahmednagar district 79.91 per cent people are living in rural area and depending on agriculture, where about 73.73 per cent land is rain fed, entirely depending on monsoon. Therefore present study shows that entire district experienced 7 out of 10 years (70 per cent) rainy days shrinking from normal with tremendous spatial variability. The highest shrinking trend of rainy days was observed in Shevgaon tahsil, 7 out of 10 years (2005, 2006, 2007, 2008, 2009, 2012, and 2014) followed by Parner (2007, 2008, 2009, 2011, 2012 and 2014), Jamkhed (2005, 2007 2009, 2011, 2012 and 2014), Pathardi (2005, 2006, 2007, 2008, 2012 and 2014) and Kopergaon (2008, 2009, 2011, 2012, 2013, 2014) 6 out of 10 years.

However, Nagar, Shrigonda, Karjat, Newasa, Rahuri, Akole, Sangamner and Shrirampur tahsils shows 5 out of 10 years (50 per cent) shrinking rainy days while only Rahata tahsil indicates lowest shrinking trend, 3 out of 10 years (30 per cent). The result of study clearly points out that all tahsils in district experienced shrinking rainy days during 2005 to 2014 period.

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LAND USE PATTERNS IN AHMEDNAGAR DISTRICT OF MAHARASHTRA

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ABSTRACT

Land use is the surface utilization of all developed and vacant lands on a specific point at a given time and space. The land use pattern is different from region to region and place to place. Land is one of the most important resources for human being therefore it is necessary to put land for right use according to its capability and type. Therefore, in this paper attempt is made to analyse the existing general land use patterns in Ahmednagar district of Maharashtra and changes therein, which is very much useful for further land use planning. The period selected for the present study is from 2000-01 to 2011-12. The present study is entirely based on secondary data which is mainly collected form Socio–Economic Review and District Statistical Abstract of Ahmednagar. Present investigation shows that there is 0.44 per cent decrease in forested area, 4.12 per cent decrease in other uncultivable land and most importantly 1.44 per cent decrease in net shown area, whereas increase in area not available for cultivation now by 1.35 per cent as well as follow land by 4.66 per cent in the district during the study period. It is observed that agricultural and economically productive land converted into the non-agricultural uses, mainly because of the rapid growth of urbanization, industrialization and simultaneously development of infrastructural facilities in the district. Therefore, it is suggested here that fertile land can be used for agricultural purposes only whereas infertile land can be used for non-agricultural purposes.

Key Words: *Land use, Patterns, Urbanization and Industrialization.*

INTRODUCTION

Land use is the surface utilization of all developed and vacant lands on a specific point at a given time and space (Foreman, 1968). The socio-economic changes that have profound influence on land use pattern. It is an ideal index for looking at the economic progress of rural area (Singh, 1974). It is one of the most important resources for human being therefore it is necessary to put land for right use according to its capability and type. Land use study is much useful for land use planning because increasing population increases the demand on land for non-agricultural purposes may be met without reduction in farm land. The analysis of general land use pattern is very much useful for further investigation of socio-economic reality in the study area.

OBJECTIVES

1. To analyse the existing general land use patterns in Ahmednagar district of Maharashtra and changes therein from 2000-01 to 2011-12.

STUDY REGION

Ahmednagar district is selected for study purpose. It is situated partly in the upper Godavari basin and partly in the Bhima basin occupying a somewhat central position in the Maharashtra state. It lies between 18^{0} 2’ and 19^{0} 9’ north latitude and 73^{0} 9’ and 75^{0} 5’ east longitude.

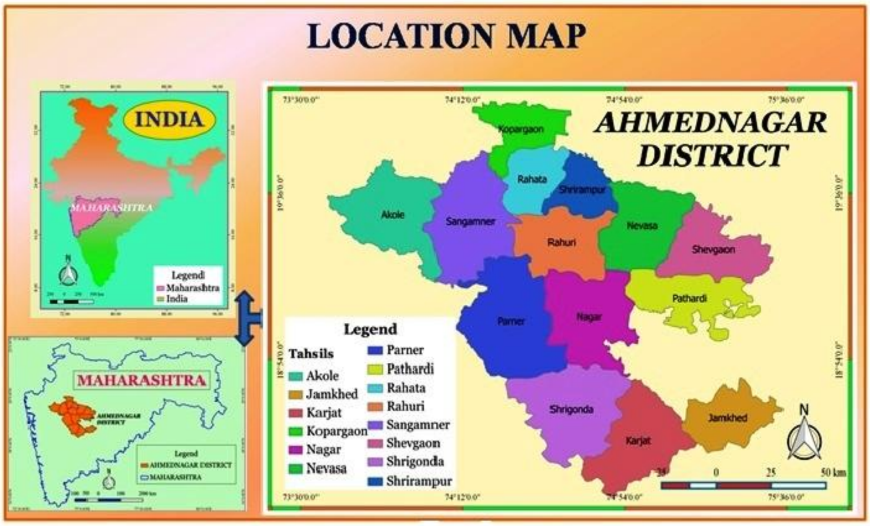

Fig. 1

DATABASE AND METHODOLOGY

In the present study tahsil has taken as a basic unit of investigation. The present study is entirely based on secondary data which is mainly collected form Socio–Economic Review and District Statistical Abstract of Ahmednagar, 2000-01 and 2011-12 and also information have been collected from various published and unpublished thesis, articles and books etc.

GENERAL LAND USE PATTERN

1. Area under Forest

The area under forest occupies about 7.89 per cent of the total geographical area of the district during 2011-12. It clearly indicates that the proportion of area under forest is very much lower in the district as compared to the state of Maharashtra (16.96 per cent). The highest area under forest is observed in the Akole tahsil (27.72 per cent) followed by Rahuri (15.45 per cent), Parner (10.6 per cent), Shrigonda (9.48 per cent), Karjat (8.76 per cent), Nagar (8.76 per cnet) and Jamkhed (4.31 per cent) tahsil (Table 2.6). The lowest area under forest is found in Sangamner tahsil with 0.84 per cent. It is surprising to note that forest cover is not at all available in the fertile and irrigated tahsils like Kopargaon, Rahata and Shrirampur.

The area under forest covers 8.33 per cent of the total geographical area during 2000-01, while 7.89 per cent during 2011-12. It indicates that significant decrease in the area under forest in the district. About 0.44 per cent decrease is found in forested area during the 2011-12 over 2000-01.

2. Land not Available for Cultivation

The land not available for cultivation includes land under non-agricultural uses, barren and uncultivable waste. About 10.10 per cent area of the district belongs to this category, which is slightly lower as compared to the state average (10.34 per cent).

The land not available for cultivation was highest in the Karjattahsil (21.65 per cent), followed by Sangamner, Rahuri, Nevasa, Nagar, Akole, Shevgaon, Rahata, Kopargaon, Shrirampur, Parner, Shrigonda and Pathardi tahsil. The lowest per cent was recorded in the

Jamkhed tahsil (2.74 per cent). Karjat tahsil denotes highest share in this category due to the geographically large area covered by elevated plateau region and drought affected land.

During the 2000-01 to 2011-12, the area under this category has increased about 1.35 per cent in the district as a whole. The development of infrastructural facilities like construction of road and railway networks, canals, reservoirs, urbanization and expansion of settlements, development of industries etc, leads to high proportion of land not available for cultivation in the study area.

Table 1.1
Tahsil-wise Land Use Pattern in Ahmadnagar District, 2011-12

Sr. No.	Tahsil	Total Geographical Area (Hectres)	Area Under Forest %	Area not avilable for Cultivation %	Other uncultivated Land %	Fallow Land %	Net Sown Area %	Total
1	Akole	150400	27.72	8.74	0.39	2.35	60.79	**100.00**
2	Sangamner	135780	0.84	21.65	7.18	9.04	61.30	**100.00**
3	Kopargaon	70613	0.00	6.90	5.70	14.48	72.93	**100.00**
4	Rahata	68786	0.00	6.95	1.82	6.25	84.98	**100.00**
5	Shrirampur	50602	0.00	5.93	2.66	9.97	81.44	**100.00**
6	Nevasa	129204	1.13	12.26	0.09	2.97	83.55	**100.00**
7	Shevgaon	108713	1.06	7.93	0.28	1.50	89.23	**100.00**
8	Pathardi	117784	5.46	5.00	0.83	49.88	38.83	**100.00**
9	Nagar	150272	8.76	10.42	1.17	3.78	75.86	**100.00**
10	Rahuri	101685	15.45	13.14	1.08	11.21	59.13	**100.00**
11	Parner	186792	10.06	5.38	0.43	5.84	78.29	**100.00**
12	Shrigonda	160481	9.48	5.19	1.52	14.77	69.04	**100.00**
13	Karjat	149152	8.76	22.16	5.73	12.62	50.72	**100.00**
14	Jamkhed	87524	4.31	2.74	0.95	31.95	60.04	**100.00**
	Dist. Total	**1667788**	**7.89**	**10.10**	**2.03**	**11.88**	**68.11**	**100.00**

Source: Socio-economic Review and Statistical Abstract of Ahmadnagar, 2013.

3. Other uncultivated land (excluding fallow)

Other uncultivated land and cultivable waste excluding fallow included in this land use category. About 2.03 per cent area of the district belongs to this category, which is comparatively much lower to the state average (7.84 per cent) during the period of 2011-12.

The highest proportion of other uncultivated land is recorded in Sangamnertahsil (7.18 per cent), followed by Karjat and Kopargaontahsil i.e. 5.73 per cent, 5.70 per cent respectively whereas lowest area under this category was found in Nevasatahsil (0.09 per cent) of the district. Remaining tahsils like Shrirampur, Rahata, Shrigonda, Nagar, Rahuri, Jamkhed, Pathardi, Parner, Akole and Shevgaontahsil recorded lower share of other uncultivated land. High share of this category confined with tahsils having undulating topography, while lower share of this category confined with the plain and fertile area, development of irrigation facilities and use of modern techniques for farming.

The district has identified with 4.12 per cent decrease in other uncultivated land excluding fallow, while Maharashtra state identified with not change at all from 2000-01 to 2011-12. However, land belongs to this category attributes larger potentiality for extension of agriculture and plantation in near future.

4. Fallow Land

Fallow land is the land not used for cropping at the time of reporting. Fallow land further can be used for the cultivation. The fallow land occupies 11.88 per cent of the total geographical area which is higher than the state average of 8.27 per cent during 2011-12. The highest proportion of fallow land is found in Patharditahsil (49.88 per cent), followed by Jamkhed (31.95 per cent), Shrigonda (14.77 per cent), Kopargaon (14.48 per cent), Karjat (12.62 per cent), Rahuri (11.21 per cent), Shrirampur (9.97 per cent), Sangamner (9.04 per cent), Rahata (6.25 per cent), Parner (5.84 per cent), Nagar (3.78 per cent), Nevasa (2.97 per cent) and Akole (2.35 per cent) tahsil. The lowest fallow land is found in Shevgaontahsil (1.50 per cent).

The district has identified with 4.66 per cent increase in fallow area from 2000-01 to 2.11-12, which is much higher than the 0.42 per cent increase of the state. It is because of the district mostly lies in drought prone zone and receives irregular rainfall also the rugged topography, poor soil, lack of irrigation facilities, lack of capital, traditional agricultural practices etc. are responsible for increase in fallow land.

5. Net Sown Area

Net sown area means, the total area sown with crops and orchards may be sown more than once in the same year but counted only once (Agricultural Census, 2001-02). The net sown area occupies about 68.11 per cent of the total geographical area of the district which is considerably larger than the other land uses and also larger than the state average of 56.59 per cent during 2011-12. The highest proportion of net sown area is observed in Shevgaontahsil (89.23 per cent) while the lowest proportion is observed in Patharditahsil (38.83 per cent). Tahsil like Rahata, Nevasa, Shrirampur, Kopargaon, Parner and Nagar shows higher share of net shown area whereas Akole, Sangamner, Rahuri, Shrigonda, Karjat and Jamkhedtahsil shows lower share of net sown area (Below 70 per cent). Shevgaontahsil blessed with flat and fertile land with availability of irrigation facilities, mechanization in agriculture leads to highest share of net sown area in 2011-12. Patharditahsil characterized by scarcity of rainfall, lack of water supply, rugged topography and infertile soil, therefore most of the land put fallow and consequently it leads to lower proportion of net sown area.the noteworthy feature is that decrease in the net area sown corresponds to the increase in fallow lands in the region (Pawar, 1981).

The district has identified with 1.44 per cent decrease in net sown area, while Maharashtra state identified with 0.69 per cent decrease from 2000-01 to 2011-12. The decrease in the net sown area corresponds to the increase in fallow lands in the study area. Present investigation clearly reveals that the drought affected areas of the district identified with lower proportion of net sown areas whereas mostly irrigated areas identified with higher proportion of net sown area. Further thing is that with rise in population, rise in encroachment on fertile land.

CONCLUSION

Present investigation shows that there is 0.44 per cent decrease in forested area, 4.12 per cent decrease in other uncultivable land and most importantly 1.44 per cent decrease in net shown area, whereas increase in area not available for cultivation now by 1.35 per cent as well as follow land by 4.66 per cent in the district during the study period. It is observed that agricultural and economically productive land converted into the non-agricultural uses, mainly because of the rapid growth of urbanization, industrialization and simultaneously development of infrastructural facilities in the district. Therefore, it is suggested here that irrigation facilities should be made available in the drought-prone tahsils and also fertile land can be used for agricultural purposes only whereas infertile land can be used for non-agricultural purposes.

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AGRICULTURAL LAND USE AND CROPPING PATTERN IN RELATION TO POPULATION: A CASE STUDY OF DHAVAL VILLAGE

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ABSTRACT

This paper attempts to explore the changing village land use and cropping pattern in an agriculturally developed district of Satara in Maharashtra. It has been captured through the fieldwork conducted in randomly selected single village. A well-structured pre-tested schedule was used to collect the information. The survey brings out that after 1991 there is a significant change in the village land use and cropping patterns in the village transforming the basic subsistence nature of agriculture into commercial one.

KEYWORDS: Land use pattern, Population, Occupational Structure.

INTRODUCTION:

The present study is good attempt in understanding the agricultural land use and cropping pattern in relation to population. In order to assess the agricultural land use and cropping pattern in relation to population and to prepare agricultural land use planning, it is necessary to have an intensive study of the land uses of each village situated in the area under study. Phaltan Tahsil consists of four revenue villages. This is why, it is very difficult, if not impossible, to record the existing uses of every piece of the land of all the 1767 villages, especially when the cropping pattern changes with seasons and from year to year. As the size of farm is very small, it is very difficult to record the nature of agricultural land utilization. Such large scale survey involves mobilization of vast resources of manpower and organization as was done in the first land use survey of Great Britain 1930-45. This is beyond the scope of an individual research worker to have such a detailed survey of all the villages of the region. Therefore, the only alternative is to select sample representative village i.e. Dhaval for the detailed micro level study.

THE STUDY AREA:

Dhaval village is situated in south-western part in Phaltan Tahsil. It is located on 17^{O}9'8" North latitudes and 74^{O}43'6" East longitudes. Rainfall scarcity and occurrence of frequent drought conditions are common in this village. Phaltan is the weekly market centre which is located 18 kilometres away from Dhaval village. The village spread over an area of 1032.07 hectares. As per 2011 Census, the population of this village was 3146 of which 1656 males and 1490 females. The density of population has increased by 52 in 2011. In 2011, the density is 304 persons per square kilometres which it was 252 persons per square kilometre in 1991. In 2011, there are 615 households in this village. Dhaval village shares its boundary with Sherechiwadi village to the north, Miryachiwadi village and Dalwadi village to the east, Wadgaon village to the west and Tathwada village to the south. The village settlement lies in the central part of village area (Fig.-1).

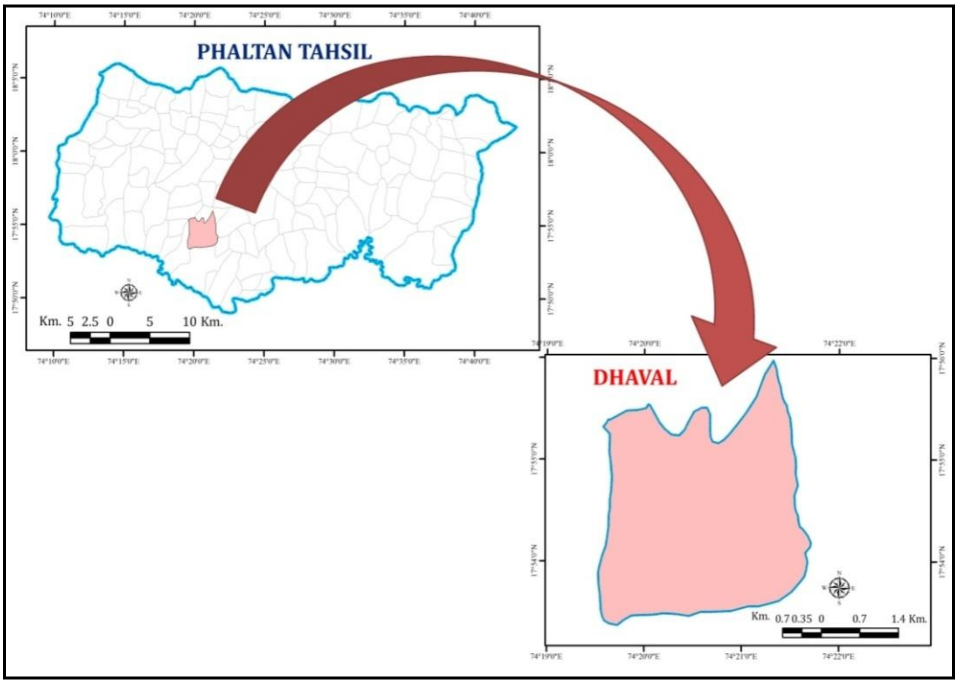

Fig.-1

AIM AND OBJECTIVES:

The aim of the paper is to take brief review of the changes that have been taking place in changes in agricultural land use and cropping pattern in relation to population characteristics during the period of thirty years to achieve the following objectives,

1. To evaluate the variations in agricultural land use and cropping pattern.
2. To study the population characteristics.
3. To assess the surplus/deficits of agricultural land.

DATA SOURCE AND METHODOLOGY:

The secondary data at village level from Talathi record was collected for last thirty years and discussion was made with villagers to understand and confirm the trend. In the study, one acre of agricultural land has been selected as required to adequately feed each person in the village. This figure has been converted into hectares that comes to 0.39. It is possible now to depict how far the land required supporting one person in the village as a whole. The figure now provides a quick measure of spatial pattern of farming efficiency as well as population pressure on land of the village.

VILLAGE DHAVAL:

INTRODUCTION:

The village Dhaval from Phaltan Tahsil of Satara district is selected for detailed micro level study to understand the dimensions of agricultural land use and cropping pattern in relation to population.

General land use:

The local relief of this village plays vital role in land use pattern in Dhaval village. The net sown area 532 hectares in this village accounts for 51.54 percent concentrated in the western and the eastern parts along the stream. 35.65 percent is irrigation area in this village which is less than other sample villages. Upper part of the hill range is covered by forest whereas foothill and offshoots of hill range running the west-east direction is occupied by fallow land. Forest area is spread on 8.38 percent of total geographical area which is confined to the south, the east and the south-eastern parts on hilly ranges. The fallow land in Dhaval village occupies 26.90 percent and it has been identified along the foothill spurs in the central, the west and the southern parts where the soil is sandy. Dhaval village represents the area of Jowar and Bajara crop combination. Jowar is a leading crop of Rabi season which is cultivated over 47.09 percent of net sown area in the south, the central, the north and the north-western parts.

During the study period, it was found that Bajara has been replaced by Jowar on 6.30 percent area. Wheat is a winter season crop covering 6.39 percent area and it is cultivated along the stream in Sandy clay loam and Clay soil in the north-western parts. Sugarcane occupies 0.37 percent area in the central part in irrigated tracks. Fodder crops concentrate in the north-eastern part over Sandy clay loam and Clay soil covering 3.19 percent of net sown area. Vegetables are grown along the stream in the western and the eastern part occupying 0.66 percent area.

Table-1: Dhaval Village, Land Use Pattern (in hectares)

Sr. No.	Land use Categories	1991	2001	2011
1	Total village area	1032.07	1032.07	1032.07
2	Net sown area	350.00 (33.91%)	502.00 (48.64%)	532.00 (51.54%)
3	Land not available for cultivation	470.00 (45.53%)	131.13 (12.70%)	131.13 (12.70%)
4	Cultivable waste	70.00 (6.78%)	35.00 (3.39%)	5.00 (0.48%)
5	Fallow land	55.78 (5.40%)	277.65 (26.90%)	277.65 (26.90%)
6	Forest	86.29 (8.38%)	86.29 (8.38%)	86.29 (8.38%)

Source: Village Revenue Record, Phaltan, 1991, 2001 and 2011.

Cropping Pattern:

The area under cultivation in the village Barad is high. Out of the cultivated area, maximum area is devoted to food crops amongst more than 83 percent of area are under food grain crops.

Table No.2: Village Dhaval, Cropping Pattern (Area in hectares)

Sr. No.	Name of The Crops	1991	Percent	2001	Percent	2011	Percent
1	Jowar	203	43.84	215	42.15	257	42.47
2	Bajara	180	38.87	199	39.05	243	40.16
3	Wheat	28	6.04	32	6.27	34	5.61
4	Sugarcane	02	0.43	02	0.39	02	0.33
5	Maize	32	6.91	35	6.86	38	6.28
6	Fruits	07	1.54	09	1.76	10	1.69
7	Fodder Crops	09	1.94	15	2.94	17	2.80
8	Vegetables and Pulses	02	0.43	03	0.58	04	0.66
	Total	463	100	510	100	605	100

Source: Village record, Dhaval& Office of Land record, Phaltan Tahsil.

The average cropping pattern of the village during the last 30 years is revealed in the Table No.2. In the year 1991, out of the total cropped area 42.47 percent was occupied by Jowar, 40.16 percent by Bajara, i.e. 5.61percent by wheat crops, 0.33percent by Sugarcane crop, 6.28percent by Maize cropsand 2.80percent by fodder crops. Maximum amount of area was recorded under food grain crops. In 2001, the situation is somewhat changed with increasing demand of food, the farmers of the village have to maintained more area under food crops. This year also maximum amount of area was recorded under food crops to meet the demand of food for increasing population. Table-2 clearly shows the share of principal crops in the cropping area of the village. Area under cereals is increased by 23.47 percent but the area under fruits and vegetable crops decreased by 0.43 percent and fodder crops by 0.28 percent. The trend of growing cash crops increases with growing of surplus food grains. Most of the farmers are interested to produce maximum surplus food grains. The black cotton soils attract the agriculturist to produce more and more cotton.

Population:

Dhaval village is a medium village in term of population having 3146 persons in 2011. This village has 40.62 percent small farmers, 48.29 percent medium farmers and only 11.06 percent big farmers. Per capita land available for cultivation is 0.16 hectares in this village. The population density in Dhaval village is 304 persons per square kilometre in 2011. It was 252 persons per square kilometre in 1991.The density of population have increased by 20.58 percent when compared to the density population in 1991. The nearest market centre is Phaltan which is just 18 kilometres from Dhaval village.

This village is connected to Phaltan, Tathawada and Pusegaon for commodity transportation. No Krishi Seva Kendra is located at Dhaval village. There are 48 tractors available for agricultural practices and 184 wells, 38 boring pumps in this village. There are 222 Electrified water pumps in Dhaval village. The sugarcane production is supplied to Sriram Sahkari Sakhar Karkhana located at Phaltan which is 18 kilometres from Dhaval village.

Table-3: Dhaval village, Land Use and Population

Sr. No.	Land Use Categories	Area in hectares	Land Per Head of Population(hectares)
1	Total village area	1032.07	0.32
2	Net sown area	532.00	0.16
3	Land not available For cult.	131.13	0.04
4	Cultivable waste	5.00	0.001
5	Fallow land	277.65	0.08
6	Forest	86.29	0.02
7	Double cropped area	257	0.08
8	Gross cropped area	754.42	0.23
9	Irrigated area	368.00	0.11

Source: Computed by Researcher.

Occupational Structure:

Dhaval village has witnessed 20.58 percent population growth from 1991 to 2011. The percentage of main workers has increased by 10.30 percent. Among the main workers cultivators have increased by 25.86 percent from 1991 to 2011, whereas agricultural labourers and other workers have decreased by 1.36 percent and 24.56 percent respectively. The percentage of marginal workers has decreased by 1.55 percent while non-workers have decreased by 8.75 percent. According to 2011 census, there are 44.37 percent of main workers and 8.50 percent of marginal workers in this village. Actual cultivators are 72.20 percent, 20.34 percent are agricultural labours in this village.

Table-4: Dhaval village, Occupational Structure

Sr. No	Category	Population						Percent Change
		1991	Percent	2001	Percent	2011	Percent	
1	Total population	2609	100	2695	100	3146	100	20.58
2	Total Main Workers	889	34.07	1262	46.82	1396	44.37	10.30
	i) Cultivators	412	46.34	873	69.17	1008	72.20	25.86
	ii) Agricultural Labours	193	21.70	248	19.65	284	20.34	-1.36
	iii) Other Workers	284	31.96	141	11.17	104	7.4	-24.56
3	Marginal Workers	262	10.05	136	5.05	267	8.50	-1.55
4	Non Workers	1458	55.88	1297	48.12	1483	47.13	-8.75

Source: District Census Handbook, Satara District, 1991, 2001and 2011.

CONCLUSION:

1. Agricultural is the main important occupation of the village and more than 90 per cent of land and people are devoted to agricultural activities.
2. The rate of increase of Population density is more and it recorded more than double during the period of investigation.
3. The overall deficit of agricultural land noticed since initial period of study and same remains at the end.
4. Vertical expansion is possible by applying the agricultural technology.

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AGRICULTURAL PROBLEMS AND PROSPECTS OF DROUGHT PRONE AREA: A CASE STUDY OF MAN TAHSIL (SATARA DISTRICT)

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ABSTRACT:

The irrigation commission 1972 observed 'Assuming that districts which receive less than 75cm of rainfall perineum are liable to drought'. There are about 77 such districts in the country. Besides this the commission identifies drought and chronic areas on the basis of annual and south west monsoon rainfall data from 1901 – 1960 for about five hundred station and it has considered. 20percent to 25 percent probability of rainfall departure from the normal, such areas are considered as drought areas. According to commission identification the tahsil Man of Satara district(Maharashtra) falls in drought area The irrigation commission 1972 observed Assuming that districts which receive less than 75cm of rainfall perineum are liable to drought'. There are about 77 such districts in the country. Besides this the commission identifies drought and chronic areas on the basis of annual and south west monsoon rainfall data from 1901 – 1960 for about five hundred station and it has considered. 20percent to 25percentprobability of rainfall departure from the normal, such areas are considered as drought areas. According to commission identification the Tahsil Man of Satara district (Maharashtra) falls in drought area. In this paper an attempt has been made to analyse the Agricultural problems and prospects of Man Tahsil of Satara District. This study is based on secondary data.

KEYWORDS: Drought, Irrigation, Natural, Economical and Social condition.

INTRODUCTION:

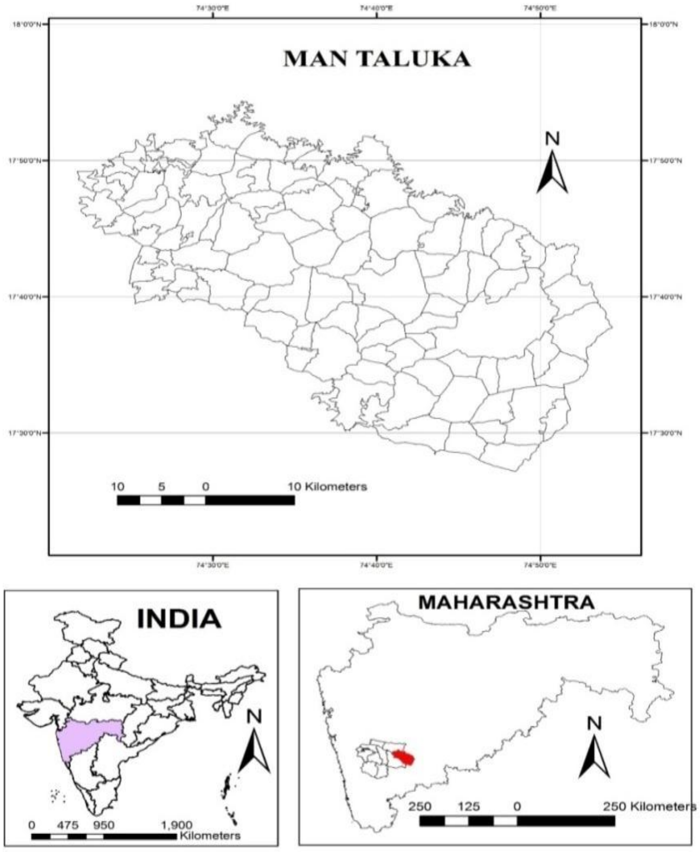
The irrigation commission 1972 observed 'Assuming that districts which receive less than 75cm of rainfall per annum are liable to drought'. There are about 77 such districts in the country. Besides this the commission identifies drought and chronic areas on the basis of annual and south west monsoon rainfall data from 1901 – 1960 for about five hundred station and it has considered. 20percent to 25percentprobability of rainfall departure from the normal, such areas are considered as drought areas. According to commission identification the Tahsil Man of Satara district (Maharashtra) falls in drought area. Agriculture being a basic activity plays a vital role in Indian economy. But still it gambles with the monsoon causes high fluctuation in production inadequate rainfall of monsoon and frequent drought condition hampered the development of agriculture, particularly, in drought prone area of Maharashtra. The Tahsil Man falls in drought prone area where, generally the rainless crops are the major crops such as Bajara, Kharif Jowar, Rabbi Jowar and pulses. In this paper an attempt has been made to analyse the Agricultural problems and prospects of Man Tahsil of Satara District. This study is based on secondary data.

THE STUDY AREA:

Man Tahsil covering the part of the Man river basin is one of the economically prosperous Tahsils of Satara district in southern Maharashtra. It lies between $17^{0}15'$ north to $18^{0}11'$North latitude and $73^{0}33'$ east to $74^{0}54'$East longitude. The total geographical area of the tahsil is 1507 sq. km. situated between the Mahimangad range and the main Mahadeo range, the Man valley has relief forms similar to those of the Yerala river. To the south-west it has the eroded scarp face of the Mahimangad range and northwards the plateau edge, with occasional heights, drops into the lower much eroded 'badland' topography of the Sangola region in the Sholapur district.

The proposed project area falls under drought prone area zone of southern part of Maharashtra. The average annual rainfall of Tahsil is 465 to 500 mm. the highest intensity of rainfall during the last ten years is 60 mm/hr and the highest rainfall in 24 hours during last ten years is 150mm. The area receives all of its precipitation from south-west and northeast monsoon. According to 2011 Census, the area has total population of 1, 99,598 and out of these, 1, 00,066 are males and 99,532 are females. Man Tahsil. Dahivadi is the administrative head quarter of this Tahsil (Fig.-1).

Location Map of ManTahsil



OBJECTIVE:

1) To study the Agricultural problems and prospects of Man Tahsil of Satara District.

2) To study the Recommendation of study area.

DATA SOURCE:

The data of different kinds have been collected from the primary and secondary sources. Primary data have obtained from the questionnaires. The questionnaires cover aspect like crop land use, farmers' education, income from various sources and problems regarding agriculture and allied sectors. Besides this information concerned Talathi and Sarpanch were contacted to get more information of these villages. The primary data is collected through interview and discussions technique with farmer and secondary data from published and unpublished report and abstracts such as socio-economic review, and District statistical abstracts. Agricultural office, Tahsil office, Block Office, Dahiwadi.

METHODOLOGY:

As the entire study is based on the data collected by various sources, interview and discussions with the agricultural expert the simple methodology is adopted. Agricultural land use information on cadastral map, land record and field notes are also used for the study.

THE PROBLEMS OF THE STUDY AREA:

1. **Natural problems**

The total geographical area of the tahsil is 1507 sq. km. situated between the Mahimangad range and the main Mahadeo range, the Man valley has relief forms similar to those of the Yerala river. To the south-west it has the eroded scarp face of the Mahimangad range and northwards the plateau edge, with occasional heights, drops into the lower much eroded 'badland' topography of the Sangola region in the Sholapur district. The proposed project area falls under drought prone area zone of southern part of Maharashtra. The average annual rainfall of Tahsil is 465 to 500 mm. the highest intensity of rainfall during the last ten years is 60 mm/hr and the highest rainfall in 24 hours during last ten years is 150mm. The area receives all of its precipitation from south-west and northeast monsoon .As the irrigation commission identified the area of Man Tahsils a permanent drought area, comprises dry climate, which affects very seriously on plant and animal life of this area. Whatever, agricultural practices have been made by the people majority that includes in dry land farming which is much handicapped as compare to the irrigated farming of the other area. Climate plays important role in agricultural economy and development. But semi-arid and dry climate of the area is a major problem of agricultural activity. Because of the high temperature condition, low rainfall and low humidity, poor quality of soil, soil erosion, this affects badly on the crops as well as natural vegetation and human life of this area.

2. **Economic problem.**

As the Tahsil Man comes in rain shadow zone in the western Maharashtra the scarcity of water for drinking as well as agriculture practices, is a basic problem of the area. About 86.74 percent area of the net sown is of permanently dry land farming and the cropping pattern like Jowar, Bajara, Pulses and Oil seeds emerged as a cropping pattern of drought prone area. This dry land cropping pattern also faces the problem of drought condition and famines situation frequently. To provide water for agriculture by various means of irrigation is the only solution remaining to minimize the intensity of drought situation. But only 13.26 percent land is irrigated by well, tube well, tanks in the study area, but all these facilities which are available in this area are totally depend upon the rainfall condition of the year, whenever the area enjoys sufficient rainfall with equal distribution in monsoon period in such position above mentioned all the means of irrigation are only successfully utilized by the farmers. Because of the dry land cropping pattern of this area, lack of irrigation facilities and the traditional agricultural practices, the productivity remains low and majority farmers have to struggle with the permanent poor condition. In this situation for farmers of this area turned to the other subsidiary activity like dairy farming, livestock and poultry etc. Most of the farmers in these areas utilized the traditional methods and seeds for cultivation of the crops. Now a days it is necessary to use the improved drought registrant verities of Jowar, Bajara, Cotton which are provided to the farmers by the Govt. Agencies under the high yielding variety program me and all these modern seeds are also available in private sector also allows with this it is necessary to use the chemicals, fertilizers and pesticides for the more production but considering the poor condition of the farmers it is not possible thoroughly. The central and state government also provides such types of fertilizers and pesticides through Zilla Parishad and Panchayat Samiti to the farmers. Beside this modern technology should be utilized in the sector of agriculture operations and irrigation systems. Along with the modern technology which should be utilized in agriculture the market and transport facilities plays also vital role in the development of agriculture. The supply of electricity and connectivity to each settlement through road networking is sufficient in the tahsil, but the facilities regarding agro service centre, agricultural market, and cold storages are inadequate in study area. The Financial system which is established by the State and Central Government is working in this area, but because of the frequent droughts and famines the farmer's became hard and fast rules and regulations, and all these financial agencies have stopped their finance to such farmers. Ultimately the farmers prefer the way of suicides.

3. Social Problem.

The frequent drought condition and famines the problem of scarcity of water becomes a permanent problem in this area. So the nature of agriculture mostly remains subsistence type. The land holdings becoming smaller and smaller due to the Hindu law that is father to son which is major barrier in the development of agriculture to India also, it badly affects in using the some modern technology in agricultural practices. The Man Tahsil being a permanent drought prone area creates the problems of scarcity of water and because of frequent droughts there is a great uncertainty in agricultural productions. So the farmers of this area rushed to the tendency of fatalistic.

RECOMMENDATION:

1. Use of drought fighting program.
2. Saving of standing kharif crops from drought affect.
3. Providing pre-sowing irrigation for rabbi crops.
4. Providing a Minimal irrigation for growing vegetable, fruits and fodder crops in small area.
5. Introduce new high yielding crops verities.
6. Introduce of short duration varieties of crops.
7. New agronomic practices are necessary.
8. Soil conservation practices like contour banding, terracing, land leveling etc.
9. New irrigation project should be accelerated towards dry land areas.
10. The need of education intensive programs me through demonstration and extension services for water management at farm level.
11. Need of the main policy for drought areas should be conjunctive.
12. Use of water of rainfall surface and underground water to sustain and optimal crop pattern and to insure a regional and reliable income per hectares.
13. A forestation, soil and moisture conservation.
14. Restructuring of cropping pattern and pasture development.
15. Livestock development.
16. Development of small and marginal farmers etc. All these area the drought-fighting program me should be applied for the development of drought prone area.

CONCLUSIONS:

The Tahsil Man falls in drought prone area, which affects the cropping pattern of Natural, socio-economic and other technological factors affect the cropping pattern. Generally, the rain fed crops are the major crops of this area for i.e. Bajara, Kharif Jowar and Rubbi Jowar. The cropping pattern of this area hampered frequently through the frequent drought conditions. Very low per cent (11 percent) of the cultivated land is under irrigation by means of wells, tube wells and tank irrigation in the study area which cannot replace the specific cropping pattern of the drought prone area. Various projects, which are taken by the Government of Maharashtra specifically for the drought prone areas. After the completion of these projects water is supplied to the agriculture by canals and then the total scenario of the existing cropping pattern may be changed in the drought prone areas in near future.

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IMPACT OF IRRIGATION ON LANDUSE PATTERN: A CASE STUDY OF SHIVANI VILLAGE

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ABSTRACT

Intensity of rainfall is ratio between the sum of rainfall and number of rainy days in specific period and place. Rainfall intensity affects on the soil erosion, drainage development, floods and droughts. The rainfall intensity in the upper Krishna basin varies from place to place. On the basis of rainfall intensity the study region is divided into four categories. Western part, the tahsils namely Mahabaleshvar Shahuwadi, Radhanagari, Bavada, and Chandgad revels rainfall intensity is very high and it is more than 20. The Javali, Patan, Bhudargad, Panhala and Ajara tahsils have rainfall intensity in between 15 to 20.

Maximum part of the study region shows rainfall intensity between 10 to 15 and it includes Wai, Satara, Karad, Koregaon, Shirala Walwa, Kavathemanhkal, Jath, Miraj, Hatkanangale and Kagal tahsils. Shirol, Tasgaon, Kadegaon, Palus, Karveer, Khatav, Khanapur, tahsils have very low intensity of rainfall and it is less than 10. Day by day the rainfall intensity in study region is decreased.

Key Words:- Intensity, Rainfall, Flood, Drought

INTRODUCTION

Maharashtra is one of the leading states in agriculture development in India. About 65 per cent of the total workers in the state depend on agriculture and allied activities. In Maharashtra western part of state is leading agricultural development sector. But agricultural development in western Maharashtra is uneven due to physical as well as socio-economic factors. Upper Krishna basin is the variety in agricultural sector. Western hilly region of study area is undeveloped agricultural because of the unfavorable physiography. Some part of the upper Krishna basin around the Krishna, Koyana, Warana and Panchaganga rivers and its tributaries in Satara, Sangli and Kolhapur district is developed in agricultural sector. But these area faces with flood problems frequently in rainy season. Eastern part of the study region, tahsils namely Koregaon, Khatav, Khanapur, Kavathemahankal, Jath, Tasgaon and eastern part of Miraj tahsil are less developed and far behind in agricultural sector. Physiography in this region is undulating with ups and downs in lands. Climate is also not suitable as this region falls in rainfall shadow region; it is therefore experiences scanty rainfall. It results that these regions frequently face severe drought condition. Because of drought condition agriculture productivity and agriculture development is very low.

Objective:

The main objective present research paper to study the impact of irrigation on land use pattern of Shivani Village.

DATA BASE AND METHODOLOGY

The proposed research work based on both primary and secondary data. Fieldworks as well as field observation during field visits and interview of farmers in view of water availability conducted. During the field work keen observation of the spatial things done from geographical aspects.

Secondary sources of data do not view the actual and complete picture of all elements required for the study. Some micro level data cannot measure by the government agencies. So there is basic need to collect micro level data from the study region. To collect primary data based on research design questionnaire, interview, field observation methods are applied. Researcher is belongs from the drought and flood prone region and he is well knowledge base about of socio-economic problems as well as flood and drought hazard.

Secondary sources of data have been used for the detail analysis of physical and environmental setup of the study region. To study the causes and effects of flood and drought assessed on the bases of various reports published by Govt. and semi - government Departments. Secondary data is collected from tahsil level and for sample villages study at village level. There are many secondary sources of data viz. village directory, district gazetteer, land record office, revenue departments, district and state irrigation and metrological departments, ground water survey department, census etc. will be brought under use for the sake of comparative study.

Methodology

The present study was based on secondary and primary data, collected through schedule and various secondary sources. Collected data is tabulated with the help of various quantitative and statistical methods. Researcher applied the rate of change, Some cartographic techniques are used at proper place. The maps, graphs, photo plates and imageries are utilized to support analysis. Rate of change is computed with using the formula (Nagar, 2002), which is as below

Rate of change= x/y -1*100

Whereas,

X= is value of the last year

Y= is a value of first year.

Study Region:

Village Shivani is located on the left bank of Nandni river in Kadegaon tahsil of Sangli district. This village is situated on the 17°16′30′′north latitudes and 74°35′50′′ east longitude. Height of village is 628.80 m above mean sea level. It is 6 km towards the south-east of Kadepur. It is bounded by Amrapur at the north, Vadiye Raybag at the east, Wangi at the south and Hingangaon Khurd at the west. Geographical area of village Shivani is 1125.25 ha and population was 2725 according to 2001 census. The population density was 471 per sq km. Shivani village is benefited by the river Yerla , Nandni and Arphal, Takati and local Chikali canal.

Village Shivani is situated at 628.80 m above from the mean sea level. Shivani village is extended between 17°16′31′′ N and 74°35′51′′ E latitude and longitude respectively and it situated at the height of 628.80 m from the mean sea level. General slope of village is southwards. Shivani village receives rainfall from south-west monsoon from June to October. Retreating monsoon gets heavy rainfall in October. Winter season from November decrease the daily temperature. The soil of present village is classified into two categories black cotton soils and reddish soils. Average annual rainfall is 600 mm and average annual rainfall intensity is 9.81. Some small nalla (stream) comes from western side Sonhira is important nalla (stream) and another Mahadev odha and Borhira nalla (stream). Maximum portion of the Shivani village is lying between Nandani and Yerala daub. Yerla and Nandni confluence is the south-east of this village. Nandani river bed is 623.60 m above from mean sea level. General average slope of the village is 15 to 20 m. According to census of India 2001, total population of Shivni village was

2773. Population density was 237 persons per sq km. Peoples belonging from SC categories percentage with total population was 3.77 per cent.

LANDUSE PATTERN

Land resource is important because human economic and social development depend on such type of resources. Landuse pattern is complex phenomena and interaction between physical, social and economic factors. Agricultural land is the main asset of rural settlement in study region. Existing landuse pattern and its changing nature depend on economic factors, living standard, development of basic infrastructure and diffusion of new innovation and creativity. Landuse pattern of sample villages is influenced by the physio-climatic factors such as slope, terrain, soil, precipitation and temperature. Another technological irrigation factor has caused tremendous change in the general landuse pattern of case study areas. Before analysis of the agricultural pattern, it is necessary to study the change in general Landuse pattern and its changing nature after linkage project.

National classification of Landuse pattern has classified land among 12 categories but for present study researcher has studied these entire elements into six categories such as forest, cultivable waste, non agricultural uses, others fallows, current fallows and net sown areas. Table 1.1, 1.2 indicates that forest land is 2.16 per cent in sample villages and it is less than national and state average. But with comparison with 2001 forest cover is increased by 11.59 per cent because of irrigation people planted fruit plants on their farm. Proportion of forest occupied land is very less land with great differences from village to village. Two villages U'Mayani (5.50 %) and Shivani (4.97%) having more than average forest cover. The highest land under forest cover is observed in U'Mayani because of social forestry.

Table 6.1: Change in Landuse Pattern During 2001 to 2012 (ha)

Village	Forest	Cultivable waste	Non Agricultural Uses	Other Fallows	Current Fallows	Net Sown Area	Total Area
2001							
Shivani	42.00	141.00	19.00	147.00	422.88	354.00	1125.88
2012							
Shivani	56.00	144.20	82.00	39.08	92.60	712.00	1125.88

Source: Based on Village Land Revenue Record, 2001, 2012.

Cultivable waste duly rocky land, steep slops, highly up and downs, area due to highly irrigation and nearly to canal is lightly changed. In 2001 cultivable waste land is 8.16 per cent in case study area. Change in the cultivable land is 4.92 per cent.

Its change proportion is high in Shivani (331.00 %) village more than average. Change in non agricultural uses is positive because the new construction of houses and domestic animals sheds, land utilized for canal, new road constructed for sugarcane transportation are increased. It can be considered as positive indicator of economic progress of rural areas.

Fallow land is also most important potentional for agricultural extension. Fallow land is distributed into current fallow and other fallow. Before the canal and river linkage current fallow land was 25.03 per cent and other fallow land was 16.50 per cent. But after the project completion present per cent of current fallow land is 10.96 per cent observed -52.59 per cent negative change. Other fallow land change also recorded -35.60 per cent negatively because irrigation assurance.

Table 6.2: Change in Landuse Pattern During 2001 to 2012 (%)

Village	Forest	Cultivable waste	Non Agricultural Uses	Other Fallows	Current Fallows	Net Sown Area
2001 (Pre Project)						
Shivani	03.73	12.52	01.69	13.06	37.56	31.44
2012 (Post Project)						
Shivani	04.97	12.81	07.28	03.47	08.22	63.24
Change in %						
Shivani	33.33	2.27	226.95	-73.41	-78.10	101.13

Source: Based on Village Land Revenue Record, 2001, 2012.

Net sown area represents the actually sown area during the current agricultural calendar year. Net sown area percentage is 46.48 in 2001 and 2012 its percentage is 62.51 indicates positive change. Change in net sown area is 101.13 per cent highest recorded at Shivani village because high benefit available of river linkage and canal irrigation. General land utilization positively changes in forest, cultivable waste, non agricultural uses and net sown area. But change in fallow land is negative indicates the irrigation development positively affected. Moreover, expansion is also possible by cultivating the land more than once year.

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A STUDY OF USE OF ICT TO SOLVE AGRICULTURAL PROBLEMS IN INDIA

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ABSTRACT

Information and Communication Technology in Agriculture (ICT in agriculture), also called as E-agriculture, is developing and applying innovative ways to use ICTs in the rural domain, with a primary focus on agriculture. ICT in agriculture offers a wide range of solutions to some agricultural challenges. It is seen as an emerging field focusing on the enhancement of agricultural and rural development through improved information and communication processes. In this context, ICT is used as an umbrella term encompassing all information and communication technologies including devices, networks, mobiles, services and applications; these range from innovative Internet-era technologies and sensors to other pre-existing aids such as fixed telephones, televisions, radios and satellites. E-agriculture continues to evolve in scope as new ICT applications continue to be harnessed in the agriculture sector. More specifically, e-agriculture involves the conceptualization, design, development, evaluation and application of innovative ways to use ICTs in the rural domain, with a primary focus on agriculture. Provisions of standards, norms, methodologies, and tools as well as development of individual and institutional capacities, and policy support are all key components of e-agriculture. Farming in India is the center area for sustenance security, dietary security, and supportable advancement and for destitution easing. It contributes approx. 14 % of GDP. Turning points in farming advancement in India incorporates: Green insurgency, Evergreen unrest, Blue transformation, White upheaval, yellow upset, Bio innovation unrest and the latest one is Information and correspondence innovation unrest.

Key Words: Information and Communication Technology, E-agriculture, Encompassing

Introduction:

Information and Communication Technology in Agriculture also called as E-agriculture, is developing and applying innovative ways to use ICTs in the rural domain, with a primary focus on agriculture. ICT in agriculture offers a wide range of solutions to some agricultural challenges. It is seen as an emerging field focusing on the enhancement of agricultural and rural development through improved information and communication processes. In this context, ICT is used as an umbrella term encompassing all information and communication technologies including devices, networks, mobiles, services and applications; these range from innovative Internet-era technologies and sensors to other pre-existing aids such as fixed telephones, televisions, radios and satellites. E-agriculture continues to evolve in scope as new ICT applications continue to be harnessed in the agriculture sector. More specifically, e-agriculture involves the conceptualization, design, development, evaluation and application of innovative ways to use ICTs in the rural domain, with a primary focus on agriculture. Provisions of standards, norms, methodologies, and tools as well as development of individual and institutional capacities, and policy support are all key components of e-agriculture. E-Agriculture is one of the action lines identified in the declaration and plan of action of the World Summit on the Information Society (WSIS).

Many ICT interventions have been developed and tested around the world, with varied degrees of success, to help agriculturists improve their livelihoods through increased agricultural productivity and incomes, and reduction in risks. Some useful resources for learning about e-agriculture in practice are the World Bank's e-sourcebook ICT in agriculture – connecting smallholder farmers to knowledge, networks and institutions (2011), ICT uses for inclusive value chains (2013), ICT uses for inclusive value chains (2013) and Success stories on information and communication technologies for agriculture and rural development have documented many cases of use of ICT in agriculture.

Some of the countries who are using the FAO-ITU E-agriculture Strategy Guide to develop their national e-agriculture strategy are Bhutan, Sri Lanka, Papua New Guinea, Philippines, Fiji and Vanuatu. The guide provides a framework to engage broader stakeholders in the development of national e-agriculture strategy.

Objectives:

For this study following objectives are taken**:**

1. To know the major agricultural problems facing Indian farmers.
2. How can we solve a farmer's problems? With increasing affordability and use of technology in India.

Database & Methodology:

The present research paper is totally based on secondary data. Secondary data is obtained from various sources of published and unpublished book, Govt. offices records, Census etc. Collected secondary data is tabulated, calculated and analyzed through statistical methods and it is presented with suitable graphical techniques.

Discussion:

Rural practices and progressions vary internationally—since plants have their own particular contrasts and the area assumes a part on their advancement also. Be that as it may, through the trading of information from various ergonomically included people from everywhere throughout the world, change of methods can be experienced too. It has had an effect on how data is shared, and having the capacity to utilize this data for the progression of the horticultural area gives an extraordinary positive effect that is useful for everybody. IT has turned into a scaffold for individuals from everywhere throughout the world.

IT underpins new techniques for accuracy agribusiness like modernized ranch apparatus that applies for composts and pesticides. Ranch creatures are sustained and checked by electronic sensors and ID frameworks. Offering or purchasing online started to end up mainstream on the planet. Be that as it may, it's most critical part remains correspondence, and the Internet has furnished us with a perfect chance to do as such.

Focal, state governments and private associations have taken ICT measures for horticulture augmentation which incorporate ITC-e-choupal, Kisan Kerala, Aaqua, Rice information administration entrance , e-krishi, Mahindra Kisan Mitra, IFFCO Agri-entryway, Village learning focuses (VKCs)- M.S Swaminathan research establishment (MSSRF), town asset focuses (VRCs)- Indian Space research association, and so on.

Transforming rural India with the help of digital technologies

ICT is becoming the facilitator of socio-economic development in rural India with its obvious facilities by way of health, education, financial services and employment avenues, etc. It can help the bridge gaps by providing 'e' and 'm' services. ICT offering meant for rural sector can be classified into three categories:

1. Those solutions which aim are aimed at empowerment
2. Those which would do enablement.
3. Those for market expansion.

With respect to empowerment- e-choupal comes up as fine example. This is example of efficient supply chain system empowering the farmers with timely and relevant information enabling them to get better returns for their produce. And due to its community centric approach, it gives other offerings also to the farmers' like- insurance and farm management practice, etc.

The practice of e-governance, which creates transparency and governance through IT has enabled the citizens. Market expansion with the help of ICT can be seen through various examples, such as – In recent years the village and heritage tourism in remote areas of the country has picked up a huge momentum and this has been done on account of awareness being created by the online portals, attracting more visitors compared to past. Direct connect through e-commerce has facilitated large number of artisans agro-based small enterprises in rural areas. Women's livelihood is being facilitated amongst the weavers' community in the north eastern states by marketing their product through the internet medium. Indian rural market is going under transformation with better access to information. With the help of IT, farmers can use the services of FMC and can get better value for their product.

ICT and Agriculture

Farming and Information Technology seems to be the most distantly placed knowledge sets in the world. Farming being the most primitive and most basic of the jobs and IT related being the most advanced and most modern. However we know the importance of farming as it is essential for life maintenance on the surface of mother earth and it is important for the developments in IT to aid for the betterment of farming to produce better.

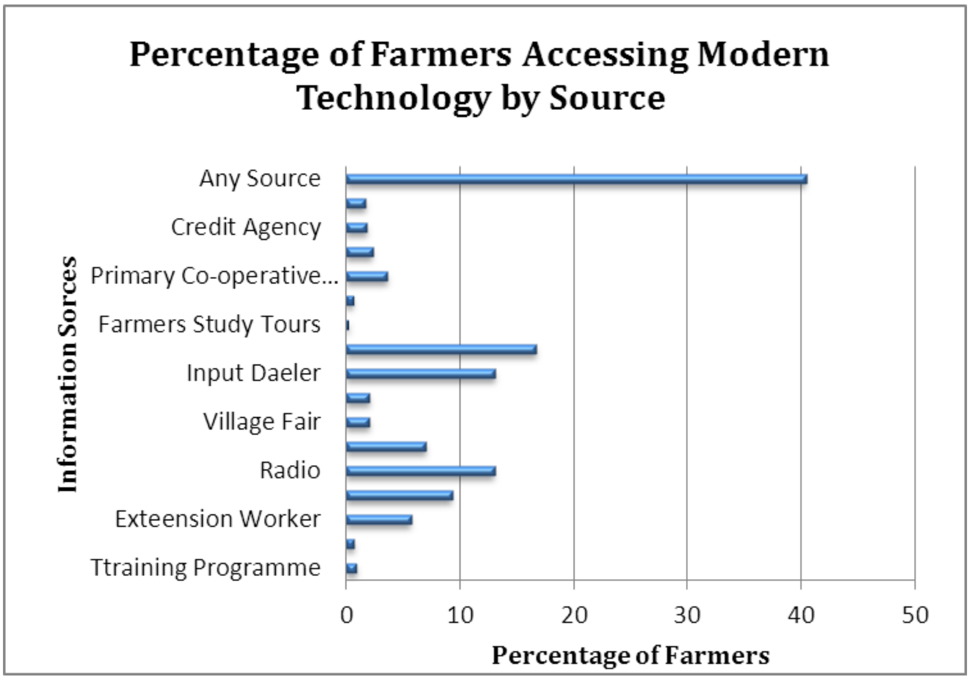
E-Agriculture is a new area of knowledge emerging out of convergence of IT and farming techniques. It enhances the agricultural value chain through the application of Internet and related technologies. Basically IT helps farmers to have better access to information which increases the productivity. It also enables him to get better prices through information of change in price in different markets.

Percentage of Farmers Accessing Modern Technology by Source

Sr.No.	Sources	Percentage of Farmers
1	Ttraining Programme	0.9
2	Krishi Vidhyan Kendra	0.7
3	Exteension Worker	5.7
4	Telivision	9.3
5	Radio	13
6	Newspaper	7
7	Village Fair	2
8	Govt. Demonstration	2
9	Input Daeler	13.1
10	Other Progressive Farmers	16.7
11	Farmers Study Tours	0.2
12	NGO/ Private Agency	0.6

Table contd…

13	Primary Co-operative Society	3.6
14	Output Buyers	2.3
15	Credit Agency	1.8
16	Others	1.7
17	Any Source	40.4



The information related to policies and programs of government, schemes for farmers, institutions through which these schemes are implemented, new innovations in agriculture, Good Agricultural Practices (GAPs), Institutions providing new agricultural inputs(high yielding seeds, new fertilizers etc) and training in new techniques are disseminated to farmers through use of Information technology to ensure inclusiveness and to avoid digital divide.

Access to price information, access to agriculture information, access to national and international markets, increasing production efficiency and creating a 'conducive policy environment' are the beneficial outcomes of e-Agriculture which enhance quality of life of farmers.

Soil Management, Water Management, Seed Management, Fertilizer Management, Pest Management, Harvest Management and Post-Harvest Management are the important components of e-Agriculture where technology aids farmers with better information and alternatives. It uses a host of technologies like Remote Sensing, Computer Simulation, Assessment of speed and direction of Wind, Soil quality assays, Crop Yield predictions and Marketing using IT.

In India, there have been several initiatives by State and Central Governments to meet the various challenges facing the agriculture sector in the country. The E-Agriculture is part of Mission Mode Project, which has been included in NeGP (under National E-governance Plan) in an effort to consolidate the various learning from the past, integrate all the diverse and disparate efforts currently underway, and upscale them to cover the entire country.

The MMP is to be operational zed by Department of Agriculture and Cooperation (DAC), and aims to provide services, such as: Information to farmers on seeds, fertilizers, pesticides, Information to farmers on Govt. Schemes, Information to farmers on Soil recommendations, Information on crop management, Information on weather and marketing of agriculture produce

- **Government steps to provide e-aid to farmers National Policy for Farmers, 2007** The the Government of India It has important provision for use of Technology: New technologies which can help enhance productivity per unit of land and water are needed. Biotechnology, information and communication technology (ICT), renewable energy technology, space applications and nano-technology to provide opportunities for launching an "Evergreen Revolution" capable of improving productivity in perpetuity without harming the ecology. Under **National Telecom policy, 2012** major focus is being given at improving the broadband penetration. It mentions mobiles as an instrument of socio-economic empowerment for citizens
- **National mission on agricultural extension and Technology:** The aim of the Mission is to restructure and strengthen agricultural extension to enable delivery of appropriate technology and improved agronomic practices to farmers. Under **Bharat Nirman,** has registered the increased tele-density in rural areas. And it is this base which is being used to provide 'm' service to farmers, giving them right information at right time.
- **Universal service obligation fund (USOF)** already launched wireless broadband Scheme in 2009. USOF is also funding the National Optical fibre network (NOFN), which is being managed by Bharat Broadband Network Limited. Bandwidth from NOFN will be eligible to give wide range of services to rural India. Pilot project scheme for Mobile values added services (m-VAS) for rural women's Self-help group (SHG) is also part of USOF's Sanchar Shakti programme. In this the SHG on the basis of their activities are provided with information in local languages through SMS, outbound dialers (OBDs) and Integrated Voice response system (IVRS).
- **Bharat Nirman Kendra**, shall be a single window for providing the information on the NREGS and shall provide feedback on the quality of implementation of the program. The idea is to slowly move on the wage employment to self-employment by providing skill development facilities to the rural people and in the process give a fillip to the rural economy. Mobile-enabled kisan card system to help the agricultural community engage in cashless transactions, Kisan credit card: It uses the ICT to provide affordable credit for farmers in India. **Kisan Choupal** in collaboration with Krishi vigan Kendra is a successful model in Bihar. It is being conducted in identified village on the basis of need assessment of the farmers by the scientists on agriculture and allied enterprises. At Kisan chouapl, the dialogue/. Discussion /problems solving is facilitated with help of Information technologies, showing technical videos to farmers, movies, etc. at the beginning of the choupal. This has increased the awareness of farmers on cropping practises and new techniques. **Kisan Call centre:** An expert advisory system and the farmers needs to call the toll free number 1800-180-1551 to seek expert advice on different matters related to agriculture and allied sectors. **Kisan SMS Portal:** Here farmer keeps getting SMS messages providing information or delivering service or giving advisories on his mobile from experts, scientists and officers at various level after once opting for messages on agricultural practises / crops of his interest. The services of the portal include crop production, including horticulture, animal husbandry, dairying

and fisheries. It sends messages relating not only production aspect but also marketing of produce, weather forecast, soil testing, etc.

- The **Sandesh Pathak application**, developed jointly by C-DAC Mumbai, IIT-Madras, IIIT Hyderabad, IIT Kharagpur, and C-DAC Thiruvananthapuram will enable SMS messages to be read out loud, for the benefit of farmers who may have difficulty in reading. It is usable by people who cannot read. A large population of farmers belongs to this category. So when they receive an SMS message either containing agriculture-related advice or some other thing, this app will read aloud the content.The app which is available for download from the Appstore of **the Mobile Seva Project** of government of India, is an Indian language SMS Reader.The app is part of the project launched by the Indian Government to help farmers read messages which may be of the following types: advice to solve farming problems — insect, disease, fertilizer or weed management; information on weather — such as forecasts; and updates on latest technology — for improving yield and much more.

1. **Village Knowledge Centre (VKC)**Village Knowledge Centre (VKC) serves as information dissemination centre providing instant access to farmers to latest information/ knowledge available in the field of agriculture, starting from crop production to marketing. A “VKC In-charge” who looks after the operations of the VKC mans every VKC.**Village resource centres (VRC)**The VRCs are connected to Knowledge/Expert Centres like Agricultural Universities, Skill Development Institutes and Hospitals.
2. Proposal for Kisan T Channel: Dedicated to the interests of the agriculture and allied sector has been proposed to launch in financial year 2014-15. This will provide real time information to famer regarding new farming techniques, water conservation, organic farming, etc.
3. Fund for National Agricultural technology infrastructure.
4. Fund for Agricultural extension program to disseminate frontline technologies.

More advanced use of ICT in farming

1. Irrigate via smart phone: Mobile is playing a big role in monitoring and controlling crop irrigation systems. With the right equipment a faremer can control his irrigation systems from a phone or computer instead of driving to each field. Moisture sensors in the ground are able to communicate information about the level of the moisture present at the certain depth of the soil. This gives more precise control of water and other inputs like fertilizer that are applied by irrigation pivot.
2. GPS mapping for an input to the field using variable rate technology, which helps farmer in accessing the need i.e. where they need to put more fertilizer or less, according to the requirement of the soil. GPS enabled services are also helping in field documentation about yield, moisture, maps for field drainage, etc.
3. Various farmer friendly applications (apps) are being launched by companies, which helps farmers in discovering prices for their products, delivering their product, getting soil report, etc.
4. One of the best use of IT in farming is being done by one vegetable farmer outside Hyderabad using webcams to monitor the crops and to take the scientists’ expertise to address problems without taking them to the field.

Benefits of e-aid to farmers

IT has made its way into the agricultural sector, and with positive results. To name a few, here are some of its effects:

- **Improved decision making** – By having the necessary information, farmers—big and small can make better and more informed decision concerning their agricultural activities.. The exchange of knowledge from various countries and organization also helps farmers be more aware of factors to consider before making their decisions.
- **Better planning** – IT has paved the way to come up with farming software which can keep better track of crops, predict yields, when to best plant and what to plant, to intercrop or focus on just one product, or determine the current need of the crops—just about everything needed to improve production and income.
- **Community involvement** – There are several programs which are made possible by IT applications, and community involvement in agriculture can be increased as well. When a community adopts modern methods for agriculture, the production of local goods can be increased.
- **Agricultural breakthroughs** – IT makes the spread of information concerning the latest agricultural breakthroughs more possible. When scientists develop new and improved grains or find techniques to help winter crops become stronger against the cold, farmers from all over the world may benefit from the same breakthroughs simply by being connected to the rest of the agricultural world.
- **Agriculture for everyone** – Farmers have in-depth knowledge when it comes to their trade. Growing your own sustainable garden of herbs, fruit trees, and other agricultural produce can be possible in a smaller scale. Planting is beneficial in more ways than one, and having your own produce even helps assure the freshness and quality of the food your family eats.
- **Precision agriculture** (PA)or satellite farming or site specific crop management (SSCM) is a farming management concept based on observing, measuring and responding to inter and intra-field variability in crops.

Conclusion:

Development is a process which takes couple of years to change the rural life. Thus information technology will definitely be in a position to change the scenario of rural life and create a better path for rural development. Among the major States, Maharashtra was on top with the 104 out of 1,000 families had Internet in cities, followed by Kerala and Himachal Pradesh at 95 each and Haryana at 81.5.

Though lots of problems like technical feasibility of connectivity in rural areas, cost involved in ensuring services, need for basic computer literacy and literacy hinders the fast development of e-Agriculture, it will definitely be an engine of growth in Rural India once the initial hiccups are overcome. Some of those problems are:-

- The reach of the technology is still very poor and large chunk of farmers are still ignorant about such advancements. The distribution of technologies is not uniform throughout the country. Farmers of prosperous states are at the receiving end like-Punjab, Haryana, Maharashtra and the farmers of backward states still practise their age old techniques and knowledge.
- The use of technology is being used by the already rich farmers and utilising these services they are further prospering. The small and marginal farmers are again being left out in the process of development.
- Due to low literacy rate among farmers and digital divide, there is a rise of new class of middle man, who provide ICT services to farmers. They are also believed to distort the information for their own benefit.

- The rural infrastructure for the use of ICT is also not uniform and lot of regional disparity persists.

Suggestions:

i. Initiated public debate on policy issues affecting ICTs and agriculture development
ii. Commitments from public sector agencies on ICT policy
iii. Accelerated interventions and innovations on ICTs and agriculture
iv. Increased public awareness and recognized role of community telecasters in agricultural marketing and development.
v. Wider news coverage and reported pieces of information on the status of ICTs, agriculture and community telecasters in major media houses and website.

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AN ANALYTICAL STUDY OF AGRICULTURAL TRANSFORMATION IN KOLHAPUR 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 Kolhapur district particularly in the last decade. Only secondary source of data has been considered for last 14 years (i.e. 2001 to 2014) for this study. The commercial crop of sugarcane impacted the agricultural landuse of the district. The transformation in sugarcane is +1.90 per cent, while in the other hand transformation in cereals is -2.24 per cent in the study period. This transformation has take place due to the increasing irrigation, communication, transport and market facilities. This agricultural transformation has also impacted on the cropping intensity in the Kolhapur district.

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. 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 Kolhapur district during the last decade (i.e. 2001 to 2014).

Objective

The only objective of this paper is to analyse the agricultural transformation and crop intensity in the Kolhapur district during 2001 to 2014.

Database and Methodology

The present paper is entirely based on the secondary data, which is collected from the Socio-Economic Abstract of Kolhapur district of 2001 and 2014. The simple techniques like percentage, average are used for analyse the agricultural landuse and cropping pattern. Some cartographic techniques like choropleth map to understand decadal variation in crop intensity of Kolhapur district. 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 Kolhapur district, which situated in the extreme southern part of Maharashtra state. It lies between 15^0 43' and 17^0 17' north latitude and 73^0 40' and 74^0 42' east longitude. It surrounded by Sangli district to the north, Belgaum district (Karnataka State) to the east and south and Ratnagiri and Sindhudurg districts to the west. The Sahyadri ranges to the west and zigzag Warana River to the north form the natural boundaries.

Discussion

The discussion pertaining to main objective of this paper is as follows –

Agricultural Landuse Pattern in Kolhapur District

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 Kolhapur district were studied for the 2001 to 2014.

Table 1 : Agricultural Transformation in Kolhapur District (2001 to 2014)

Cropping Pattern	2001		2014		Transfor-mation
	Area	%	Area	%	
Cereals	177220	37.98	171531	35.74	-2.24
Pulses	27947	5.99	31390	6.54	+0.55
Sugarcane	96800	20.74	108669	22.64	+1.90
Spices	5534	1.19	5334	1.11	-0.08
Fruits	13012	2.79	17060	3.55	+0.76
Vegetables	5587	1.19	6138	1.28	+0.09
Fiber Crops	402	0.09	660	0.14	+0.05
Oilseeds	134042	28.72	134153	27.95	-0.77
Medicinal & Intoxicant Crops	5864	1.26	4537	0.95	-0.31
Other Non-Food Crops	238	0.05	459	0.10	+0.05
Gross Cropped Area	**466646**	**100.0**	**479931**	**100.0**	

Source *: Socio-Economic Abstracts of Kolhapur district in concern years*

In the year 2001, most of the cropped area was under the cereal crops (37.98%), besides commercial crops like oilseeds (28.72%) and sugarcane (20.74%) mostly dominated the cropping pattern of the district. Cropped area under pulses was only 5.99 per cent. Remaining crops like various spices, fruits and vegetable, fiber corps, medicinal and intoxicant crops and other non-food crops covered only small part of the total cropped area.

In the year 2014, the total scenario was almost same as considering the highest area covered by various corps, but some ups and downs were found in the area covered by them. As per the year 2001 in this year also most of the cropped area was under the cereal crops (35.74%), besides commercial crops like oilseeds (27.95%) and sugarcane (22.64%) mostly dominated the cropping pattern of the district. Cropped area under pulses was only 6.54 per cent.

Agricultural Transformation

As per the above table (Table 1) it was clearly found that, most of the positive agricultural transformation found in the sugarcane crop (+1.90%), while on the other hand most negative transformation was found in the cereals crops (–2.24%). It means during the investigation period (i.e. 2001 to 2014) most of the area was shifted from the cereal crops to sugarcane. Apart from that some positive transformation was found in the crops like fruits (+0.76%), pulses (+0.55%), vegetables (+0.09%), fiber crops (+0.05%) and other non-food crops (+0.05%). While negative transformation found in the corps such as oilseeds (–0.77%), medicinal and intoxicant crops (–0.31%) and spices (–0.08%).

Intensity of Cropping

Intensity of cropping depends upon irrigation facilities, favourable climatic conditions, type of soil, etc. On the other hand, rising population and lack of irrigation facilities minimize the cropping intensity. In the following discussion tahsil-wise cropping intensity in the Kolhapur district was analysed.

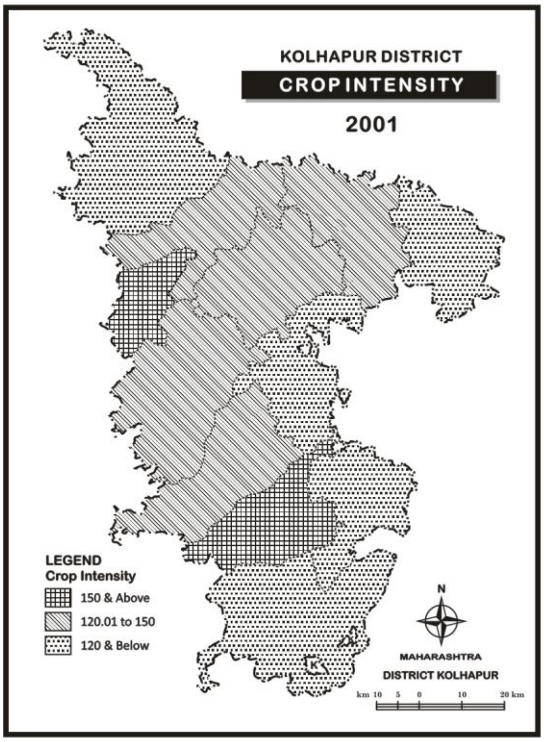
Table 2 : Tahsil-wise Crop Intensity in Kolhapur District (2001 to 2014)

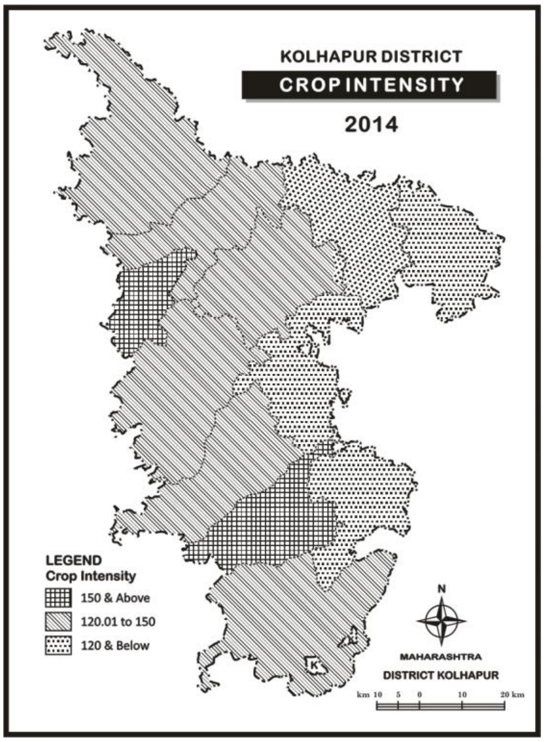
Sr. No.	Tahsil	Crop Intensity	
		2001	2014
1	Shahuwadi	118.04	131.21
2	Panhala	125.20	123.15
3	Hatkanangale	122.40	119.44
4	Shirol	116.63	113.37
5	Karvir	134.34	139.23
6	Gagan Bavada	243.05	204.47
7	Radhanagari	121.44	125.26
8	Kagal	116.49	114.42
9	Bhudargad	131.14	128.80
10	Ajara	167.56	168.86
11	Gadhinglaj	112.60	108.05
12	Chandgad	116.11	121.54
Kolhapur District		**126.85**	**126.06**

Source *: Socio-Economic Abstracts of Kolhapur district in concern years*

The overall cropping intensity was decreased from 126.85 per cent to 126.06 per cent during the period 2001 to 2014. In the year 2001, Gagan Bavada (243.05%) and Ajara (167.56%) tahsils have highest cropping intensity. Followed by Karvir (134.34%), Bhudargad (131.14%), Panhala (125.20%), Hatkanangale (122.40%) and Radhanagari (121.44%) have medium cropping intensity. Remaining tahsils like Shahuwadi (118.04%), Shirol (116.63%), Kagal (116.49%), Chandgad (116.11%) and Gadhinglaj (112.60%) have lowest cropping intensity as compare to other tahsils.

In the year 2014, except some changes the trends in the cropping pattern was almost same. Again Gagan Bavada (204.47%) and Ajara (168.86%) tahsils have maximum crop intensity in the year 2014. Besides, Karvir (139.23%), Shahuwadi (131.21%), Bhudargad (128.80%), Radhanagari (125.26%), Panhala (123.15%) and Chandgad (121.54%) have moderate crop intensity. The lowest crop intensity found in the Hatkanagale (119.44%), Kagal (114.42%), Shirol (113.37%) and Gadhinglaj (108.05%) tahsils.





Concluding Remark

The advance facilities like irrigation, transport, communication, market are the main causes behind the agricultural transformation in the Kolhapur district. Apart the advanced and modern agricultural means and tools also affected the cropping pattern as well as crop intensity in the Kolhapur district. The cropping pattern of the district has transforms towards the commercial crops such sugarcane, and therefore the cropped area under food crops is continuously decreasing. Hence, the district needs to adaption of decentralisation of cropping pattern, increasing crop intensity, aforestation, etc. to maintain and restore the agricultural balance and avoid major agricultural problems in upcoming period.

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IMPACT OF IRRIGATION IN GROWTH AND TRENDS OF TRACTRIZATION ON AGRICULTURE OF WESTERN MAHARASHTRA: A GEOGRAPHICAL ANALYSIS.

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ABSTRACT

In irrigated area farming is generally carried out scientifically and with commercial attitude. The mechanization of agriculture is the labor saving input. It further refers to use of improved implements with the application of new farm technology (mechanization) agricultural productivity has shown marked improvements. This has become common phenomenon in irrigated areas of western Maharashtra. The period during seventies and nineties has witnessed considerable increase in the quantity and quality of improved implements run by mechanical power. The Western Maharashtra region is located in Maharashtra State. It covers an area of 57235 Sq .Km With comprise five district and 58 tehsils and population of about 23449049 as per 2011 census. The major river system is Bhima and Krishna .In the analysis primary and secondary data have been used. The study region comprises of five districts i.e. Pune, Satara, Sangli, Kolhapur and Solapur .There are total 58 tehsils in the Study region. In the year 1981, there were 5892 tractors in the districts, which increased to 11880 in 2012.The present Research paper is examined the Impacts Irrigation on Growth and trends of tractorization in Western Maharashtra

Key Words: Mechanisation, Tractrisation.Agricultural Productivity

1) Introduction

The developments in irrigation are always regarded as stimulant to modernize agriculture. Such modernization takes place only when the farmers can afford themselves to invest in the process of development of agriculture. The ability of farmer to invest in agricultural sector has been determined by irrigation as it promotes income level. Mechanization of agriculture is the essential characteristic of irrigated areas. An assured irrigation, therefore, paves the way for mechanization.

The heavy iron ploughs drawn by five or four pairs of bullocks were gradually replaced by multifunctional implement like Tractor. Favorable government policies have led to the availability of financial facilities through government agencies banks or co-operative basis which encouraged their member farmers for high production. The farmers were supplied tractors and other improved implements on long term loan basis. Besides these, the role of regional agricultural universities is worth maintaining which devised new improved implements of agriculture and suitable to local environments. On individual level many entrepreneurs have been engaged in devising new innovations in agricultural implements. All these efforts were resulted into overall increase in agricultural productivity of western Maharashtra .Solapur, Sangli, Kolhapur, Pune and Satara districts has emerged out recently as progressing part of the state regarding the use of improved implements. The nature and intensity of agriculture, mainly in irrigated areas, has been determined by improved implements. However, there is regional disparity in the distribution of these implements.

There are many implements which require heavy investment. They cannot be afforded by small farmers and especially farmers in any farming areas where income level of farmers is insignificant. It is observed that there has been awareness among the farmers regarding the merits of improved implements. An even small farmer prefers to hire modern implements particularly for Plugging land preparation, winnowing harvesting etc in the region.

2) Objectives:

The present Research paper is examined Impact of Irrigation on the Growth and trends of tractorization in Western Maharashtra

3) Data Base & Methodology:

In the analysis primary and secondary data have been used. The primary data were collected through Schedules on field work. About 35 per cent Sample tehsils of randomly villages were selected for primary data besides this, the secondary data obtained from the records of Zilla Parishad and State Government agricultural department and R.T.O. Offices of Solapur, Sangli, Kolhapur, Pune and Satara districts. Use of statistical procedures is applied at appropriate places.

4) The Region:

The Western Maharashtra region is located in Maharashtra State. The Study region western Maharashtra extends between 15^0 45/ North to$19^0$24/ North latitudes and 73^0 19/ East to 76^0 15/East longitudes. It covers an area of 57235 Sq .Km With comprise five district and 58 tehsils and population of about 23449049 as per 2011 census. The density of population is 347 persons. The region is surrounded by Karnataka state in the south, Konkan region in the west, Nasik in the north and the eastern boundary is surrounded by Aurangabad administrative region of Maharashtra. Fig No 1 broadly, The Physiographic of the region is uneven in nature. Higher elevation is Sahyadris. The average height of the range is 1300 meters. The highest peak of the region is Kalsubai 1646 Meters. Harishchandra-Balaghat and Shambhu-Mahadev these are the sub ranges of sahyadri, which extends in North-West and South -east direction in the study region. The major river system is Bhima and Krishna. Sina, Nira, Ghod, Kukdi, Indrayani, Mula, Mutha, are the major tributaries of Bhima .Koyana, Yerla, Warana, Panchganga, are major tributaries of river Krishna. The study region comprises of five districts i.e. Pune, Satara, Sangli, Kolhapur and Solapur .There are total 58 tehsils in the Study region.

5) Irrigation Projects:

The Region has Major, Medium and Minor Irrigation projects were developed .The region has Pangaon, Asthi, Ekrukh, Tiangi, Maswad, Padwalkarwadi, Budhighal, Basapawdi, Siddhewadi, Doshinala, Andali, Pushpawati, Dahewale, Kasarsai, Kumbhi, Kasari,Patgaon where there are Medium irrigation projects. The Ujjani, Dudhganga, Tillari, Tulshi, Warna, Radhanagri, Koyana, Dhom, Kanher, Manikdoh, Wadaj, Dimbhe, Warasgaon,Panshet, Khadakwasala, Veer, Chasakman, Davdhar, Bhatghar,Kukadi and Balawadi, Irrigation project is the major irrigation projects in the Western Maharashtra. Takari, Tembhu, Mahishal, Kasari is the lift irrigation Projects in the Western Maharashtra, The Impact of those irrigation project on Agricultural development of western Maharashtra. The construction of the project was started in 1972. Before the severe drought, after completion of the project, the potential area under irrigation was 11, 50,581 hectare of the region. This region constructed Ujjani irrigation project envisages storage at with the canals of left and right side on the bank of Bhima river.Takari, Tembhu and Mahishal lift irrigation schemes were established in the region. Dudhganga, Tillari, Tulshi, Warna, Radhanagri, Projects were envisages Panchganga river with the canals of Kolhapur district. Koyana, Dhom, Kanher, Khodshi projects constructed on Krishna, Koyana and Wang rivers on the Satara district. Manikdoh, Wadaj, Dimbhe, Warasgaon, Panshet, Khadakwasala, Veer, Chasakman, Devdhar, Bhatghar, Kukadi, Balawandi irrigation projects were developed in the Bhima and its tributaries in the Pune district.

6) Growth of Tractorization:

The growth may help to understand future possible trends based on past studies. Agricultural development is depending on the growing agricultural technology. The study of growth of tractors in therefore made here to assess the trends is growth of tractors in Western Maharashtra (Fig. 1.3).

Table 1.1

Tehsil wise growth of Tractors in Western Maharashtra (1981 to 2012)

Sr No	Tehsils	Years			
		1980-81	1990-91	2000-2001	2012-13
1	Karmala	33	82	473	2050
2	Madha	9	52	559	2350
3	Barshi	39	110	295	1520
4	North Solapur	12	19	62	850
5	Mohol	21	68	353	1450
6	Pandharpur	99	223	601	2150
7	Malshiras	298	308	630	1850
8	Sagola	21	65	320	1350
9	MangalWedha	24	102	368	1290
10	South Solapur	45	33	240	960
11	Akkalkot	45	74	1056	2298
12	**Solapur District**	**646**	**1136**	**4957**	**18118**
13	Mahabaleshwar	0	8	16	520
14	Wai	123	360	690	2030
15	Khandala	27	165	334	1570
16	Phaltan	203	320	531	1620
17	Man	35	120	208	1450
18	Khatav	43	210	578	1420
19	Koregaon	78	240	750	1320
20	Satara (City)	93	250	784	1340
21	Jaoli	2	35	119	650
22	Patan	20	210	1127	730
23	Karad	332	550	1103	7051
24	**Satara District**	**956**	**2468**	**6240**	**19701**
25	Shirala	68	205	410	1210
26	Walwa	378	888	2248	3200
27	Palus	N.T.A	N.T.A	N.T.A	1420
28	Kadegaon	N.T.A	N.T.A	N.T.A	1240
29	Khanapur(vita)	122	321	897	2120
30	Atpadi	6	101	290	710
31	Tasgaon	221	513	1447	2440
32	Miraj	264	504	1313	2390
33	Kavathemahankal	14	126	345	440
34	Jat	24	219	659	483

35	**Sangli District**	**1097**	**2877**	**7609**	**15653**
36	Shahuwadi	36	45	150	750
37	Panhala	191	250	550	1800
38	Hatkanangale	424	450	750	2050
39	Shirol	244	360	650	1950
40	Karveer	916	645	1350	3350
41	Bavda	11	74	150	950
42	Radhanagri	140	240	360	1150
43	Kagal	63	110	140	850
44	Bhudargad	29	170	265	1150
45	Ajara	7	270	350	1050
46	Gadhinglaj	75	360	450	1706
47	Chandgad	58	240	355	950
48	**Kolhapur District**	**2194**	**3214**	**5520**	**17706**
49	Juneer	48	35	504	2250
50	Ambegaon	6	5	369	2100
51	Shirur	113	330	2380	2200
52	Khed	44	320	551	2500
53	Mawal	6	250	345	2200
54	Mulshi	13	110	225	1700
55	Haveli	41	250	1024	2900
56	Pune city	5	5	27	10
57	Daund	168	250	1527	2230
58	Purandhar	36	105	415	2200
59	Velhe	0	12	21	1640
60	Bhor	11	112	292	2202
61	Baramati	267	256	2620	8500
62	Indapur	241	145	1773	5300
63	**Pune district**	**999**	**2185**	**12073**	**37932**
64	**Western Maharashtra**	5892	11880	36399	109110

Source – R.T.O. Office Solapur, Sangli, Kolhapur, Pune, Satara districts 2012
***N**.T.A- No Tehsil Available, (These tehsils established in 2002)

I) Status in 1981

In the year 1981, there were 5892 tractors in the districts, which increased to 11880 in 2012. In general there are three broad zones where tractors are concentrated. The first position with above 200 tractors has been recorded in the Phaltan, Tasgaon, Shirol, Indapur, Miraj, Baramati, Malshiras, Karad, Walwa,Hatkanagale and Karveer tehsils of western Maharashtra. These tehsils were assured irrigation facilities of the region. This has been emerged out as the core zone for tractor such high concentration could be attributed to innovative nature of farmers, assured water supply from different sources. Moreover, the sugarcane and Jawar, wheat, Maize, Pulses have sound income and they have also established contacts to funding agencies. The second position has been recorded by between 100-200 tractors of the Shirur, Khanapur, Wai, Radhanagri, Daund and Panahala tehsils of the region. Which have adverse climatic and physiographic conditions; however, some of the rich and forward looking farmers have adopted such technology. The, tehsils, Mababaleshwar, Jaoli, Pune, city, Valhe, Atpadi, Ambegaon,Maval,Ajara,Madha,Bavda,Bhor,North,Solapur,Mulshi,Kavthemahankal,Patan,Mohol, Sangola,Mangalwedha,Jat,Khandala,Bhudargad,Karmala,Man,Shahuwadi,Purandhar,Barshi,Havali,Khatav,Khed,South,Solapur,Akkalkot,Junner,Chandgad,Kagal,Shirala,Gadhinglaj,Koregaon,Satara (tehsil) and Pandharpur have shown poor response to the adoption of such technology. This may be considered as third zone. The main constraint is the meagerness of rainfall in the east which has developed poor stage of economy leading to discouragement to peasants for understanding costlier ventures.

II) Status in 1991

In the succeeding decade i.e. 1991 the growth of tractors has been increased from 5891 in 1981, 11880in 1991 in the districts. The First zone in above 300 tractors of Malshiras, Khed, Phaltan, Khanapur, Shirur, Wai, Shirol, Gadhiglaj, Hatkanagale,Miraj,Tasgaon,Karad,Karveer and Walwa tehsils of western Maharashtra. This may be due to positive role of sugar co-operative industry, increasing financial facilities from co-operative industry, increasing financial facilities from co-operative banks and innovative attitude of farmers. The second zone has also retained its same position. The second zone has between 100 to 300 tractors in the region, Atpadi, Mangalwedha,Purandhar,Barshi,Kagal,Mulshi,Bhor,Man,Kavthemahankal,Indapur,Khandala,Bhudargad,Shirala,Khatav,Patan,Jat,Pandharpur,Koregaon,Radhanagri,Chandgad,Satara(tehsil),Panhala,Maval,Havali,Daund,Baramti and Ajara tehsils of Western Maharashtra. The remaining tehsils of below 100 tractors comprises South solapur,Jaoli, Junner, Shahuwadi, Madha, Sangola, Mohol, Akkalkot, Bavda and Karmala the third position of the region. Generally there is increasing number of tractors in the region.

III) Status in 2001

In the year 2001 the growth in the number of tractors has been accelerated from 11880 in 1991 to 36399 in 2001. The core zone has also maintained its first position mainly above 1000,tractors,Havali,Karad,Akkalkot,Patan,Miraj,Karveer,Tasgaon,Daund,Indapur,Walwa,Shirur and Baramati tehsils of western Maharashtra. The Substantial developments of agro industries and growing income from sugarcane farming have attributed the growth of tractors. The second zone has between 500-1000 tractors of second position in Junner,Phaltan,Panhala, Khed, Madha, Khatav,Pandharpur,Malshiras,Shirol,Jat,Wai,Koregaon,Hatkanagale,Satara (tehsil) and Khanapur tehsils due to positive role of co-operative regarding financial assistance to farmers- Generally the nature of farmer. In this region is innovative the third zone has also experienced the growth of tractors below 500 ie. Mahabaleshwar, Velhe, Pune, city, North, solapur, Jaoli, Kagal,Shahuwadi,Bawda,Man,Mulshi,South,solapur,Bhudargad,Atpadi,Bhor,Barshi,Sangola,Khandala,Kavthemahankal,Mawal,Ajara,Mohol,Chandgad,Radhanagri,Mangalwedha,Ambegaon,Shirala,Purandhar,Gadhiglaj and Karmala because of establishment of industries playing an important role for promoting the tractor technology (Table -1.1).

Iv) Status in 2012

In the year 2012 the region is marked with increasing number of tractors i.e.109110such considerable increase in the number of tractors is due to substantial development of agro based industries and favorable government policies and positive role of co-operative regarding financial assistance to farmers. The farmers have adopted new cultivation techniques by using tractor technology. The high concentration above 3 tractors is found in all the irrigated tehsils of Miraj,Radhanagri,Wai,Katad,Walwa,Shirol,Panhala,Hatkanagale,Katvir and Pune city of the western Maharashtra which have assured water supply from different sources especially from Canal, lift Irrigation, were supplied water. The cash crops of sugarcane and wheat, Jawar have strengthened purchasing power of farmers. Moderate concentration between 1 to 3 tractors are confined to the tehsils

Bhudargad,Shahuwadi,Khanapur,Koregaon,Chandgad,Shirala,Kagal,Satara(tehsil),Gadhiglaj,Daund, Phaltan,Tasgaon,Indapur,Baramati and Malshiras the agro based industries are playing vital role for promoting the tractor technology. Further, this part is well endowed with favorable climatic conditions for sugarcane cultivation by which farmers can get substantial income. This has enabled them to purchase such technology. The low concentration of tractors in all the tehsils of Mahabaleshwar,Velhe,Jaoli,Madha,Atpadi,Ambegaon,Maval,Jat,Mohol,Sangola,North Solapur,Ajara,Kavthemahankal,Mangalwedha,Barshi,Karmala,Mulshi,Bhor,Patan,Akkalkot,South ,Solapur,Purandhar,Khatav,Junner,khed,Man,Havali,Khandala,Bavada,Pandharpur and Shirur tehsils of western Maharashtra, which could be attributed to the lack of irrigation facilities and poor purchasing power. Apart from this, the farmers, in such areas are unable to allocate them higher income. All these tehsils have recorded less than 1 tractor. Fig No 1.2

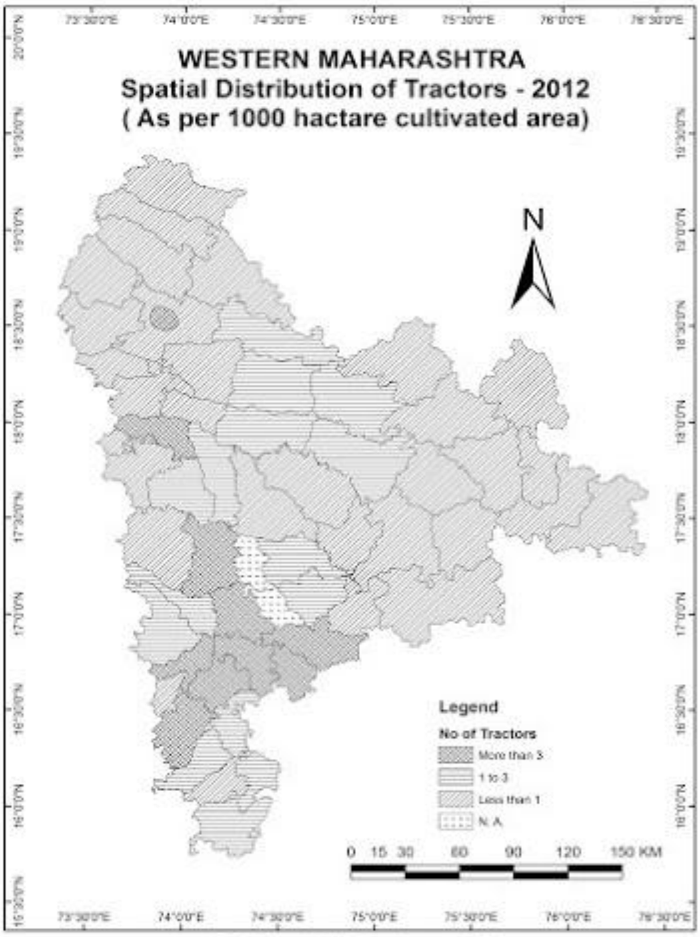

Fig. 7.11 Spatial distribution of tractors- 2012

7) Tehsil wise Growth Trend in Tractorisation

In view of increasing growth in the number of tractors in the region, Tehsil wise study of growth of tractorisation is considered here for the period of 1981-2012. The yearly data of the number of tractors was collected from Road transport offices of Solapur, Sangli, Satara, Kolhapur and Pune districts. The processed data is represented through a graph and ten years running averages were considered Fig No.1.3The most remarkable fact in that almost all the tehsils indicate an upward trend in the tractorisation. The tractorisation highest, recorded, Wai (2030),Karmala,Hatkanagale(2050),Ambegaon(2100),Khanapur(2120),Pandharpur(2150),Shirur,Maval,Purandhar,(2200),Bhor(2202),Daund(2230),Junner(2250),Akkalkot(2298),Madha(2350), Miraj (2390), Tasgaon (2440), Khed (2500), Havali (2900), Walwa(3200), Karvir (3350), Indapur (5300),Karad(7051)andBaramati(8500) tehsils of western Maharashtra in 2014which may be attributed to several factors. These tehsils were perennial sources of irrigation, provide irrigation to Agriculture that the development of agriculture. This tehsils has forty six sugar factories which have promoted the development of mechanization. The availability of financial facilities and conversant nature of farmers to new innovation has led to substantial development in tractorisation. The similar trends of tractorisation are followed by other tehsils like Ajara(1050),Radhanagri,Bhudargad(1150),Shirala(1210),Kadegaon(1240),Mangalwedha (1290),Koregaon(1320),Satara(tehsil)(1340),Sangola(1350),Khatav,Palus(1420),Mohol,Man(1450),Barshi(1570),Phaltan(1620),Velhe(1640)Mulshi(1700),Gadhiglaj(1706)Panhala(1800),Mal shiras(1850)and Shirol(1950) An interesting fact is that deposit the adverse ecological conditions, the tehsils in the Agriculture development. After Ujjani canal in the region Malsiras have also shown upward trend. This could be attributed to recent developments in Sugarcane, Jawar, Wheat, Pulses cultivation fetching sound income to farmers. South, Solapur(960), Chandgad, Bavada(950), North, Solapur, Kagal (850),Shahuwadi,(750),Patan(730),Atpadi(710), Jaoli(650), Mahabaleshwar (520),Jat(483), Kavthemahankal (440) and Pune city tehsils of western Maharashtra has also registered upward trend and credit can go to Sidheshwar sugar factory Kumthe, Bramdev mane sugar factory Ltd Bhandharkavthe,Damagi,Sugar Co-operative Mangalwedha,Vitthal Sugar Co-operative Vanunagar,Vijay Sugar Privately Karkamb,Pandharpur tehsil, and remaining tehsils of sugar industry were promoted the development in irrigation and mechanization. Apart from this, there are intra-regional disparities in each tehsils.

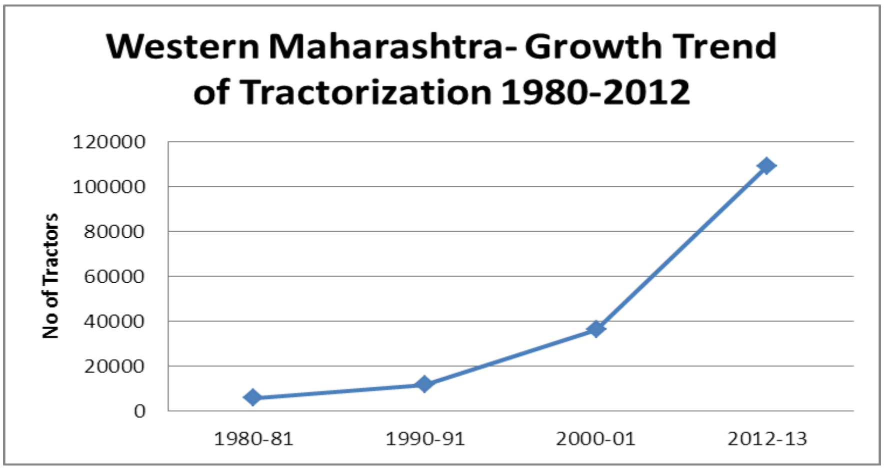

Figure 1.3

8) Conclusion:

Irrigation is one of the most important components of agricultural development which, in turn, reflects the social, economic back ground of the region. Western Maharashtra is one of the agricultural developed parts of the states. However the fertile flood plain offers favorable environmental conditions for technological developments.

The growth may help to understand future possible trends based on past studies. Agricultural development is depending on the growing agricultural technology. In the year 1981, there were 5892 tractors in the districts, which increased to 11880 in 2012. In general there are three broad zones where tractors are concentrated. The first position with above 200 tractors has been recorded, Phaltan, Tasgaon, Shirol, Indapur, Miraj, Baramati, Malshiras, Karad, Walwa, Hatkanagale and Karveer tehsils of western Maharashtra. These tehsils were assured irrigation facilities of the region. This has been emerged out as the core zone for tractor such high concentration could be attributed to innovative nature of farmers, assured water supply from different sources. Moreover, the sugarcane and Jawar, wheat, Maize, Pulses have sound income and they have also established contacts to funding agencies. The second position has been recorded by between 100-200 tractors of the Shirur, Khanapur, Wai, Radhanagri, Daund and Panahala tehsils of the region. Which have adverse climatic and physiographic conditions; however, some of the rich and forward looking farmers have adopted such technology.

In the succeeding decade i.e. 1991 the growth of tractors has been increased from 5891 in 1981, 11880in 1991 in the districts. The first zone has above 300 tractors of Malshiras, Khed, Phaltan, Khanapur, Shirur, Wai, Shirol, Gadhiglaj, Hatkanagale, Miraj, Tasgaon,Karad,Karveer and Walwa tehsils of western Maharashtra. In the year 2001 the growth in the number of tractors has been accelerated from 11880 in 1991 to 36399 in 2001. The first Zone above 1000,tractors,Havali,Karad,Akkalkot,Patan,Miraj,Karveer,Tasgaon,Daund,Indapur,Walwa,Shirur and Baramati tehsils of western Maharashtra. The Substantial developments of agro industries and growing income from sugarcane farming have attributed the growth of tractors. In the year 2012 the region is marked with increasing number of tractors i.e.109110such considerable increase in the number of tractors is due to substantial development of agro based industries and favorable government policies and positive role of co-operative regarding financial assistance to farmers. The farmers have adopted new cultivation techniques by using

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AGRICULTURAL PROBLEMS OF DROUGHTPRONE AREA: A CASE STUDY OF JATH TAHASIL DIST: SANGLI, (MAHARASHTRA).

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ABSTRACT

'Drought'is a natural hazard that differs from other hazards since it has a slow onset, changes over months or even years , affects a large spatial extent,and cause little structural damage.Other hazards,the impacts of drought duration economic,environmental and social sectors and can be reduced through mitigation and awareness because,droughts are a normal part of climate variability for virtually all regions,it is important to develop plans to deal with these extended periods of water shortage in a timely,systematic manner as they change.

The tahasil jath of sangli district falls in rain shadow zone of the maharashtra ,were agriculture as well as animal life is mostly affected by the fiquent occurrence of the droughts.Hence in this paper ,Jath tahasil of sangli district which falls in drought prone area of Maharashtra is selected for study.The major objective of this paper is to study and analysis the aricultural problems and prospects of jath tahasil.The reaserch work is entirely besed on secondary data and impirical knowledge.Village is used as a besic unit of investigation.The remidial measures are also suggeested for improvement and development of agrculture and animal life.

Drought is a severe problem in the eastern part of Sangli district and most Governments intervene to assist their farmers.Once institutionalized,drought assistance changes the way farmers manage resources,often with increased productivity and improved livelihoods.But when assistance is heavily subsidized,farmers may adopt excessively risky farming practices,with increased losses and grater dependence on government in drought years.The feed subcidy and credit programs in the eastern part of sangli help farmers in drought years,but they have also conributed to over –grazing and crop expansion in to droughtpron areas.Better alternatives could be area based rainfall insurance and the development of drought forcasting information systems.

Key words: drought prone area, scarcity, watershed, arficial Recharge, Ground Water.

1. Introduction:

India is agricultural country. Indian economy depends upon agriculture. But now a day rainfall decreases due to increasing Global Worming. Because of this there is bad effect on agriculture. Therefore, water percolation tank is one of the best alternatives to solve scarcity problem and thereby increasing creasing the possibilities of sustainable agriculture in study area.

Western Maharashtra has been regarded as one of the agriculturally developed areas of the state where the high proportion of population seeks its livelihood from agricultural activity. Despite the intra-regional variations in the physic-socio-economic conditions, the region has shown an upward trend in the production. Rainfall decreases from west (2000mm) to east (500mm). The eastern part of Sangli district is therefore considered as semiarid region. Since the area under investigation falls under rain shadow region water scarcity is an acute problem for agricultural development so as to minimize the scarcity of water. The state government has implemented various schemes to enrich water regime of the scarcity zone by which irrigation is strengthened for promoting agricultural development

Water percolation tank is one of the best alternatives to solve scarcity problem and thereby increasing the possibilities of sustainable agriculture and it has become boon to rain shadow areas of Maharashtra, during the last three decades the efforts have been made towards this direction. The concept of water tank is not new to the region but, utilizing the natural sites (river or stream courses) as reservoirs to impound water available from rainfall. The stored water has been utilized through the canals to the fields or somewhere the storage tanks are constructed so as to recharge the water table. Moreover, the increasing the water table further leads to the development of well irrigation and changes in cropping pattern of the region. Fig.l.1 explain how water percolating tanks can be regarded as a major source of water and how indirectly influences the cropping pattern and socio- economic status of the region. Therefore, it has far reaching impact on the immediate areas located in downstream. In fact, this has proved to be successful attempt and many areas have been benefited by perennial irrigation. Thus, agricultural landscape gets transformed due to water percolating tank in the famine-affected areas. However, regional variation takes place in water table, intensity of cropping pattern and their productivity pattern, especially within the command area. In view of the above, the present investigation aims to analyses the impact of water percolating tank on the ground water table and cropping pattern of Sordi village in Jath tahsil of Sangli District in eastern Maharashtra.

2. Objectives:-

The main objective of the present study is to study the impact of water percolation tank on cropping pattern. On the basis of this it is further aimed to suggest the meaningful suggestions for the development of agriculture in the study area. This is viewed in the light of following specific objectives:

1) To study the distribution of water percolation tanks in Sangli district.
2) To study the geographical background as the basis for agricultural development in the study area.
3) To study the spatial distribution of water percolation tanks in the study area.
4) To assess the impact of water percolation tank on the cropping pattern.

3. Statement of the Problem

The subject selected for research has various problems. The whole Jath tahsil is engrossed with severe famine conditions. The rain as it comes under rain shadow, falls here scantily. Too little rainfall is the crucial problem. There appears the dearth of essential planning for store & supply of water.

Henceforth the variation in the matter of global warming should be thought of and to make proper and planned use of water, it is necessary for unnatural rainfall, to store water in tanks from interim flood situations. It is awfully essential with scientific view point to accumulate watershed for a long time use in an appropriate proportion.

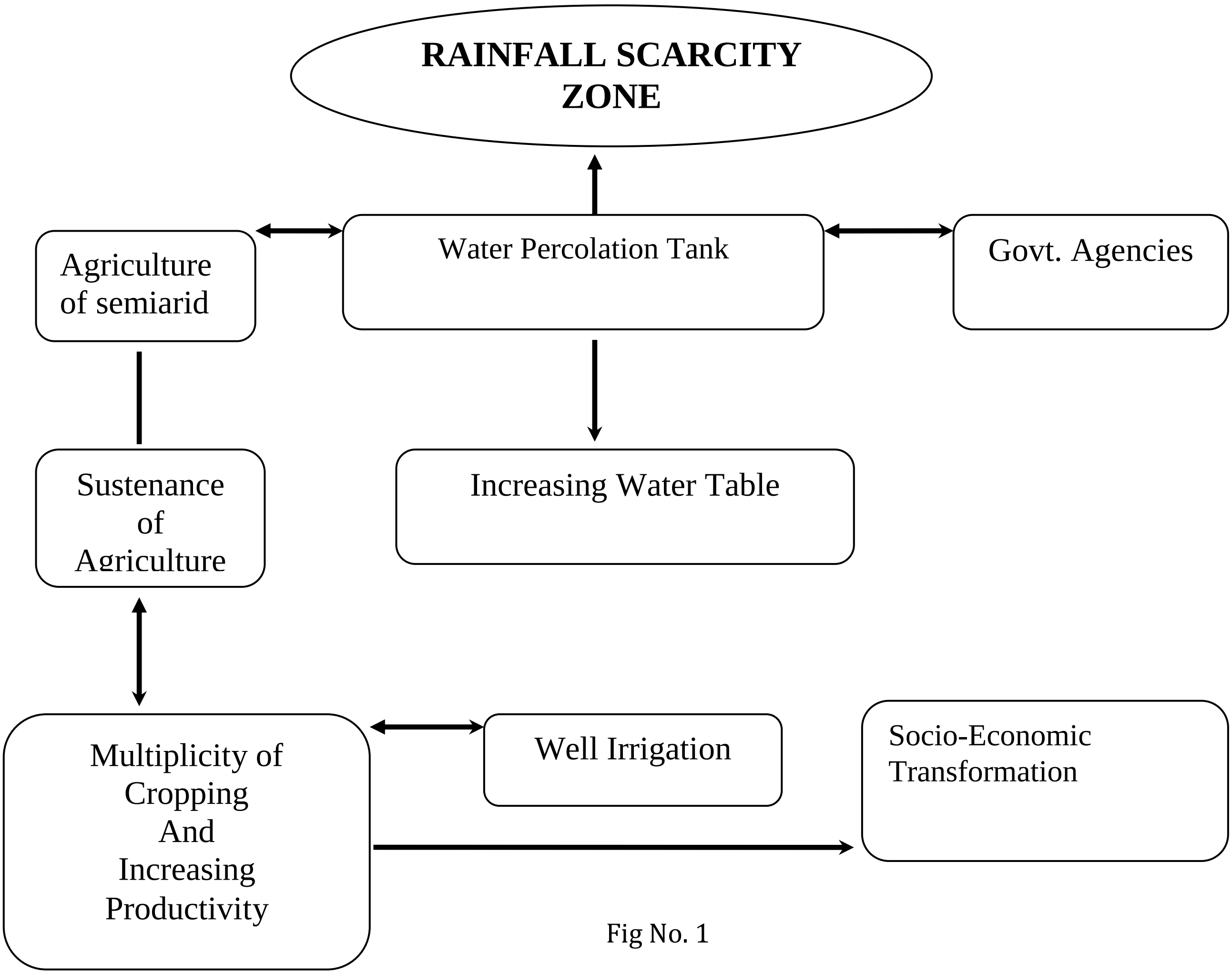

Fig No. 1

4. METHODOLOGY

The following methods will be used for collecting the data and work will be carried out as follows.

1) The proposed study will be based on primary and secondary sources of data. The primary data as the source will be generated through intensive field work with help of schedule Questionnaire and through the method of observation, interview and discussion.
2) The secondary sources of data will be collected from District statistical abstracts census reports, Tahsil Records, Irrigation Departmental Records, unpublished records.
3) The data will be collected from different offices i.e. Department of forest, Revenue, Irrigation, Social welfare offices at the district and taluka headquarters.
4) For the micro level analysis village will be selected as a unit and taluka will be chosen as an aerial unit for regional analysis. The sample study will be conducted in some selected villages by conducting intensive fieldwork to bring out grass-root level realities. The stratified sampling techniques will be used. To support these some of the case studies will also the undertaken. The present study covers the period of 20 years from 1991 to 2011.

5. GEOGRAPHICAL BACKGROUND:

Geographical background of any area must be evaluated on the basis of study of physical characteristics viz. physical setting, climate drainage etc. Geographical investigation of the physical environment or resources is an important tool for planning and there optimum utilization.

A. LOCATION AND PHYSIOGRAPHY:-

Sordi village is situated nearly 4 km West of Jath City in Sangli district. At 17° 18'25"to 17°23'7" North latitude and 74°40'29"East to74°55'3"East longitude. In 2011 the village had a population of 2011, spreading over an area of 2164.28 hectares.

Location of Sordi Village:

B. PHYSICAL SETTING:-

The village area can be divided in to three physical divisions.

i. Hill and Hillock region

The village surrounded by three small hills located in north, south and east of village. It covers about the 71% of village area.

ii. Low- land region

It covers 21 % area which is moderately steep.

iii. Plain region

It includes a narrow flood plain of Sordi nala and covers a small part (8 %) of the village area.

C. CLIMATE:

The average annual rainfall in the district as a whole is 600mm. In general rainfall decreases from west to east from 2000 to 500mm. from central parts eastwards, the region has severe drought conditions. The climate of the district is characterized by general dryness through the year except during the south-west monsoon season. Maximum and minimum temperature is 42° c and 27° c respectively. In general, the climate becomes hotter as one proceeds from west to east. The cold season is from December to about the middle of February. The hot season which follows lasts till the end of May, which is the hottest month. June to September is the south-west monsoon season and October and November contributes the post monsoon season. In the post-monsoon, cold and summer season, the air is dry, particularly in the afternoon, while during the south-west monsoon season the air is semi-humid. In south-west monsoon seasons, winds are from the direction between south-west to north-east. In the post monsoon season they are predominantly from the north-east or east.

D. SOILS:-

The village possesses the following three soil types

i. Medium soils :

It occupies 27 % of the village area and located in west, south and eastern parts of village

ii. Deep black soils:

This soil covers 8% of total village area and located in Southern part of village.

iii. Coarse shallow soils

An extensive tract (65%) has been occupied by this soil which is not fertile and mostly devoted to grasslands but now being used for pomegranate and grape wine cultivation.

Type of soil:

Types of soils	Percentage	Land in hector
Medium	27	584.36
Black	8	173.14
Coarse shallow	65	1406.78

Note: Only land under agricultural use is considered.

Table: 1

6. IMPACT OF WATER PERCOLATION TANK:-

Water percolation Tank refers to an artificial tank mainly developed to store the water for irrigation and to enrich water table in downstream areas. The device of tapping rainwater has been emerged during the last four decades in famine - affected areas. Though it is a new phenomenon, it has become common feature in these areas of the state. In fact this technological advancement in irrigation has provided a suitable tool for the development of agriculture. Water percolation tanks are artificially developed tanks for impounding the water for various uses.

Although the concept of water percolation tank is the recent advancement in the field of irrigation, it has man folding effects on agricultural landscape. They require heavy capital layout, which can be afforded only by government agencies. The earthen bunds are constructed across the streams so as to impound the rainfall water throughout the year. The stored water has been used for agriculture and domestic purpose as well. Many times, the stored water is lifted by electric motors with heavy capacity for irrigating the fields. The rate of recharge has been accelerated in the downstream areas which have been utilized for irrigation purposes through dug wells and tube wells. This leads for bringing about the changes in agricultural landscape. The old cropping pattern is replaced by irrigated crops. The farmer adopts the cropping pattern which is suitable to existing environmental conditions and which may give high remuneration to them. The cash crops are usually preferred by the farmers by which income level is increased. This leads for socio - economic transformation too.

In the present study the focus of attention is on Sordi tank, a Minor Irrigation Project and its impact on changing cropping Pattern.

Effect on Ground Water (1991-92)

Level of water	Sumer Season G.W.Table In Feet	Winter season G.W.Table In Feet	Rainy season G.W.Table In Feet
Tube wells	90	40	25
Dug wells	40	35	20

Table: 2

Effect on Ground Water (2011-12)

Level of water	Sumer Season G.W.Table In Feet	Winter season G.W.Table In Feet	Rainy season G.W.Table In Feet
Tube_wells	*60*	*25*	*10*
Dug_wells	*35*	*20*	*10*

Table: 3

7. SPATIAL DISTRIBUTION OF WELLS:-

Sordi Village is located in the rain shadow region of Sangli District (Jat Tahsil). So wells play an important role in agricultural activities of farmers of Sordi Village. The distribution of wells in Sordi Village is uneven and number of wells and tube wells has tremendously increased after the construction of water percolating tank since 1984. At present there are nearly 98 wells and 467 tube wells which are distributed unevenly 5 wells are available per 100 hectares and 22 tube wells are available per 100 hectares. Near the reservoir and nala wells are sparsely distributed because the farms receive the irrigation water through the Pipe line, whereas the wells are densely observed in south-western part of the village, mainly due to lack of the other irrigation facilities. In 1991-92, the village had total 67 wells and 277 tube wells with a density of 2.1 wells per 100 hectare and 12.6 tube wells per 100 hectare. Thus, formerly the distribution of wells was very sparse.

If one notices the map of two periods that is 2011-12 and 1991-92's showing the distribution of wells and tube wells, there is a tremendous change in the pattern of wells, tube wells and their numbers. During the last two decades, 48 new wells and 277 new tube wells have come up, especially in the north, east and west parts of the village. This increase in the number of wells can be attributed with the change in the water table mainly due to the water percolation tank.

8. SPATIO-TEMPORAL VARIATION IN WATER TABLE:

Wells and their water table had played an important role in the agricultural activity of the farmers. The distribution of wells was influenced by the construction of water percolation tank. Similarly, their water level is also indirectly influenced by water percolation tank. In the present study, with help of intensive field work an attempt is made to locate the present number of wells and with figure of water table on a map and similar map showing distribution of wells and their water table was prepared by using the data and the information collected from the farmers.

The map not only shows the distribution of wells but also their water table. Based on, water table figures the Isoclines have been drawn which joins equal water table places The Isoclines maps of water table for the two different decades, help us to see not only the spatial variations in the water table but also the temporal variations in them.

9. PRESENT SPATIAL CROPPING PATTERN:-

Cropping pattern of 2011-12, this is unevenly distributed all over the region. More than 48.37% area is under the category of Bajara -Jawar. These are generally medium lands. These are agriculturally medium lands but can be developed with heavy cost. Among the crops Jawar is dominant crop covering 10.97 % area followed by pulses, with 17.78 % area in 2011-12.

Among the irrigation crops fruits (19.84%), Oil seeds (8.89%) & vegetables (5.9%) are important. The significant increase in Oil seed (8.81%) area is major characteristic of the cropping pattern. The north, east and southern parts have the dominance of medium lands. Jawar is mainly confined to north, east and southern parts of the study area.

10. TEMPORAL CHANGE IN CROPPING PATTERN:-

Table 1 reveals the picture of spatial cropping pattern during 1984-85 and 2011-12. The temporal change can be evident during 21 year period. There has been gradual change in cropping pattern after the construction of water percolation tank. The water percolation tank has enriched the water table resulting into increasing the number of wells. Consequently, the irrigated area was devoted to cash crops like Fruits, Vegetables, Sugarcane and Jawar.

Area under Different Crops (in hectares and percentage)

In l991-92 and 2011-12 and Difference in percentage

Sr. No.	CROPS	YEAR 1991-92		YEAR 2011-12		
		AREA IN HECTARES	AREA IN %	AREA IN HECTARES	AREA IN %	% CHANGE IN AREA
1	Jawar	111	10.97	111	10.97	00
2	Bajara& Jawar	489.82	48.37	309.82	30.59	-17.78
3	Wheat	20	1.98	60	5.93	3.95
4	Oil seeds	0.8	0.08	90	8.89	8.81
5	Pulse	180.1	17.78	180.10	17.78	00
6	Vegetables	9	0.88	59.8	5.90	5.02
7	Fruits	201.86	19.94	201.86	19.94	00

Table No.4

Source: - Compiled by The researchers 2011-12

The increase in irrigated crops has replaced many traditional crops. The area under Wheat increased from 1.98% in 1991-92 to 5.93 % in 2011-12 similarly; there is also absolute increase 5.02 % under vegetables, a cash but irrigated crop. There is also positive increase in the area under oil seeds from 0.08 % to 8.89 % during this period. An interesting fact is that the area under Bajara and Jawar has declined from 48.37 % to 30.59% which was subsequently brought under Wheat and oil seeds cultivation. In the region most important thing is the crops like vegetables shows positive change 5.02% increases, Wheat shows 3.95% & Oil seeds show 8.81% increase .The proportion of rest of the crops shows, negative change in the region.

CONCLUSIONS

1) In the Sordi village, after the construction of water percolation tank, there were considerable changes in irrigation facilities and cropping pattern.
2) In the Sordi village due to water percolation tank, there was increase in the number of wells and there were 106 new wells were constructed. As result, there was increase in well density by 4.9 per 100 hectare.
3) Water percolation tank has directly influenced the agricultural land use pattern In the area, there is change in the area under crops i.e. a few new crops such as Oil seed, vegetable have been introduced and area under few other crops. Such as Jawar & Bajara have decreased whereas the area under Oil seed, Vegetable and Wheat has increased. The availability of water is resulted from water percolating tanks.
4) In this study, it is observed that area, under Jawar & Bajara has decreased by 17.78 % which further has been occupied by some cash crops like Oil seed and Vegetables wherever irrigation is extended in the western part of study area, these changes are observable.

The cropping pattern has changed drastically. Farmers have switched over from cereals to cash crops. The increase in per hectares yield has also been achieved.

The above study reveals the fact that there is positive and direct impact of water percolation tank on water table, resulting in the increase of the number of wells and tube wells. The increase in the number of wells further changed the spatial characteristics of cropping pattern. Thus water percolation lank is the single most important tool to bring about favorable changes in the agriculture of famine affected regions of the state.

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DEFORESTATION IN KOLHAPUR DISTRICT

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ABSTRACT

Today it is the need of hour to minimize the pressure on forest ecosystem for the conservation and rational use of natural renewable resources like forest i.e. natural vegetation, and other resources. Under the tremendous pressure of so called development in the urbanized areas man is tightening its impetus around even forest areas which are left so little. There is pressure on the forest ecosystems which causing irreparable damage to the system. Finally deforestation takes place. Fore present investigation Kolhapur District is selected.

The percentage of forest area is 21.71 % (2013-14) of the total geographical area. In South plateau region of Maharashtra, total geographical area in Kolhapur district shows low but forest area shows highest position. The decay of forest cover is mainly due to forest offences, such as, forest fire, forest cutting, forest grazing etc. Present paper describes the silent features of forest cover, and changing condition of Kolhapur district forest in Maharashtra.

Keywords: Deforestation, Forest covers, forest development approach,

Introduction:

Destruction of forests is known as deforestation. Several man-made activities like mining, construction of roads, developmental projects, power generating plants, growing agriculture expansions result into deforestation. Deforestation has become a matter of serious concern through out the developing countries of the world, which have large population to support.

Objective:

The major object of this paper is to analyses the rate of deforestation in Kolhapur district.

Study area:

Kolhapur District is located in the southern part of Maharashtra. Its headquarters is at Kolhapur city, situated on the banks of river Panchanganga. Kolhapur also known as 'Dakshin Kashi', for the very famous temple of goddess Mahalaxmi .The Kolhapur district lies between 15°, 43' and 17°, 17' North Latitude and 73°, 40' and 74°, 42' East Longitude. It has an area of 7685 sq. km. and a population of 35, 15,413 according to 2001 census. It has a density of 389 people per sq. km, which is higher than 257 people per sq. km. for the state as whole. Kolhapur was the capital of the farmer. It's present position as a great commercial, religious, cultural and educational center. It is well connected by roads. It is surrounded by the boundaries on the north by the district of Satara, on the west the district of Ratnagiri and on the south and east by Belgaum district of Karnataka state.

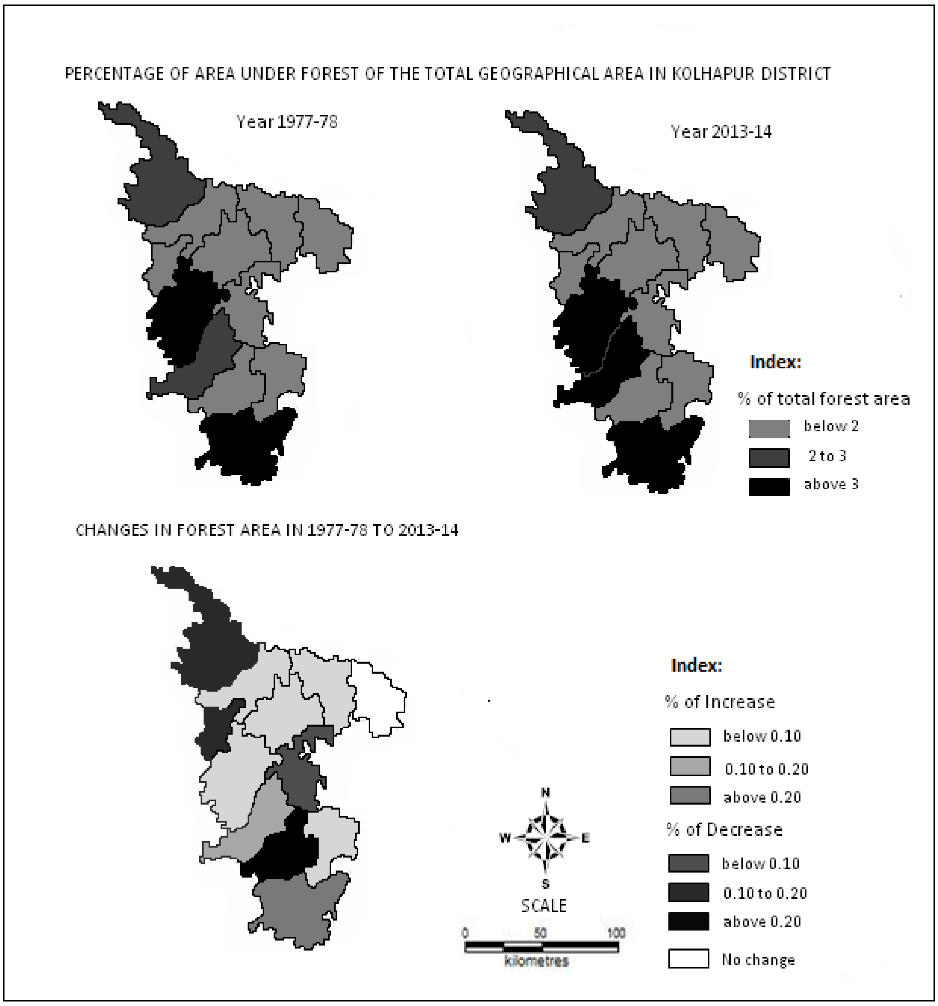
Data base and Methodology:

The present study is based on primary and secondary sources of data. In order to meet the objectives confirmed above, essentially the survey method has adopted. The farmers who involved in the social forestry and the officials of the social forestry department are duly interviewed. For the analysis of the data different suitable statistical methods has used. For the diagrammatic representation of the results suitable cartographic methods has used.

Forest changes condition in Kolhapur district:

No.	Taluka	1977-78	2013-14	Change from 1977-78 to 2013-14
1	Shahuwadi	2.80	2.99	-0.19
2	Panhala	1.49	1.43	+0.06
3	Hatkanangle	0.18	0.09	+0.09
4	Shirol	0.11	0.11	00
5	Karvir	0.11	0.10	+0.01
6	Gaganbavda	1.35	1.52	-0.17
7	Radhanagari	3.43	3.41	+0.02
8	Kagal	0.14	0.18	-0.04
9	Bhudargad	3.04	2.94	+0.10
10	Ajra	1.57	1.81	-0.24
11	Gadhinglaj	0.23	0.22	+0.01
12	Chandgad	3.46	3.13	+0.33
	Total	**17.91**	**17.93**	**-0.02**

Source: Forest Department and socio economic review (2013-14)



Map Compiled by Researcher

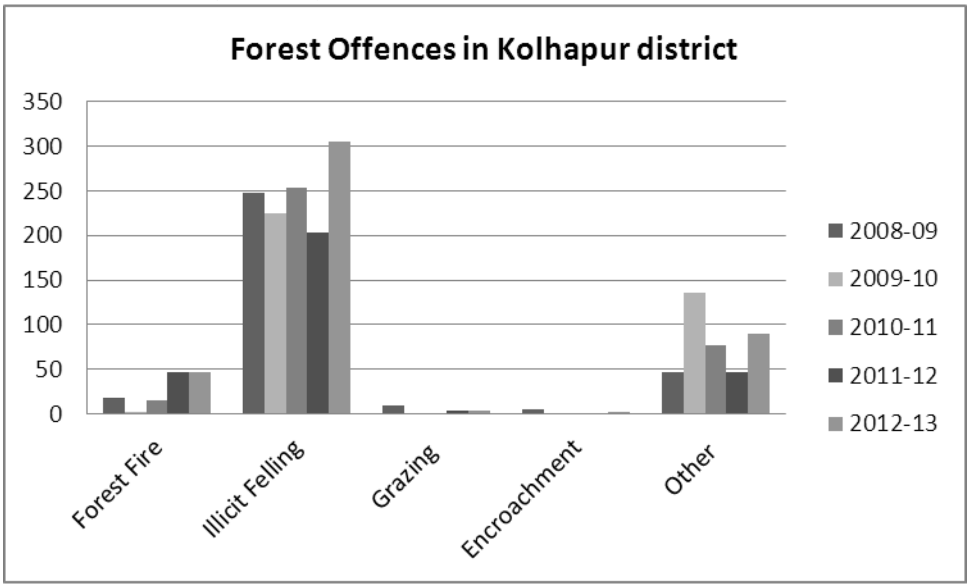
Reference: Social forestry and Forest Department

The above table shows that, Forest changes condition in Kolhapur district. The total geographical area in Kolhapur district is 7762.61Sq.k.m. and forest area is 1685.89 Sq.k.m. The total geographical area in Kolhapur district is very low but forest area cover maximum. Forest occupies about 17.91 percentage in year 1977-78 and 17.93 percentage in year 2013-14 of the total geographical area of the district. If we see the condition of changes in 1977-78 and 2013-14. The forest area is noted and newly planted forest in Panhala, Hatkangale, Karvir, Radhanagari, Bhudargad, Chandgad taluka. And maximum deforestation takes place in Sahuwadi. Gaganbawada, Kagal, Ajara etc and Shirala taluka shows no changes in forest area.

Forest Offences in Kolhapur district:

Offences Year	Forest Fire	Illicit Felling	Grazing	Encroachment	Other
2008-09	18	248	09	05	47
2009-10	01	225	-	-	136
2010-11	15	254	-	-	77
2011-12	47	203	03	-	46
2012-13	47	305	03	02	89
Total	**128**	**1235**	**15**	**7**	**395**

Source: Forest Department (2013-14)



The above table and graph shows that, Forest offences in south plateau region of Maharashtra. Joint forest management is work base upon forest protection and development. The local people participation are gives good result of joint forest management program. In lat five year forest offences are very largely cover in Kolhapur district. The forest division success to remove near about encroachment offences. The figure of Illicit Felling of Kolhapur district is 1235, it is maximum incident as compare to other offences. Heave illicit felling of the trees is noticed particularly in the voluble and important tree areas. For illicit felling miscreant valuable and impotent trees which can the smart amount in the market. The figure of Encroachment offences are very low.

Conclusion:

If we see the condition of changes in Kolhapur district, maximum deforestation takes place in Sahuwadi. Gaganbawada, Kagal, Ajara, taluka. And no changes forest area shows in Shirala taluka. In Kolhapur district deforestation taking place rapidly because of over population. Local peoples are mover involving in forest offences, so forest are largely cutting by man. Today's need to preserving forest otherwise district may be converted into desert in future.

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AGRICULTURE PRODUCTIVITY-PROSPECTS AND PROBLEMS

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ABSTRACT

This paper examines the prospects and problems of agricultural productivity in India, it covers trend of agriculture growth, sect oral share in GDP, crop wise productivity etc. this paper also discuss about problems of agriculture law productivity in India such as poor technology, lack of irrigation facilities, land fragmentation, agriculture depends on weather etc. this paper based on secondary data like various governments reports , books , articles, and news paper etc. so basis of this methodology paper understand problems and prospects of Indian agriculture productivity

KEYWARDS: Agricultural productivity

INTRODUCTION

Agriculture is a critical sector of the Indian economy. Through its contribution to overall gross domestic product (GDP) of the country has fallen from about 30 percent in 1990-91 to less than 15 percent in 2014-15. A trend that is expected in the development process of any economy agriculture yet forms the backbone of development about 52% of total work force still employed by the farm sector which makes more than half of the Indian population dependant on agriculture for substance however, within the rural economy. The share of income form non-farm activities also increased.

This paper briefly reviews the status and prospects of agricultural productivity, especially during the last 10 years like agriculture sect oral growth, area of cultivation under various crops , crops production etc. also discuss about problems of agricultural production with the declining share of agriculture to GDP, the continuing high pressure of population on agriculture and increasing fragmentation of land leading top decreasing availability of cultivated land area.

The present paper is an attempt to examine different facts of problems of agriculture and prospects of agriculture productivity.

OBJECTIVES

1) To understand prospects of agriculture productivity.
2) To know the problems of agriculture law productivity.

REARCH METHODOLGY AND DATA BASE:

This paper based on secondary data such as various govt. reports, books, journals, news papers and articles etc.

Data Base

Agricultural productivity is measured as the ratio of agriculture outputs to agriculture inputs while individual products are usually measured by weight, their varying densities make measuring overall agriculture outputs difficulties therefore output is usually measured as the market value of final output.

Agricultural productivity may also be measured by what is termed total factor productivity (TFP) this method of calculating agriculture productivity compares an index of agricultural inputs to index of out puts.

Source of agricultural productivity

- Mechanization
- HYVP, which were the basis of green revaluation
- Fertilizers- primary plant nutrients, nitrogen, phosphorus and potassium and secondary nutrients such as sulfur, zinc, copper manganese calcium magnesium, molybdenum on deficient soil.
- liming of acid soils to raise ph and to provide calcium and magnesium
- irrigation
- Herbicides
- Pesticides
- Productivity improving technology

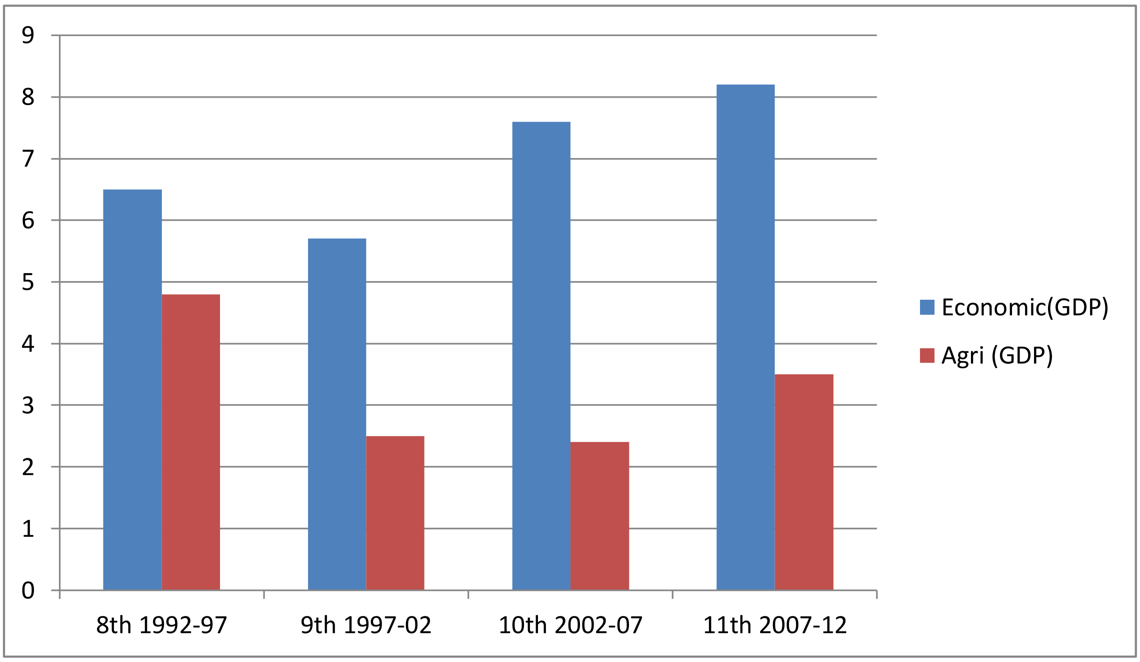
RESULTS AND DISCUSSION

1) Growth rates GDP(overall) and GDP (agriculture & allied sectors)

Plain period	Economic(GDP)	Agri. (GDP)
8th 1992-97	6.5	4.8
9th 1997-02	5.7	2.5
10th 2002-07	7.6	2.4
11th 2007-12	8.2	3.2

Source- Indian economy- data and sundaram Ed.2014

Since 8th plan period to 11m five year plan period GDP (overall). Growth has been increasing and agri. (GDP) remained constant.



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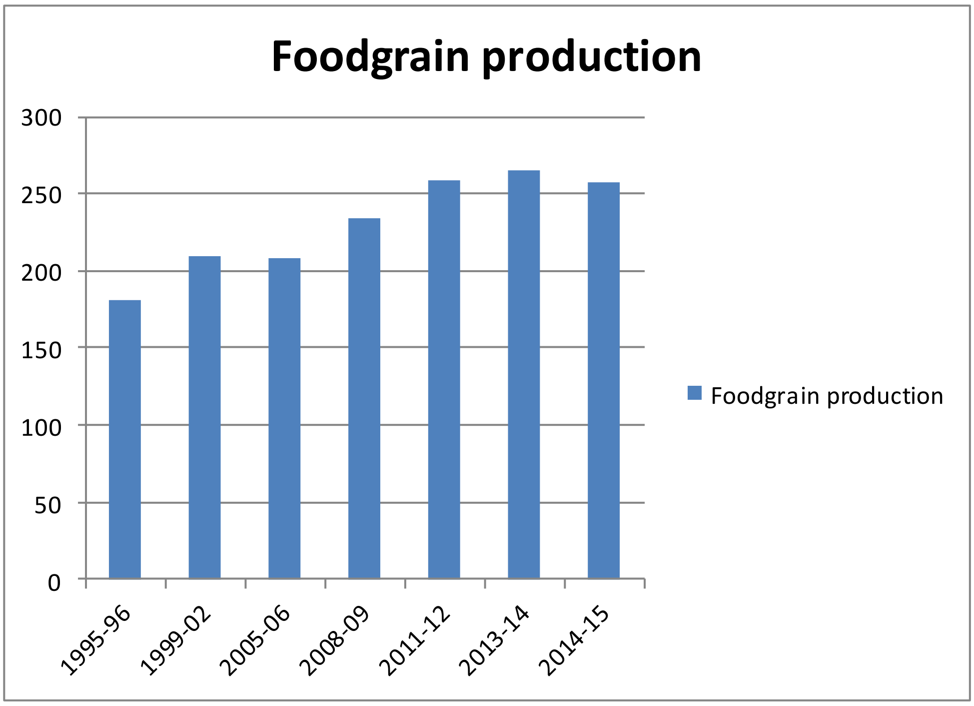
2) Food grain production

Years	Million tones
1995-1996	180.4
1999-2000	209.8
2005-2006	208.6
2008-2009	234.47
2011-2012	259.32
2013-2014	264.77
2014-2015	257.07

Sources- Indian economy- pratiyogita darpan



Above table shows food grain production has been increasing since 1995-1996 to 2014-15 in 1995 production was 180.4 million tones but now 2015 food grain production is 257.07 million tones.

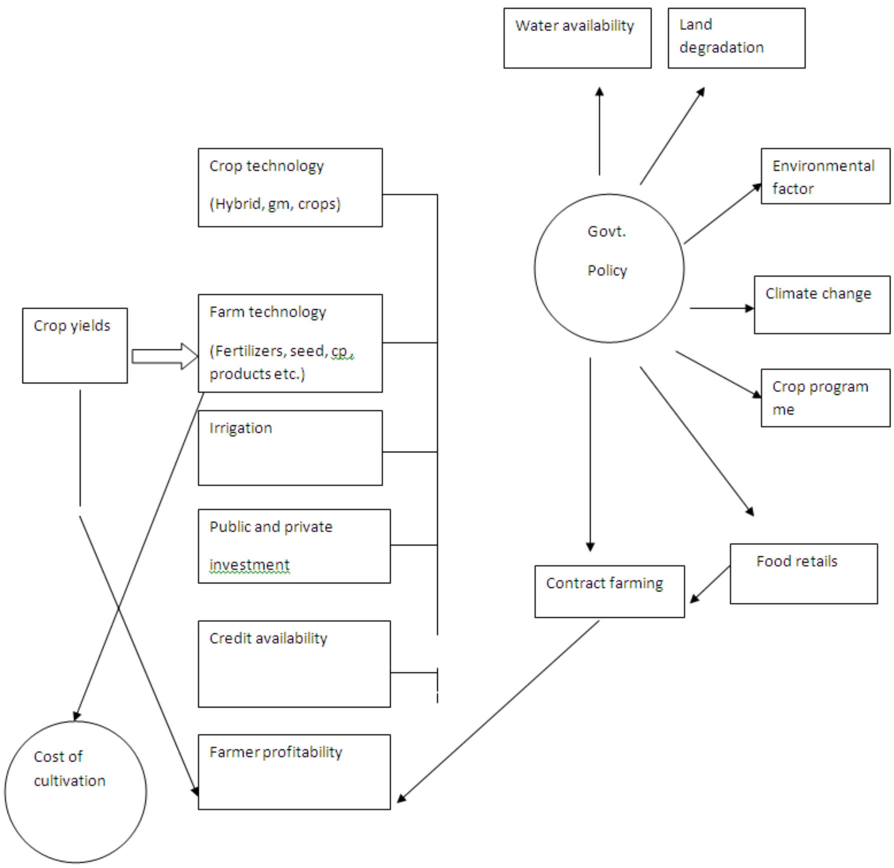
2) **Crop wise production in million tones**

Crop	2010-11	2011-12	2012-13	2013-14	2014-15
Rice	95.98	105.31	105.24	106.54	103.24
Wheat	86.87	94.88	93.51	95.51	95.76
Jawar	7.00	6.01	5.28	5.39	4.83
Bajra	10.37	10.28	8.74	9.38	7.91
Maize	21.73	21.7	22.26	24.341	22.97
Coarse cerals	43.40	42.04	40.04	43.5	39.85
Tur	2.86	2.65	3.02	3.29	2.75

Gram	8.22	7.70	8.83	9.88	8.28
Urad	1.76	1.77	1.90	1.51	1.61
Moong	1.80	1.63	1.19	1.50	1.39
Total pulses	18.24	17.09	18.34	19.27	18.93
Total	244.490	259.32	257.13	264.77	257.07
Food grams					
Groundnut	8.26	6.96	4.69	9.67	7.47
Mustard	8.18	6.60	8.03	7.96	7.36
Soybean	12.74	12.21	14.66	11.99	14.64
Oil seeds	32.48	29.80	30.94	32.88	29.83
Cotton	33.00	35.20	34.22	36.39	35.15
Sugar cane	342.38	361.04	341.20	350.02	354.90

Sources- Indian economy- datta-sundaram ed.2014)

Above table shows crop wise production in million ton. In various crops since 2010-11 to till date crops production has been increased and especially measure crops such as rice wheat sugarcane, cotton, soybean etc. has increased.



PROBLEMS OF AGRICULTURAL LOW PRODUCTIVITY

1) Size Of holdings

The average size of holdings in India is very low less than 2 hectors or 5 acres due to which no scientific cultivation with improved techniques and seeds can take place. Small sized holdings lead to great west of time, labor difficulty in paper utilization of irrigation of facilities and irrigation among farmers.

2) poor techniques of productivity

The Indian farmers have been using old and inefficient methods and techniques of farming the Indian farmers do not have the means to purchase good quality seeds and better techniques of farming due to scaring of funds.

3) Inadequate irrigation facilities

Most of the farmers through out the country have to depend upon rainfall. The ratio of irrigated land to total cultivated land is now about 33 percent

4) Pressure of population on land

In 1901 16.3 populations was depend. It rose to 44.2 cr. In 1981.the cultivated land in India declined up to 0.14 in 2009 according to a World Bank report published in 2010.

5) Lack of credit and marketing facilities

On account of lack of marketing facilities and non availability of loan on fair rate of interest the cultivators are not able to invest the requisite resources in agriculture. This keeps the role of productivity on land and per cultivator low.

6) Unreliable monsoon

The Indian farmer is at the mercy of monsoon which can some time bring varying heavy rains and causes floods and sometimes dry spoils that to drought conditions.

7) Soil erosion

In a land of heavy rains removal of natural vegetation can be disastrous. it leads to wide spread soil erosion.

8) Human factor

Pointy is serious problem. Farmers are after burdened win inherited debts. They cannot afford to use modern equipments and buy better seeds. Movers they do not have security against the crop failure.

9) Fertilizers and biocides

The farmers depend on minerals. The chemical fertilizer are costly and often beyond the reach of the poor farmers.

CONCLUSION:

The relevant data shows an agricultural growth has been increasing since from 8th five year plan to till date. Similarly paper also considers food grains production has been increased. In 1995 production was 180.4 and recently food grain production is 257.07 in 2014-17. Crop wise production in million tones the production of major crops has given more contribution such as sugarcane rice, wheat ,pulses,soyabean,oilseeds etc. while studying paper researchers has considered various problems of agricultural low productivity like land fragmentation, irrigation , poor technology etc. more problems available in agriculture productivity but as compare to problems Indian agriculture productivity showed good prospects.

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ROLE OF PRIMARY AGRICULTURAL COOPERATIVE CREDIT SOCIETIES IN AGRICULTURAL DEVELOPMENT OF INDIA

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ABSTRACT

The cooperative movement in India has taken deep roots in various sectors and is making a significant contribution towards Agricultural and economical development , Particularly the primary Agricultural cooperative credit societies plays very important role in agricultural development it considered as the pillars of the Agricultural development in India. Primary Agricultural Cooperative Credit Societies actively engaged in provision of integrated service to the farmers and serve as a point of dissemination of the technology and the improved cultivation practices. In this paper the researchers take review of PACCS in Agricultural development in India.

Key Words:- PACCS, Loans, Financial aspects, Agricultural Development

Introduction

Agriculture is backbone of Indian economy. As per Census near about 70 percent of population resides in rural area and depending directly or indirectly upon agricultural for there livelihood. Therefore in India Agricultural development is very important and the contribution of the rate of GDP is also depending on this sector. Agriculture is a dominant sector of our Indian economy. The cooperative movement in India has taken deep roots in various sectors and is making a significant contribution towards Agricultural and economical development , Particularly the primary Agricultural cooperative credit societies plays very important role in agricultural development it considered as the pillars of the Agricultural development in India. Primary Agricultural Cooperative Credit Societies actively engaged in provision of integrated service to the farmers and serve as a point of dissemination of the technology and the improved cultivation practices. It is expected to increase the prosperity of farmers by availing better services particularly in the area of technological intervention.

At present up to 2014 in india, there are 93042 Cooperative credit societies including FSS and LSAMS (Farmers service societies) and (Large sized Adivasi multipurpose societies)

Functions of PACCS

- It provide credit to the farmers, distribute inputs like fertilizers and also run outlets under Public Distribution System.
- These societies provide short term and medium term credit for agriculture and allied activities.
- Primary Agricultural Cooperative Credit Societies also issue loans for other agricultural purposes like purchase of farm machineries and for non-agricultural purposes including loans for the purchase of consumer durables, housing loans, education loans and professional loans.

- To provide marketing facilities for the sale of agricultural produce
- To associate itself with economic and social welfare programmes of the village.

Role of PACCS in Agricultural Development

The Cooperative Credit societies Act 1904 permitted only to form PACCS, which laid more emphasis on the promotion of agricultural credit. The cooperative credit societies Act of 1912 removed the defects of 1904 Act and was made applicable to both credit and non-credit cooperative societies. The distinction between rural and urban societies was abolished and provision was made for societies with limited or unlimited liability. With the introduction of reforms Act of 1919, the transfer of cooperation to provincial government were empowered to have their own cooperative societies Act to make the path of credit movement smooth and sound. As a result ,some provinces passed their own cooperative societies Act. The Bombay province took the lead and passed an act in 1925 followed by Madras province in 1932 and bihar and Orissa in 1935 and Bengal in 1941. Through the No. of societies increased from 17729 in 1915-16 to 91786 in 1929-30, there had been a parallel growth of over dues to loan outstanding from 17 percent in 1915-16 to 25 percent in 1929-30.

After Independence, with the beginning of the planning era in 1950-51, the movement got a new phase of development under five year plans, The loans advanced by the paccs increased to Rs.550 crores during 1969-70 i.e. at the end of fourth five year plan as against Rs.22.9 crores during 1950-51, at the stage of five year plans.

Objectives of the study:-

1. To take review of PACCS in Agricultural development.
2. A study of financial role of PACCS in India.

Research Methodology:-

The present study is based mainly on secondary data. The data was collected from Library books, Published Annual reports of NAFSCOB, Journals, websites, Research Articles and other published materials. The data with regards to review and role of PACCS to be collected from published sources.

Data Analysis and Interpretation

The role of primary agriculture cooperative credit societies in agricultural development in India is discussed in the following. The number of primary agriculture co-operative societies during the period of 2010-11 to 2013-14 is shown in table 1.

Table No.1. Total Number of PACCS in India Region Wise (in000)

Sr.No.	**Name of Zone**	2013-2014	2012-2013	2011-2012	2010-2011
1.	Central	13386 14.39	13386 14.32	10818 11.70	12791 13.69
2.	Eastern	18566 19.95	18566 19.86	19421 21.01	18466 19.77
3.	North -Eastern	3491 3.75	3491 3.73	15357 16.61	15426 16.51
4.	Northern	12899 13.86	12824 13.72	29633 32.06	29541 31.62
5.	Southern	15040 16.16	14971 15.96	13703 14.82	13717 14.68
6.	Western	29660 31.88	30304 32.41	3500 3.79	3472 3.72
	All Total Percentage(%)	93042 100	93488 100	92432 100	93413 100

Source :- Annual report of NAFSCOB National federation of state cooperative Bank ltd.

In the above table central zone consist of Delhi, MP, UP and Eastern Zone consists Bihar, West Bengal and North Eastern zone consists Arunachal Pradesh, Assam., Manipur, Meghalaya, Nagaland, Sikkim, Tripura and Northern zone consists Punjab, Haryana, HP, Jammu & Kashmir, Rajasthan, Chhattisgarh, Uttarakhand and Southern zone consists of Ap, Karnataka, Kerala, Tamil Nadu and Western zone consists of Goa, Gujrat and Maharashtra.

Table No.2. Total Number of Members in PACCS (In000)

Sr.No.	Year	Number of Membership	Growth Rate %
1.	2013-2014	130119	2.08
2.	2012-2013	127467	12.21
3.	2011-2012	113596	6.29
4.	2010-2011	121225	-

Source :- Annual report of NAFSCOB National federation of state cooperative Bank ltd.

Table No.3. Type wise Number of Members in PACCS

Sr.No.	Year	SC	ST	Others
1.	2013-2014	18232	9324	106201
2.	2012-2013	19203	10330	97933
3.	2011-2012	20340	10059	83196
4.	2010-2011	15385	9807	96033

Source :- Annual report of NAFSCOB National federation of state cooperative Bank ltd.

Table No.4. Financial aspects of PACCS (Rs. in Crores)

Sr. No.	Year	Paid up capital	Deposits	Borrowing	Working capital
1.	2013-2014	978880	8189490	9583580	21242917
2.	2012-2013	986830	6711309	9335915	28081643
3.	2011-2012	828010	5025279	8883557	16050797
4.	2010-2011	755117	3723816	5400010	14422190

Source :- Annual report of NAFSCOB National federation of state cooperative Bank ltd

Table No.5. Total Loans Issued (Rs. In Crores)

Sr.No.	Year	Short term	Trend%	Medium term	Trend%
1.	2013-2014	14204370	13.45	2937585	19.98
2.	2012-2013	12519725	56.05	3671190	35.60
3.	2011-2012	8022774	6.36	2707248	70.51
4.	2010-2011	7542682	-	1587700	-

Source :- Annual report of NAFSCOB National federation of state cooperative Bank ltd.

Table No.6. Numbers of societies in profit and loss

Sr. No.	Year	Number of societies in profit	Number of societies in Loss
1.	2013-2014	43327	37662
2.	2012-2013	42586	37955
3.	2011-2012	45433	36375
4.	2010-2011	44554	38065

Source :- Annual report of NAFSCOB National federation of state cooperative Bank ltd.

Findings

Agriculture Co-operative Credit societies are working positively. In all India level Total number of PACCS divided in to Six Zone i.e. Central, Eastern, North-Estern, Northern, Southern

& Western. In the year of 2013-2014 Western zones No. of PACCS is high compare to other zone. In this zone include Maharashtra, Goa & Gujrat state. Eastern zones No. of PACCS only 3.75% share in total. There is negative results in the total No. of PACCS in 2013-2014, in this year trend of No. of paccs is decreased compared to last three year.

There is negative direction found in the establishments in number of societies but the total numbers of members are increased during the years 2012-2013. In the year of 2013-2014 the Growth rate of membership only 2.08% compared to last year. Type wise Number of Members in PACCS in all India level SC & ST category Number of members is less compared to others. It may be reason of category members not participated or May be they do not get opportunities to membership.

Financial aspects performance of primary agriculture co-operative societies has shown not much better but good performance in the scene of progress and development.

Agriculture is a dominant sector of our economy and credit plays an important role in increasing agricultural production. In all India level short term and Medium term loans is the main source of finance to farmer. It plays very important role of Agricultural development it proves the above tables statistics.

In the last tables of statistics shows that total number of PACCS in profit and Loss position. In the year of 2013-2014 No. of in profit positions societies are increased compared to last three years it shows good performance of societies. And reverse side said that No. of Loss positions societies are also decreased.

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AGRICULTURAL PROFILE AND CROPPING PATTERN IN WALWA TAHSIL OF SANGLI DISTRICT, MAHARASHTRA

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ABSTRACT

Agriculture is a backbone of Indian Economy. More than 70 per cent population depends upon agriculture. Agriculture is the main source of livelihood of the people in the region. Agricultural activities are depended on various factors such as type of soil, monsoon, irrigation facilities, land productivity etc. India has monsoon type climate which has irregular and unpredictable nature. Due to lack of irrigation facilities the farmers take only one crop in a year. So the income from agriculture is very inadequate. Agriculture activity is supplemented with the subsidiary activities such as dairying, poultry, sheep rearing, cattle breeding etc (Patil, 2010). So there is the need of substitute business to the farming. Agricultural landuse pattern and cropping pattern in Walwa tehsil is such type of irrigated land, non-irrigated land, forest cover, fallow land etc. Then agriculture in the Walwa tahsil is mostly of the intensive subsistence type with an emphasis on the production of food grains. The commercial crops like sugarcane, oilseeds, Soyabean, vegetables and fruits etc. are also cultivated in the region. Kharip and Rabbi are the two main crop growing seasons in the study region.

Key words: Agriculture, Monsoon, Substitute, Emphasis, Cultivate, Kharip, Rabbi etc.

Preface:

The Walwa tahsil is divided into four agriculture divisions. These agriculture divisions are Kasegaon, Ashta, Islampur and Kurlap. These divisions are taken as an areal unit for analysis of the present study. Agricultural landuse pattern and cropping pattern in Walwa tehsil is such type of irrigated land, non-irrigated land, forest cover, fallow land etc. Then agriculture in the Walwa tahsil is mostly of the intensive subsistence type with an emphasis on the production of food grains. The commercial crops are sugarcane, oilseeds, Soyabean, vegetables and fruits etc. Kharip and Rabbi are the two main crop growing seasons in the study region.

Study Region:

The Walwa tahsil is one of the important tahsils in Sangli district of Maharashtra which is mostly famous in the dairy activities. It is located in western part of Sangli district having 787.81 sq. kms. (78,781 hector) geographical area (Fig.1). Walwa tahsil lies between 14^0 44' North latitude to 15^0 04' North latitude and 79^0 19' East longitude to 79^0 39' East longitude. The average height of study region is 560 m. from mean see level.

Objectives:

1] To study the landuse pattern

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2] To study the cropping pattern
3] To study the Kharip & Rabbi crops.

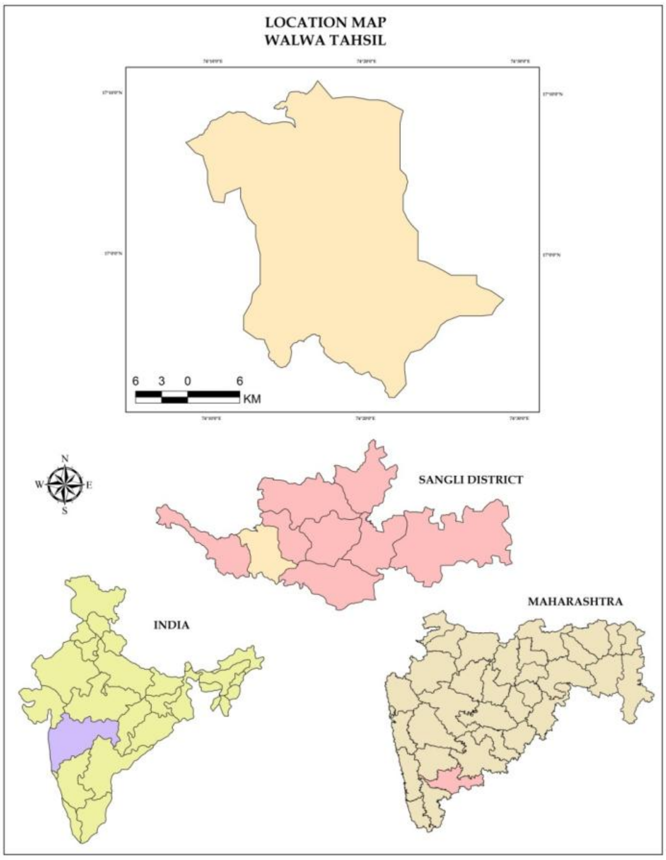


Fig: 1

Methodology:

The researcher has collected the related information and statistical data from the Agriculture Department of Walwa tehsil, Official records of Socio-Economic Reviews and Statistical Abstract 2007 to 2014. Whereas published information also collected from Talathi Office, Reference Books, Internet and News papers.

Discussion:

Agricultural landuse pattern and cropping pattern in Walwa tehsil is such type of irrigated land, non-irrigated land, forest cover, fallow land etc.

Table No. 1

Agricultural Landuse Pattern in Walwa Tahsil

Sr. No.	Landuse	Area in hect.
1	Total Geographical Area	78781.00
2	Area Under Crop	64832
	A) irrigated land (Bagayat)	51391
	B) non irrigated land (Jirayat)	13441
3	Forest Area	2952
4	Area Not Available for Agriculture	4766
5	Uncultivated Waste	1805
6	Fallow Land	4426

Source: *Socio-economic abstract of Sangli District, 2013*

Table no. 1 shows the agricultural landuse pattern in Walwa tahsil. In the study region, 64,792 hector areas is under crops in that 51,351 hector area has irrigation facilities and 13,441 hector area is depended on the monsoon which is non irrigated area. In the Walwa tahsil, 2952 hector area is under forest cover (since-2001), while 4766 hector area is not available for cultivation, either it is non-agricultural zone or not able for cultivation. Apart from that there is 1805 hector areas uncultivated waste, whereas 4426 hector is a follow land.

1 CROPPING PATTERN:

Agriculture in the Walwa tahsil is mostly of the intensive subsistence type with an emphasis on the production of food grains. The commercial crops like sugarcane, oilseeds, vegetables and fruits etc. are also cultivated in the region. Kharip and Rabbi are the two main crop growing seasons. The Kharip crops are sown with the onset of monsoon and harvested in September-October. The Rabbi crops are sown in October-November and harvested in February-March. There are some crops like Jawar and oil seeds which are grown in both the seasons. Sugarcane stands in the field for 12 to14 months spread over both the seasons.

Over a large area in the region the rain fed crops are found such land is known as 'Jirayat' or non irrigated land. Hence, the farmer has to depend entirely on the natural source of water for crop production. Most of the farmers have successfully adopted dry farming techniques where conservation of moisture is of vital importance, 'Bagayat' in contrast is an irrigated land where labour and water intensive farming is practiced. The crop like sugarcane is entirely dependent on irrigation. However irrigation usually supplements rain to strengthen the main crop or sustain the subsidiary crops. Though the capacity of a well to irrigated, the land is limited farmers generally grow cash crops which fetch them good returns. It appears that farmers are changing their cropping patterns according to the improvement in technology, economic factors and the nature of demand. The development of irrigation facilities in the area have caused in digging of wells which have been utilised for irrigation purpose. Now a day, there is a considerable increase in the cultivation of vegetables, fruits, flowers and nurseries. Farmers of the region are practicing intensive and high-tech agriculture.

Mumbai, Pune, Solapur, Kolhapur, Sangli, Belgum, Goa and Bengalore markets have given encouragement to farming fruit, flowers, vegetables and onion production. Spices like turmeric, garlic, ginger as well as crops like Rice, Jawar, Wheat, Maize, Sunflower, Soyabeans are also produced in the region. Most of the crops are grown on irrigated as well as non irrigated supplies fodder. Therefore in Walwa tahsil a large scale fodder is available for livestock and development of dairy farming.

1.1 Cropping Pattern in Kharip Season:

As mentioned earlier, there are two different seasons in the cultivation of crops viz. Kharip and Rabbi. Accordingly, cropping pattern of these two seasons is also different. These seasons are mostly influenced by climatic conditions of that particular area (Sangale, 1995). The following discussion is present to the cropping pattern in the Kharip season in the Walwa tahsil.

Table 2 reveals that the agriculture region-wise area under different crops in Kharip season. Sugarcane is major growing crop (49.54 per cent) in all the divisions. Islampur (60.03 per cent) region has the highest area under sugarcane followed by Ashta region (52.53 per cent). In Kasegaon region, sugarcane crop is dominated over the one and half of the region (51.84 per cent) whereas in the Kurlap region 47.50 per cent area is observed under the sugarcane crop.

Soyabean is the second largest cultivated crop (26.83 per cent) in the tahsil. Kasegaon division (30.53 per cent) has highest area under this crop followed by Islampur region (24.40 per cent), similarly Ashta region is also observed 24.22 per cent area under the soyabean crop. In Kurlap region, this crop has been cultivated on the area of 23.69 per cent. Groundnut is highly cultivated in Kurlap region (11.07 per cent) while in the Ashta region this crop is cultivated in lowest area i.e. 4.46 per cent. Rice is 2.95 per cent and Jawar is 2.80 per cent dominantly cultivated in Walwa tahsil (Fig.2) . In the Walwa tahsil, as pulses are considered, Udid (3.31 per cent) has been cultivated in the highest area as compare to the other pulses. Accordingly, Islampur region has highest area under the Udid (8.00 per cent).

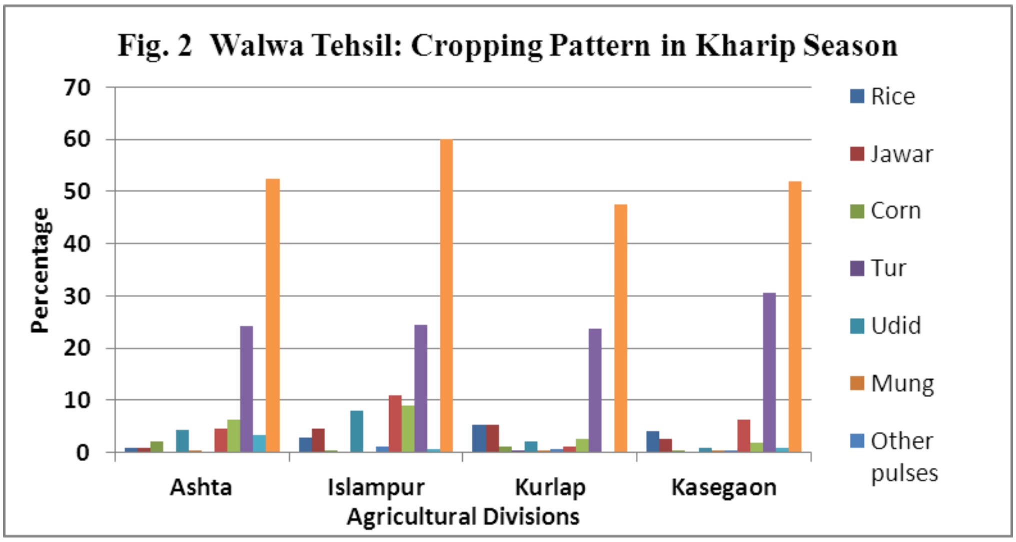
Table No. 2
Area under Different Crops in Kharip Season (2013-14)

Area in hectors

Crops	Agricultural Region				Total		
	Ashta	Islampur	Kurlap	Kasegaon	Rural	Urban	Tahsil
Rice	187 (0.93)	334 (2.93)	722 (5.30)	730 (4.04)	1352 (2.40)	21 (0.21)	**1973 (2.95)**
Jawar	172 (0.85)	524 (4.60)	711 (5.22)	460 (2.54)	1811 (3.22)	56 (0.56)	**1867 (2.80)**
Corn	425 (2.11)	31 (0.27)	146 (1.07)	80 (0.44)	346 (0.62)	26 (0.26)	**372 (0.56)**
Tur	36 (0.18)	13 (0.11)	58 (0.43)	32 (0.18)	137 (0.24)	0 (0.00)	**137 (0.21)**
Udid	876 (4.34)	912 (8.00)	281 (2.06)	143 (0.79)	1707 (3.04)	505 (5.06)	**2212 (3.31)**
Mung	96 (0.48)	20 (0.18)	59 (0.43)	55 (0.30)	210 (0.37)	20 (0.20)	**230 (0.34)**
Other pulses	34 (0.17)	114 (1.00)	71 (0.52)	52 (0.29)	226 (0.40)	45 (0.45)	**271 (0.41)**
Groundnut	900 (4.46)	1246 (10.93)	1507 (1.07)	1155 (6.39)	4582 (8.15)	226 (2.27)	**4808 (7.20)**
Sunflower	1283 (6.36)	1018 (8.93)	360 (2.64)	343 (1.90)	2219 (3.95)	785 (7.87)	**3004 (4.50)**
Soya bean	4889 (24.22)	278 (24.40)	3226 (23.69)	5518 (30.53)	14761 (26.26)	3161 (31.70)	**17922 (26.83)**
Other crops	684 (3.39)	66 (0.58)	9 (0.07)	137 (0.76)	797 (1.42)	107 (1.07)	**904 (1.35)**
Sugarcane	10604 (52.53)	6842 (60.03)	6469 (47.50)	9370 (51.84)	28069 (49.93)	5020 (50.34)	**33089 (49.54)**
Total	**20186 (100.0)**	**11398 (100.0)**	**13619 (100.0)**	**18075 (100.0)**	**56217 (100.0)**	**9972 (100.0)**	**66789 (100.0)**

Note: *Figures in brackets are percentage*

Source: *Official Records of Agriculture Department, Islampur, 2013-14*



1.2 Cropping Pattern in Rabbi Season:

Rabbi season is mostly influenced by the winter climatic conditions (Singh, 1975), hence, different cropping pattern are observed in this season. The following table analyses the cropping pattern of the study region in the rabbi season.

Table No.3

Area under Different Crops in Rabbi Season (2013-14)

Area in hectors

Crops	Agriculture Region				Total		
	Ashta	Islampur	Kurlap	Kasegaon	Rural	Urban	Tahsil
Jawar	780 (25.67)	1054 (32.12)	758 (20.30)	1085 (37.38)	3288 (28.16)	389 (30.41)	3677 (28.38)
Wheat	958 (31.53)	898 (27.37)	1200 (32.14)	642 (22.12)	3342 (28.62)	356 (27.83)	3698 (28.54)
Corn	216 (7.11)	189 (5.76)	210 (5.62)	151 (5.20)	696 (5.96)	70 (5.47)	766 (5.91)
Gram	1068 (35.15)	1129 (34.41)	1551 (41.54)	1015 (34.96)	4304 (36.86)	459 (35.89)	4763 (36.76)
Pulses	13 (0.43)	08 (0.24)	10 (0.27)	9 (0.31)	36 (0.31)	04 (0.31)	40 (0.31)
Safflower	01 (0.03)	02 (0.06)	05 (0.13)	1 (0.03)	08 (0.07)	01 (0.08)	09 (0.07)
Sunflower	02 (0.07)	01 (0.03)	00 (0.00)	0 (0.00)	03 (0.03)	00 (0.00)	03 (0.02)
Total	3038 (100.0)	3281 (100.0)	3734 (100.0)	2903 (100.0)	11677 (100.0)	1279 (100.0)	12956 (100.0)

Note: *Figures in brackets are percentiles*

Source: *Official Records of Agriculture Department, Islampur, 2013-14*

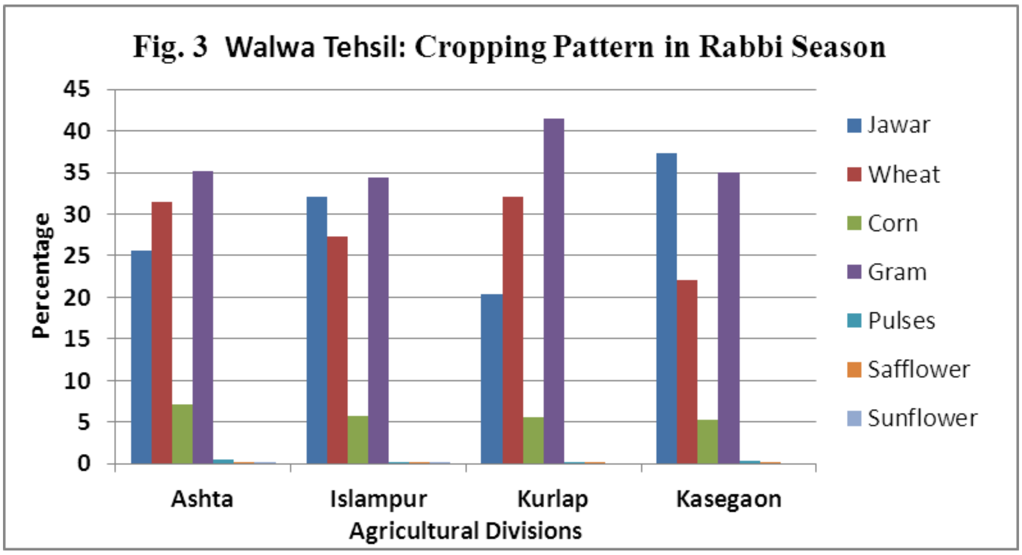


Table 3 reveals that the agriculture region-wise area under different crops in rabbi season. Gram is the highest growing crop (36.76 per cent) in entire year. Accordingly, Kurlap region (41.54 per cent) has highest area under the gram; on the other hand Isalmpur region (34.41 per cent) has lowest area under the gram.

Apart from that, Wheat (28.54 per cent) and Jawar (28.38 per cent) crops are also dominated on the highest area in the rabbi season. In the study region, 32.14 per cent area of

Kurlap region falls under the Wheat crop. Similarly in the Kasegaon region (37.38 per cent) the highest area falls under the Jawar crop (Fig.3). Besides, Corn (5.91 per cent), pulses (0.31 per cent), Kardai (0.07 per cent) and Sunflower (0.02 per cent) these crops are growing in the some part of the study region in the rabbi season.

Conclusions:

Most of Walwa tahsil is agrarian belt, which surrounded by basins of rivers Krishna and Warana. Therefore, major part of the Walwa tahsil is covered by irrigation. There are 65.23 per cent land comes under the irrigation. As considering the Kharip cropping pattern Sugarcane (49.54 per cent) and Soyabean (26.83 per cent) are the most dominated corps in the entire Walwa tashil, it's again due to the blessings of rivers Krishna and Warana. While considering the rabbi cropping pattern Gram (36.76 per cent), Wheat (28.54 per cent) and Jawar (28.38 per cent) crops have been dominated in the Walwa tahsil.

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AGRO-TOURISM : A GEOGRAPHICAL STUDY IN MAHARASHTRA

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ABSTRACT

Tourism is a global industry in 21st century. It is one of the greatest success stages of our time. Today in the world more than 500 billion U.S. dollar trade and 350 million people engaged in this industry. Tourism industry provides high employment and income any other trade or economic activity.

In Maharashtra geographical and agricultural background is very rich. Agro tourism would bring many direct and indirect benefits to the people. The agro-tourism activity is great capacity to create additional source of income and employment to the farmers.

Keywords : Agri-tourism, activity, farmers.

Introduction :

Govt. of Maharashtra declared 2011 year is a tourism year. because tourism is most important activity which is developed very fast in 21st century. Today agro-tourism is one of new concept coming in this industry. There are so many direct &indirect benefits brings to some farmers. The agro-tourism activity is an innovative agricultural activity related to agricultural and tourism. This activity create opportunities to the famers. And in India Maharashtra is one of the states where the major tourist centers are located and there is a large scope as well as great potential to develop agri-tourism in Maharashtra.

Objectives :

1) To studies the importance and significance and opportunities of agri-tourism in Maharashtra.
2) To explain the importance of agro-tourism development in Maharashtra.
3) In this study to identify the problems of the agro-tourism and suggestions to operations of agro-tourism.
4) To made a small and suitable framework of agro-tourism centers of small farmers.

Study Area :

Maharashtra is a one of the state which is located in western part of India. The absolute location is 17^0 57' 8" North Latitude and 75^0 16' 00" East Longitudes. Agricultures is a most important occupation in Maharashtra. In this state annual rainfall is 400 to 600 mm and in western part wet and warm climate, and in not and dry climate middle and eastern part.

Importance of the Study :

In Maharashtra agriculture is one of the most important primary activity. The overall development of state is depending upon this activity. But the monsoon, prices fluctuations of agriculture products this agriculture system is totally unprofitable. So their is a need of various activities in agriculture. In other hand the growth of urbanization is much more. The rate of population is very high in the urban area. They are in the closed door, flat system, fast food, computer internet, offices and clubs. Many things they wants to relax life. So they comes in rural areas to getting relax life. So it is a golden opportunity to farmers for develop their farm. They develop their agro-tourism centers and areas him and create additional income sources and develop their standard of life.

Methodology :

The present study was based on secondary data. This data was collected in articles, research paper, books, reports, 11th Plan document of Govt. of India, websites of the Govt. of Maharashtra, agri ministry of Maharashtra and MIDC.

Agro-tourism :

Agro-tourism is played a most vital role in development of Maharashtra. It is a farm based business. It is a new face of tourism in Maharashtra.

Agro-tourism is defined as "travel than combines agricultural or rural settings with products of agricultural operations all within a tourism experience." Here agro-tourism and eco-tourism are closed related to each other. The eco-tourism provides by the tour companies. But agro tourism farmers offer tours to their agriculture farm and providing fun, education and entertainment filled experience for the urban peoples.

Requirement for agro-tourism centers :

To develop an agro-tourism center in their farm the farmer must have basic infrastructure and facilities in their farm as follows.

Facilities should provides :

- Provides rural games to the tourist.
- To see and participate in the agri activities.
- Offer authentic rural Indian / Maharashtra food for breakfast, lunch & dinner.

Infrastructure :

- Plant, trees and water must available at the area.
- Hostel, hotel or accommodation must available at the area.
- Medical facilities, cooking food must available.
- Some bullock cart, baffellow, telephone, cattle must available at the area.
- Village level games must available.

Various facilities should provide :

- Rural games.
- Maharashtra food for exam - chattanibhakari, hurada, tambada-pandhararassa etc.
- Riding horse, fishing, buffalo ride, bullock card for riding.
- To provide information on culture, dress, arts, rural festivals etc.
- To provide information on groundnut, corn, fruits etc.
- Give authentic information about birds, animals, local birds, butterfly etc.
- Arrange the various programmee, like that Dhangarigaja, shekoti, fire camp, folk dance, ovi, bhajan, kirtana etc.

Location of the Center :

The location of the center must eassy and natural beckground along with agro-tourism. Some urban people or tourist are interested wants to rural life. So this agro-tourism centers must need easy accessible by roads, or railways. In Maharashtra Mahabaleshwar, Nasik, Pandharpur, Panhala etc. are already developed tourist centers. So these are hether place for the development of agro-tourism.

Significance of Agro-tourism centers :

Some of the benefits are as follows.

1) This center supported for rural and agricultural development processes.
2) It is supported for other tourist places.
3) Farmers can improved their standard of living.

4) Improvement of urban & rural people including social moral values.
5) Extra income sources available for the farmers.
6) Employment opportunities are available.

Agro-tourism potential in Maharashtra :

Maharashtra is a one of the state in India where the 720 km long coastline along the area Kokan region. Western ghats&Sahyadri mountain range are serval hill stations, water reservoirs, semi-evergreen forests are available in this area. In this area their are some many tourist centers which are the supporting the nature for the agro tourism center in Maharashtra. In our Maharashtra 22368 thousand hacter are under the agriculture. Where near about 40000 thousands of livestock like that cow, goats, beffelows etc. is available in this state. Some fruits, like mango, grepes, bananas, orange, leman, strawberry production is growing up and the other hand rice, grain, wheat, groundnut, bajara, onions, cotton, sugarcane, oil seeds these are the agriculture production is giving in Maharashtra state. In our Maharashtra following factors are helpful to the agro-tourism centers.

1) Good communication & transport facilities.
2) The tourist places are already exist to support agro-tourism.
3) More horticulture is available.
4) Various crops, people, deserts, mountain, hill stations, are available which provides scope promotion of all season, multi-location agro-tourism.
5) In Maharashtra there are so many established tourist destination in the world.
6) Maharashtra is one of state where the horticulture is dominant.
7) In Maharashtra so many non-urban tourists spots are available.
8) In India Maharashtra is a one of the state where the diverse agro-climate conditions, diverse crops, diverse people etc. available.
9) In rural area good cultural is available like folk dance, lavani, povada, koli dance, ovi, dindi etc.
10) Maharashtra is very glorious with a great variety in rural games like viti-dandu, lapa-chhapi, dori-udi etc. It gives a unique identity to the rural Maharashtra

Problems of Agri-tourism in Maharashtra :

In Maharashtra there are so many problems in agro-tourism. There is a great potential to develop agro-tourism center due to the good physical structure climate, to rest. So on but there are so many probelms.

1) Knowledge of agro-tourism.
2) Capital development for agro-tourism.
3) So many farmers the farms are to small.
4) Small land holders.
5) Communication skill.
6) Commercial approach of the small farmers.
7) More drought prone area.
8) Low quality land.
9) Lake of irrigation problem.

Key Techniques for success in Agro-tourism :

For the good success in the agro-tourism following suggestion.

1) Small farmers can develop their agro-tourism centers for the help of society.
2) To develop different tour packages.
3) Behave of our farmers.
4) To develop chain publicity.

5) To take feedback of tourist.
6) To make your website and update it.
7) To use artificial resource for development of tourist center.
8) Optimum charges.
9) To give training to your staff or family members for reception and hospitality.
10) Communication growth e.g. college, clubs etc.

Conclusion :

In India Maharashtra is a one of state where the potential of agro-tourism centers is very high capacity. There is good natural physical structure, climate, waterfall, water bodies, forestry, etc. In agriculture the type of agriculture is different place to place. The product of agri is totally different. So it is a good opportunity to develop an agro-tourism business in Maharashtra. But the knowledge of agro-tourism is not available for small farmers in Maharashtra. So the MTDC, agri-colleges give the orientation about it and provide some new knowledge to agro tourism. The govt. should provide finance to farmers to develop agro-tourism centers.

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CHANGING CROPPING PATTERN IN PANCHAGANGA BASIN: A GEOGRAPHICAL ANALYSIS

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ABSTRACT

Cropping pattern is the proportion of area under various crops at a point of time. It indicates how intensively the net sown area is being utilized for various crops. The cropping pattern depends on a number of inputs of which irrigation is an important one. Changes in cropping pattern refer to change in proportion of area under different crops at two different times. Such changes are governed by ecological situation. In view of the predominantly agrarian nature of the study region, such studies are the subject of supreme importance. In this context, the present study aims to assess cropping pattern and highlight volume of change in Panchganga Basin. The present investigation is based on primary and secondary data. The period selected for study is from 2001-02 to 2012-13. The data thus collected is processed and further represented through the table, graphs and maps. The study region is the Panchaganga basin in the southern part of Maharashtra which is one of the well watered & agriculturally progressive part of the state. In the study area food crops occupy the largest area (157151hectares) which is about 58.13 per cent of the total cropped area. Among food grains Rice (18.82%) is the leading crop followed by ragi. Other food grains occupy very small proportion of area. Among non food grains sugarcane has now attained significant proportion i.e. 65445 hectares of cultivated area (24.21%). Amongst non-food crops, soyabean (6.87%), groundnut (6.38%) and fodder (27.70%) occupy dominant place. Other non-food crops occupy insignificant area in the cropping pattern. There are low changes in the cropping pattern of the study region during the period under investigation. The total area involved in change is 2.38 per cent

1.1 INTRODUCTION:

Cropping pattern is a dynamic concept as it changes over space and time. Cropping pattern means proportion of area under various crops at a point of time. The agricultural land use pattern changes according to the changes according to the changing need of human being. To avoid the negative impact of any natural hazards, the farmers are choosing the variety of crop combinations in their fields. Population pressure, irrigation facilities lead to change in Land use and cropping patterns. This paper an attempt has been made to explain changing cropping pattern in Panchganga Basin.

1.2 OBJECTIVES:

The present study aims to assess cropping pattern and highlight volume of change in Panchganga Basin.

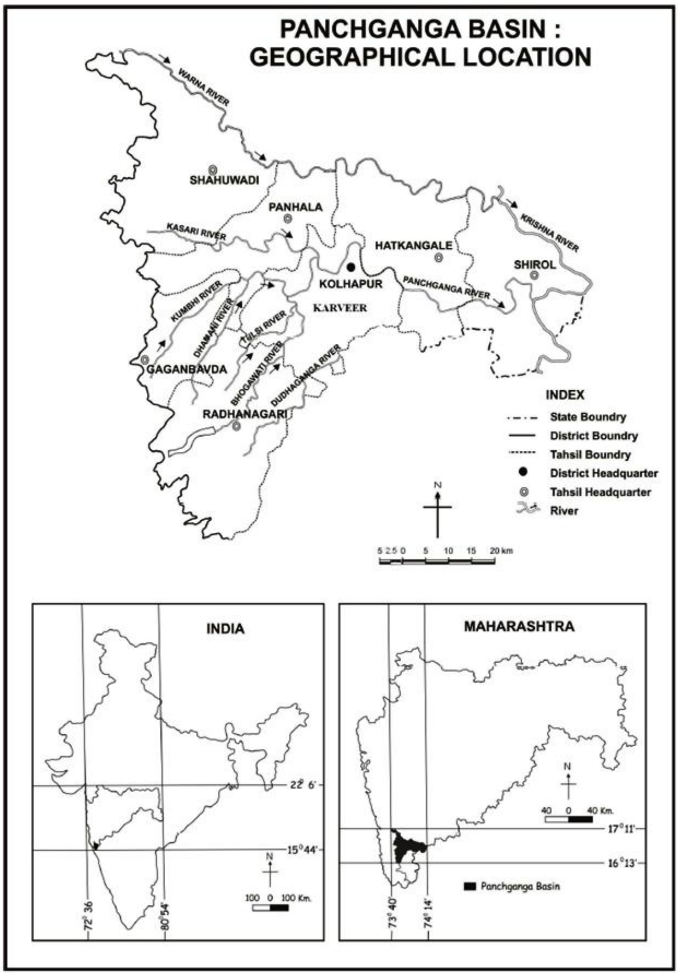


Fig. 1

1.3 STUDY REGION:

The selected region for the present investigation is the 'Panchganga Basin of south Maharashtra state. It comprises 7 tahsils of Kolhapur district namely Shahuwadi, Panhala, Gagan-Bawada, Karveer, Hatkanagle, & Shirol (Fig.1). The triangular tract region lies between 16° 13' North and 17° 11' North latitude and 73° 41' East and 74° 42' East longitudes. It covers about 45752.2sq.km area and supports 29,17,042 (2.6 % of state) population. The river Panchaganga is well- watered and agriculturally developed part of the state (Shinde,1973). This region is topographically complex, having river valley flood plains to the east and hilly ranges to the west. Climatically this region have temperate climate. The region located in rain shadow zone of Western Ghats receives a decreasing amount of rainfall from the west (6000mm) to east (500mm).

1.4 METHODOLOGY:

The entire study is based on secondary data, which is collected from Socio-economic review, agricultural department of Kolhapur district. The data for area under crop is collected from village and tahsil revenue departments. The period selected for study is from 2001-02 to 2012-13. Collected data are processed and represented by statistical and cartographic techniques.

1.5 CROPPING PATTERN AND CHANGES:

The cropping pattern means the proportion of area under various crops at a point of time. The area under study grows a variety of crops, but they are generally classified as food and non-food crops.

Table 1: Changing cropping pattern in Panchganga Basin

Crops	2001-02		2011-12		Volume of change %
	Area in hectare	% to G.C.A	Area in hectare	% to G.C.A	
Rice	53518	16.41	50866	18.82	2.41
Wheat	4847	1.49	333	0.12	-1.36
Jowar	13848	4.25	7127	2.64	-1.61
Niger	8733	2.68	9276	3.43	0.75
Other cereals	982	0.30	5463	2.02	1.72
Total cereals	86947	26.66	73971	27.36	0.70
Gram	6850	2.10	192	0.07	-2.03
Other pulses	2290	0.70	476.15	0.18	-0.53
Total pulses	16797	5.15	934.15	0.35	-4.80
Total foodgrains	103744	31.81	74905	27.71	-4.10
Sugarcane	81467	24.98	65445	24.21	-0.77
Condiments & spices	1829	0.56	738	0.27	-0.29
Fruits and vegetables	10301	3.16	16063	5.94	2.78
Total food crops	197341	60.51	157151	58.13	-2.38
Cotton	28	0.01	0	0.00	-0.01
Other fibers	61	0.02	44	0.02	0.00
Total fibers	368	0.11	44	0.02	-0.10
Groundnut	23393	7.17	17237	6.38	-0.80
Soyabean	45537	13.96	18561	6.87	-7.10
Total oil seeds	69086	21.18	41064	15.19	-5.99
Tobacco	0	0.00	106	0.04	0.04
Total drugs & narcotics	3257	1.00	121	0.04	-0.95
Total fodder	56102	17.20	74887	27.70	10.50
Total non food crops	128780	39.49	113175	41.87	+ 2.38
Gross cropped area	326121	100.00	270326	100.00	**± 2.38**

Source: Compiled by the researcher.

In the study area food crops occupy the largest area (157151hectares) which is about 58.13 per cent of the total cropped area. Among food grains Rice (18.82%) is the leading crop followed by ragi. Other food grains occupy very small proportion of area. Among non food grains sugarcane has now attained significant proportion i.e. 65445 hectares of cultivated area (24.21%). Amongst non-food crops, soyabean (6.87%), groundnut (6.38%) and fodder (27.70%) occupy dominant place. Other non-food crops occupy insignificant area in the cropping pattern. There are low changes in the cropping pattern of the study region during the period under investigation. The total area involved in change is 2.38 per cent (Table 1).

1.5.1 Rice:

Rice is one of the major staple food crops in study region. It occupies about 18.82 per cent of total cropped area having more variation at tahsil level. The area under rice cultivation has increased from 16.41 to 18.82 per cent during the period under investigation. However, in study region only two tahsils i.e. Hatkanangle and Gagan Bavda registered an increase the proportion of area involved in increase ranges from 4.37 to 9.47 per cent. In rest of the circles the decreasing trend is observed varying from under 0.04 to over 7.69 per cent. It is due to the tendency of the farmers, to switch over to commercial crops like sugarcane and soyabean from traditional cereal crops like Jowar and Wheat as soon as the land is irrigated (Fig. 2 B).

1.5.2 Ragi:

Nagli or Nachani are the local names of these crops which is high calcium content. Ragi is dominant cereal crops particularly in western part of study region. It occupies about 3.43 per cent of total gross cropped area. The area under Ragi cultivation has increased from 2.68 to 3.43 percent during the study period. The high positive change (over 2%) is observed in Gagan Bavda tahsil. The moderate positive change (0 to 2%) is noted in the Shahuwadi and Karveer tahsil. However, low negative change (0 to 1%) is found in tahsils of Panhala, Hatkanangle and Shirol. The moderate negative change (1 to 3%) is found in Radhanagari tahsil (Fig. 2 D).

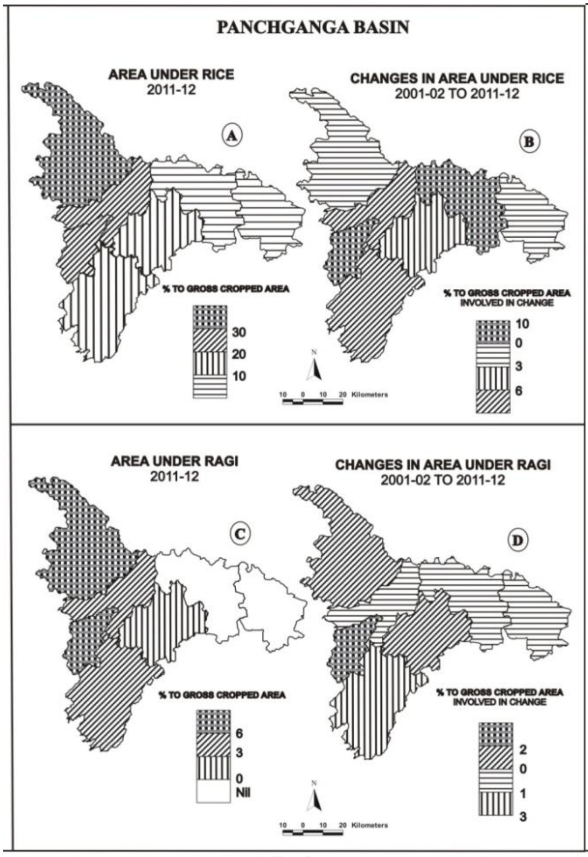


Fig: 2

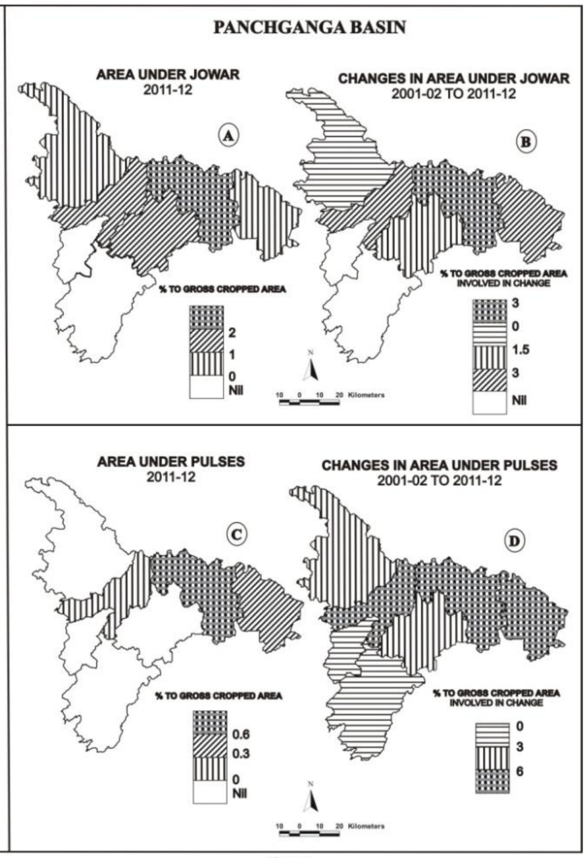


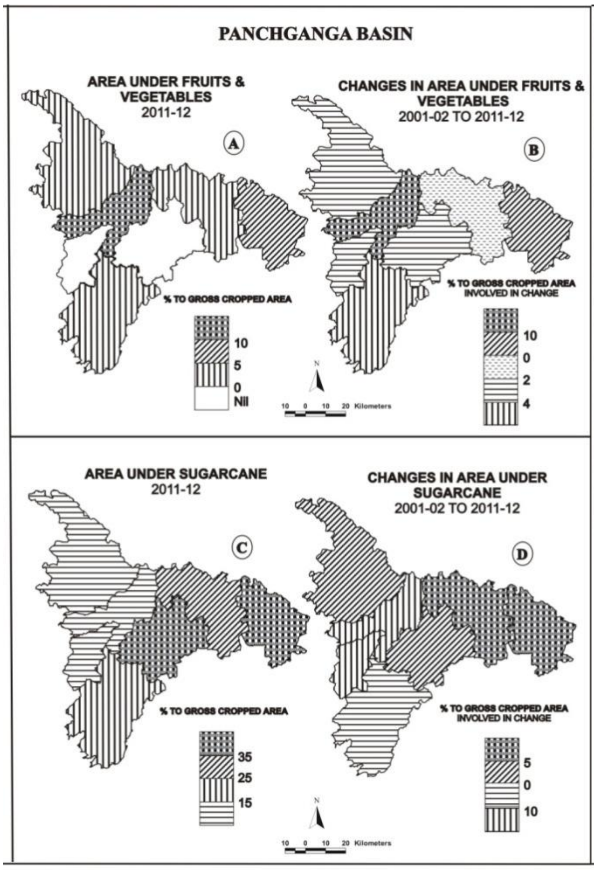
Fig: 3

1.5.3 Jowar:

Jowar is another staple food is grown both as kharif and rabi crop. On an average there is 2.64 per cent of area under jowar as against 11.33 per cent in Maharashtra as a whole. The area under jowar has decreased from 4.25 to 2.64 per cent during the study period. Because at present, tendency of farmers is to grow cash crop like sugarcane, soyabean and vegetables. The change in area under jowar is exhibited in (Fig. 3 B). It has negative change (-1.61%) in the region as a whole. The very high negative change (over 3%) is observed in the tahsils of Shirol and Panhala which are the traditionally Jowar growing areas. The moderate negative change (1.5 to 3%) is noted in Karveer tahsil. The low negative change (0 to 1.5%) is observed in the tahsil of Shahuwadi. The shift of area under Jowar is observed either towards sugarcane or Ragi.

1.5.4 Pulses:

The region produces varieties of pulses. However, principal pulses grown are gram, udid (black gram), mug, tur (pigeon peas) etc. They are mainly practised as a intercropping and are largely rain fed. At present area under pulses has decreased. In general the pulses cultivation has diminished in importance during the last fifteen years in the region. The area under pulses has decreased from 5.15 to 0.35 per cent. However, high (above 6%) negative change is noted in the eastern part of the region. The moderate negative change (3 to 6%) is found in the tahsils of Shahuwadi and Karveer. The low negative change (below 0 to 3%) is observed in tahsils of Radhanagari and Gagan Bavda. (Fig.3 D).



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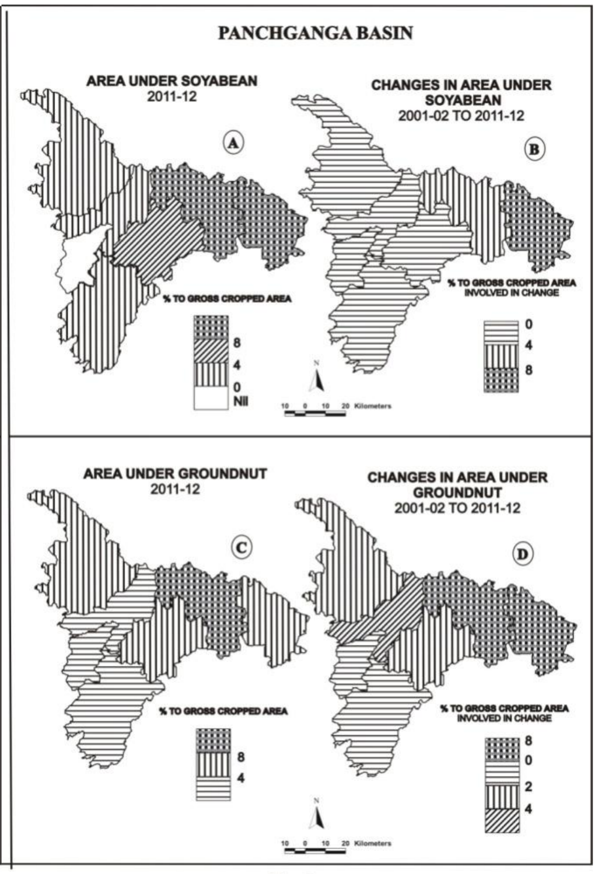

Fig: 5

1.5.5 Fruits and Vegetables:

The principal vegetables grown in the region are cauliflower, cabbage, tomato, brinjal, chillies and fruits grow mango, jackfruit, Grape, Banana etc. The proportion of area under all the vegetables is 16063 (5.94%) hectares of the total cropped area. In all, total increase by 2.78 per cent in area under fruits and vegetables is observed during the period under investigation. It is mainly due to their commercial value and low harvesting period as well the significant high positive change is observed in Panhala and Shirol tahsil. However the low negative change (0 to 2%) is observed in Hatkanangle tahsil. The moderate negative change (2 to 4%) in noted in the tahsils of Shahuwadi, Gagan Bavda and Karveer. The high negative change (above 4%) is found in Radhanagari tahsil. (Fig. 4 B)

1.5.6 Sugarcane:

Sugarcane, a premier cash crop occupies 24.21 per cent of total cropped area (4.40% state) and ranks first among all crops. The distribution of sugarcane in the study area is widespread, and everywhere the crop shares a significant proportion of the cropped hectarage. The high positive change (over 5%) is observed in the tahsils of Shirol and Hatkanangle. The moderate positive change (0 to 5%) is noted in the tahsil of Shahuwadi and Karveer (Fig. 4 D)It is made possible due to the increase in perennial (lifts) sources of irrigation and also the special efforts made by co-operative, particularly sugarcane factories, which have supported peasants in all respects to grow sugarcane. Here the co-operative movement provides an enviable model for the whole nation to follow. The area under sugarcane has decreased from 24.98 per cent to 24.21 per cent during study period. The high negative change (over 10%) is observed in tahsils of Gagan Bavda and Panhala. The moderate negative change (0 to 10%) is noted in Radhanagari tahsil.

1.5.7 Soyabean:

Soyabean, a kind of oilseeds, has been recently introduced in the study region. By occupying 6.87 per cent of gross cropped area it ranks second among cash crops. The distribution of soyabean in the study area is wide spread and eastern part the crop shares a significant proportion of the cropped hectarage. At present area under soyabean is decreasing because fluctuations of rate, uncertain climatic condition, the tendency of farmers select other crops affect of diseases on this crop. Therefore, area under soyabean has decreased from 13.96 to 6.87 per cent during period under investigation. The high negative change (above 8%) is observed in the tahsil of Shirol. The moderate negative change (4 to 8%) is found in the tahsil of Hatkanangale. The low negative change (below 4%) is noted in Shahuwadi, Panhala, Karveer, Gagan Bavda and Radhanagari (Fig.5 B).

1.5.8 Groundnut:

Groundnut is a kharif crop, grown all over the region. The crop prefers light red and brownish loamy soils of varying depth. It occupies 6.38 per cent area which is higher than that of state (1.30%) average. In case of groundnut cultivation, 0.80 per cent negative change is observed in the whole region, because soyabean and sugarcane have replaced this crop. The area under groundnut has decreased from 7.17 to 6.38 per cent during the study period. However the high positive change (0 to 8%) is observed in the eastern part of the region which is called as a sugar bow of the region. The low negative change (0 to 2%) is noted in the tahsils of Gagan Bavda and Radhanagari. The moderate negative change (2 to 4%) is found in Shahuwadi and Karveer tahsils. The high negative change (below 4%) is observed in Panhala tahsil (Fig.5 D).

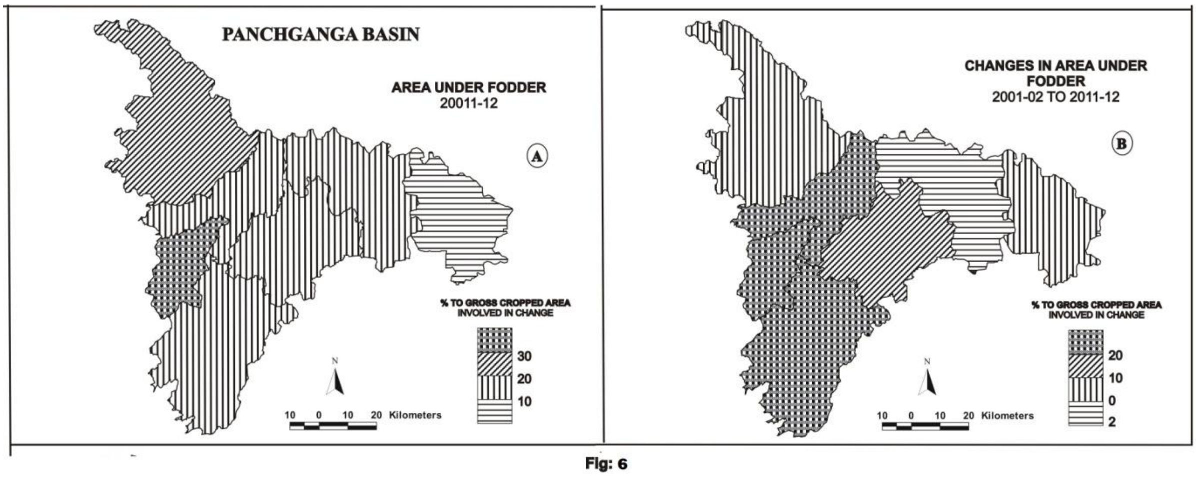

Fig: 6

1.5.9 Fodder:

The fodder crops refer to all grasses, legumes or other crops which are grown pure or mixture to provide cut herbage for feeding green or for the conservation in the form of hay or silage (Singh, 1979). About 27.70 per cent of gross cropped area is under fodder crop. The area under fodder crop has increased from 17.20 per cent to 27.70 per cent. The high positive change (over 20%) is observed in the tahsils of Panhala, Gagan Bavda and Radhanagari. The moderate positive change (10 to 20%) is found in Karveer tahsil. The low positive change (below 10%) is observed in tahsils of Shahuwadi and Shirol. However negative change (below 2%) is noted in Hatkanangle tahsil (Fig. 6 B).

1.6 CONCLUSION:

In study region food crops occupy the largest area (157151) which is about 58.13 per cent of the total cropped area. Ragi, Jowar and rice are principal food grains grown in the region. However, the area under food grains has decreased from 31.81per cent to 27.71 per cent during period under investigation. In general the jowar and pulses cultivation has diminished in importance during the last ten years in the region. Sugarcane, a premier cash crop occupies 24.21 per cent of total cropped area and ranks first among all crops. The area under fruits and vegetables has increased by 2.78 per cent. The significant increase in area under fruits and vegetables is observed mainly in Panhala and Shirol tahsils. Soyabean, groundnut and fodder are important non food crops grown in the region. Soyabean, a kind of oil seeds, has been recently introduced in the study region. It is second ranking cash crop occupying 6.87 per cent of gross cropped area. Groundnut is third ranking cash crop occupying 6.38 per cent of gross cropped area.

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IMPACT OF CLIMATE CHANGE ON INDIAN AGRICULTURE

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ABSTRACT

Climate change is defined as change in climate over time, whether due to natural variability or as a result of human activity. Adaptive capacity is the ability of a system to adjust to climate change (including climate variability and extremes) to moderate potential damages, to take advantage of opportunities, to cope with the consequences. Vulnerability is the degree to which a system is susceptible to and unable to cope with adverse effects of climate change including climate variability and extremes new option for carbon sequestration in agriculture and forestry and land -use change as deforestation contributes to respectively 13 and 17 percent of total anthropogenic greenhouse gas emissions while carbon dioxide emission from agriculture are small the sector account for about 60 percent of all nitrous oxide (N2O, mainly from fertilizer use) and about 50 percent of methane. The lPCC estimates that the global technical mitigation potential for agriculture (excluding forestry) will be between 5 500 and 6 600 mt co2 - equivalent per year by 2030, 89 percent of which are assumed to be from carbon sequestration in soils.

Keywords: Climate Change, Agriculture, Forestry, Gas emissions.

Introduction

Weather is the condition of the atmosphere at a particular place and time. It is characterized by parameters such as temperature, humidity, rain and wind. Climate is the long term pattern of weather conditions for a given area. Climate change refers to a statistically significant variation in either the mean state of the climate or its variability, persisting for an extended period. India is home to extraordinary variety of climatic regions, ranging from tropical in the south to temperate and alpine in the Himalayan north, where elevated regions receive sustained winter snowfall. The nation's climate is strongly influenced by the Himalayas and the Thar Desert. Four major climatic groupings predominate into which fall seven climatic zones which are defined on the basis of temperature and precipitation.

Climate change is the most important global environmental challenge facing humanity with implications for natural ecosystems, agriculture & health. The perusal of general circulation models (GCM s) on climate change indicate that rising levels of greenhouse gases (GHGs) are likely to increase the global average surface temperature by 1.5-4.5°C over the next 100 years. The difference of average temperature between the last ice age and present climate is 6°C. This will raise sea-levels, shift climate zones pole ward, decrease soil moisture and storms. Global warming is predicted to affect agricultural production at large. Global food security threatened by climate change is one of the most important challenges in the 21st century to supply sufficient food for the increasing population while sustaining the already stressed environment. Climate change has already caused significant impacts on water resources, food security, hydropower, human health. The changes in crop production related climatic variables will possibly have major influences on regional as well as global food production.

In India the direct impact of climate change would be effect plant growth development and yield due to change in rainfall and temperature .Increase in temperature would reduce crop duration, increase crop respiration rate change the pattern of pest attack and new equilibrium between crop and pest hasten mineralization in soil and decrease fertilization use efficiency. All these could considerably affect crop yield for long run. In general the simulation results indicate that increasing temperature and decreasing growth and yield of agricultural crops. Increased CO_2 levels are expected to favor growth and increase crop yields and therefore, will be helpful in counteracting the adverse effects of temperature rise in future. In warmer, lower latitude regions, increased temperate may accelerate the rate at which plant release CO_2¬in the process of respiration, resulting in hastened maturation and reduced yield.

Inferences

- **A.** Co_2 is increasing
- **B.** CH_4 is increasing
- **C.** Earth atmosphere system temperature and surface temperature is increasing
- **D.** Extreme temperature increasing
- **E.** Atmospheric water vapors content increasing. Frequency of heavy precipitation events increasing
- **F.** More intense and longer droughts
- **G.** Tropical cyclone intensity increasing.
- **H.** Area of seasonally frozen ground decreasing
- **I.** Glaciers and snow cover decreasing, Arctic sea ice extent decreasing

Objectives and Methodology

The major objectives of this paper are

1. To analyse the impact of climate change on Indian agriculture
2. To suggest the measures needed

An attempt is made in this paper to study the impact of climate change on Indian agriculture. This analysis is purely based on the secondary information gathered from different sources such as books, Journals, Reports etc.

Effects of Climate Change

- **Impact On Water Availability**

  It is known that water resources play a vital role in human prosperity and agriculture of any kind. The world's agriculture, hydroelectric power and water supplies depend on different components of the hydrological cycle, including the natural replenishment of surface and groundwater resources. Assessment of seasonal and long-term water availability is not only important for sustaining human life, biodiversity and the environment. Climate change is one of the greatest pressures on the hydrological cycle along with population growth, pollution, land use changes and other factors. In the light of the uncertainties of climate variability, water demand and socio-economic environmental effects, it is urgent to take some measures to use the limited water efficiently and develop some new water resources.

- **Climate Change Impacts On Soil Water Balance**

  Soil water balance is important for the water management and water use strategy. Climate change will make the temperature and rainfall fluctuates, consequently, influencing soil evaporation and plant transpiration. All of these may influence the regional soil water balance under various climatic conditions. Soil water balance is reliable evidence to calculate crop water requirements and water use efficiency.

- **Impacts On Sustainability Food Security**
  Food security is defined by the Food and Agriculture Organization (FAO) as a "situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life". The definition involves four aspects of food security, namely, food availability, food stability, food access and food utilization. Climate change can impact agricultural sustainability in two interrelated ways: first, diminishing the long-term ability agro-ecosystems to provide food and fiber for the world's population; and second, by inducing shifts in agriculture regions that may encroach upon natural habitats, at the expense of floral and faunal diversity. Global warming may encourage the expansion of agricultural activities into regions now occupied by natural ecosystem such as forests, particularly at mid- and high-latitudes. Forced encroachments of this sort may thwart the process of natural selection of climatically-adapted native crops and other species.
- **Pests and Diseases**
  Conditions are more favorable for the proliferation of insect pests in warmer climates. Longer growing seasons will enables insects such as grasshopper to complete a greater number of reproductive cycles during the spring, summer, and autumn. Warmer winter temperatures may also allow larvae to winter over in areas where they are now limited by cold, thus causing greater infestation during the following crop season. Altered wind patterns may shift as the timing of development stages in both hosts and pests is altered. Live stocks diseases may be similarly affected. The possible increases in pest infestations may bring about greater use of chemical pesticides to control them, a situation that will require the further development and application of integrated pest management technique.

Strategies for Facing the Challenge

Specific measures can only provide a successful adaptive response if they are adopted in appropriate situations. Some of those are as below.

- Biodiversity and the preservation
- Development of 'natural' farming and forestry systems
- Traditional agricultural landscapes
- water management and use
- Dealing with climate change
- Research on new variety development, incorporating various traits such as heat and drought tolerant, salt and pest resistant should be given prime importance.
- Existing policies may limit efficient response to climate change. Changes in policies such as crop subsidy schemes, land tenure systems, water pricing and allocation, and international trade barriers could increase the adaptive capability of agriculture.

Conclusion

Global warming will influence temperature and rainfall, which will directly have effects on the soil moisture status and groundwater level. Signals of climatic change are already visible. Global climate change is going to affect major crops like rice, wheat, maize in India. Climate is the least manageable of all resources. Hence, to avert the ill effects of climate change, more attention has to be paid to other resources and technologies viz. soil, irrigation water, nutrients, crops and their management practices, to sustain the productivity and to ensure food and environmental security to the country. Adaptive measures are to be taken in a timely fashion, both at the farmers' level (backed by strong agriculture/climate research and application oriented outputs) as well as at the policy makers' level to enable the small and marginal farmers to cope with the adversities of climate change.

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AGRICULTURAL PROBLEMS AND ITS SOLUTION IN INDIA

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Abstract

Agriculture, the backbone of Indian economy, contributes to the overall economic growth of the country. Over 70 percent of the rural households depend on agriculture as their principal means of livelihood. Agriculture, along with fisheries and forestry, accounts for one-third of the nations GDP product and is its single largest contributor. Agro-based industries are obtained from agriculture. The workers employed in industry and infrastructural activities depend on agriculture for their food supplies. Moreover, agriculture gives large market for nonagricultural goods and services. This is an attempt to understand the history and characteristics of the Indian agriculture sector its transition from traditional to commercial agriculture and the problems it faces. Modern agricultural practices and the relationship with environmental depletion have also been assessed. This paper discusses problems faced by the Indian agriculture sector. These problems are poverty, illiteracy, socioeconomic conditions, lack of technical knowledge, small land holdings, irrigation, seeds, storage facilities etc.

Keywords: Agriculture, India, Problems, Solutions

Introduction:

India is pre-dominantly an agricultural country. Agriculture has been practiced in India since time immemorial. It plays important role in the economy of India. Till 1971, about 80 percent of India's population lived in rural areas and depended directly or indirectly on agriculture. It still provides livelihood to the people in our country. It fulfills the basic need of human beings and animals. It is an important source of raw material for many agro based industries. India's geographical condition is unique for agriculture because provides many favourable conditions. There are plain areas, fertile soil, long growing season and wide variation in climatic condition etc. Apart from unique geographical conditions, India has been consistently making innovative efforts by using science and technology to increase production. It contributed about 45 percent Gross Domestic Production at that time. Today, agriculture and allied sectors contribute nearly 25 percent GDP ,while about 65-70 percent of the population is dependent on agriculture for their livelihood.

Agriculture problems and their solutions:

Indian agriculture is plagued by several problems, some of them are natural and some others are manmade. Some of the major problems and their possible solutions have been discussed as follows.

1.Small and fragmented land holding:

The average size of holding was 2.28 hectares in 1970-71 which was reduced to 1.82 hectares in 1980-81 and 1.50 hectares in 1995-96.The size of the holdings will further decrease with infinite sub-division of the land holdings.

The problem of small and fragmented holding is more serious in densely populated and intensively cultivated states like Kerala, West Bengal, Bihar and eastern part of UP. Where the average size of land holdings is less than one hectare and in certain parts it is less than even 0.5 hectare. Sub-division and fragmentation of the holdings is one of the main causes of our low agricultural productivity and backward state of our agriculture. A lot of time and labor is wasted in moving seeds, manure, implements and cattle from one piece of land to another.

Irrigation becomes difficult on such small and fragmented fields. Further a lot of fertile agricultural land is wasted in marking boundaries, under such circumstances; the farmer cannot concentrate on improvement.

The solution of this problem is the consolidation of holdings which means the reallocation of holdings which are fragmented, the creation of farms which comprise only one or a few parcels in place of multitude of patches formerly in the possession of each peasant. But unfortunately, this plan has not succeeded much. The other solution to this problem is cooperative farming in which the farmers pool their resources and share the profit.

2. Irrigation Problem:

Although India is the second largest irrigated country of the world after China, only one third of the cropped area is under irrigation. Irrigation is the most important agricultural input in a monsoon country like India where rainfall is uncertain, unreliable and erratic. India cannot achieve sustained progress in agriculture unless and until more than half of the cropped area is brought under assured irrigation. Most of the farming in India is monsoon dependent – if monsoons are good, the entire economy (and not just the agricultural sector) is upbeat and when the monsoon fails, everyone everywhere takes a hit to some extent.

The problem here is of proper management of water or the lack of it. Irrigation which consumes more than 80% of the total water use in the country needs a proper overhaul if the country has to improve agricultural output and boost the overall economy.

3.Seed Problem:

Seed is a critical and basic input for attaining higher crop yields and sustained growth in agricultural production. Distribution of assured quality seed is as critical as the production of such seeds. Unfortunately, good quality seeds are out of reach of the majority of farmers, especially small and marginal farmers mainly because of exorbitant prices of better seeds.

In order to solve this problem, the Government of India established the National Seeds Corporation in 1963 and the State Farmers Corporation of India in 1969.Thirteen State Seed Corporation were also established to augment the supply of improvement seeds to the farmers.HYV Programme was launched in 1966-67 as a major thrust plan to increase the production of food grains in the country.

Seed problems can be overcome by creating in house seed banks at the village level for traditional crops (thereby reducing farmer dependence on external seed banks), selling Government approved seeds through proper channels (to eradicate spurious seeds) and strict penalties on seed marketing companies in case the seeds do not match the claims – germination and yield - of the companies. Terminator seeds should not be encouraged as a matter of principle as they force farmers to buy seeds for every crop.

4. Sustainability problems :

Indian agricultural productivity is very less compared to world standards due to use of obsolete farming technology, coupled with this lack of understanding of the need for sustainability in the poor farming community has made things worse. Water usage is also unplanned with some arid areas misusing the irrigation facilities provided by planting water intensive crops. In areas where irrigation in the form of rivers and canals is not sufficiently available, ground water resources are heavily exploited.

Sustainability in agriculture is of utmost importance as many problems faced by farmers are related to this. Excess fertilizer usage not only makes the plants dependent on artificial fertilizers but also erodes the land quality, polluted ground water and in case of a surface runoff, pollutes the nearby water bodies.

Some sustainability solutions are proper crop management on the basis of water availability, crop rotation, deploying modern agricultural practices to boost productivity, switching over to organic farming (village pools will reduce costs), thrust on allied activities.

5. Low storage facilities:

Storage facilities in rural areas are either inadequate under such conditions the farmers are completed to sell their produce immediately after the harvest at the prevailing market prices which are bound to be low. Such distress sale deprives the farmers of their legitimate income. Storage facility is very essential to avoid losses and to benefit the farmers and the consumers alike.

At present there are number of agencies engaged in warehousing and storage facilities. The Food Corporation of India, The Central Warehousing Corporation and State Warehousing Corporation are among the principal agencies engaged in this task. These agencies help in building up buffer stock, which can be used in the hour of need. The central government is also implementing the scheme for establishment of National Grid of Rural Godown since 1979-80.

6. Inadequate transport:

One of the main problems in Indian agriculture is the lack of cheap and efficient means of transportation. Even at present there are many villages which are not well connected with main roads or with market centre. Most roads in the rural areas are Kutcha (bullock-cart roads) and become useless in the rainy season. Under these circumstances the farmers cannot carry their produce to the main market and are forced to sell it in local market at low price.

Linking each village by road is a gigantic task and it needs huge sums of money to complete this task.

7.Soil Erosion:

Soil is very important natural resources of India because agricultural production is basically dependant on the fertility of soil. Large tracts of fertile land suffer from soil erosion by wind and water. This area must be properly treated and restored to its original fertility and some methods are normally adopted for the conservation of soil erosion like this increase area under forest, avoid overgrazing, crop rotation, strip cropping, contour tilling and terracing and contour bonding etc,

8.Problems of Mechanization:

Despite large scale mechanization of agriculture in some parts of the country, most of the agricultural operations in larger parts are carried on by human hand using simple and conventional tools and implements like wooden plough, sickle, etc. Little or no use of machines is made in ploughing, sowing, irrigating, thinning and pruning, weeding, harvesting, threshing and transporting the crops. This is specially the case with small and marginal farmers it results in huge wastage of human labor and in low yields per capita labor force.

There is urgent need to mechanize the agricultural operations so that wastage of labour force is avoided and farming is made convenient and efficient. Agricultural implements and machinery are a crucial input for efficient and timely agricultural operations, facilitating multiple cropping and thereby increasing production. Some progress has been made for mechanizing agriculture in India after Independence.

9. Scarcity of capital:

Agriculture is an important industry and like all other industries it also requires capital. The role of capital input is becoming more and more important with the advancement of farm technology. The main suppliers of money to the farmer are the money-leaders and commission agents who charge high rate of interest and purchase the agricultural produce at very low price.

Rural credit scenario has undergone a significant change and institutional agencies such as Central Cooperative Banks, State Cooperative Banks, Commercial Banks, Cooperative Credit Agencies and some Government Agencies are extending loan to farmers on easy terms.

10. Manures, Fertilizers and Biocides:

Fertilizers are another important input in agriculture growth. Fertilizers are been used in Indian soils for growing crops over thousands of years. This has led to depletion and exhaustion of soils resulting in their low productivity. This is a serious problem which can be solved by using more manures and fertilizers. Manures and fertilizers play the same role in relation to soils as good food in relation to body. However, there are many difficulties in providing sufficient manures and fertilizers in all parts of India’s dimensions inhabited by poor farmers. Chemical fertilizers are costly and are often beyond the reach of the poor farmers.

IT has been felt that organic manures are essential for keeping the soil in good health. The country has a potential of 650 million tones of rural and 160 lakh tones urban compost which is not fully utilized at present. The utilization of this potential will solve the twin problem of disposal of waste and providing manure to the soil. The government has given high incentive especially in the form of heavy subsidy for using chemical fertilizers.

11. Agricultural Marketing:

Agricultural marketing still continues to be in a bad shape in rural India. In the absence of sound marketing facilities, the farmers have to depend upon local traders and middlemen for the disposal of their farm produce which is sold at throw-away price. In most cases, these farmers are forced, under socio-economic conditions, to carry on distress sale of their produce. In most of small villages, the farmers sell their produce to the money lender from whom they usually borrow money.

In order to save the farmer from the clutches of the money lenders and the middle men, the government has come out the regulated markets. These markets generally introduce a system of competitive buying, help in eradicating malpractices, ensure the use of standardized weights and measures and evolve suitable machinery for settlement of disputes thereby ensuring that the producers are not subjected to exploitation and receive remunerative prices.

Conclusion:

Agriculture makes the highest contribution to India's GDP. Agriculture contributes almost about 25 percent to the country's GDP. It has been seen in the last few years that the input of the agriculture sector has been declining, but it is still the biggest contributor. Agriculture occupies a prominent position in Indian policy-making not only because of its contribution to GDP but also because of the large proportion of the population that is dependent on the sector for its livelihood. The growth in population and wealth has stimulated demand to the extent that domestic production has not always been able to keep up and there is increasing speculation that the Indian economy may be overheating leading to inflation. The downside of the increased import demand and the current commodity boom is that India’s food import bill will rise sharply. However it is clear that India’s agricultural sector has made huge strides in developing its potential. The green revolution massively increased the production of vital food grains and introduced technological innovations into agriculture. This progress is manifested in India’s net trade position. Where once India had to depend on imports to feed its people, since 1990 it is a net exporter of agri-food products. Its agriculture is large and diverse and its sheer size means that even slight changes in its trade have significant effects on world agricultural markets.

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THE IMPACT OF CLIMATE CHANGE AND CLIMATIC VARIABILITY ON AGRICULTURE PRODUCTIVITY IN JAOLI TEHSIL

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ABSTRACT

Agriculture sector alone represents 23 % of India's Gross National Product, plays a crucial role in development and shall continue to occupy an important place in the national economy. It sustains the livelihood of nearly 70% of the population. It seems obvious that any significant change in climate on a global scale will impact local agriculture, and therefore affect the world's food supply. The problems of predicting the future course of agriculture in the changing world are compoundedby the fundamentalcomplexity of natural agricultural systems, and socioeconomic systems governing the world food supply and demand. Climate change will also have an economic impact on agriculture, including changes in farm profitability, prices, supply, demand, trade and regional comparative advantages. The magnitude and geographical distribution of such climate induced changes may affect our ability to expand the food production area as required to feed the burgeoning population.

Keywords: Climate Change, Climatic Variability, Agriculture Productivity.

Introduction:

Agriculture is an important sector in India and it not only contributes to the national income but also provides livelihood to roughly two thirds of the workforce in the country.Indian agriculture has been undergoing spectacular changes in recent period. These changes are manifestations of large scale commercialisation and diversification taking place in the agricultural sector.India has got a predominantly agrarian population and roughly two thirds of the population is dependent on agriculture for livelihood. It is central to all strategies for planned socioeconomic development of the country. Rapid growth of agriculture is essential not only to achieve self-reliance at the national level but also for household food security and to bring about equity in distribution of income and wealth resulting in rapid reduction in poverty levels.World Bank report (1998) analysed climate change effects on Indian agriculture, through annual net revenues, by using Ricardian method (Mendelsohn et al. 1994). This paper discussed on Climate Change and Climatic Variability on Agriculture Productivity in Jaoli tehsil of Satara district.

Study Area:

The Jaoli tehsil in Satara district of Maharashtra lies between 17^0, 57" and 17^0, 25" north latitude to 73^0, 32" and 73^0, 57" east longitudes. It is situated among the Sahyadri mountain ranges. In the Jaoli tehsil there are five circles and the Medha circle one of them. The total area of the Medha Circle is 8989.57 hectors. The physiography of the study region is typical and interesting because the Medha Circle located in hill ranges. Various spurs which are running from main range of Sahyadri towards south- east direction from steep sloped valleys, from which small streams fed the water to rapid range stream courses and they discharge in Venna

River. The study region and surrounding region experiences a monsoon type of climate. The average annual rainfall for Jaoli tehsil is 1714.76mm.

Source of Data:

Present paper data totally depends on secondary data. The secondary data is taken from the Directorate of Economics and Statistics (DES), Ministry of Agriculture, and Indian Meteorological Department (IMD), Government of India.

Climate and Rainfall:

The Jaoli Tehsil and surrounding region experiences a monsoon type of climate. The climate of Jaoli is favourable and healthy. The climate of Jaoli tehsil is divided in to four major seasons: The cold season, hot and dry season, rainy season and retreating monsoon season. The month of May is hottest month of the year and the December is coldest month of year. The maximum temperature is between 34^0 to 38^0c and minimum temperature between 10^0 to 15^0c in the tehsil. The rainfall varies widely in the different part of the tehsil depending on their closeness to Sahyadri. The maximum rainfall received in the month of June, July, August and September from southwest wing of monsoon winds. The average rainfall of the study region is 1250 mm. As per geographical condition distribution of rainfall is uneven.

Soil:

The soil of the Jaoli tehsil generally falls under three main categories. Laterite soils in hilly region, Lighter black soils on the slopes and Medium black to deep Black soil in the plains. Laterite soils are subjected to heavy leaching and high degree of erosion. The reason for red colour is high proportion of iron oxide in the soil. This soil has deficiency of nitrogen, organic compound and phosphorous. It can be productive after providing heavy fertilizer and irrigation facilities. Lighter black soilsare locally called '*Malran'*. These soils are hard, rocky, and brown in colour. They are rich in lime and potash content but shallow in depth. The literate soil used for '*Kumri'* cultivation or would ash tillage on account of heavy rainfall. Laterite soils are red in colour and are locally known as '*Tambadimati.'* Medium black and deep black soils found mainly along with Niranjana, and Venna river Basin. Soil is usually characterized by a rich and fertile black soil contains high proportion of nitrogen and organic matter.

Climate Change and Climatic Variability

The variations in the meteorological parameters are more of transitory in nature and have paramount influence on the agricultural systems, although other parameters, like soil characteristic, seed genetics, pest and disease and agronomic practices also do impact crop yields. Among these factors, pest and diseases cause a significant loss to world food production under different climatic conditions. Developmentand distribution of pest and diseases are governed by temperature patterns, rainfall or humidity and seasonal length to a great extent

Jaoli tehsil agriculture totally depends on monsoon rain. It is an important occupations of the tehsil. Tehsil 67 percent of working population is directly engaged in agricultural activities and the economy is depending on agriculture sector. Nowadays, cropping pattern and agrarian economy of the tehsil has changed because of the land under the cash crops increased while the land under food crops has decreased. The agricultural production has increased due to construction of canal and lift irrigation basically in the northern part of the tehsil. Jawar, Wheat, Rice, Bajara and various Pulses are main crops of the tehsil. Sugarcane is the main cash crop of the tehsil in the northern part of the tehsil. Rice is the main crop of the southern part of the tehsil because of the small size of the land holding and heavy rainfall. In tehsil Dhom, Mahu, Hatgheghar, Kanher irrigation project are the main sources of canal and lift irrigation. Out of the total irrigated area 753 hector area is under canal irrigation and 959 hector area is irrigated through open well. Analysis of the food grains productivitydata for the last few decades revealsa tremendousincreasein yield, but it appearsthat negativeimpactof vagaries of monsoon has been large throughoutthe period

Impacts:

Jaoli tehsil agriculture observed the following problems of climate change and climatic variability. i) Shift in climatic and agriculture zones ii) Impact on Agriculture soil iii) Effect on soil organic matter and soil fertility iv) Effect on biological health of soil v) Soil erosion and sediment transport vi) Reduced soil water availability vii) Impact on soil processes viii) Salinization and alkalization ix) Pest, Diseases and Weeds x) Impact on Plant growth and Impact on crop production.

Conclusion:

Crop growth models have been modified and tested for various important crops of this region under different climate change scenarios. But most of the results happen to be region specific and with certain assumptions. Accuracy in assessing the magnitude of the climate change on higher spatial and temporal resolution scale is the prime requirement for accurate estimates of the impact. The extent of inter and intra annual variability in climate happens to be large in this region, and the crops respond differentially to these changes. Understandingof this differentialbehaviour can aid in working out the impact of climate change. The vast genetic diversity in crops provides a platform to identify suitable thermal and drought tolerant cultivars for sustained productivity in the changed climate. Identification of suitable agronomicmanagementpractices can be a potential solution to optimize agricultural production in the changed climate.

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SPATIO-TEMPORAL CHANGES IN POPULATION DENSITY OF KOLHAPUR DISTRICT: A GEOGRAPHICAL STUDY

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ABSTRACT

The term density of population refers to a ratio between population and land area. Populationdensity refers to the total population of a particular region for per unit area. It is fundamental concept of population geography. Population aspects the density of population area essential to include in the introducing subject to understand overall nature of the region, due to interrelated impacts of physical, social and economic aspects to one another. The study of population gives an idea about the dispersion of population. The density is one of the parameter for measuring land population ratio of the region. This can be measured by arithmetic, agricultural and physiographical. The change in population is not only change in its number but also its change in structure, composition and distribution with respect to region and time. Therefore, attempt is made here to analyze the Spatio-temporal changes of population density in Kolhapur district. Based on the population density, the tahsils of Kolhapur district are divided into very high, high, medium and low density zones.

Key-word: Spatio-Temporal, Population Density, Variations.

INTRODUCTION:

The concept of population density is one of the important factors used to determine population distribution, growth and migration. The term density of population is more proportional. When we deal with density of population, it concern for some kind of man land ratio. There are several means of describing the population density. While calculating density, population and area is taken into consideration. According to Clarke (1972), the concept of density of population is most revealing and is a useful tool in the analysis of the diversity of man's distribution in space. The density of population is determined by physical as well as socio-economic and political factors. The geographer's task is to explain this diversity in terms of physical, social, demographic, political, economic and historical factors as an inter-related influence (Clarke, 1976)

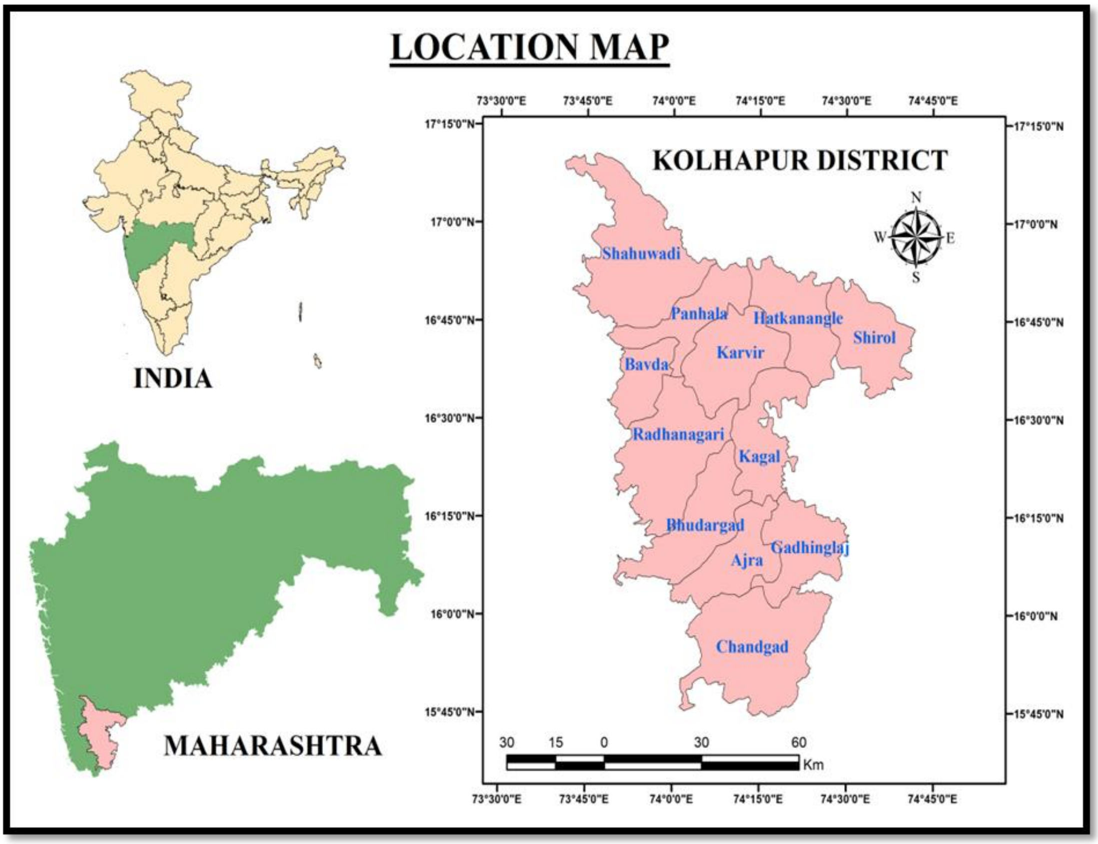
Population density is useful in several ways. For example, If the region natural factors favorable and density of population is optimum, then it is easier to implement the development planes. With this view we have discussed the tehsilwise population density of Kolhapur district during 2001 and 2011.

THE STUDY AREA:

Kolhapur is situated on the south-western part of Maharashtra state. The absolute location of district is 15^0 43' north and $17^0$17' north latitude and $73^0$40' east and $74^0$42' east longitudes and comprising 12 tahsils. It is surrounded by Sangli district to its North and East, Belgaum district of Karnataka to its south and Sindhudurg district to the west. The Sahyadri ranges to the west and warana river to thenorth forms the natural boundaries. The geographical area of district 7685 sq.km, for the administrative purpose the district is divided into 12 tahsils. According to 2011 census the total population of the district is 3876001.Kolhapur the 'Historical and Religious City' is currently emerging as the largest educational center of certain hilly stations, goods and services. Kolhapur district having 18 towns and 1206 villages. The distribution of the total population in the urban and rural areas is 1229896 and 1050353 respectively.

The population density of the district was 473 persons per sq. km in 2001 and in 2011 census that is 520 persons per sq. km. The study has been made at the tahsil level. The data have been compiled from various publications of the State Government and from the Census of India publications.

Location Map of Study Area



OBJECTIVES:

1. To study Spatio-temporal changes in population density.
2. To find out the factors affecting population density.

DATABASE AND METHODOLOGY:

Geography is an empirical science which requires data collection for various sources. Thus to fulfill the objectives outlined above the data source related to the study area secondary in nature. The data regarding population and geographical area has been collected from the census handbook of Kolhapur district, 2001-2011, socio-economic abstract 2013, other publications like proceedings of national conferences, govt. publications etc. Population density refers to the ratio between numbers of people to the size of land in a country. It is usually measured in persons per sq. km with applying following formula.

$$\text{Density of Population} = \frac{\text{Total Population}}{\text{Total Geographical Area}}$$

The collected data has been processed and analyzed by using statistical techniques. To analysis of Spatio-temporal changes of population density within the study area, the tahsils of Kolhapur district are grouped into Very high, High, Medium and Low category. For preparation of map Arc-Gis software is used.

Table No. 1
Kolhapur District:
Spatio-Temporal Change in Density of Population (2001-2011)

Sr. No.	Tahsil	Geographical Area in Sq.Km	Density of Population		Spatio-Temporal Change (2001-2011)	Spatio-Temporal Change in % (2001-2011)
			2001	2011		
1	Shahuwadi	1043.52	169	178	9	19.15
2	Panhala	568.68	419	456	37	78.72
3	Hatkanangle	614.38	1155	1315	160	340.43
4	Shirol	503.00	714	777	63	134.04
5	Karveer	669.88	1354	1549	195	414.89
6	Radhanagari	892.04	211	224	13	27.66
7	Kagal	547.30	454	503	49	104.26
8	Gaganbavda	282.30	115	127	12	25.53
9	Gadhinglaj	480.92	450	469	19	40.43
10	Bhudargad	643.53	225	234	9	19.15
11	Ajara	548.74	221	219	-2	-4.26
12	Chandgad	952.82	190	196	6	12.77
Kolhapur		**7685.00**	**473**	**520**	**47**	**47**
Maharashtra		**307713**	**315**	**365**	**50**	**50**

Source: District Census Handbook, 2001,2011 Computed by researcher.

Density of population in Kolhapur District (2001-2011):

Table No. 1 reveals that the Kolhapur district density of population has 473 persons per sq. km in 2001 and that time Maharashtra state was 315 persons per sq. km. In 2011 the district as whole as 520 persons per sq. km population density that of state is 365 persons per sq. km. Spatio-temporal changes in population density of Kolhapur district is uneven it varies from tahsil to tahsil. To analyze Spatio-temporal variations in population density of Kolhapur district area categories into very High, High, Medium and Low population density.

1. **Very High Population Density (Above 714 in 2001 & Above 777 in 2011):**

Table No. 1 and Fig. No. 1 indicates that Karveer and Hatkanangle (1354 and 1155 persons per sq. km respectively) tahsils have recorded very high population density in both the decades i.e. 2001 and 2011. In these tahsils largest part cover area of Panchganga river and its tributaries due to that high percent fertile soil, perennial irrigation facilities, commercial activities, high agricultural efficiency, agriculture and also industrial development and development of agro based industries. Industrial and Educational facilities mostly found in Karveer tahsil and Kolhapur city is a big urban centre located in Karveer tahsil.

2. **High Population Density (225 to 714 in 2001 and 243 to 777 in 2011):**

In this category four tahsils included i.e. Shirol, Kagal, Gadhinglaj and Panhala with 714, 454, 450 and 419 persons per sq. km area in 2001 respectively, While in 2011 777, 503, 469 and 456 persons per sq. km area respectively. In these tahsil having high population density due to plain surface of Kagal and Shirol tahsil, highly deep black cotton soil, good infrastructural facilities and presence of fertile soil.

3. **Medium Population Density (169 to 225 in 2001 and 127 to 234 in 2011):**

In this category there were four tahsils included in 2001 i.e. Bhudargad, Ajra, Radhanagari and Chandgad with 225, 211 and 190 persons per sq. km area respectively. But in 2011 there is only one tahsil added this category i.e. Shahuwadi, Radhanagari, Bhudargad, Ajra and Chandgad tahsil having more than 75 per cent hilly undulating topography, very high rainfall which adversely affected on irrigation and most of these tahsils are part covered of reddish and laterite soils.

4. **Low Population Density (Below 169 in 2001 and Below 127 in 2011):**

The low population densityis found in Shahuwadi and Gaganbavda tahsil i.e. Below 169 persons per sq. km area in 2001 and below 127 persons per sq.km area in 2011. In 2001 Shahuwadi and Gaganbavda having low population density i.e. 169and 115 persons per. Sq. km area (Table no.1 & Fig. 1) and in 2011 only Gaganbavda tahsil have low population density found i.e. 127 persons per sq. km area. These two tahsils have low density found due to that heavy rainfall, thick forest area, hilly and undulating terrain, unfertile soil and low proportion of arable land.

Table No.2

Kolhapur District: Category-wise Density of Population-2001

Density	**Above 714**	**225-714**	**169-225**	**Below 169**
Category	Very High	High	Medium	Low
No. Of Tahsils	2	4	4	2
Name of Tahsil	Karveer, Hatkanangle	Shirol, Kagal Gadhinglaj, Panhala	Radhanagari, Bhudargad, Ajra, Chandgad	Shahuwadi, Gaganbavda

Table No.3

Kolhapur District: Category-wise Density of Population-2011

Density	**Above 777**	**234-777**	**127-234**	**Below 127**
Category	Very High	High	Medium	Low
No. of Tahsils	2	4	5	1
Name of Tahsil	Karveer, Hatkanangle	Shirol, Kagal Gadhinglaj, Panhala	Shahuwadi, Radhanagari, Bhudargad, Ajra, Chandgad	Gaganbavda

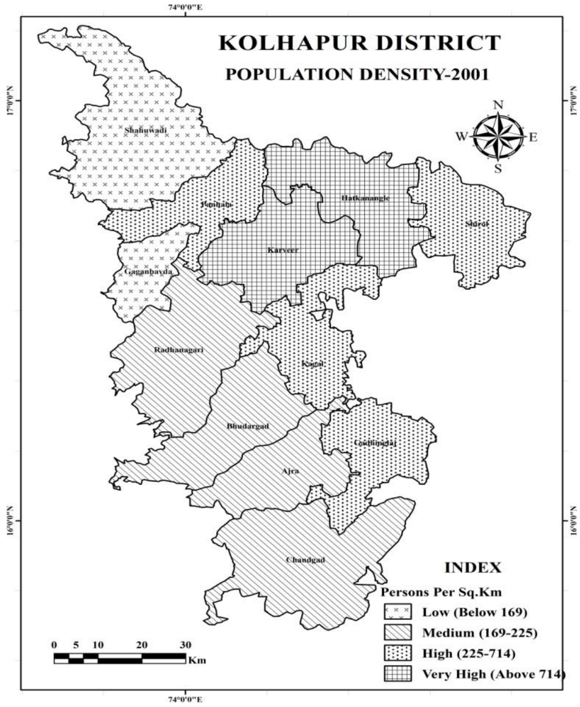


Fig. 1 Population Density 2001

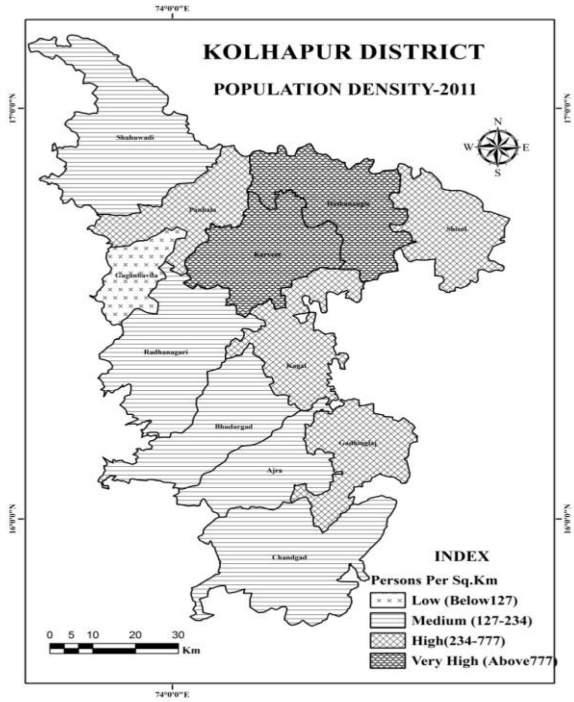


Fig. 2 Density of Population-2011

Spatio-Temporal changes in Density:

Table No. 1 reveals that the density of population in Kolhapur District is increased by 47 persons per sq. km from 2001 to 2011 that of Maharashtra state is 50. Spatio-temporal analysis reveals positive as well as negative changes. There are eleven tahsils having positive changes in population density while only one tahsil has negative change from 2001 to 2011 i.e. Ajra. Positive change ranging from minimum 6 to maximum 195 persons per sq. km. Maximum positive change found in Karveer tahsil i.e. 195 followed by Hatkanangle (160) due to overall levels of agricultural, educational, industrial and infrastructural development due to favorable physical as well as cultural factors. In the district only Ajra tahsil having insignificant negative change i.e. 2 persons per sq. km due to adverse physical factors which leads out migration from Ajra to Mumbai and surround districts.

Conclusion:

The present study deals with the Spatio-temporal changes of population density in Kolhapur district. The population density of some tahsils is very high, which some tahsilshave medium or low density due to the variation of physical and cultural factors. The population density of Karveer and Hatkanangle tahsil is very high because both the tahsils have fertile soil, sufficient rainfall, agricultural, industrial and educationaldevelopment. Karveer tahsil is mostly urbanized. There are four tahsils having high population density i.e. Shirol, Kagal, Gadhinglaj and Panhala tahsil due to highly black cotton soil, good infrastructural facilities and in most of the part having fertile soil. Medium population density is found in Bhudargad, Ajra, Radhanagari and Chandgad tahsil due to undulating topography, reddish and laterite soils. The low population density observed in Shahuwadi and Gaganbavda tahsil because of very high rainfall which is adversely affected on irrigation. In Kolhapur district Karveer tahsil have highest positive changes i.e.195 due to Industrial, agricultural, Infrastructural and educational development.

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REVIEW OF LAND SIZE AND LAND PRODUCTIVITY IN SANGLI DISTRICTS

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Abstract

This research paper is focus on which type of relation between and land size and land productivity in current scenario. Agricultural sector plays a strategic role in the process of economic development of a country. It has already made a significant contribution to the economic prosperity of advanced countries and its role in the economic development of less developed countries is of vital important sector. Land size is an important factor of productivity of agricultural sector. In agriculture, too, we have a size, which under given conditions, would yield the best results to the farmers. The advantages of large and small farms have been debated for at least a century. In the Sangli district land size and productivity of different corps is positive relation. Production cost of different size of land in different crops is variations. The study area land size and cost of production is inverse relation. Average per hector gross income in different crops is different the relation of land size and gross income is equal.

Introduction

Agricultural sector plays a strategic role in the process of economic development of a country. It has already made a significant contribution to the economic prosperity of advanced countries and its role in the economic development of less developed countries is of vital important sector. Agriculture is the only livelihood to the two-third of its population which gives employment to the 57 per cent of work force. In 1950-51 the share of agriculture in total GDP was 37.6 per cent. Gradually it declined and has now come down to 11.7 per cent in 2015-16. Due to rapid growth of rural population and division of families the farmland has undergone rapid fragmentation. Now 80 per cent of the farmland holding are with the small and marginal farmer owns and up to 5 acres.

The problem under taken for the study of research is very important according to the Indian farmers. There is a more confusion about the relation between and land size and land productivity in Indian agriculture. This study is focus on which type of relation between and size and productivity in current scenario. Which are other factors affecting on land productivity and causes of low land productivity this research work also focus on what are the major challenge before agriculture sectors during the recent period.

Objective of study

This research is focus on to search the various factors which are affecting on land size in Sangli District. Following are the major objective of present study.

1. To assess productivity of different crops in different land size in Sangli districts.
2. To measures production cost of different crops in different land size in Sangli districts.

3. To measures average gross income of per hector of different crops in different land size in Sangli districts.

Scope of the study

The present paper is focused on to examine the relationship between land size and land productivity is Sangli district in Maharashtra. It is also focused on other factors affecting on land productivity, causes and suggestions on low land productivity.

Data collection

The present paper is based on both primary and secondary data. There are 10 talukas in sangli district and only 4 taluas are selected for study. Out of them two talukas are from irrigated area and two form non-irrigated area. In each talukas 5 villages are selected for study. In each village, 12 farmers are selected for our study, by using random sample method. Theses 12 farmers are equally distributed form five groups of farmer's e.g. Marginal farmers, small farmers, semi-medium and large farmers, it means total 240 farmers will be selected as a sample.

Research methodology

In order to analyses the data we have used the various methods as percentage, averages rage and graphical methods.

Data analysis

Land size is an important factor of productivity of agricultural sector. In agriculture, too, we have a size, which under given conditions, would yield the best results to the farmers. The advantages of large and small farms have been debated for at least a century. There 3 are economists and farmers who advocate large-scale farming for efficient operations satisfactory income to the farm family and food to the advocate small-scale farming on the ground of social justice.

Productivity in different corps

Table shows productivity per hector of different crops in Sangli districts

Table no 1
Productivity of different corps

(In KG)

Crops	Land size					
	Marginal	Small	Semi-medium	Medium	Large	Average
Rice	1722	1735	1727	1820	1840	1768.8
Wheat	1564	1524	1638	1655	1668	1609.8
Jawer	933	895	945	969	1010	950.4
Maize	1418	1456	1458	1489	1522	1468.6
Groundnut	835	831	842	865	910	856.6
Soybean	1017	1089	1113	1128	1156	1100.6
#Sugarcane	87	87	102	112	135	104.6

Source: Field Survey *#Sugarcane productivity in tone*

As per the above table productivity of rice in marginal farmers is 122 Kg., small farmers is 1735 Kg., semi-medium farmers is 1727 Kg medium farmers is 1820. And large farmers are 1840 Kg. average productivity of rice is 1768.8 Kg. per hector. It is observe that in Sangli districts land size and productivity of rice is positive relation. The productivity of wheat in marginal farmers is 1564 Kg small farmers is 1524 Kg semi-medium farmers is 1638 Kg and medium and large farmers wheat productivity is 1655 and 1668 respectively. It is observe that in Sangli districts land size and productivity of wheat is positive relation. Productivity of Jawar in marginal farmers is 933 Kg, small farmers 895 Kg semi-medium farmers is 969 Kg and large farmers is 1010 Kg. It observes that in Sangli districts land size and productivity of Jawar is positive relation. Maize productivity of small farmers is 1418 Kg small farmers is 1456 Kg semi-medium farmers is 1458 and medium and large farmers maize is 1468.6 Kg per hector in this area. Productivity of groundnut in small farmers is 835 Kg, small farmers 831 Kg semi-medium farmers is 842 Kg, medium farmers is 865 Kg and large farmer productivity is 910 Kg. average productivity groundnuts in Sangli districts is 856- Kg. Soybean productivitymarginal famers is 1017 Kg, small farmers is 1089 Kg. Semi-medium farmers is 1113 Kg medium farmers is 1128 kg and large farmers is 1156kg average productivity of soybean 1100.6 Kg. It is observe that in irrigated talukas land size and productivity of soybean is positive relation. The productivity of sugarcane in Sangli districts marginal farmers is 87 tone semi-medium farmers is 102 tone and medium and large farmer’s productivity of sugarcane in 112 and 135 tons respectively average productivity of sugarcane in irrigated talukas are 104.6 tones. It is observe that in Sangli districts land size and productivity of sugarcane is positive relation.

Production cost in different cost

Table shows production cost in different cost in Sangli districts

Table no 2
Productivity of different corps

(In Rs)

Crops	**Land size**					
	Marginal	**Small**	**Semi-medium**	**Medium**	**Large**	**Average**
Rice	21238	20989	20768	19242	18948	20237
Wheat	20856	20478	19309	19023	18767	19687
Jawar	8958	8894	8699	8602	8400	8711
Maize	17023	16825	15550	15236	14968	15920
Groundnut	17200	17589	16013	15889	15256	16389
Soybean	22104	21787	21410	20963	20212	21295
Sugarcane	70456	69546	68744	66968	65741	68291

Source: Field Survey

Above table shows that, production cost of different crops according to land size in Sangli districts. Production cost of rice in marginal is Rs 21238, and small farmers are Rs 20989. The production cost of rice in semi-medium, medium and large farmers is Rs 20768, Rs 19242. And Rs 18948 per hector respectively. It is clear that land size and production cost of rice per hector is inverse relation. Production cost of wheat in marginal is Rs 20856 and small farmers are Rs 20478. The production cost of wheat in semi-medium, medium and large farmers is Rs 19309, Rs19023 and Rs 18769 per hector respectively. It is clear that land size and production cost of wheat per hector is inverse relation. Production cost of Jawar in marginal farmers is Rs 8958 and a small farmer is Rs 8894. The production cost of Jawar inn semi-medium, medium and large farmers is Rs 8699, Rs 8602 and Rs 8400 per hector respectively. It is clear that land size and production cost of Jawar per hector is inverse relation. Production cost of maize in marginal farmers is Rs 17023 and a small farmer is Rs 16825. The production cost of maize inn semi-medium, medium and large farmers is Rs 15550, Rs 15236 and Rs 14968 per hector respectively. It is clear that land size and production cost of maize per hector is inverse relation. Production cost of groundnut in marginal farmers is Rs 17200 and a small farmer is Rs 17589. The production cost of groundnut in semi-medium, medium and large farmers is Rs 16013, Rs 15889 and Rs 15226 per hector respectively. It is clear that land size and production cost of groundnut per hector is inverse relation. Production cost of soybean in marginal farmers is Rs 22104 and a small farmer is Rs 21787. The production cost of soybean inn semi-medium, medium and large farmers is Rs 21410, Rs 20963 and Rs 20212 per hector respectively. It is clear that land size and production cost of soybean per hector is inverse relation. Production cost of sugarcane in marginal farmers is Rs 70456 and a small farmer is Rs 69546. The production cost of sugarcane in semi-medium, medium and large farmers is Rs 68744, Rs 66968 and Rs 65741 per hector respectively. It is clear that land size and production cost of sugarcane per hector is inverse relation.

Per hector gross income in different crops

Calculate of gross income per hector is a total per hector revenue of farmers minus total per hector cost. The following table shows the gross income per hector of Sangli districts.

Table no 3

Per hector gross income in different crops

(inRs)

Crops	**Land size**					
	Marginal	**Small**	**Semi-medium**	**Medium**	**Large**	**Average**
Rice	26978	27591	27448	31718	32572	29289
Wheat	29152	28290	30739	33937	34607	31827
Jawar	13434	12586	13693	14654	15840	14099
Maize	9919	10839	11392	13055	13950	11983
Groundnut	16200	15651	17387	18711	21144	17875
Soybean	11457	14150	12151	16261	17936	15025
Sugarcane	147044	147956	148756	213032	271759	193209

Source: Field Survey

Table depicts that per hector gross income of different crops in Sangli district. In the gross income of rice in marginal farmers is Rs 26778 and income of small farmers is Rs 27591. The average gross income of semi-medium farmers is Rs 27448. The medium and large farmer's average gross income of rice in per hector is Rs 31718 and Rs 32572 respectively. It is observe that land size and gross income of rice is equal relation. In the gross income of wheat in marginal farmers is Rs 29192 and income of small farmers is Rs 28290. The average gross income of semi-medium farmers is Rs 30739. The medium and large farmer's average gross income of wheat in per hector is Rs 33937 and Rs 34607 respectively. It is observe that land size and gross income of wheat is equal relation. In the gross income of Jawar in marginal farmers is Rs13434 and income of small farmers is Rs12586. The average gross income of semi-medium farmers is Rs13693. The medium and large farmer's average gross income of Jawar in per hector is Rs14654 and Rs15840 respectively. It is observe that land size and gross income of Jawar is equal relation. In the gross income of maize in marginal farmers is Rs 9919 and income of small farmers is Rs 10840. The average gross income of semi-medium farmers is Rs 11392. The medium and large farmer's average gross income of maize in per hector is Rs 13055 and Rs 13950 respectively. It is observe that land size and gross income of maize is equal relation. In the gross income of groundnut in marginal farmers is Rs 16200 and income of small farmers is Rs 15651. The average gross income of semi-medium farmers is Rs 17387. The medium and large farmer's average gross income of groundnut in per hector is Rs 18711 and Rs 21144 respectively. It is observe that land size and gross income of groundnut is equal relation. In the gross income of soybean in marginal farmers is Rs16200 and income of small farmers is

Rs15651. The average gross income of semi-medium farmers is Rs17387. The medium and large farmer's average gross income of soybean in per hector is Rs18711 and Rs21144 respectively. It is observe that land size and gross income of soybean is equal relation. In the gross income of sugarcane in marginal farmers is Rs 147044 and income of small farmers is Rs 147954. The average gross income of semi-medium farmers is Rs 148756. The medium and large farmer's average gross income of sugarcane in per hector is Rs 213032 and Rs 271759 respectively. It is observe that land size and gross income of sugarcane is equal relation.

Conclusion

Land size is an important factor of productivity of agricultural sector. In agriculture, too, we have a size, which under given conditions, would yield the best results to the farmers. The advantages of large and small farms have been debated for at least a century. In the Sangli district land size and productivity of different corps is positive relation. Production cost of different size of land in different crops is variations. The study area land size and cost of production is inverse relation. Average per hector gross income in different crops is different the relation of land size and gross income is equal.

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WATER CONSERVATION: A STEP TO CONSERVE WATER IS THE STEP TO SECURE THE FUTURE.....

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Abstract

The most essential among all the natural resources on earth is water. A drop of water is worth more than a sack of gold for the thirsty man. If each one of us makes efforts to save water today, it will save us later. Water conservation is the most effective and environmentally sound method to fight global warming. Water conservation is what that can reduce the scarcity of water. It aims to improve the efficiency of use of water, and reduce losses and waste.

Key Words: Scarcity of Water, use, resources, Conservation.

Introduction:

Water has emerged as one of the primary environmental concerns for the 21st century. Many parts of the world are currently facing water shortages, while others must contend with severe water pollution. The consequences are bleak: social, economic and political instability leading, in the worst case scenario, to violence over dwindling water resources. Immediate action is needed to stall the emerging crisis and to begin reversing many of the trends we have set overtime.A number of organizations around the world are working towards resolving these issues. It becomes apparent, though, that there are no easy solutions. Since water flows irrespective of political and even cultural borders, cooperation amongst the various stakeholders must become an essential part of the global effort.

Objectives:

The research paper is related to water conservation. That the aim of the paper to avoid leakages of water from the taps. To tips to save water, benefits to conserve water, technical method to conserve water etc.

Source of data:

Thus the data was collected in various journals, books, research papers, census, newspapers, government reports, abstracts etc. this data adopted to the paper was kindly and clearly shows which steps applying to water conservation.

Tips to Save Water :

- Avoid leakage of water from the taps.
- Turn the tap off when not in use especially when you brush your teeth or wash clothes.
- Rainwater harvesting is the method to conserve water.
- The water supply should be limited in those areas which enjoys the unlimited water supplies.
- Check the leakage of water in the toilets. Also get check the hidden water leaks.
- Educate the mind of the people in the rural areas to save the water.
- Promote the conservation of water through media and wall posters.
- Never throw the water unnecessary on roads which can be used for gardening and cleaning.
- Avoid unnecessary flushing the toilets. Dispose off the tissues, cigarettes and other waste into the bin instead of toilets.

- Use minimum amount of water to bath.
- Water Waste restrictions.
- Improvement in the water distribution system.
- Water your lawn only when it is needed.
- Use a broom instead of hose to clean the sidewalks or to wash the car.
- Capture the water that is leaking and repair it as soon as possible.
- You can use washing machine to wash clothes that does not consume much water.
- Don't leave the tap running while washing the dishes in the kitchen.
- Install small shower heads to reduce the flow of water.

Benefits to Conserve Water :

- If you save water it can save your money bills.
- Reduction in interior water use cuts waste water flows, especially overflowing of gutters which contaminates the environment.
- Environment benefits include eco system and habitat protection.
- Water conservation helps in improving the quality of your drinking water.

Technical Methods to Conserve Water:

Rainwater Harvesting :

Rainwater harvesting is the gathering and collection of water from the rooftop. The traditional method of rain water harvesting is the most effective and simple way to conserve the water. It means utilization of rain water for the domestic as well as agricultural purposes. There are three technical methods of rain water harvesting such as Catchment, Conveyance and storage.

Historical Water Bodies :

There are many traditional water bodies which have been in disuse for the longer time. These bodies can be reused as the recharging points.

Ponds :

Steps should be taken to avoid dumping of sewage into the village ponds. Efforts need to be made to deepen these ponds with the dragline machines. Garbage and other waste sholud not be dumped into the ponds.

Water Conservation:

Our ancient religious texts and epics give a good insight into the water storage and conservation systems that prevailed in those days.

Over the years rising populations, growing industrialization, and expanding agriculture have pushed up the demand for water. Efforts have been made to collect water by building dams and reservoirs and digging wells; some countries have also tried to recycle and desalinate (remove salts) water. Water conservation has become the need of the day. The idea of ground water recharging by harvesting rainwater is gaining importance in many cities.

In the forests, water seeps gently into the ground as vegetation breaks the fall. This groundwater in turn feeds wells, lakes, and rivers. Protecting forests means protecting water 'catchments'. In ancient India, people believed that forests were the 'mothers' of rivers and worshipped the sources of these water bodies.

Some ancient Indian methods of water conservation:

The Indus Valley Civilization, that flourished along the banks of the river Indus and other parts of western and northern India about 5,000 years ago, had one of the most sophisticated urban water supply and sewage systems in the world. The fact that the people were well acquainted with hygiene can be seen from the covered drains running beneath the streets of the ruins at both Mohenjodaro and Harappa. Another very good example is the well-

planned city of Dholavira, on Khadir Bet, a low plateau in the Rann in Gujarat. One of the oldest water harvesting systems is found about 130 km from Pune along Naneghat in the Western Ghats. A large number of tanks were cut in the rocks to provide drinking water to tradesmen who used to travel along this ancient trade route. Each fort in the area had its own water harvesting and storage system in the form of rock-cut cisterns, ponds, tanks and wells that are still in use today. A large number of forts like Raigad had tanks that supplied water.
- In ancient times, houses in parts of western Rajasthan were built so that each had a rooftop water harvesting system. Rainwater from these rooftops was directed into underground tanks. This system can be seen even today in all the forts, palaces and houses of the region.
- Underground baked earthen pipes and tunnels to maintain the flow of water and to transport it to distant places, are still functional at Burhanpur in Madhya Pradesh, Golkunda and Bijapur in Karnataka, and Aurangabad in Maharashtra.

Rainwater harvesting:

In urban areas, the construction of houses, footpaths and roads has left little exposed earth for water to soak in. In parts of the rural areas of India, floodwater quickly flows to the rivers, which then dry up soon after the rains stop. If this water can be held back, it can seep into the ground and recharge the groundwater supply.

This has become a very popular method of conserving water especially in the urban areas. Rainwater harvesting essentially means collecting rainwater on the roofs of building and storing it underground for later use. Not only does this recharging arrest groundwater depletion, it also raises the declining water table and can help augment water supply. Rainwater harvesting and artificial recharging are becoming very important issues. It is essential to stop the decline in groundwater levels, arrest sea-water ingress, i.e. prevent sea-water from moving landward, and conserve surface water run-off during the rainy season.

Town planners and civic authority in many cities in India are introducing bylaws making rainwater harvesting compulsory in all new structures. No water or sewage connection would be given if a new building did not have provisions for rainwater harvesting. Such rules should also be implemented in all the other cities to ensure a rise in the groundwater level. Realizing the importance of recharging groundwater, the CGWB (Central Ground Water Board) is taking steps to encourage it through rainwater harvesting in the capital and elsewhere. A number of government buildings have been asked to go in for water harvesting in Delhi and other cities of India.

All you need for a water harvesting system is rain, and a place to collect it! Typically, rain is collected on rooftops and other surfaces, and the water is carried down to where it can be used immediately or stored. You can direct water run-off from this surface to plants, trees or lawns or even to the aquifer.

Some of the benefits of rainwater harvesting are as follows:
- Increases water availability
- Checks the declining water table
- Is environmentally friendly
- Improves the quality of groundwater through the dilution of fluoride, nitrate, and salinity
- Prevents soil erosion and flooding especially in urban areas

Agriculture

Conservation of water in the agricultural sector is essential since water is necessary for the growth of plants and crops. A depleting water table and a rise in salinity due to overuse of chemical fertilizers and pesticides has made matters serious. Various methods of water harvesting and recharging have been and are being applied all over the world to tackle the problem. In areas where rainfall is low and water is scarce, the local people have used simple techniques that are suited to their region and reduce the demand for water.

- In India's arid and semi-arid areas, the 'tank' system is traditionally the backbone of agricultural production. Tanks are constructed either by bunding or by excavating the ground and collecting rainwater.
- Rajasthan, located in the Great Indian Desert, receives hardly any rainfall, but people have adapted to the harsh conditions by collecting whatever rain falls. Large bunds to create reservoirs known as khadin, dams called johads, tanks, and other methods were applied to check water flow and accumulate run-off. At the end of the monsoon season, water from these structures was used to cultivate crops. Similar systems were developed in other parts of the country. These are known by various local names ¾ jaltalais in Uttar Pradesh, the haveli system in Madhya Pradesh, ahar in Bihar, and so on.

Reducing water demand:

Simple techniques can be used to reduce the demand for water. The underlying principle is that only part of the rainfall or irrigation water is taken up by plants, the rest percolates into the deep groundwater, or is lost by evaporation from the surface. Therefore, by improving the efficiency of water use, and by reducing its loss due to evaporation, we can reduce water demand.There are numerous methods to reduce such losses and to improve soil moisture. Some of them are listed below.

- Mulching, i.e., the application of organic or inorganic material such as plant debris, compost, etc., slows down the surface run-off, improves the soil moisture, reduces evaporation losses and improves soil fertility.
- Soil covered by crops, slows down run-off and minimizes evaporation losses. Hence, fields should not be left bare for long periods of time.
- Ploughing helps to move the soil around. As a consequence it retains more water thereby reducing evaporation.
- Shelter belts of trees and bushes along the edge of agricultural fields slow down the wind speed and reduce evaporation and erosion.
- Planting of trees, grass, and bushes breaks the force of rain and helps rainwater penetrate the soil.
- Fog and dew contain substantial amounts of water that can be used directly by adapted plant species. Artificial surfaces such as netting-surfaced traps or polyethylene sheets can be exposed to fog and dew. The resulting water can be used for crops.
- Contour farming is adopted in hilly areas and in lowland areas for paddy fields. Farmers recognize the efficiency of contour-based systems for conserving soil and water.
- Salt-resistant varieties of crops have also been developed recently. Because these grow in saline areas, overall agricultural productivity is increased without making additional demands on freshwater sources. Thus, this is a good water conservation strategy.
- Transfer of water from surplus areas to deficit areas by inter-linking water systems through canals, etc.
- Desalination technologies such as distillation, electro-dialysis and reverse osmosis are available.
- Use of efficient watering systems such as drip irrigation and sprinklers will reduce the water consumption by plants.

Conclusions:

The most important step in the direction of finding solutions to issues of water and environmental conservation is to change people's attitudes and habits¾this includes each one of us. Conserve water because it is the right thing to do. We can follow some of the simple things that have been listed below and contribute to water conservation.

- Try to do one thing each day that will result in saving water. Don't worry if the savings are minimal¾every drop counts! You can make a difference.
- Remember to use only the amount you actually need.
- Form a group of water-conscious people and encourage your friends and neighbours to be part of this group. Promote water conservation in community newsletters and on bulletin boards. Encourage your friends, neighbours and co-workers to also contribute.
- Encourage your family to keep looking for new ways to conserve water in and around your home.
- Make sure that your home is leak-free. Many homes have leaking pipes that go unnoticed.
- Do not leave the tap running while you are brushing your teeth or soaping your face.
- See that there are no leaks in the toilet tank. You can check this by adding colour to the tank. If there is a leak, colour will appear in the toilet bowl within 30 minutes. (Flush as soon as the test is done, since food colouring may stain the tank.)
- Avoid flushing the toilet unnecessarily. Put a brick or any other device that occupies space to cut down on the amount of water needed for each flush.
- When washing the car, use water from a bucket and not a hosepipe.
- Do not throw away water that has been used for washing vegetables, rice or dals¾use it to water plants or to clean the floors, etc.

You can store water in a variety of ways. A simple method is to place a drum on a raised platform directly under the rainwater collection source. You can also collect water in a bucket during the rainy season.

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COMPARATIVE STUDY OF RAINY DAYS AND CROP RAINY DAYS IN SATARA DISTRICT OF MAHARASHTRA

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ABSTRACT

The rainfall and rainy days are important for the crop growing. The amount of rainfall equal or exceed 5 mm is require for any crops. The studies of Crop rainy days are provide better information of irrigation requirement of crops. The number of crop rainy days are affected the production and yields of monsoon based crops. In the present study, comparatively investigate the ratio of rainy day and crop rainy days of Satara district during the period of 1983 -2012. The western part of the Satara district shows the above 0.85 ratio of CRD/RD, the central and northeast part of the district shows 0.80 to 0.85 ratio and south and southeast part shows below 0.75 ratio of CRD/RD.

Keywords: Crop rainy day, Rainy day, monsoon, agriculture

Introduction

The identification of CRD is required for parameterization of the natural availability of rainfall for the agriculture. The ratio of CRD and RD will provide information of difference of the availability rainfall. This ratio is helpful for the preparation of irrigation schedule, analysis of soil moisture and investigation of crop productivity. In this research paper, the ratio of crop rainy days and rainy days of Satara district is discussed. Satara district is located in the western part of Maharashtra. The Geographical location of Satara is 17^0 5' to 18^0 11' North & 73^0 33' to 74^0 54' East. It is bounded by Pune district to the north, Solapur district to the east, Sangli district to the south, Ratnagiri district to the west and Raigad district lies to its north-west direction. Satara district is situated in the river basins of the Bhima and Krishna. The physical setting of Satara show a contrast of immense dimensions and reveals a variety of landscapes influenced by relief, climate, vegetation and agricultural activity.

Agriculture is the major primary activity of Satara district. It is classified into two main seasons; Kharif and Rabi. The Kharif agriculture season is from June to mid of October during the periods of southwest monsoon season and the Rabi agriculture season is from mid October to February during the post monsoon and cold seasons. Some parts of the district grow crops during summer season. The climatic variability of the district affected the agriculture production. The high frequency of drought is increased in the eastern part of the district (Khandala, Phaltan, Man, Khatav and Koregaon tahsils) during the last few decades. The rainfall distributions during crop sowing period have also become responsible for the reduction of agricultural production. Some historical evidence of the district shows the agriculture production is mainly depending on the annual rainfall.

Data and Methodology

The daily rainfall data of 27 stations in the Satara district from 1983-2012 is considered for the analysis of crop rainy days. The rainy days (RD) considered the rainfall amount equaled or exceed 2.5 mm, whereas the crop rainy days considered the amount of rainfall equaled or above 5 mm. The numbers of Crop Rainy Days are divided by the Rainy days for the calculation of ratio of CRD and RD. The ratio of CRD and RD are presented in IDW maps.

Crop rainy days

The annual and seasonal ratio of CRD and RD for the corresponding station has been represented in the Figure -1. Figure 1 (A) indicated the annual ratio of CRD/RD over the study area. The highest ratio of CRD/RD is observed Gureghar (0.96), while the lowest at Targaon (0.65) station. The western part of the district shows the above 0.85 ratio of CRD/RD, the central and northeast part of the district shows 0.80 to 0.85 ratio and south and south-east part shows below 0.75 ratio of CRD/RD.

Table -1

Ratio of Crop rainy days and Rainy days

Sr. No	Station	HS	SW	PM	CS	Annual
1.	Ambale	0.78	0.76	0.81	0.69	0.77
2.	Ambavade1	0.83	0.71	0.71	1.00	0.71
3.	Ambavade2	0.70	0.68	0.78	0.76	0.70
4.	Andhali	0.71	0.85	0.91	0.92	0.85
5.	Belwade	0.76	0.79	0.78	0.91	0.79
6.	Davari	0.88	0.88	0.87	1.00	0.88
7.	Goregaon Wangi	0.84	0.82	0.90	0.88	0.83
8.	Gudhe	0.79	0.74	0.83	0.69	0.76
9.	Gureghar	0.93	0.96	0.91	1.00	0.96
10.	Jawalwadi	0.89	0.81	0.91	0.86	0.83
11.	Kas	0.78	0.92	0.81	0.78	0.91
12.	Keral	0.87	0.87	0.84	1.00	0.87
13.	Mahabaleshwar	0.94	0.93	0.83	1.00	0.92
14.	Marali	0.91	0.92	0.93	1.00	0.92
15.	Mendh	0.91	0.84	0.85	0.90	0.85
16.	Nagewadi	0.77	0.92	0.91	0.86	0.92
17.	Nagthane	0.74	0.79	0.82	0.95	0.79
18.	Padloshi	0.72	0.81	0.80	0.67	0.80
19.	Parali	0.72	0.81	0.80	0.67	0.80
20.	Sandavali	0.82	0.91	0.89	0.91	0.90
21.	Shivade	0.66	0.70	0.75	0.72	0.70
22.	Targaon	0.67	0.62	0.75	0.83	0.65
23.	Thoseghar	0.84	0.94	0.95	0.86	0.94
24.	Upshinge	0.82	0.88	0.87	0.85	0.88
25.	Wathar	0.80	0.73	0.77	0.48	0.74
26.	Wathar Station	0.77	0.74	0.86	1.00	0.76
27.	Yelgaon	0.88	0.83	0.85	0.57	0.83

Source – Complied by researcher

In the southwest monsoon season, the ratio of CRD/RD is shown in Figure 1 (B). Mostly southwest monsoon season contribute 89.1 percent of the total of annual rainfall, so the ratio of CRD/RD is similar to the annual. The ratio of in this season ranges 0.62 to 0.96.

During the post monsoon season, the ratio of CRD/RD ranges from 0.71 to 0.95 (Figure 1 C). The northern, north-central, north-east and western part of the district shows above 0.85, the central, north-west, south-central and south-east part of the district shows 0.80 to 0.85 ratio of CRD/RD, while the south part of shows below 0.80 ratio of CRD/RD.

Figure 1 (D) shows the ratio of CRD/RD in the cold season. The ratio of CRD/RD ranges from 0.48 to 1. The southern part of the district shows below 0.50 ratio of CRD/RD. Most of the part of the district shows above 0.80 ratio.

The ratio of CRD/RD of the hot season is depicted in the Figure 1 (E); it ranges from 0.66 to 0.94. The highest ratio of (0.85) CRD/RD is observed in the south-west and north-west part of the district, while below 0.70 is observed in the eastern part. The central part indicated ratio of 0.75 to 0.85 CRD/RD.

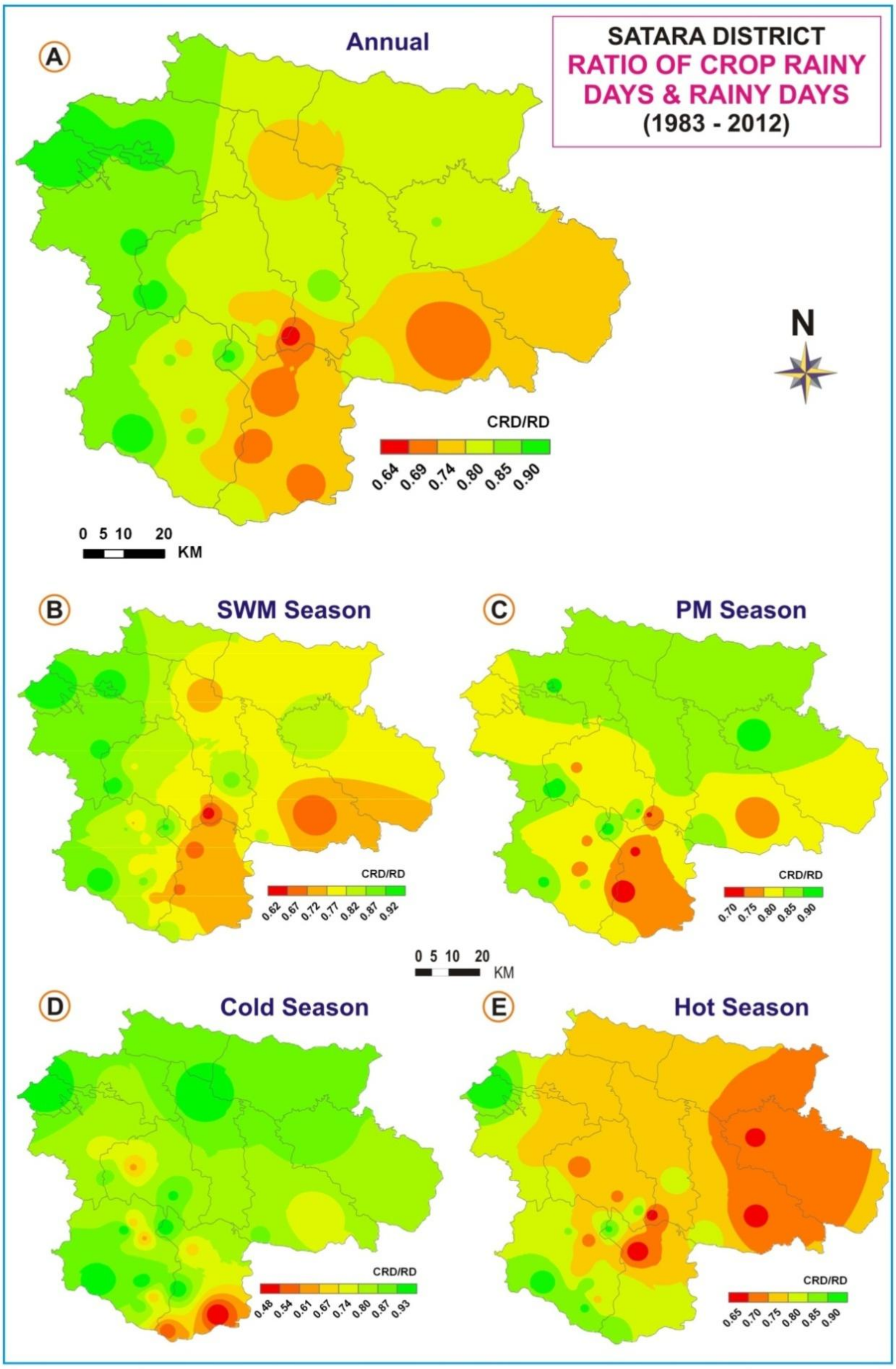

Fig. 1

Conclusion

The identification of crop rainy days is required for parameterize of the natural availability of rainfall for the agriculture. The ratio of crop rainy days and rainy days will provide information of difference of the availability rainfall. This ratio is helpful for the preparation of irrigation schedule, analysis of soil moisture and investigation crop productivity. The western part of the district shows the above 0.85 ratio of CRD/RD, the central and north-east part of the district shows 0.80 to 0.85 ratio and south and south-east part shows below 0.75 ratio of CRD/RD.

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THE STUDY OF STATUS OF WORKERS IN THE SHETKARI VINKARI SAHKARI SOOT GIRNI LTD (ISLAMPUR)

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ABSTRACT

Textile Industry in India is the second largest employment generator after agriculture. The Textile industry plays important role in the Indian economy and contributes substantially to its export earnings. Textile exports shares nearly 30 percent of the country's total exports. It is 20 percent of the National production. It provides direct employment to cover 15 Million persons in the mill such as Power Loom and Handloom Sectors. India is the world's second largest production of textiles after china. It is the world's third largest production of cotton. The textile industry in India is one of the oldest manufacturing sectors in the country and currently, it's largest in Maharashtra Sangli District plays very important role in textile industry.

The co-operative spinning mill in India is relatively started recently. The co-operative textile sector has played a commendable role in the upliftment of workers in the Shetkari Vinkari Sahakari soot Girni Ltd Islampur here about 10 percent workers are selected as a sample for study This soot Girni is selected in the semi urban area or rural area of Walwa Tehsil, The workers are coming from surrounding village of this mill. Therefore all the study is about a significant socio economic transformation in the area by this mill. This transformation took the shape of better civic information and a noticeable improvement in the quality of life Shetkari Vinkari Sahakari soot Girni Ltd Islampur provided jobs for 490 people. The people are settled nearby the soot Girni around 02 km to 15 km. According to field survey this soot Girni is very useful for change in Socio-Economic conditions of workers. This soot Girni is providing various facilities to workers.

KEYWORDS: Co-Operative Textile Sector, Socio- Economic condition of workers, Manufacturing

INTRODUCTION

The word "Textile" is derived from the Latin word "Texere" meaning to weave and "Textiles" means woven. The word 'Textile' was originally used to define a woven fabric and the process involved in wearing cloth from the ancient time textile industry was working it produced a various type of cloth .Now a days this industry is well established in all over the world.

First Indian textile industry was established in 1822 on the bank of river Hugli in West Bengal. Jute industry made a beginning in 1855 with the establishment of a jute mill in the Hooghly Valley near Kolkata with foreign capital and entrepreneurship. Thereafter in 1854, the Indian industrialist Mr. Kawasaki Dadabhai Devar had taken initiative and established first modern cotton textile mill at Mumbai (Maharashtra) and after that in 1861, the third textile mill started at Ahmadabad (Gujarat). In the year 1907, the use of electricity has been started in the textile industry and the remarkable development of textile industry has been taking place. At present in India more than 1824 textile mills. Out of these 192 mills are run by the public sector, 153 are run by the co-operative sector and remaining 1479 textile mills are under the command of private sector.

Maharashtra is an important and leading textile cloth manufacturer state in India because it is not only in number of textile mills but also cloth production and its allied activities. There are 210 cotton textile industries in which 36 per cent looms and 25 per cent spindles out of the total country in Maharashtra. The textile industrial sector of Maharashtra has provided nearly three lakes employments which contributes different levels of jobs. Mumbai is supposed as the biggest and significant Textile Hub in Maharashtra as well in India. Due to this, Mumbai is known as 'Manchester of India'. Followed the Mumbai, the cotton textile industries are concentrated at Ichakaranji (Kolhapur district) due to favorable locational factors and it is commonly called as 'Manchester of Maharashtra'. Beside these some other textile centers in Maharashtra which are Sangli, Sholapur, Pune, Jalgaon and Nagpur etc.

PROFILE OF SHETKARI VINKARI SAHKARI SOOT GIRNI

This is co-operative spinning mill named as Shetkari Vinkari Sahakari soot Girni Ltd Islampur, established in 2003 but actual commercial production started in 2005. This mill started by the Ex Finance Minister Jayant Patil and ex Chairman Maharashtra state co-operative Textile federation Limited Mumbai Dileep Patil. This is a state of the art 25200 spindles project, with machines from Laxmi Machine works, Coimbatore and winding machine from Murata (Japan) and a laboratory form premier Inc. The set up of machinery and modern testing equipment results in high production levels and superior quality of yarn. The yarn produced by the mill is accepted by the export markets on all counts of quality standards. The project has been launched in two phases, the first of which is complete, 18000 spindles are presently under production. The unit has been awarded 1 St Prize for the best technical performance in the first year.

OBJECTIVE- To Study the socio economic condition of workers

METHODOLOGY AND DATABASE

The primary data has been collected from schedule which has been prepared for workers about 490 workers are working in the Shetkari Vinkari Sahakari Soot Girni Form these workers about 10 percent workers are selected as sample for this analysis. Here stratified random sample techniques have been used for study. Further the researcher has recorded his observations during the data collection. Also he had conducted the group discussions to understand the opinion and attitude of the respondents in general. Secondary data has been collected through technical performance report from Maharashtra state co-operative Textile federation Limited Mumbai.

STATUS OF WORKERS IN THE SHETKARI VINKARI SAHKARI SOOT GIRNI

Here schedule has been prepared for the analysis of status of workers in the soot Girni. This schedule includes questions regarding their General Information, Infrastructure and Facilities, Educational status, Family status, Economical status provided by soot Girni. About 49 Schedules have been filled up from the workers. The workers from different villages, different economical background has been selected.

TABLE NO- -1. RESIDENTIAL ADDRESS OF THE WORKERS

Sr. No	Local Workers	Out of State Workers	Total Workers
1	47	02	49

Above table shows that majority of the workers are coming from the nearest place of spinning mill. They are travelling 2 km to 21 km distance regularly to work in the spinning mill. Some workers are come here from out of state.(Goa and Karnataka state). Those are stayed in the Islampur city. They are invited because they are experienced and skilled workers.

TABLE NO-2. EDUCATION OF WORKERS

Sr. No	Education	Number of Worker
1	S.S.C	19
2	H.S.C	16
3	Graduate	11
4	Post Graduate	03
	Total	49

Above table shows that 71 percent workers are studied up to ssc and hsc. This soot Girni is situated in the rural area therefore various workers are coming from rural background. Remaining workers are highly educated those are supervisors and technical workers.

TABLE NO -3. FAMILY SIZES OF WORKERS

Sr. No	Persons in the family	Number of workers
1	Below-2	09
2	2 to 4	19
3	4 to 6	12
4	6 to 8	07
5	8 to 10	02
	Total	49

Above table shows that family size between 2 to 4 are in majority workers house. The second largest group is 4 to 6 because all the workers are form nearby rural area, which is living in mostly joint family or with their old parents and therefore other peoples of family members are helping them in the agricultural practices.

TABLE NO.-4. WORK EXPERIENCE

Sr. No	Work Experience	Number of workers
1	1 Year	26
2	2 Year	06
3	3 Year	08
4	4Year	04
5	More than 5	05
6	Total	49

Majority of the workers are from nearby areas from the share holders therefore they are not taken for experience. Therefore here skilled workers are very less. Soot Girni is giving training of machine work after joining. Only few workers are experienced they are mostly from other state of from city specially invited because of their experience.

TABLE NO.-5. CHANGE IN SOCIAL STATUS

Sr. No	Number of workers	Change in social status
1	28	Yes
2	21	No
Total	49	

About 57 percent workers are agreed that their social status has been changed because of this job. They are living in nearby villages they are doing agricultural practices with this job therefore they can invest better in agriculture than other people. Therefore they get respect in the village more than only farmers therefore they feel that their social status has been improved.

CONCLUSION

This soot Girni is providing job to the people living in the nearby village Therefore this soot Girni is responsible to improve standard of living of the people lives in nearby village. But majority workers are not experienced They are doing job because soot Girni is very near to their village and getting additional income. Therefore they are not serious about job. Workers are having agricultural land and they are doing agricultural practices with this job. Therefore not focusing on the skill and technology Therefore for skill and technology soot Girni has appointed persons from out of state. Therefore here are few suggestions for improving the quality of workers for better development

1) The nature of work in textile units is temporary
2) They should provide more health facilities to reduce health problem
3) Compulsory training programs

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LEVALS OF URBANIZATION IN KOLHAPUR DISTRICT OF MAHARASHTRA: A GEOGRAPHICAL STUDY

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ABSTERACT

Urbanization is the demographic process of becoming urban. In other words, it is a demographic process whereby an increasing proportion of the population of a region lives in urban areas. In developed nations urbanization is occurring at much faster rate than less developed country. In India urbanization flourished as early as 300 b.c. The urban centers of Mohenjo-Daro and Harappa may be cited as the examples. The process of urbanization recorded a steady growth after 1921. It got jump after independence. The present study attempt has been made to analyze the levels of urbanization in Kolhapur district in Maharashtra. The district consist twelve tahsils covering 7685 sq. km. area. The present study is based on the secondary data. Tahsil is taken as a unit of study, for understanding and mapping purpose. The Kolhapur district level of urbanization has been studied with the help of various indicators such as urban growth rate, urbanization trend, etc. map and diagrams used for systematic presentation of results. Due to the process of urbanization the quality of life in most of the urban places is declining. Delhi at present is considered as the second most polluted city after Mexico City in the world. The present study may help to the urban planners, administrators and urban developers to knowledge of the present level tend and pattern of urbanization for future planning.

KEY WORDS: Urbanization, Population, Area, Growth Rate, Demography, etc.

INTRODUCTION:

In 1800 A. D., only 2.4 per cent of the world population was urban which increased to 9.2 per cent in 1900. In 1950 about 21 per cent of world population was living in towns and cities. In 2001, about 48 per cent of the world population was residing in urban settlements. According to the projections made for 2025, about 57 per cent of the world population would be urban.

In India process of urbanization recorded a steady growth after 1921. From 1951 to 2011 India's urban population has more than tripled from 62.4 million to 377.1 million in 2011. Number of urban towns has grown from 2843 in 1951 to 7935 in 2011. According to the 2011 census in India, there are three mega cities having a population of over 8 million each. These are Mumbai, Kolkata and Delhi.

The present urbanization of India faces difficult challenge of poverty, poor urban infrastructure and environmental degradation. The quality of life in most of the urban places is declining. Delhi at present in considered as the second most polluted city after Mexico City in the world. Adequate steps are not taken to prevent pollution and to improve the quality of life the life of urban dwellers of India may become more difficult. The planners, administrators and urban developers should have knowledge of the present level trend and pattern of urbanization for future planning. There for the present study attempt has been made to analysis the level of urbanization in Kolhapur district.

STUDY AREA:

Kolhapur district is in the extreme southern part of Maharashtra State. Its location lies between 15^0 43' and 17^0 17' north latitudes and 73^0 40' and 74^0 42' east longitudes. It is surrounded by Sangali district to the north. Belgaum district of Karnataka state to the east, and south, Ratnagiri and Sindhudurga districts to the west. The Sahyadri ranges to the west and Varna River to the north form the natural boundaries. The district as a whole is part of the Deccan table land and slopes towards the south-east.

The district has an area of 7685.00 sq. Km which is about 2.50 per cent of the total area of the state. According to 2011 census of India, the total population of Kolhapur district is 3876001 out of which 2645992 population lives in rural areas and 1230009 population lives in urban areas.. It has density of 504 persons per sq. km which is higher than 365 persons per sq.kms for the state. The district comprises of 12tahsils namely Karvir, Panhala, Hatkanangale, Shirol, Kagal, Gadhinglaj, Chandgad, Ajra, Bhudargad, Radhanagari, Bavda, and Shahuwadi. Kolhapur city is the administrative head quarter of the district.

OBJEECTIVE:

The main objective of the present study is

1. To know the levels of urbanization in study area.
2. To find out the trend and patterns of urbanization in Kolhapur district.

DATARBASE AND METHODOLOGY:

The present study is based on mainly secondary data. It mainly collected from district census handbook, socio economic abstract, etc. The percentage of urban population to total population has been calculated. The period from 1951 to 2011 is selected for the observation of trend and degree of urbanization change. The result has been shown with the help of different graphs, tables.

URBANIZATION IN KOLHAPUR DISTRICT:

According to the 2011 census, the total population of Kolhapur district is 3876001. The growth of population from 1951 to 2011 steady increase, in 1951 the total population of Kolhapur district is 1227547, it become 3523162 in 2001. According to the census of 2011 the total urban population of Kolhapur district is 3876001.

The urbanization in the Kolhapur district increased from 277457 in 1951 to 1230009 in 2011. The percentage of urban population in Kolhapur district increased from 1951 to 2011. The percentage of urban population of Kolhapur district since 1951 is noted in Table 1.

Table 1
Trends of Urbanization in Kolhapur District (1951 to 2011)

Year	Total population	Urban population	Urban population in %	Urban population decadal growth rate in %
1951	1227547	277457	22.60	-------
1961	1596493	307775	19.28	10.93
1971	2001973	440245	21.99	43.04
1981	2506330	622022	24.82	41.29
1991	2989507	787002	26.32	26.52
2001	3523162	1050353	29.81	33.46
2011	3876001	1230009	31.73	17.10

Source: Census of India, 1951 to 2011

In 1971, the urban population of Kolhapur district was 21.99 per cent; it was reflected in the decennial growth rate of urban population, which was 43.04 per cent during 1961-1971 because of agricultural depression and population migration from rural area to urban area due to various reasons like job opportunities, education facility. After the independent of India, it is the highest decadal growth rate in urban population recorded in Kolhapur district. However, in the next decade the decennial growth rate in Kolhapur district demonstrated a declining trend after reaching the peak in 1961-1971. In the 1971-1981, it was 41.29 per cent and the level of urbanization was 24.82 per cent. It reached 31.73 per cent in the year 2011, and the decadal growth rate of the year 2001-2011 was 17.10 per cent (figure 1). There are not only variations in the level of urbanization in Kolhapur district but also fluctuation in the decadal growth rate of urban population.

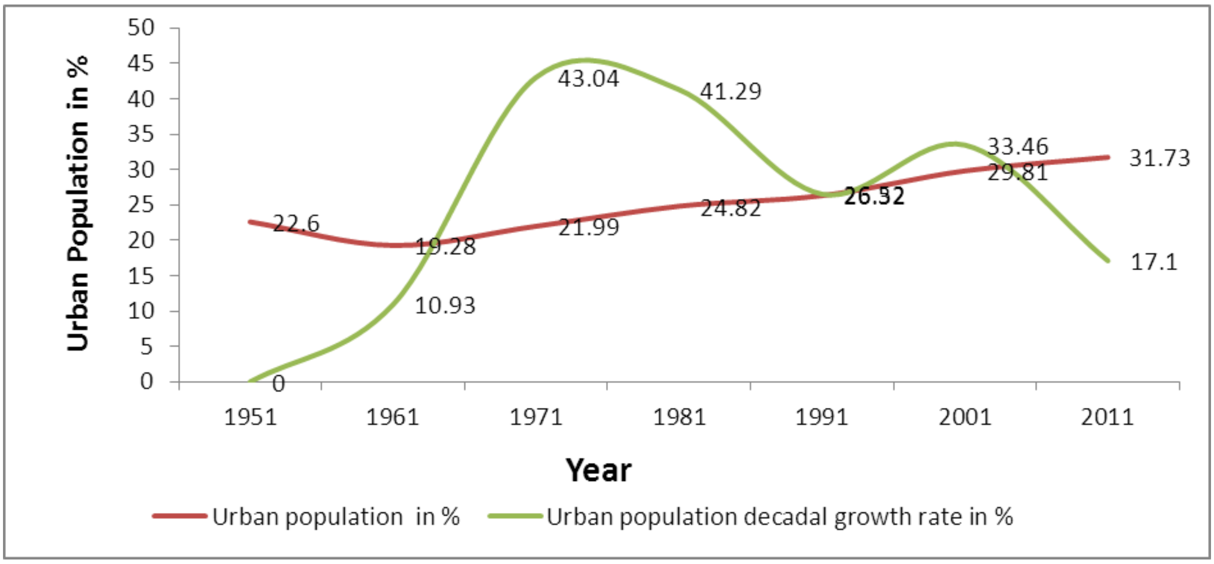

Figure 1: Trend of Urbanisation in Pune District (1951-2011)

Level of urbanization in these 12 tahsils in 1991, 2001, and 2011 are presented in Table 2.

Out of 12 tahsils, there were two tahsils with a level of urbanization higher than the district average. These included Karvir and Hatkanangale due to administration point, tourism and availability of basic services. Karvir tahsil is the highly urbanised tahsil in Kolhapur district, followed by Hatkanangale. Chandgad, Bhudargad and Bavda tahsil was very poor in urbanization in all three decades. In the Ajra tahsil urbanization not started in 1991 census year, but it started in the 2001 census period. According to above census data the urbanization rate of Shahuwadi were gradually decreased from 1991 to 2011. In the year 1991 it was 3.30 percent but it lower down in the year 2001 it became 3.11 per cent, in 2011 it became 2.88. On the other hand the urbanization process gradually increased in other tahsil (Table-2).

Table 2

Tahsil Wise Level of Urbanization in Kolhapur District (1991 to 2011)

Sr. no.	District/tahsil	Percentage of urban population to tahsil population		
		1991	2001	2011
1	Karvir	56.68	60.52	63.19
2	Panhala	1.43	1.45	3.01
3	Hatkanangale	44.26	50.02	49.58
4	Shirol	17.75	17.93	18.12
5	Kagal	13.20	13.29	16.45
6	Gadhinglaj	11.33	11.72	12.04

Table contd…

7	Chandgad	0	0	0
8	Ajra	0	12.23	14.35
9	Bhudargad	0	0	0
10	Radhanagari	0	0	0
11	Bavda	0	0	0
12	Shahuwadi	3.30	3.11	2.88
13	District Total	26.33	29.81	31.73

Source: Census of India, 1991 to 2011.

PATTERNS OF URBANISATION IN KOLHAPUR DISTRICT, 1991 TO 2011.

On the basis of level of urbanization, the tahsils can be divided into five categories with its respective percentage of urban population to the total population. Spatial pattern of urbanization for Kolhapur district has been attempted since 1991, 2001 and 2011.

1) Areas of high degree of urbanization (more than 70%)
2) Areas of medium degree of urbanization (40-70%)
3) Areas of moderate degree of urbanization (10-40%)
4) Areas of low degree of urbanization (1-10%)
5) Area of very low degree of urbanization (less than 1%)

1) AREAS OF HIGH DEGREE OF URBANIZATION:

In this category no any tahsil of Kolhapur district situated. Due to slow growth of industrialization and low migration from rural to urban area the high degree of urbanization not found in the Kolhapur district.

2) AREAS OF MEDIUM DEGREE OF URBANIZATION:

Medium degree of urbanization was found only in Karvir and Hatkanangale tahsil. Karvir tahsil has above 56 per cent urbanized tahsil in the study region. Hatkanangale tahsil was 44.25 per cent urbanized in 1991 census, after that in the year 2001 it became 50.02. In the 2011 census year urbanization of Hatkanangale tahsil decrease, it became 49.58 per cent. Due to establishment of medium scale industrial units and migration from rural to urban these tahsils remained in the categories of area with medium degree of urbanization.

3) AREAS OF MODERATE DEGREE OF URBANZATION:

As per 1991 census of India, only three tahsil are situated in this category these are Shirol, Kagal, Gadhinglaj and tahsil. Ajra tahsil was added in low degree of urbanization area for next tow census period (2001 and 2011). Due to small scale industrial units and some unfavourable geographical conditions, very low degree of migration from rural to urban area the moderate degree of urbanization found in this category.

4) AREAS OF LOW DEGREE OF URBANISATION:

As per three census of India, there are two tahsils area with a low degree of urbanization. Shahuwadi and Panhala tahsils are include in above category. Due to peripheral location, poorly developed infrastructure facilities and uneven terrain are responsible for a low level of urbanization in this part of the district.

5) AREAS OF VERY LOW DEREE OF URBANISATION:

As per census 1991 of India, there are five tahsils areas with a very low degree of urbanization these are Chandgad, Bhudargad, Radhanagari, Bavda and Ajra tahsil . In 2001, there are four tahsils, Ajra tahsil has subtracted in this category. Due to adverse physiographic and climatic conditions, lack of infrastructure, lack of industrial development and predominance of primary activities are the factors those explain largely the poor urbanization.

CONCLUSION:

The urban population in the Kolhapur district increased from 277457 in 1951 to 1230009 in 2011. The percentage of urban population in Kolhapur district increased from 1951 to 2011. After 1971 decade the urban population of Kolhapur district increased at a faster rate. In year 1971 it was 440245, it become 1050353 in the year 2001,and in the census year 2011 it became 1230009. The great majority of people migrated towards urban areas for trade, job and for educational purpose from rural to urban areas.

Urbanization in Kolhapur district show irregular pattern. As compare to other tahsils in Kolhapur district Karvir tahsil is more urbanized, on the other hand Shahuwadi and Panhala tahsils record low level of urbanization. In the study area Chandgad, Bhudargad, Radhanagari, Bavda tahsil are the tahsils were urbanization process are not stared yet. The decadal growth rate of urban population in Kolhapur district going to decrease in last three decades.

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ROLE OF TRANSPORT SYSTEMS ON ECONOMIC DEVELOPMENT IN KOLHAPUR DISTRICT OF MAHARASHTRA STATE

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ABSTRACT

Transportation plays an important role in the political, economic and social development of any region and society. The economic utilization of different type of resource would incomplete without transportation. The density of transportation and its development is control of economic development of a country. The economic development of any under developing district can be attributed relatively poor condition of transport system. One of the main reasons for the economic backwardness of many of the developing district of every state is the non-availability of modern transportation system. Many economists said that, in many causes' rural poverty systems from the poor development of transport system. The most important matter at such economic development is to achieve the maximum benefit from each of the existing mode of transport system. The transport cost most important for reasons of economic development of any district. In this paper the present study reveals the tehsil wise mode of transport in Kolhapur district, 2013-2014. According to 2011 census Kolhapur district has 3876001 populations. It occupies area of 7685 sq. km, the secondary data have been collected and computed by recent research techniques and the results have been brought through tables and maps.

Keywords:-Transportation system, Economic development, density.

Introduction:

"Transport, an important phenomenon of cultural landscape, work as a potent factor for the regional and national development any type of development whether economic, social or cultural is based on a good transport network" (Singh,J.1977). "Certainly, the cheap, efficient and fast transportation is dominant factor of our modern industrial and scientific age" (Finch, 1949). "Unlike natural resources transport is manmade recourse which interacts with man and various commodities of different areas. Transport, therefore is a form of capital good, just as a piece of factory equipment, which can be used to produce a service. In the absence of means of transport the regional development cannot get momentum and it cannot enhance the socio economic condition of developing countries" (Tiwari R..C, 1990) "In other words without transformational and communicational lines must of economic activities are barred. Consequently, a broad gap in human civilization is created. It is a strong tool for the exchange of views, cultures, traditions, religious etc. in brief transport eases the movement of man, goods an ideas and just as manufacturing creates form utility so transportation creates place utility." (Finch, 1949). 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. At present it is most important to role that the transport system of Kolhapur district is different types and different ways. The transport is most important role to play for economic development. Road transport is supposed to be more efficient than railway transport. Road way transport is maximum use in different development of economic condition in Kolhapur district. The proposed study region experiences the disparity in the distribution of mode of transportation from tehsil to tehsil. Keeping above arguments in mind, it is proposed a humble effort towards great task of exploring ROLE OF TRANSPORT SYSTEMS ON ECONOMIC DEVELOPMENT IN KOLHAPUR DISTRICT OF MAHARASHTRA STATE

The Study Area:

Kolhapur district is the most developed district of Southern-western part of Maharashtra. The absolute location of district is 15^{o} 43' to 17^{o} 17' North Latitude and 73^{o} 40'and 74^{o} 42' East Longitude. It is surrounded by Sangli district to its North and East, Belgaum district of Karnataka to its South and Sindhudurg district to the West. The Sahyadri ranges to the west and Warana River to the North forms the natural boundaries. The geographical area of districts 7685 square kilometers, for the administrative purpose the district is divided into 12 Tehsils. The population of the study region is 38, 76, 001 persons, according to 2011 census. The maximum and minimum temperature ranges in between 38^{o}C and 14^{o}C with annual average precipitation 115 cm.

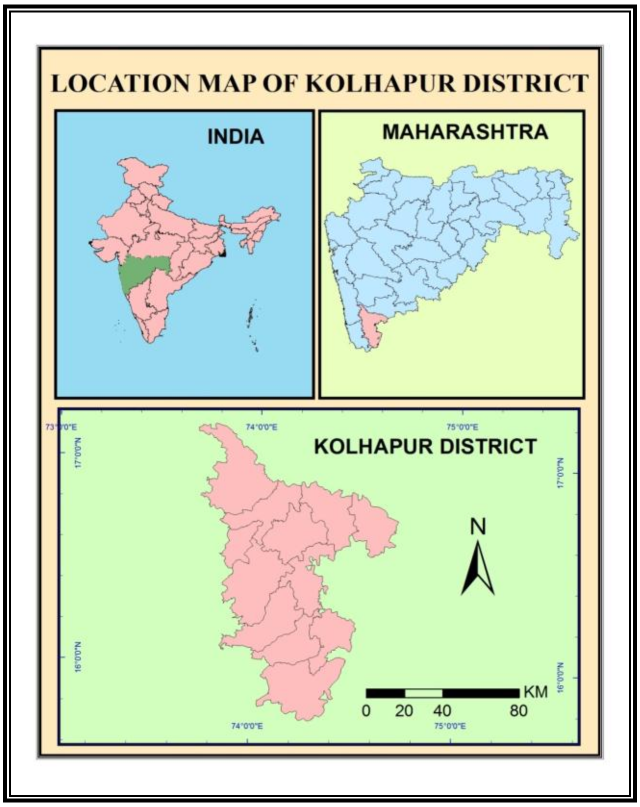

Fig.1

Objectives:

The main objective of the present study is to analyze the tehsil wise Transport system and economic development in Kolhapur district.

Data collection and Methodology:

Present paper is based on secondary data. The data have been analyzed for total roads length per 100 square kilometers. The secondary data have been collected and computed by recent research techniques and the results have been brought through tables, Graph and maps.

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Role of Transport Systems on Economic Development in Kolhapur District:-

Transportation network plays a significant role in the economic development. The development of transport network is controlled by topography of the region. The development of transportation network is vital for the decentralization and mobilization of small and large scale industry in the region. Transport system in different ways, like road way transport, railway transport, and Air Transport etc.

Table 1
The Kolhapur District
Spatial Pattern of Road Length 2013-14

Sr. No.	Tehsils	Road Length in km.						
		National Highway	Major State Highway	State Highway	Major District Road	Other District Road	Village Road	Total Road Length
1	Shahuwadi	37.49	0.00	73.69	142.95	195.66	345.78	795.57
2	Panhala	14	0.00	76.60	139.05	131.34	318.68	679.67
3	Hatkanangle	23	16.41	109.80	61.91	175.22	547.48	933.82
4	Shirol	0	18.10	84.75	123.63	90.35	380.39	697.22
5	Karvir	30.52	0.00	113.82	150.55	205.38	415.40	915.67
6	Bavda	0	0.00	34.20	61.40	40.95	64.30	200.85
7	Radhanagari	0	0.00	85.00	174.65	197.85	418.10	875.6
8	Kagal	5	0.00	59.04	188.33	133.14	341.20	726.71
9	Bhudargad	0	0.00	68.83	91.20	238.50	289.70	688.23
10	Ajra	0	0.00	96.92	78.80	154.37	218.40	548.49
11	Gadhinglaj	0	0.00	71.00	139.40	166.20	344.80	721.4
12	Chandgad	0	0.00	118.47	176.03	226.88	307.35	828.73
	Total	110.01	34.51	992.12	1527.90	1955.84	3991.58	8611.96

Source: i) Executive Engineer, P.W.D. Kolhapur
ii) Executive Engineer, B. and C. Z.P..Kolhapur

Table 2
The Kolhapur District
Spatial Pattern of Road Length (Density 100 sq.km) 2013-2014

Sr.No.	Tehsils	Total Geographical Area (in sq.km)	Density 100 sq.km						
			National Highway	Major State Highway	State Highway	Major District Road	Other District Road	Village Road	Total Road Length
1	Shahuwadi	1043.50	3.59	0.00	7.06	13.70	18.75	33.14	76.24
2	Panhala	568.80	2.46	0.00	13.47	24.45	23.09	56.03	119.49
3	Hatkanangle	609.40	3.77	2.69	18.02	10.16	28.75	89.84	153.24
4	Shirol	507.90	0.00	3.56	16.69	24.34	17.79	74.89	137.28
5	Karvir	671.10	4.55	0.00	16.96	22.43	30.60	61.90	136.44
6	Bavda	279.30	0.00	0.00	12.24	21.98	14.66	23.02	71.91
7	Radhanagari	892.30	0.00	0.00	9.53	19.57	22.17	46.86	98.13
8	Kagal	547.50	0.91	0.00	10.78	34.40	24.32	62.32	132.73
9	Bhudargad	644.40	0.00	0.00	10.68	14.15	37.01	44.96	106.8
10	Ajra	548.80	0.00	0.00	17.66	14.36	28.13	39.80	99.94
11	Gadhinglaj	481.20	0.00	0.00	14.75	28.97	34.54	71.65	149.92
12	Chandgad	952.20	0.00	0.00	12.44	18.49	23.83	32.28	87.03
	Total	7746.40	1.42	0.45	12.81	19.72	25.25	51.53	111.17

Source: Compiled by Researcher

1 .Road Network

The Kolhapur district has well developed interconnected network of various roads (Fig. 2). The Kolhapur district has total road length of 8611.96 km and road density per 100-sq.km is 111.17 km. Table 1 and 2 provides comprehensive regarding spatial pattern of length of roads and road density. It observed that the distribution of roads have played a major role in the economic development.

I) The National highway:-

Pune-Bangalore (NH 4) passes through the study area, which has 58.52 km. length. The NH4 passes through Hatkanangale, Karvir and Kagal tehsils of the study region.

II) MAJOR STATE HIGHWAY:-

A major state highway, which connecting the Kolhapur city with the Sangli city is went through Hatkanangale and Shirol tehsils and it has length of 34.51 km. This road plays a vital role in agro-based industries such as sugar industry, cotton textile and milk production.

III) STATE HIGHWAY:-

The district as a whole has 12.81 km density of state highway per 100 square kilometers. However, spatial distribution varies from tehsil to tehsils. The High density of state highway is recorded in Gadhinglaj, Shirol, Karvir,Ajra and Hatkanangale tehsils i.e. above 14.40 km per 100 square . The moderate density of state highway is found in Kagal, Bavda, Chandgad and Panhala tehsils i.e. 10.70 to 14.40 km per 100 squares. The low density of state highway is recorded in Shahuwadi, Radhanagari and Bhudargad tehsils i.e. below 10.70 km per 100 squares.

IV) MAJOR DISTRICT ROADS:-

The district as a whole has 19.72 km density of major district roads per 100 square kilometers. However, spatial distribution varies from tehsil to tehsils. The High density of major district roads is recorded in Hatkanangale, Shahuwadi, Bhudargad and Ajra tehsils i.e. above 18 km per 100 squares. The moderate density of major district roads is found in Chandgad, Radhanagari, Bavda, Karvir, Shirol and Panhala tehsils i.e. 18 to 26 km per 100 squares. The low density of major district roads is recorded in Gadhinglaj and Kagal tehsils i.e. below 18 km per 100 squares.

V) OTHER DISTRICT ROADS:-

Table 2 indicates that the density of other district roads is 25.25 km per 100 square kilometers, district as a whole. However, spatial distribution varies from tehsil to tehsils. The High density of other district roads is recorded in Bavda, Shirol and Shahuwadi tehsils i.e. above 22 km per 100 square kilometers. Moderate density of other district roads is found in Radhanagari, Panhala, Chandgad, Kagal, Ajra and Hatkanangale tehsils i.e. 22 to 29 km per 100 square kilometers. The low density of other district roads is found in Bavda, Shirol and Shahuwadi tehsils i.e. below 22 km per 100 square kilometers.

VI) VILLAGE ROADS:-

The district as a whole has 51.53 km density of village roads per 100 square kilometers. However, spatial distribution varies from tehsil to tehsils. The high density of village road is recorded in Gadhinglaj, Shirol and Hatkanangale tehsils i.e. above 67 km per 100 square kilometers. Moderate density of village road is found in Radhanagari, Panhala,Karvir and Kagal tehsils ranging from 45 to 67 km per 100 square kilometers. The low density of village road is observed in Bavda, Chandgad, Shahuwadi, Ajra and Bhudargad tehsils i.e. below 45 km per 100 square kilometers.

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VII) TOTAL ROAD LENGTH:-

The density of total roads length per 100 square kilometers in the entire district is 111.17 km. However, spatial distribution varies from tehsil to tehsils (Fig. 2). The High density of total road length is recorded in Kagal, Karvir, Shirol, Gadhinglaj and Hatkanangale tehsils i.e. above 126 km per 100 square kilometers due to high economic development tehsil as compare other tehsil. Moderate density of total road length is found in Ajra, Bhudargad and Panhala tehsils ranging from 99 to 126 km per 100 square kilometers due to moderate economic development. The low density of total road length is recorded in Bavda, Shahuwadi, Chandgad and Radhanagari tehsils i.e. below 99 km per 100 square kilometers due to lack of small and large scale industries resulted low economic development tehsil as compare other tehsils .

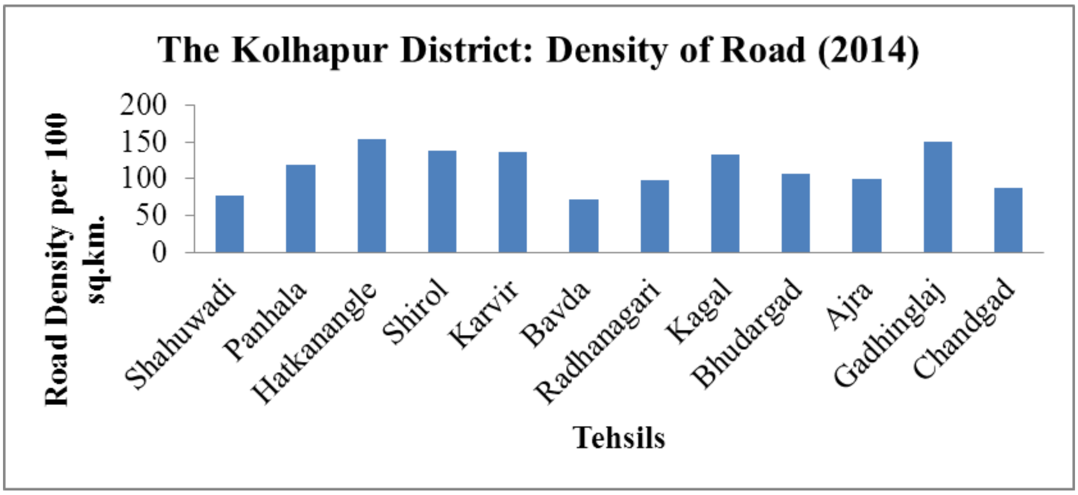

Fig.2

2. Railway Network:

Although, the district has limited length (35.67km) of railway it is the most important means of transport. There is only one railway route in the district, which is single line broad gauge type. It connects Miraj with Kolhapur and this line controls daily migration to Kolhapur city from eastern region (Fig.2.).

3. Airport Network:

Kolhapur's domestic airport is located 9 kilometers southeast of the city at Ujalaiwadi. In August 2013, the Airports Authority of India took control of the airport.

Concluding remarks:

The forgoing analysis reveals that the transport system of Kolhapur district is lower than the Maharashtra state average due to topography of the region. But spatial distribution varies from tehsil to tehsil. Roadway transportation network plays a significant role in the economic development of Kolhapur district. The High density of total road length is recorded in Kagal, Karvir, Shirol, Gadhinglaj and Hatkanangale tehsils due to this tehsils effect of high economic development. The low density of total road length is recorded in Bavda, Shahuwadi, Chandgad and Radhanagari tehsils due to this tehsils effect of low economic development. Kolhapur district, there is ample scope for effective and innovative development of combined Road, Rail and air services. Unplanned development of transport network in many under development tehsils is so complicated in nature that it is quite impossible to set up co-ordination among the various modes for transport. Need at the moment is to extend the necessary co-ordination among the existing means of transport and look forward for a mare integrated and planed development of the future modes of transport in Kolhapur district.

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VILLAGE AND COTTAGE INDUSTRIES IN YEOTMAL DISTRICT: A GEOGRAPHICAL REVIEW

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ABSTRACT

The Yeotmal district is considered to be one of the industrially backward district of Maharashtra state and is mostly dependent on agriculture for its livelihood. According to 2011 census agriculture accounted for 75.24% of the total employment in Yeotmal district and 79.99 percent of the population was rural, 18.20% population was employed in manufacturing and house hold industries in the same year. Yeotmal is poor in mineral resources. It is also poor in forest resources except Maregaon tahsil. As the region is having good fertile soil, sufficient drainage, net work and suitable climate there is wide scope for agro-based industries. The importance of small scale industries is minified in today's economic climate by the continued sluggish growth and the rising regional imbalance and widening unemployment and poverty. The development of small scale industry is in need to maintain adequate growth and create additional employment opportunities in the study region.

The Khadi and Village Industries Commission setup in April 1957, is responsible for the development of these industries. It financial and other assistance to registered institutions and co-operative societies, State Khadi and Village Industries, Boards and 23 other village industries which come within its purview. During the first and second plans Rs.42 crores and Rs.187 crores were allotted to village and small industries. The actual expending during Third Plan was estimated at Rs. 241 crores and during the Annual Plans (1966-69) at Rs. 132 crores. The estimated outlay in the public sector for village and small scale industries worked out to be Rs/ 251 crores in the fourth plan.

The Fifth Plan rightly mentions, "A significantly large number of persons already dependent on traditional industries like handloom, agriculture, coir, khadi and village industries are living below the poverty line. Therefore, the principal objectives of the programme for the development of different small industries in Fifth Plan is to facilitate the removal of poverty and inequality in consumption standard of these persons through creation large scale opportunities for fuller and additional productive employment and investment of their skill so as to improve their level of earnings. With this and in view, the revised Fifth Paln allocated a sum of Rs. 510 crores for village and small industries in the public sector. The estimated expenditure during 1974-78 on village and small industries aggregated to Rs. 388 crores. During 1975-76 these industries provided employment khadi accounted for 8.24 lakh and village industries 11.21 lakh production was worth Rs. 195.21 crores in 1975-76 Of this khadi accounted for 47 crores and villages industries Rs 148.5 crores.

Key Words:*Village and Cottage industries.*

Introduction:

'Industrial Geography' is essentially associated with productive efforts of a man for manufacturing the things to satisfy these needs. Therefore, simply defined, industrial geography is the study of the distribution of manufacturing industry. In the broadest sense, "the industrial geography is concerned with the interpretation of present distribution patterns of global, continental, national or regional". The geographic approach using the map as the chief tool of analysis is eminently to this type of study. The industrial geography, a young branch of economic geography in the true sense came into existence in the beginning of 20th century. In other nations the systematic study in the field of industrial geography started with the work of Christaller, W. M. Rawston, E.M. Renner, Hartshorne etc. on the contrary systematic contribution in this field have been came quite late in Indian geography.

Choice of the Study Region:

Yeotmal district lies between 19^{0}26' and 20^{0}42' north latitudes and 77^{0}18' and 79^{0}98' east longitudes. It has an area of 13584 sq.km. the district has occupied 4.4 percent of the total area of the state. Yeotmal is the largest district in the Amravati division, with a population 2,775,457 of which male and female were 1,425,593 and 1,349,864 respectively as per the census. The district constituted 2.47 percent of total population of Maharashtra. The district has 13 towns and 2131 villages out of which 306 villages are uninhabited. On the north it is bounded by Washim and Amravati districts, on the west by Parbhani district, on the east by Chandrapur and Wardha districts and on the south by Nanded district and the Adilabad district of Andra Pradesh.

The district has 16 tahsils. Originally Yeotmal district consisted of five subdivisions – Darwah, Pudad, Wani, Yeotmal and Kelapur. On 1st May 1981, these were reorganized and 14 tahsils were created. Again on 15th August 1992 the district was once again reorganized and divided into 16 tahsils viz. Darwah, Yeotmal, Pusad, Wani, Babhulgaon, Kalamb, Ghatanji, Ralegaon, Moregaon, Digras, Ner, Umerkhed, Mahagaon, Arni, Kelapur and Zari.

Aims and Objectives:

1. To study the development of village and cottage industries in Yeotmal district in particular.
2. To analyse the availability of infrastructural and geographical factors on which the development of industries depend.

Database and Methodology:

The data is collected and used for the period 1980-81 to 2010-11 for the research work. It is collected from primary and secondary sources. The primary data is collected through the especially prepared questionnaires. Primary data regarding selected large and medium scale industries, small scale industries and khadi and village industries collected by visiting the different persons of the industries.

Secondary data is obtained from Socio-Economic Abstracts, District Statistical Abstract, District Census Handbooks, Gazetteers, Agricultural Epitomes, Season and Crop Reports published by the Department of Agriculture. It was not possible to collect the primary data in each case regarding the industrial units; therefore, secondary data is obtained from the Govt. Offices, District Industrial Centre, Currency and Finance Report etc.

The data thus collected through primary and secondary sources, are processed and presented by different statistical and cartographic techniques. For the study purpose chorographic and chorologic methodologies is adopted. These involve the distribution and interpretation of the regional patterns revealed through choropleth methods. Different research methods are applied for the research work.

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Village and Cottage Industries of Yeotmal District:

There are various types of village and cottage industries which are scattered in the study region. Processing of cereals and pulses, oil ghanis, pottery, blacksmithy, carpenter, wearing, leather, cane and bamboo, bakery, tailoring, making ropes, cutting saloons, printing etc.khadi and village industries are classified into seven groups. Table 1.1 indicates that total number of khadi and village industries increased from 2214 to 3270 between 2001-02 and 2011-12.

Out of the total units 28.07% units were carpentry and blacksmithy units during 2011-12. The shares of leather units, pottery, other units, cane and bamboo, processing of cereals and pulses and oil ghanis were 24.37%, 14.25%, 11.95%, 10.58%, 6.78% and 3.97% respectively during the same year.All the categories increased during the selected period but per centage share of some categories in the district total have shown negative change. About below 3.00% positive change was took place in processing of cereals, oil ghanis and pottery, above 3.00% positive change was took place in carpentary and blacksmithy units whereas below 2.5% negative change in number of units was recorded in leather and cane and bamboo units and above 2.5% negative change in number of unit was found in other units from 2001-02 to 2011-12.

Table No.1.1: Statement Showing Village and Cottage Industries in Yeotmal District

Name of the Industries	Year	Number of Units	Investment in Rs. Lakh	Labour
Processing of Cereals and Pulses	2001-02	110 (4.96)	56.25 (2.00)	168 (2.90)
	2011-12	222 (6.78)	129.65 (3.57)	405 (5.29)
	Vol. of cha. in %	+1.82%	+1.57%	+2.39%
Oil ghanis	2001-02	80 (3.61)	235.61 (8.39)	190 (3.28)
	2011-12	130 (3.97)	341.82 (9.41)	324 (4.23)
	Vol. of cha. in %	+0.36%	+1.02%	+0.95%
Leather Units	2001-02	595 (26.87)	304.03 (10.83)	719 (12.42)
	2011-12	797 (24.37)	425.57 (11.72)	1055 (13.78)
	Vol. of cha. in %	-2.5%	+0.89%	+1.36%
Carpentary and Blacksmithy	2001-02	523 (23.62)	238.85 (8.51)	672 (11.61)
	2011-12	918 (28.07)	436.95 (12.03)	1143 (14.93)
	Vol. of cha. in %	+4.45%	+3.52%	+3.32%
Cane and Bamboo	2001-02	282 (12.73)	872.0 (31.08)	1425 (24.62)
	2011-12	346 (10.58)	1020.0 (28.09)	1656 (21.63)
	Vol. of cha. in %	-2.15%	-2.99%	-2.99%
Pottery	2001-02	299 (13.50)	26.9 (0.95)	1197 (20.68)
	2011-12	466 (14.25)	49.85 (1.37)	1358 (17.74)
	Vol. of cha. in %	+0.75%	+0.42%	-2.94%
Other Units	2001-02	325 (14.67)	1072.0 (38.20)	1415 (24.45)
	2011-12	391 (11.95)	1226.7 (33.78)	1714 (22.39)
	Vol. of cha. in %	-2.72%	-4.42%	-2.06%
Total Village and Cottage Industries	2001-02	2214 (100)	2805.64 (100)	5786 (100)
	2011-12	3270 (100)	3630.54 (100)	7655 (100)

Source: *District Office of Village and Cottage Industries. Figures in the Brackets Indicates Percentages.*

Investment of khadi and village industries increased from Rs. 2805.64 lakh to Rs. 3630.54 lakh from 2001-02 to 2011-12. Out of the total investment nearly 33.78% investment was found in other units during 2011-12. The shares of cane and bamboo, carpentary and blacksmithy, leather, oil ghanis, processing of cereals and pulses and pottery were 28.09%, 12.03%, 11.72%, 9.41%, 3.57%, and 1.37% respectively during 2011-12. About below 3% negative change in investment was took place in cane and bamboo units whereas about above

1% positive change was experienced in processing of cereals and pulses, oil ghanis, carpentary and blacksmithy units from 2001-02 to 2011-12.

Labour force increased from 5786 to 7655 during the selected period. Out of the total labour force about 22.39% labour was engaged in other units while only 4.23% labour force was engaged in oil ghanis during 2011-12.

About above 2.5% negative change in labour force was took place in cane and bamboo banding and pottery units on the other hand above 2% positive change in labour force was experienced in processing of cereals and pusles and carpentary and blacksmithy units between 2001-02 to 2011-12.

Conclusions:

1) Great efforts have been put by Indian planners to remove the chronic ills like unemployment, low per capita income, under utilization of resource etc. from last 50 years after Independence. After the experience of last fifty years Government of India has come to conclusion that, "neither agriculture, large scale industries nor-even both of them-together can absorb the growing number of unemployed and underemployed in village a well throughout and comprehensive programme of de-centralised industry in rural areas implemented with drive, sincerety and sense of paramount urgency can provide an effective answer to the vast problem of the rural employment. Government has taken vigorous efforts through five year plan periods.
2) Gandhij was against the large scale industries and their concentration at urban centers. He emphasized decentralization of economic activities at village level, through which he wanted to achieve self-sufficiency. He supported technological innovations especially appropriate for the society where they were adopted. This view stresses the utilization of local resources. This could be achieved through the agricultural the utilization industrial development.
3) State of Maharashtra has given more stress on khadi and village industries through five year plans. The state Government constituted the board in accordance with Mumbai khadi and village industries Act 1960. The board assists the khadi and village industries sector under Artisan Employment Guarantee Scheme and other normal assistance. At present there are 2.53 lakh khadi and village industries increased from 2214 to 3270 between 2001-02 and 2011-12 in Yeotmal district. It means that khadi and village industries increased by 1.47 times during the period of ten years.
4) Investment of khadi and village industries increased from Rs. 2805.64 lakh to 3630.54 lakh during the selected period of study. Out of the total investment nearly 33.78% investment was found other units in 2011-12. The shares of cane and bamboo, carpentary and blacksmithy, leather units, oil ghanis, processing of cereals and pulses and pottery were 28.09%, 12.03%, 11.72%, 9.41%, 3.57%, and 1.37% respectively in 2011-12.
5) Labour force increased from 5786 to 7655 during the selected period. Out of the total labour force about 22.39% labour force was engaged in other units and lowest labour force was noticed in oil ghanis i.e. 4.23% only but the percentage shares in the district total was decreased in some tahsil hence, they have shown negative change.

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GROWHT OF URBAN POPULATION IN SATARA DISTRICT OF MAHARASHTRA

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ABSTRACT

Change in population in any area primarily results of three processes these are new birth, death and migration of population. But in urban area population is increased mostly due to large scale of migration from rural area for the search of good opportunities of employment and other facilities. Basically Satara district is situated in western part of Maharashtra. Most area of the district is occupied by hills and eastern part is by drought prone area. Due to rainfall and lack of employment people move towards urban centers of the state such as Mumbai, Pune, Kolhapur, etc. as well as nearest towns also. The growth of urban population in Satara district is continuously found during last 100 years from 1911 to 2011. As per the census 1911 the urban population of Satara district is 96700, it reaches on 570228 in 2011. It means urban population is increased 10 times during these 100 years.In this paper the present study reveals the tahsil wise growth of urban population in Satara district during 1991-2011. The population growth of Satara district increased from 2451372 in 1991 to 2808994 during 2011.The results have been discussed with the help of urban population growth.After the formation of Satara district urban population is constantly growing up.

Keywords: Urban growth, Census report, Migration, Occupation etc.

Introduction:

The world has experienced unprecedented urban growth in recent decades. In 2008, for the first time, the world's population was evenly split between urban and rural areas. There were more than 400 cities over 1 million and 19 over 10 million. More developed nations were about 74 percent urban, while 44 percent of residents of less developed countries lived in urban areas. However, urbanization is occurring rapidly in many less developed countries. It is expected that 70 percent of the world population will be urban by 2050, and that most urban growth will occur in less developed countries.

India is the most populous country in the world. It covers only 2.42 per cent land area and tow third population of the world. About 52 per cent population in India is living in rural area and 48 per cent in urban area. Maharashtra is the IInd largest urban populous state in India. After independence urban population is growing gradually due to large scale migration of people from villages to towns and cities in search of opportunities of employment and better amenities of life.

Study Area :

Satara district is situated in western part of Maharashtra state. This district consist of 11 tahsils 1739 villages and 22 towns as per the census 2011. The total geographical area of district is 10480 sq. km. extending from 1705’ to 18011’ north latitudes and 73033’ to 74054’ east longitudes. This district is bounded by border of Pune district in north, Solapur in east, Sangli in south and Raigadh and Ratnagiri in west. The physiography of Satara district is covered by hills and plateaus of main Sahyadrimountain having hight over 1200 meters above sea level to the subdued basin of Nira river having average hight of 600 meters above sea level. The western region of the district I known as high rainfall region especially in Mahabaleshwar have over 6000 mm annual rainfall while eastern part of the district including Man, Khatav, Phaltan tahsils is known drought prone area having average annual rainfall about 500 mm. As per the census 2011, 3003744 population lives in Satara district including 570228 and 2433363 urban and rural population respectively.

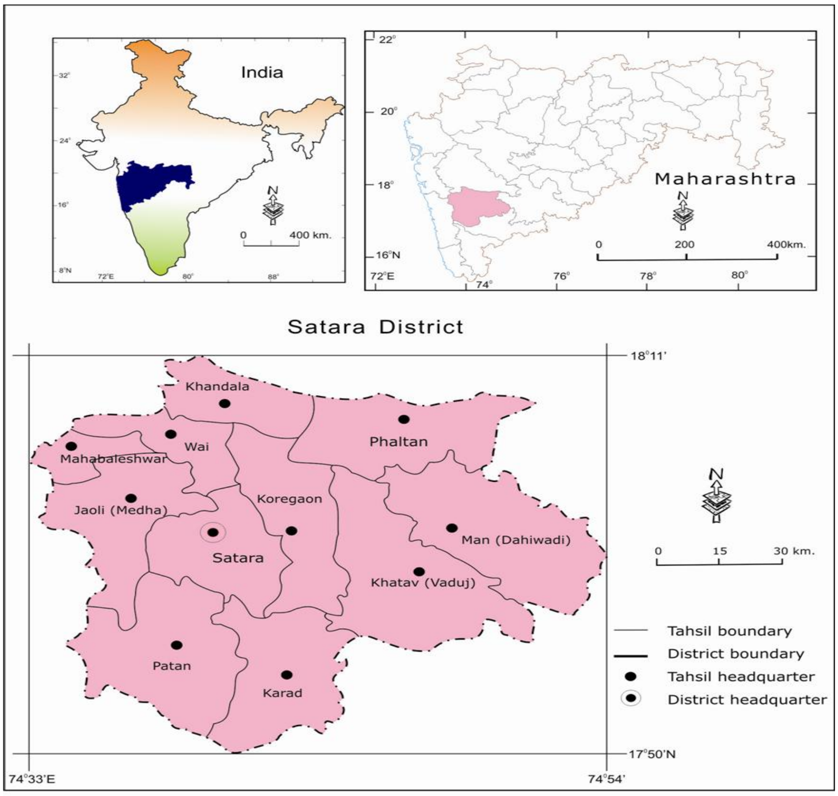

Fig. 1.1 : Location of Study Area

Objectives :

1. To study the growth of urban population in Satara district.
2. To study the tahsilwise growth of urban population in Satara district during 1991 to2011.

Data Source and Methodology:

The present study is based on secondary data obtained from census, district Gazetteers, socio economic review of Satara district. The data have been analyzed for total and tahsilwise urban population growth in percentage. The change in population over a unit time period is expressed as a percentage of urban population at the beginning of the time period. The positive growth indicated that the population is increases and the negative growth indicates decrease in population. The changes in population growth rate are measured with the following formula,

$$PGR = \frac{P2 - P1}{P1} \times 100$$

Where,

PGR = Population growth rate.

P2 = Population of district in the later decade.

P1 = Population of district in the initial decade.

Decadal Variation of Urban Population Growth in Satara District:

Table No. 1 and fig. 2 shows that the growth of urban population in Satara district. During last 100 years from 1911 to 2011 the urban population in Satara district is constantly increases and shows positive growth except 1961. In 1961, it shows negative growth rate of urban population in district because after independence in 1960 Satara district is formed as separate district from North Satara and Sangli from South Satara. After the separation of Satara as per the census of 1961, district have 9 tahsils. During 1961-71 decade it includes two new tahsils.

Tabal 1
Decadal Variation in Growth of Urban Population in Satara District (1911-2011)

Sr. No.	Year	Growth in %
1	1911	-22.68
2	1921	32.75
3	1931	15.08
4	1941	27.8
5	1951	44.84
6	1961	-1.19
7	1971	43.45
8	1981	16.96
9	1991	18.83
10	2001	26.05
11	2011	43.23

Source : Compiled by Researcher

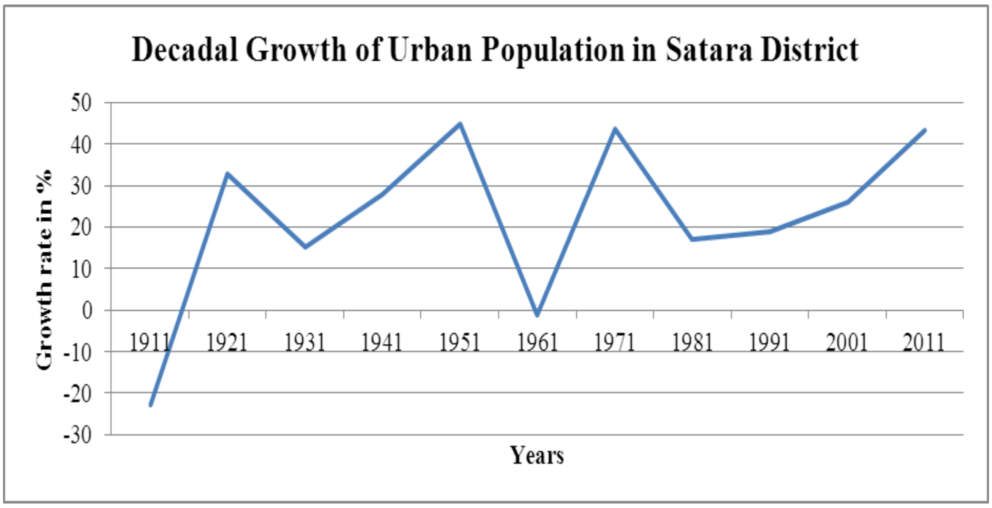

Fig. 2

The highest positive growth rate of urban population is recorded in 1951 and the lowest in 1981, it is 44.84 per cent and 16.96 per cent respectively. After the formation of Satara district in 1971 we found rapid growth rate having 43.45 per cent because of the development and growth of industries, education and other amenities in the district. After that in 1981 growth rate is declined due to migration towards Pune and Mumbai caused by drought and lack of employment. But after that till 2011 it is recorded constant growth rate having 18.83 per cent, 26.05 per cent and 43.23 per cent in the census of 1991, 2001 and 2011 respectively.

Tahsilwise Decadal Growth of Urban Population :

As per the census 2001 out of total population, 14.17 per cent population is recorded as urban population lives in 15 towns in the district, it reaches on 18.98 per cent and 22 towns in 2011. Table 2 and fig. 3 shows tahsilwise decadal variation of urban population growth. In 2001 district shows positive growth of urban population, it is 26.05 per cent growth rate since 1991. In the next decade 2001 to 2011 growth rate is 43.23 per cent.

Table 2

Tahsilwise Growth Rate of Urban Population (1991-2011).

Sr. No.	Tahsil	2001	2011
1	Satara	78.19	25.13
2	Wai	18.34	18.43
3	Kbandala	0	58.47
4	Koregaon	-62.24	155.64
5	Phaltan	14.5	18.34
6	Man	13.68	17.74
7	Khatav	0	0
8	Karad	11.68	115.06
9	Patan	13.94	18.75
10	Jaoli	0	0
11	Mahabaleshwar	23.11	8.78
	District Total	26.05	43.23

Source : Census of Satara District 2011

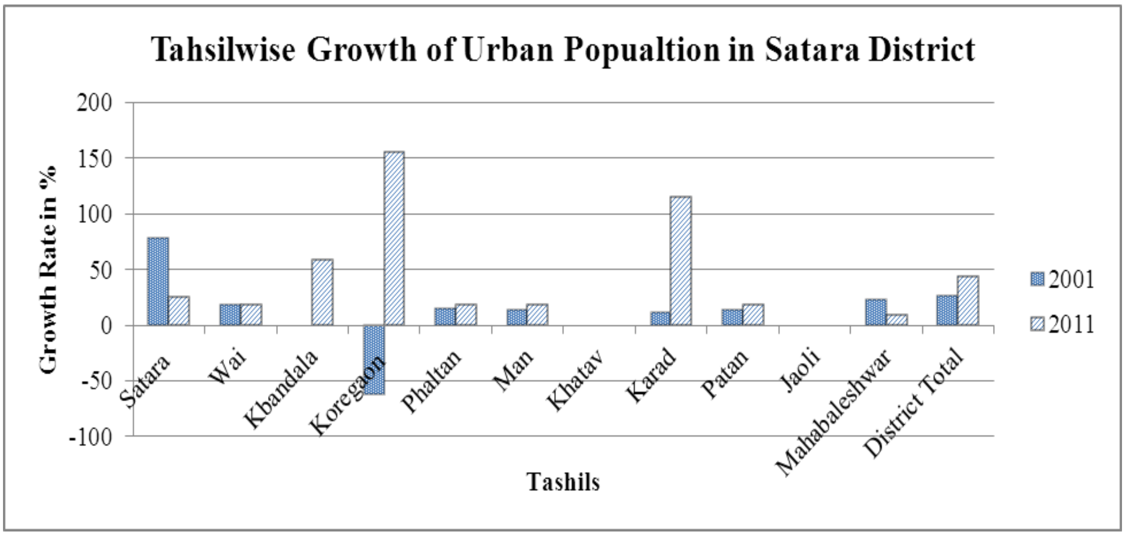

Fig. 3

In the decade 1991 to 2001 highest growth rate is recorded in Satara tahsil. It is three times more than district total rate. Wai, Man, Phaltan, Karad, Patan and Mahabaleshwar tahsils have also recorded positive growth rate but it is below the district average. In this decade only one tahsil named Koregaon is recorded negative growth of urban population shows -62.24 per cent. Because this tahsil is near to the district head quarter having only 19 km. distance. Peoples are migrated towards district head quarter from Koregaon for opportunities of employment and better amenities such as education, market, medical facilities, etc. As per census 1991 one municipal corporation and two census towns are recorded named Rahimatpur, Koregaon and

Satara Road respectively. But in 2001 Koregan and Satararoad lost their status of census town due to migration of population towards the Satara city.

In this decade Khandala, Khatav and Jaoli tahsils have not recorded urban population growth. As per the census 2001 Shirval in Khandala tahsil is received the status of new census town.

In the decade 2001 to 2011 every tahsil have recorded positive growth rate of urban population. Khandala, Koregaon and Karad tahsils have more than district average having 58.47, 155.64 and 115.06 per cent respectively. In this decade Koregaon tahsil recorded highest growth because of the increasing population and having again the status of census town of Koregaon. In this decade population in Karad city is increased rapidly due to availability of education, medicals and market facilities. In this census Hajarmachi, Sidapur, Malkapur, and Karad rural are emerged as newly census towns in 2011. In Khandala tahsil new industrial area is developed between Shiraval and Lonand. Due to this industrial area Lonand is emerged as new census town. Hence flow of migration towards Satara is reduced.

Tahsil named Satara, Wai, Phaltan, Man, Patan, and Mahabaleshwar are recorded growth rate below the district average growth rate of urban population i.e. 25.13, 18.43, 18.34, 17.74, 18.75 and 8.78 per cent respectively. In these tahsils Satara and Mahabaleshwar are recorded low growth rate in relation to the 2001 because Satara is bounded by hills of Sahyadri in the west and south river Venna and river Krishna to the north and east. These are physical limitations for the horizontal expansion of the Satara city. Besides these new industrial area is developed in Karad, Phaltan and Shirval as well as better education, medical, marked, and other facilities are developed in Karad and adjoining tahsils. Due to these facilities flow of migrants is reduced towards Satara. Mahabalwshwar tahsil have also reduced their urban population growth rate in relation to 2001 because of high rates of land and other amenities. Besides these there are physical limitations as well as government rules for horizontal expansion of the city as well as construction of roads and buildings. In this only tertiary and quaternary economic activities are increased due to its status of hill station. Hence hoteling and tourism are the main business are found in Mahabaleshwar.

As per the census 2011, Medha is emerged as new census town in Joilitahsil. So there is no revorded growth rate of urban population for this tahsil. Khatav tahsil is not recorded urban population. Its total population lives in rural area.

Conclusion :

After the formation of Satara district urban population is constantly growing up. Taking in to consideration of increasing population Vaduj in Khatav tahsil can be emerged as a new census town in next census. Karad have a better scope for urban development. The variation of growth rate is much more in Karad than other tahsils. Its growth rate is increased 10 time in the decade. Man and Phaltan tahsils have low growth rate of urban population because of its location in drought prone region. Wai and Patan tahsils have also low growth of urban population because locality hill ranges of Sahyadri.

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CHANGING DISTRIBUTION PATTERN OF RURAL SETTLEMENT IN LATUR DISTRICT DURING: 2001-2011

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Location is prime for the effective utilizations of public services. Location plays an important role in the service like Rural Settlement, primary health care, education, and transport services. The accessibility, economic feasibility and time management are determined by the location. Geographers and spatial scientists like R. Morrile, R. Erion and P. Rees (1970) , Smith (1977), S. (Okafar (1991) , have studied such aspects and similar other studies are quite useful for identifying optimal location.

In the present dissertation an effort is made to know the spatial services and range of distribution pattern of Rural Settlement at district and taluka levels in Latur district. The distribution pattern implies some sort of organization with some regularity depending on the relief and population size. To understand the spatial integration of service centres, the pattern of spatial arrangement is helpful. In the present study the Nearest Neighbour Technique is used. The Techniques was postulated and developed by plant, ecologists, Clark and Evans (1954). This method was used by the agricultural analyst like A.N. white (1979) and F. Iyan (1990) and others. In, order to specify the pattern of distribution of Rural Settlement and alike services.

This technique involves simple comparison between two mean magnitudes. i.e. observed mean distance between the nearest neighobours (or) and the expected means distance of the same density of points. If they were distributed randomly ® this can be obtained on the basis of simplified formula.

$$\mathrm{Re} = 0.5 \sqrt{\frac{A}{N}}$$

Nearest Neighbour Index is the ratio of these two i.e.

$$\mathrm{Rn} = \frac{Observed\ mean\ distane}{Expected\ mean\ distance} \quad OR \quad Rn = \frac{or}{re}$$

A nearest neighbour index of one or near to one, leads to under random concept. The deviation above one reaching a maximum of 2.15 leads to regular pattern, and deviation below one reaching to a minimum of 0 leads to the clustering pattern of medical services. Rn value zero (o) is perfect clustering. And Rn value of 2.15 is perfect regular. It is generally accepted that the range of random value from 0.8 to 1.2 explains the random like pattern.The formula has been applied at two points of time to study the distribution of ASCs in the district of Latur viz., 2001 and 2011.

Table. No.: 1.1

Rn value for Rural Settlement **at District level for the years 2001 and 2011**

District	Area in Sq. Km.	RS	2001				Area In sq. Km.	RS	2011			
			OD	**ED**	**Rn**	**Pattern**			**OD**	**ED**	**Rn**	Pattern
Latur	7157	944	3.72	2.20	1.69	ATU	7372	922	4.88	2.80	1.74	ATU

Note :-

RS = Rural Settlement
OD = Observed Distance in Km.
ED = Expected Distance in Km.
Rn = Randomness
LTU = Leading towards uniformity.
ATU = Approaching towards uniformity.

Table 1.1 shows the Rn values for Rural Settlement in Latur district from the year 2001-2011.Table shows Latur district with 944 Rural Settlement had Rn values of 1.69 in the year 2001 and due to the pattern of distribution of Rural Settlement were approaching towards uniformity. In the year 2011 Latur district witnessed a growth of 6.16 percent in Rural Settlement and total increased to a number of 922 Rural Settlement and Rn value for this was 1.74 and the result and pattern of distribution of Rural Settlement was approaching towards uniformity.

Due to the establishment of Rural Settlement in rural areas lead to the distribution pattern approaching towards uniformity in Latur district in 2011. The new Rural Settlement reduced the spatial disparity and approaching towards equal distribution was experienced. All were Rural Settlement through there was growth in the Rn value from 1.67 in 2001 to 1.74 in 2011. The pattern of distribution had remained within the sphere of random and close to approaching towards uniformity. The Rn value for Rural Settlement in the study area is 1.99, which shows the distribution of Rural Settlement in the study area is approaching uniformity. Fig. No. 1.1 shows the Nearest Neigbhour Analysis of Rural Settlement in 2011.

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SPATIO-TEMPORAL CHANGES OF SMALL SCALE INDUSTRIES IN YEOTMAL DISTRICT: A GEOGRAPHICAL REVIEW

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ABSTRACT

The Yeotmal district is considered to be one of the industrially backward district of Maharashtra state and is mostly dependent on agriculture for its livelihood. According to 2011 census agriculture accounted for 75.24% of the total employment in Yeotmal district and 79.99 percent of the population was rural, 18.20% population was employed in manufacturing and house hold industries in the same year. Yeotmal is poor in mineral resources. It is also poor in forest resources except Maregaon tahsil. As the region is having good fertile soil, sufficient drainage, net work and suitable climate there is wide scope for agro-based industries. The importance of small scale industries is minified in today's economic climate by the continued sluggish growth and the rising regional imbalance and widening unemployment and poverty. The development of small scale industry is in need to maintain adequate growth and create additional employment opportunities in the study region.

It is thus clear that small scale sector is intended to improve the economic and occupational profile of small, semi-urban and weaker sectors of our society. It is essential for the backward district like Yeotmal. Hence, this study has taken as its semi-rural, semi-urban and rural entrepreneurs. This type of the study is essential to get idea about the rural industrial development of the study region. The economy of the district is agro-based and the agricultural and man-power resources are in abundance in this district. The main agricultural products are cereals, pulses, oil seeds, cotton and sugarcane. The Maharashtra State Electricity Board has also a network of electrification throughout the study region. There is wide scope for agro-based industries like dal mills, solvent extraction, lather work, rubber and plastic, poplin and pectin, chili macula powder etc. in Yeotmal district.

There were 35 small scale units in the Yeotmal district in 1984-85. The number of permanent small scale units was increased from 35 to 1461 between 1984-85 and 2010-11. It means that permanent S.S.I. units were increased by 54 times during the period of twenty six years in the study region. The information regarding the situation in small scale industries in Yeotmal district from 1984-85 to 2010-11 presented in table 1.1 This table shows the tremendous increase by four times during the period of twenty years. S.S.I. units show constant increase in the study region.

Key Words: *Small Scale Industries, Agro Based Industries, Climate.*

Introduction:

'Industrial Geography' is essentially associated with productive efforts of a man for manufacturing the things to satisfy these needs. Therefore, simply defined, industrial geography is the study of the distribution of manufacturing industry. In the broadest sense, "the industrial geography is concerned with the interpretation of present distribution patterns of global, continental, national or regional". The geographic approach using the map as the chief tool of analysis is eminently to this type of study. The industrial geography, a young branch of economic geography in the true sense came into existence in the beginning of 20th century. In other nations the systematic study in the field of industrial geography started with the work of Christaller, W. M. Rawston, E.M. Renner, Hartshorne etc. on the contrary systematic contribution in this field have been came quite late in Indian geography.

Choice of the Study Region:

Yeotmal district lies between 19^{0}26' and 20^{0}42' north latitudes and 77^{0}18' and 79^{0}98' east longitudes. It has an area of 13584 sq.km. the district has occupied 4.4 percent of the total area of the state. Yeotmal is the largest district in the Amravati division, with a population 2,775,457 of which male and female were 1,425,593 and 1,349,864 respectively as per the census. The district constituted 2.47 percent of total population of Maharashtra. The district has 13 towns and 2131 villages out of which 306 villages are uninhabited. On the north it is bounded by Washim and Amravati districts, on the west by Parbhani district, on the east by Chandrapur and Wardha districts and on the south by Nanded district and the Adilabad district of Andra Pradesh.

The district has 16 tahsils. Originally Yeotmal district consisted of five subdivisions – Darwah, Pudad, Wani, Yeotmal and Kelapur. On 1st May 1981, these were reorganized and 14 tahsils were created. Again on 15th August 1992 the district was once again reorganized and divided into 16 tahsils viz. Darwah, Yeotmal, Pusad, Wani, Babhulgaon, Kalamb, Ghatanji, Ralegaon, Moregaon, Digras, Ner, Umerkhed, Mahagaon, Arni, Kelapur and Zari.

Aims and Objectives:

1. To study the development of large and medium scale industries in India, Maharasthra and Vidarbha region in general and Yeotmal district in particular.
2. To analyse the availability of infrastructural and geographical factors on which the development of industries depend.
3. To study the tahsilwise distribution of Cotton, Ginning and Pressing Units in the districts.

Database and Methodology:

The data is collected and used for the period 1980-81 to 2010-11 for the research work. It is collected from primary and secondary sources. The primary data is collected through the especially prepared questionnaires. Primary data regarding selected large and medium scale industries, small scale industries and khadi and village industries collected by visiting the different persons of the industries.

Secondary data is obtained from Socio-Economic Abstracts, District Statistical Abstract, District Census Handbooks, Gazetteers, Agricultural Epitomes, Season and Crop Reports published by the Department of Agriculture. It was not possible to collect the primary data in each case regarding the industrial units; therefore, secondary data is obtained from the Govt. Offices, District Industrial Centre, Currency and Finance Report etc.

The data thus collected through primary and secondary sources, are processed and presented by different statistical and cartographic techniques. For the study purpose chorographic and chorologic methodologies is adopted. These involve the distribution and interpretation of the regional patterns revealed through choropleth methods. Different research methods are applied for the research work.

Growth of Small Scale Industries in Yeotmal District:

In 1984-85 the investment in small scale units were only Rs. 58.29 lakh and it increased up to Rs. 690 lakh in 2010-11. Investment was constantly increased in the study region. The labour force of S.S.I. permanent units were increased from 102 to 680 during the period of twenty seven years. It means that labour force of permanent S.S.I. units increased during the period of investigation.

The Government industrial policy, motivation to the entrepreneurs by local and state Govt. infrastructural facilities provided by the Govt. these factors are responsible for the growth of permanent small scale units in the study region.

Table No. 1.1: Statement Showing the Growth of Small Scale Industries in Yeotmal District

Year	Number of Registered Units	Labour Force	Investment (lakh Rs.)
1984-85	35	102	58.29
1985-86	40	115	159
1986-87	51	233	217.05
1987-88	45	128	50.66
1988-89	28	210	156.11
1989-90	36	180	128.96
1990-91	44	364	87.95
1991-92	38	215	180.59
1992-93	44	345	110.4
1993-94	45	222	99.97
1994-95	35	563	180.35
1995-96	40	566	325.35
1996-97	45	435	364.15
1997-98	40	475	417.36
1998-99	48	510	422.25
1999-2000	52	429	279.7
2000-01	28	390	562.21
2001-02	57	512	217
2002-03	60	611	360
2003-04	33	905	941
2004-05	63	950	79
2005-06	60	386	947
2006-07	54	536	196.6
2007-08	106	318	952
2008-09	189	1651	843.65
2009-10	56	607	890
2010-11	89	680	690

Source: *DIC, Yeotmal.*

Provisional Small Scale Units in Study Area:

Table 1.2 gives us idea about the provisional S.S.I. units in the study region during 2011 there were 1055 units in the study region. These units will require 7127 labour forces.

Nearly Rs. 12236 lakh amount will be invested in these units. The total production capacity will be Rs. 4516 lakh.

Table No. 1.2: Provisional S.S.I. Units in Yeotmal District

As on August 2012

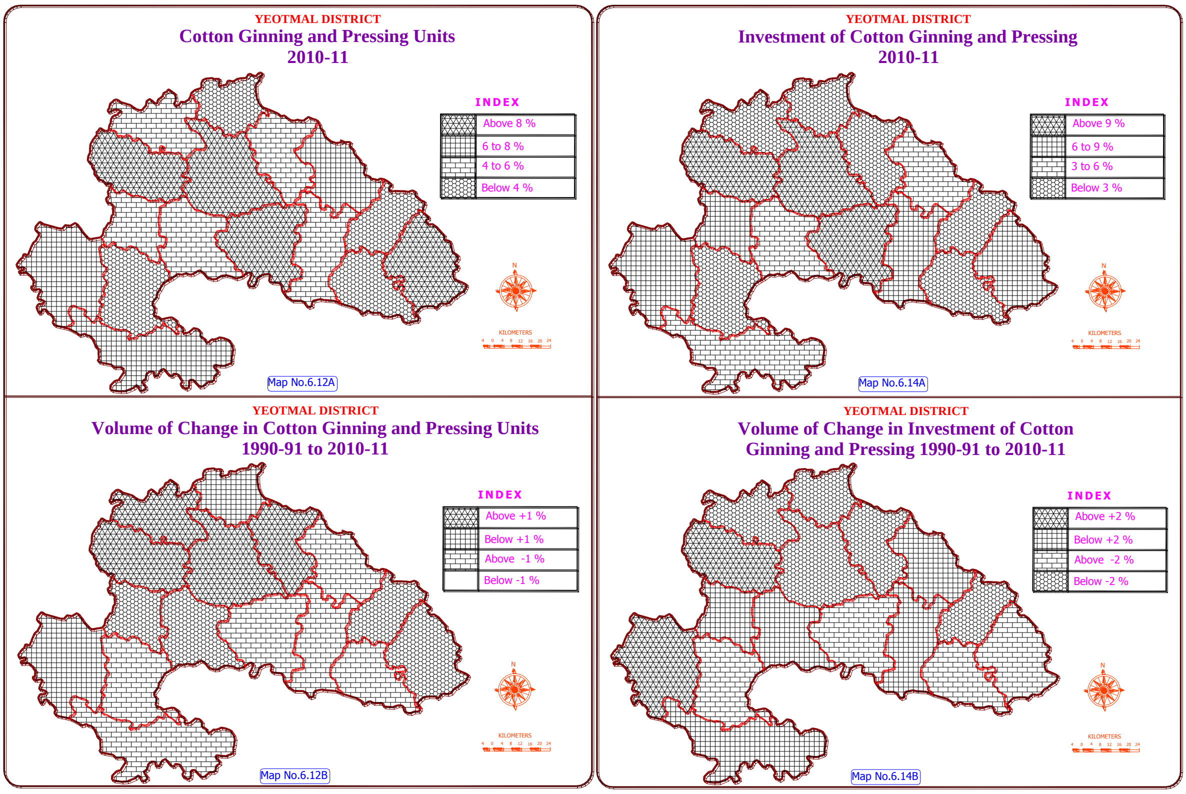
Sr. No.	Category of Industry	Number of Units	Labour Force	Investment (Rs. In lakh)	Production Capacity (Rs. in lakh)
1	Food and Beverages	344	3492	5709	2655
2	Textile	129	602	2352	333
3	Dressing and Dyeing of Fur	32	160	402	96
4	Leather	7	21	42	35
5	Forest Based	46	258	276	177
6	Electronics	15	75	48	41
7	Chemicals & Chemical based	18	62	127	71
8	Rubber & Plastic	39	145	214	115
9	Non-Metallic	39	243	741	199
10	Fabricated Metal	15	96	258	38
11	Electrical	19	107	149	62
12	Motor Vehicles	12	65	72	29
13	Recycling	39	148	208	103
14	Services	49	192	246	63
15	Land Transport	33	168	198	66
16	Health & Social	10	63	55	30
17	Cultural & Sporting	11	35	69	34
18	Others	198	1195	1070	369
Total		1055	7127	12236	4516

Source: *District Industrial Centre, Yeotmal.*

Out of the total units 32.60% units are food and beverages units. The percentage share of other units is 18.76%, textiles 12.22%, services 4.64%, forest based 4.36%, rubber, plastics, non metallic and recycling based 3.69%, land transport 3.12%, dressing and dyeing of fur based 3.03%, electrical 1.80%, chemical and chemical based 1.70%, electronics and fabricated metal 1.42%, motor vehicles 1.13%, Cultural and sporting based 1.04%, health and social 0.94% and leather units 0.66% nearly Rs. 12236 lakh will be invested in these provisional units. Out of the total investment nearly 46.64% done in food and beverages units whereas 19.22% investment will be done in textiles and 8.74% amount will be invested in other units. Remaining 25.4% amount will be invested in services, forest based, rubber, plastics, non metallic, recycling based, land transport, dressing and dyeing of fur based, electrical, chemical and chemical based, electronics and fabricated metal, motor vehicles, cultural and sporting based, health and social and leather based units in the study region. Generally these units are registered by the entrepreneurs to take loans from the various financial agencies not for the starting small scale units in the study area but for other purposes.

Cotton Ginning and Pressing Industries:

There were 36 cotton ginning and pressing industries units in Yeotmal district in 1980-81. Out of the units nearly 13.90 percent units were concentrated in Yeotmal tahsil in 1980-81. Out of the total units below 4 percent units were concentrated similarly in Ner, Babhulgaon, Kalamb, Mahagaon, Maregaon and Zarijamni tahsils, whereas 4 to 8 percent units was observed in Digras, Pusad, Arni and Kelapur tahsils. 8 to 10 percent units was found in Dharva, Umarkhed and Ralegaon tahsils, above 10 percent units were found similarly in Yeotmal, Ghatanji and Wani tahsils in 1980-81. Below 4 percent units were found in Babhulgaon, Mahagaon, Maregaon and Zarijamni tahsils whereas 4 to 6 percent units were observed in Ner, Kalamb, Digras, Arni and Kelapur tahsils while 6 to 8 percent units was noticed in Pusad, Umarkhed and Ralegaon tahsils. Above 8 percent units was found in Yeotmal, Dharva, Ghatanji and Wani tahsils during 2010-11 (Map No. 1.1 A). Cotton ginning and pressing industries are decreased in tahsils but their shares in district percentage increased or decreased in some tahsils therefore, positive and negative change occurred during the period of investigation. Below 1 percent negative change



was found in Digras, Arni, Maregaon and Wani tahsils while above 1 percent negative change in cotton ginning and pressing industries was observed in Umarkhed, Mahagaon, Ghatanji, Kelapur, Ralegaon and Zarijamni from 1980-81 to 2010-11. Above 1 percent positive change was recorded in Babhulgaon Pusad tahsils whereas below 1 percent positive change was noticed in Ner, Kalamb, Yeotmal and Dharva tahsils between 1980-81 and 2010-11 (Map No. 1.1 B).

Table 1.3 reveals that out of the total production capacity nearly 24.11 percent production capacity was observed in Yeotmal tahsil in 2010-11. Production capacity was increased in Yeotmal, Dharva, Pusad, Umarkhed, Arni and Wani tahsils and decreased in Digras, Ner, Babhulgaon, Kalamb, Mahagaon, Ghatanji, Kelapur, Ralegaon, Maregaon and Zarijamni tahsils. Below 2 percent production capacity of cotton ginning and pressing industries units was found in Ner, Kalamb, Mahagaon and Maregaon tahsils in 1980-81 whereas 2 to 4 percent production capacity of cotton ginning and pressing industries units was noticed in Babhulgaon and Zarijamni tahsils while 4 to 8 percent units was observed in Dharva, Digras, Pusad, Arni and Kelapur tahsils. Above 8 percent production capacity was recorded in Yeotmal, Ghatanji, Ralegaon, Umarkhed and Wani tahsils during 1980-81. Below 6 percent Production capacity of cotton ginning and pressing industries units was recorded in Ner, Babhulgaon, Kalamb, Mahagaon, Ghatanji, Kelapur, Ralegaon, Maregaon and Zarijamni tahsils in 2010-11 whereas about 6 to 12 percent production capacity was found in Digras, Pusad, Umarkhed and Arni tahsils. Above 12 percent production capacity was noticed in Yeotmal Dharva and Wani tahsils during 2010-11 (Map No. 1.2 A). Below 2 percent negative change in production capacity was recorded in Ner, Kalamb, Digras, Mahagaon and Maregaon tahsils on the other hand 2 to 4 percent negative change in production capacity was noticed in Babhulagoan and Zarijamni tahsils. Above 4 percent negative change in production capacity was found in Ghatanji, Kelapur and Ralegaon tahsils from 1980-81 to 2010-11. Below 5 percent positive change in production capacity was noticed in Pusad, Umarkhed and Arni tahsils while 5 to 10 percent positive changei n production capacity was observed in Yeotmal and Wani tahsils. Above 10 percent positive change in production capacity was found in Dharva tahsil between 1980-81 to 2010-11 (Map No. 1.2 B).

Table No. 1.3: Tahsilwise Distribution of Cotton Ginning and Pressing S.S.I. Units in Yeotmal District

Tahsil	Year	Number of Units	Production Capacity (Lakh)	Investment in Rs. Lakh	Labour Force
Ner	1980-81 2010-11 Vol.of Change in%	01 (2.77) 04 (4.34) +1.57%	06.00 (1.95) 20.00 (0.22) -1.73%	04.00 (3.25) 08.10 (1.78) -1.47%	05 (1.18) 30 (3.52) +2.34%
Babhulgaon	1980-81 2010-11 Vol.of Change in%	01 (2.77) 03 (3.26) +0.49%	08.00 (2.60) 18.00 (0.20) -2.4%	04.00 (3.25) 06.50 (1.43) -1.82%	10 (2.36) 15 (1.76) -0.6%
Kalamb	1980-81 2010-11 Vol.of Change in%	01 (2.77) 04 (4.34) +1.57%	06.00 (1.95) 22.00 (0.25) -1.7%	4.10 (3.33) 10.11 (2.22) -1.11%	12 (2.83) 20 (2.35) -0.48%
Yeotmal	1980-81 2010-11 Vol.of Change in%	05 (13.90) 15 (16.31) +2.41%	50.00 (16.26) 2120.5(24.11) +7.85%	25.11(20.50) 92.3 (20.29) -0.21%	80 (18.91) 210 (24.67) +5.76%
Dharva	1980-81 2010-11 Vol.of Change in%	03 (8.34) 12 (13.05) +4.71%	18.00 (5.85) 1980.72 (22.52) +16.67%	07.15 (5.82) 70.1 (15.41) +9.59%	30 (7.09) 120 (14.10) +7.31%
Digras	1980-81 2010-11 Vol.of Change in%	02 (5.55) 05 (5.43) -0.12%	24.00 (7.80) 615.10 (6.99) -0.81%	06.15 (5.01) 30.0 (6.59) +1.58%	10 (2.36) 40 (4.70) +2.34%
Pusad	1980-81 2010-11 Vol.of Change in%	02 (5.55) 06 (6.52) +0.97%	20.00 (6.50) 780.80 (8.88) +2.38%	06.25 (5.11) 35.15 (7.73) +2.62%	16 (3.79) 45 (5.28) +1.49%
Umarkhed	1980-81 2010-11 Vol.of Change in%	03 (8.34) 06 (6.52) -1.82%	25.00 (8.13) 1010.8 (11.50) +3.37%	03.50 (2.84) 18.45 (4.05) +1.21%	40 (9.46) 45 (5.28) -4.18%
Mahagaon	1980-81 2010-11 Vol.of Change in%	01 (2.77) 01 (1.08) -1.69%	06.00 (1.95) 08.00 (0.09) -1.86%	04.15 (3.37) 04.80 (1.05) -2.32%	08 (1.89) 16 (1.88) -0.01%
Arni	1980-81 2010-11 Vol.of Change in%	02 (5.55) 05 (5.43) -0.12%	15.00 (4.88) 720.0 (8.19) +3.31%	06.5 (5.31) 25.12 (5.52) +0.21%	12 (2.83) 25 (2.94) +0.11%
Ghatanji	1980-81 2010-11 Vol.of Change in%	04 (11.13) 08 (8.71) -2.42%	35.00 (11.38) 70.00 (0.80) -10.58%	20.0 (16.34) 60.5 (13.29) -3.05%	65 (15.37) 75 (8.82) -6.55%

Table contd…

Kelapur	1980-81 2010-11 Vol.of Change in%	02 (5.55) 04 (4.34) -1.21%	22.00 (7.15) 60.00 (0.68) -6.47%	06.70 (5.46) 30.1 (6.62) +1.16%	10 (2.37) 20 (2.36) -0.01%
Ralegaon	1980-81 2010-11 Vol.of Change in%	03 (8.34) 06 (6.52) -1.82%	28.00 (9.11) 18.00 (0.20) -8.91%	04.05 (3.66) 24.45 (5.37) +1.71%	45 (10.65) 75 (8.82) -1.83%
Maregaon	1980-81 2010-11 Vol.of Change in%	01 (2.77) 02 (2.18) -0.59%	06.00 (1.95) 24.0 (0.27) -1.98%	04.20 (3.41) 06.80 (1.50) -1.91%	12 (2.83) 18 (2.12) -0.71%
Zarijamni	1980-81 2010-11 Vol.of Change in%	01 (2.77) 01 (1.09) -1.68%	08.00 (2.60) 04.00 (0.04) -2.56%	04.30 (3.49) 04.90 (1.09) -2.4%	08 (1.89) 12 (1.41) -0.48%
Wani	1980-81 2010-11 Vol.of Change in%	04 (11.13) 10 (10.88) -0.25%	30.50 (9.92) 1320.0 (15.01) +5.09%	12.10 (9.85) 27.54 (6.06) -3.79%	60 (14.19) 85 (9.99) -4.2%
Total	1980-81 2010-11	36 (100) 92 (100)	307.5 (100) 8791.92(100)	122.26 (100) 454.92 (100)	423 (100) 851 (100)

Source: *DIC, Yeotmal.*

Problems of Cotton Ginning and Pressing Units:

About 80 percent entrepreneurs of selected units of cotton ginning and pressing units told that they are facing following problems.

That is Problem of raw material, Problem of Shortage of working capital, Price problem, Shortage of godowns etc. To solve the above problems the following remedies should be adopted. It is essential to develop percolation tanks in the study region so that yield of cotton will be increased in the area, Govt. of Maharashtra should be given more loans to the ginning and pressing units, It is necessary to increase the price of cotton in the market so that the farmers will get more prices of their goods, Every ginning and pressing unit is suffering from the shortage of godowns. Government of Maharashtra should construct more godowns so that pressing cotton will not damage.

Conclusions:

In the total production capacity nearly 58.79% share will came from food and beverages units. Remaining 41.21% production capacity will contributes from textiles, other units, services, forest based, rubber, plastics, non metallic, recycling based, land transport, dressing and dyeing of fur based, electrical, chemical and chemical based, electronics and fabricated metal, motor vehicles, cultural and sporting based, health and social and leather based units. Out of the total required labour force nearly 48.99% labour force was engaged in food and beverages, 16.76% labour forces are engaged in other units. Remaining 34.25% labour forces are engaged in services, forest based, rubber, plastics, non metallic, recycling based, land transport, dressing and dyeing of fur based, electrical, chemical and chemical based, electronics and fabricated metal, motor vehicles, cultural and sporting based, health and social and leather based units in 2012.

Out of total investment below 5 percent investment of cotton ginning and pressing industries was found in Ner, Babhulgaon, Kalamb, Umarkhed, Mahagaon, Ralegaon, Maregaon and Zarijamni tahsils, 5 to 10 percent investment of cotton ginning and pressing industries was observed in Dharva, Digras, Pusad, Arni, Kelapur and Wani tahsils. Above 10 percent investment of cotton ginning and pressing industries was noticed in Yeotmal and Ghatanji tahsils in 1980-81. Below 2 percent positive changes in cotton ginning and pressing industries investment was noticed in Digras, Umarkhed, Arni, Kelapur and Ralegaon tahsils whereas above 2 percent positive changes in cotton ginning and pressing industries investment was recorded in Dharva and Pusad tahsils between 1980-81 to 2010-11.

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APPLICATION METHOD OF RESEARCH IN SOCIO-ECONOMIC TRANSFORMATION

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Introduction:

Geography is concerned with the arrangement of things on the surface of the earth. It is one of the fields, interested in man's use of space and natural resources. It examine the bonds between man, culture and land form a comparative regional view point and can initially be approached from the natural (Earth Science) and cultural (Social Science and Humanities) side. Geographers contend that human societies can be fully understood only if their behavior and activities are examined against the background of space they occupy, their situation (Relative location in terms of both natural and cultural patterns) and present prospective resources and resistance facing them.Economic Geography is concerned with the distribution of man's productive activities over the surface of the earth. These activities we commonly divide into three kinds, primary activities are those which obtain simple commodities or raw materials form the soil, sea and rocks. They are agriculture, forestry, fishing, mining etc. These goods are then manufactured processed or fabricated in factories and workshops. This constitutes the secondary group of activities. It rarely happens, however, that a manufacturing process can be completed without making use of transportation services, insurance agents, brokers and dealers. These services constitute tertiary activities. Social Geography can be defined as identification of different regions of the earth surface according to association of social phenomena related to total environment. It is a study of patterns and processes in understanding socially defined population in spatial setting. It is a study of areal pattern and functional relations of social groups in the context of their social environment.

Choice of the Region:

For the study of Geographical Analysis of Socio-Economic Transformation, Latur District is selected as a study region. The district of Latur lies between $17^{0}12'$ to $18^{0}50'$ north latitudes and $76^{0}12'$ to $77^{0}18'$ east longitudes. It is surrounded by Beed and Parbhani district in the north, Nanded district in the north-east, Karnataka state in the south-east and Osmanabad district in the west and north-west.TheLatur district has an area of 7,157 sq.km. and population 24,55,543 as per 2011 census. Out of the total population of the district 74.53 percent lives in rural areas while 25.47 percent lives in urban areas. There is a spatial variation in the socio-economic development in the study region. Economy of the study region is mainly based on agriculture and agro-based industries.

Out of the total working population 54.80 percent population in the study region is working in primary activities. Region has the limited irrigation facilities through wells, tube wells and canals. The percentage of gross irrigated area to gross cropped area is 17 percent (2009-10), percentage of irrigated area varies from tahsil to tahsil, which ultimately effect on the development of agriculture in the study region. Region has not best but good accessibility for market through transportation and communication network. Region has also noticed the disparity in the development of social amenities. Such types of imbalances in the socio-economic transformation lead to research scholar to select the topic and region for investigation.

Objectives of the Study:

To study the levels of socio-economic development in the study region and causes behind the regional disparity in the development.

Database and Methodology:

Success of the research work depends upon the methodology adopted for the study. For the present study data is collected through primary and secondary sources. Primary data is obtained by preparing objective based interview schedule and questionnaire. Secondary data is obtained from socio-economic reviews of the district, district census handbook, gazetteer, reports of the ZillaParishad and PanchayatSamiti, web site etc.The data thus collected through primary and secondary sources are classified, tabulated and analyzed by using various statistical techniques and presented by using appropriate cartographic methods.

In the present study various methods and techniques have been used. However, it is not appropriate here to give all details. The details regarding various methods and techniques are discussed in the thesis at appropriate places. For the purpose of survey work stratified sampling technique is used.

To determine levels of socio-economic development in the study region indices are selected. The selection of indices is of paramount significance in this respect. The indicators selected should clearly reflect the socio-economic picture of the component areal unit of the study area. The tahsils have been awarded proportionate weights on the basis of the data of the indicators.

The lowest value of *i* indicator in the tahsils X_1, X_2, X_3.... X_n (say in X_5) has been awarded the score of 1. The weights of i indicator in remaining tahsils have been determined on the basis of the following formula:

$$Wix_1 = \frac{\mathrm{i}\,x_1}{\mathrm{i}\,x_5}$$

Where,

ix_1 = weight of i indicator in tahsil x_1

ix_1 = numerical value of i indicator in tahsil x_1

ix_5 = numerical value of i indicator in tahsil x_5

On the basis of the above formula, the weights of all the indicators in each tahsil have been computed and then composite scores have been obtained for all tahsils on the basis of the following formula:

$$Cx_1 = W_1X_1 + W_2X_1 + \dots\dots\dots + W_nX_1$$

Where, CX_1 = composite score of tahsil X_1

Composite Scores of Socio-Economic Development:

To determine the levels of socio-economic development in the study region composite scores of economic and social indicators are combined together and total composite score for each tahsil is calculated and shown in the table.

The composite scores of all tahsils in the study region have been arranged in the descending and on the basis of break in the progression of the scores of the tahsils have been grouped into five levels of socio-economic development as follows:

i) Areas of Very High Development
ii) Areas of High Development
iii) Areas of Medium Development
iv) Areas of Low Development
v) Areas of Very Low Development

Composite Scores of Economic Indicators of Tahsils

Sr. No.	Tahsil	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	Composite Score
1	Latur	1.08	1.08	2.85	1	1.39	23.82	2.36	3.36	5.96	28.79	1	1.01	1	1	13.17	3.00	19.31	3.97	120.58	23.12	53.23	312.08
2	Renapur	1.16	1.01	2.10	3.30	1.22	7	1.45	1.73	3.24	4.84	1.27	1.10	1.75	1.61	2.21	2.00	1.37	2.29	34.48	2.29	2.48	79.9
3	Ahmadpur	1.09	1.22	1.42	2.23	1.68	5.13	1.18	2.76	3.65	4.06	1.19	1.04	1.65	1.81	3.49	2.59	2.68	1	11.65	5.18	2.52	59.22
4	Ausa	1.11	1.06	1.40	2.72	1	13.67	1	3.56	6.60	5.68	1.25	1.08	1.74	2.55	4.08	2.81	2.50	1.70	51.49	5.48	3.47	115.9
5	Nilanga	1.12	1.07	2.33	2.15	1.32	11.36	1.72	3.42	9.14	30	1.24	1.09	1.69	1.98	4.76	3.70	2.32	1.44	47.04	5.41	3.67	137.97
6	Udgir	1.17	1.09	1.34	1.23	1.52	11.93	2.27	2.39	3.48	3.53	1.08	1	1.34	1.53	3.91	2.25	4.44	1.32	14.48	5.53	10.73	77.56
7	Chakur	1.10	1.13	1.64	2.41	1.94	3.75	1.27	2.27	1	1.45	1.28	1.08	1.83	2.28	1.87	1.59	1.67	1.20	16.96	3.12	2.30	53.14
8	Jalkot	1	1	1	2.06	1.36	1	1.09	1.47	1.76	1	1.17	1.04	1.56	2.51	1.14	1.33	1	1.76	1	1	1	27.25
9	Shirur A.	1.08	1.08	1.46	2.54	1.43	6.86	1.69	1	1.76	1.05	1.30	1.05	1.88	2.15	1	1	.43	3.31	27.63	1.02	2.20	63.92
10	Deoni	1.00	1.10	1.71	2.41	1.33	4.87	1.81	1.14	3.18	3.53	1.30	1.10	1.86	2.50	1.42	1.29	1.02	2.31	20.41	1.44	1.49	58.22

Source: *Compiled by the Researcher.*

Composite Scores of Social Indicators of Tahsils

Sr. No.	Tahsil	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Composite Score
1	Latur	2.79	10.97	1.08	1.04	1.14	1	2.34	1	2.74	1.43	3.93	1	2.0	6.33	5.09	1	19.77	3.5	15.25	1.5	6.25	1.30	14.31	1.24	108
2	Renapur	1.05	--	1.00	1	1.01	1.38	1.17	1.12	1.11	1.33	1.31	3.01	2.05	1	1.72	1.50	1	1.67	1.75	1	2.93	1.76	2.75	1.08	34.7
3	Ahmadpur	1.23	1.21	1.03	1.03	1.05	1.59	1.65	1.37	1.67	1.67	2.03	1.81	1.47	3.42	2.36	1.26	1.81	1.52	4.5	1.6	4.83	1.43	6.81	1.10	49.45
4	Ausa	1	1	1.01	1.00	1.03	1.17	1	1	1	1	1	1.93	2.11	1.54	4.72	1.10	3.44	1.37	3.12	1.8	3.70	1.34	5.29	1.03	43.7
5	Nilanga	1.26	1.00	1.01	1.01	1.02	1.23	1.31	1.11	1.39	1.00	1.25	1.84	1	2.48	2.90	1.75	3.09	1.32	3.68	1.7	1.50	1.37	5.09	1.01	41.32
6	Udgir	1.62	3.10	1.07	1.04	1.11	1.38	1.88	1.39	2.22	1.27	2.02	1.37	--	6.16	3.54	1.43	4.88	2.78	10.75	1.8	1	1.27	5.02	1.00	59.1
7	Chakur	1.08	--	1.02	1.01	1.04	1.58	1.470	1.5	1.56	1.06	1.10	1.44	1.64	2.29	2.36	1.60	1.49	1.17	3.5	1.3	1.73	2.27	4.25	1	38.39
8	Jalkot	1.02	--	1	1.00	1	1.53	1.30	1.53	1.52	1.78	1.76	1.96	3.35	1.94	1	1.54	1.28	1	1	1.3	1.91	1	1	1.02	32.74
9	Shirur A.	1.03	--	1.02	1.02	1.04	1.39	1.21	1.27	1.30	2.06	2.10	2.05	--	2.23	1	1.43	1.27	2.23	3.0	2.0	1.24	1.07	1.31	1.20	33.47
10	Deoni	1.04	--	1.00	1.01	1.02	1.41	1.08	1.80	1.63	2.29	2.06	1.75	3.0	2.91	1.54	1.91	1.25	1.47	1.93	1	1.05	1.24	1.5	1.17	36.06

Source: *Compiled by the Researcher.*

Composite Scores of Economic and Social Indicators of the Tahsils

Sr. No.	Tahsils	Composite Score of Economic Indicators	Composite Score of Social Indicators	WiX_1
1	Latur	312.08	108	420.08
2	Renapur	79.9	34.7	114.6
3	Ahmadpur	59.22	49.45	108.67
4	Ausa	15.9	43.7	159.6
5	Nilanga	137.97	41.32	179.29
6	Udgir	77.56	59.1	136.66
7	Chakur	53.14	38.39	91.53
8	Jalkot	27.25	32.74	59.99
9	Shirur A.	63.92	33.47	97.39
10	Deoni	58.22	36.06	94.28

Source: *Compiled by the Researcher.*

Descending Order of Composite Scores of the Tahsils

Sr. No.	Tahsils	Composite Score
1	Latur	420.08
2	Renapur	114.6
3	Ahmadpur	108.67
4	Ausa	159.6
5	Nilanga	179.29
6	Udgir	136.66
7	Chakur	91.53
8	Jalkot	59.99
9	Shirur A.	97.39
10	Deoni	94.28

Source: *Compiled by the Researcher.*

To distinguish the role of the indicators operating behind the existing status of socio-economic development of the tahsils, the weights of all the indicators have been arranged in descending order and Q1 has been determined. The weights of the indicators in the tahsils above Q1 have been treated as dominant ones responsible for the existing status of socio-economic development.

Summary

From the above discussion, it is apparent that the disparities in socio-economic development are very marked within the district. This situation is not conducive to proper development of the district. a majority of tahsils (Jalkot, ShirurAnantpal, Deoni and Chakur) require immediate attention.

Spatial analysis of the levels of socio-economic development clearly indicates that only 14 percent area of the study region comes under relatively very high development area, 32.30 percent area comes under relatively high development area, 29.59 percent area comes under medium development area, 19.28 percent area comes under low development area and 4.83 percent area comes under very low development area. Area under low socio-economic development is about 25 percent. To devoid the spatial disparity in the socio-economic development special attention of govt. and non-govt. agencies is essential. As the economy of the region has agrarian base priority in developmental process should be given to agricultural sector through modern measures. Social development automatically takes place in association with the economic development.

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"POPULATION GROWTH AND DENSITY OF KOLHAPUR DISTRICT: A GEOGRAPHICAL ANALYSIS"

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1. Introduction:

Kolhapur is progressive district almost in all the walks of life religion, politic, social, industrial, natural, education, population and tourism etc. A study of characteristics of population is an important aspect of population. The study of population, among other things attempts to answer the question: What kinds of people are found in given population and how do those in one group differ from these in another (Thompson, 1953). The study of the characteristics of population known as the study of composition of population covers certain personal, social and economic attributes of population like age, sex, density, race, literacy, educational attainment, occupation, nationality, religion, language, marital status, income, etc. The present study focused on components of population growth and density in Kolhapur district.

2. Study Region:

The area undertaken for the present study is Kolhapur district that lies in south-western part of Maharashtra state. The average altitude of Kolhapur district is 650 meter. It extends between 15^{o} 43 ^{È} North to 17^{o} 10 ^{È} North latitudes and 73^{0} 40^{È} to 74^{o} 42^{È} East longitudes having dry summer and moderately cool winter. Its total geographical area is 7685 sq.Kms. covering 2.5 Percent area of Maharashtra State, and population according to 2011 census is 38, 76,001 people residing in 1203 village of 12 tehsils.

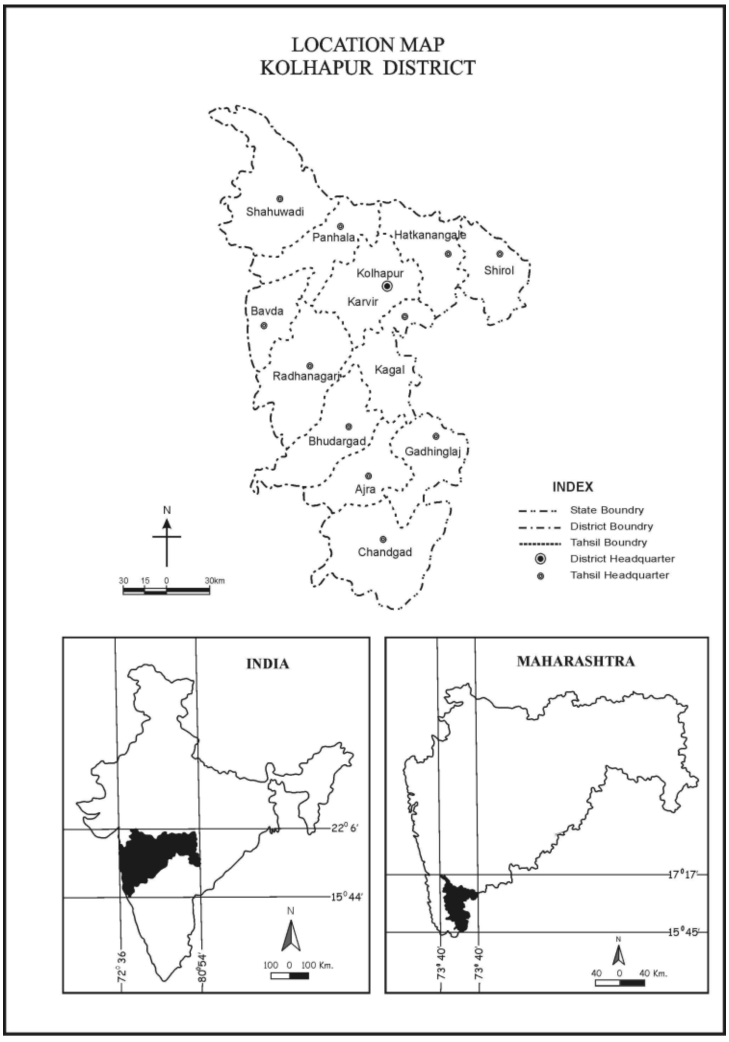

Fig. 1

3. Objectives:

The main aim of this study is to analyze the tahsil–wise population growth and density of Kolhapur district during 2001 to 2011.

4. Database and Methodology:

The study is based on secondary data collected tehsilwise from census of India reports of 2001 and 2011. The relevant information and data have been organized, classified, tabulated, and using suitable techniques and methods for the comparative study of 2001 and 2011.

5. Growth of Population:

Table No. 1

Tahsilwise Growth of Population in Kolhapur District

Sr. No.	Name of Tahsil	Population		Actual Growth	Growth Percentage
		2001	2011		
1	Karvir	906866	1037713	130847	12.60
2	Panhala	238383	259417	21034	08.10
3	Hatkanangale	709628	807751	90123	11.15
4	Shirol	359179	391015	31836	08.14
5	Kagal	248237	275372	27135	09.85
6	Gadhinglaj	216257	225734	9477	04.19
7	Chandgad	180781	187220	6439	01.83
8	Ajara	121436	120265	-1171	-0.97
9	Bhudargad	144910	150368	5458	03.62
10	Radhanagari	188107	199713	11606	05.81
11	Ganganbavada	32525	35772	3247	09.07
12	Shahuwadi	176859	185661	8802	04.47
	Total	2989507	3876001	886494	22.87

Source: Census of India 2001 & 2011

Since the study region is one of the fastest developing region in India, there considerable growth in the population during 2001 to 2011. It is observed that Karvir tahsil experienced highest growth rate (12.60%) followed by Hatanangale, (11.15%) during the last decade. This is due to high industrial development in Kolhapur and Ichalkaranji cities that kagal (9.85%), Ganganbavada (9.07%) Shirol (8.15%), Panhala (8.10%) experienced moderate growth rate in their population. These tahsils have, undergo a sizeable industrial growth during the last decade. Other tahsils experienced comparatively low population growth due to their unfavorable physiography, less irrigation facilities and lack of industrial development. The Ajara tahsil (-0.97%) decreased population in decade(2001 to 2011).

6. Density of Population:

Table No. 2

Tahsilwise Density of Population in Kolhapur District

Sr. No.	Name of Tahsil	Density(per sq Kms)		Decade Growth
		2001	2011	
1	Karvir	1354	1549	195
2	Panhala	419	456	37
3	Hatkanangale	1154	1315	161
4	Shirol	714	777	63
5	Kagal	454	503	49
6	Gadhinglaj	450	469	19
7	Chandgad	190	197	07
8	Ajara	221	219	-02
9	Bhudargad	225	234	09
10	Radhanagari	211	224	13
11	Ganganbavada	115	127	12
12	Shahuwadi	169	178	09

Source: Census of India 2001 & 2011

Density of population helps in understanding nature of distribution of population. It is useful several other ways e.g. If in a region natural factors are favorable and density of population is desirable, then it is easier to implement the development schemes it also indicates nature of balance between population of the region and its natural resources. Density of population is more than what the natural resources of the region can support, then such a situation encourages migration.

Highest density of population recorded in Karvir (195) tahsil in 2001 and 2011 census. It is followed by Hatkananagale, Shirol tahsils during both the census years. The actual growth in density of population is highly recorded in karvir tahsil. This growth in density of population is followed by Hatkananagale (161), Shirol (63) Kagal (49) and Panhala (37). The high growth of population in the above tehsils is due to industrial development and commercial farming (Sugarcane Farming). Other tahsils did not record more growth in density of population due to lack of industrial development and less development in sugarcane cultivation.

7. Conclusion:

As the foregoing description and analysis have shown considerable amount of progress in demographic characteristic in Kolhapur district, the district Kolhapur has made much progress in agricultural sector during the last decade. The development in cash crops like sugarcane, soyabean and different vegetables has become responsible for overall development of the people in Kolhapur district. This has brought a far reaching social economic and cultural transformation on Kolhapur district.

There is a high rate of growth of population in the study area and density of population in most of the tahsil is higher than the national average 2011. The population growth rate in last decade is 0.95 Percent. This shows that the area has acquired higher pace of economic development.

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"ENVIRONMENTAL PROBLEMS & AGRICULTURAL DEVELOPMENT IN INDIA"

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Introduction:-

The environmental impact of agriculture varies on the wide variety of agricultural practices employed around the world. Ultimately, the environmental impact depends on the production practices of the system used by farmers. The connection between emissions into the environment and the farming system is indirect, as it also depends on other climate variables such as rainfall and temperature.

There are two types of indicators of environmental impact: "means-based", which is based on the farmer's production methods, and "effect-based", which is the impact that farming methods have on the farming system or on emissions to the environment. An example of a means-based indicator would be the quality of groundwater that is affected by the amount of nitrogen applied to the soil. An indicator reflecting the loss of nitrate to groundwater would be effect-based.

The environmental impact of agriculture involves a variety of factors from the soil, to water, air, animal and soil diversity, people, plants, and the food itself. Some of the environmental issues that are related to agriculture are climate change, deforestation, genetic engineering, irrigation problems, pollutants, soil degradation, and waste.

Climate change:-

Climate change and agriculture are interrelated processes, both of which take place on a worldwide scale. Global warming is projected to have significant impact on conditions affecting agriculture, including temperature, precipitation and glacial run-off. These conditions determine the carrying capacity of the biosphere to produce enough food for the human population and domestic animals. Rising carbon dioxide levels would also have effects, both detrimental and beneficial, on crop yields. Assessment of the effects of global climate changes on agriculture might help to properly anticipate and adapt farming to maximize agricultural production. Although the net impact of climate change on agricultural production is uncertain it is likely that it will shift the suitable growing zones for individual crops. Adjustment to this geographical shift will involve considerable economic costs and social impacts.

At the same time, agriculture has been shown to produce significant effects on climate change, primarily through the production and release of greenhouse gases such as carbon dioxide, methane, and nitrous oxide. In addition, agriculture that practices tillage, fertilization, and pesticide application also releases ammonia, nitrate, phosphorus, and many other pesticides that affect air, water, and soil quality, as well as biodiversity. Agriculture also alters the earth's land cover, which can change its ability to absorb or reflect heat and light, thus contributing to degradation of its quality. Land use change such as deforestation and desertification, together with use of fossil fuels, are the major anthropogenic sources of carbon dioxide. Agriculture itself is the major contributor to increasing methane and nitrous oxide concentrations in earth's atmosphere.

Deforestation:-

Deforestation is clearing the Earth's forests on a large scale worldwide and resulting in many land damages. One of the causes of deforestation is to clear land for pasture or crops. According to British environmentalist Norman Myers, 5% of deforestation is due to cattle ranching, 19% due to over-heavy logging, 22% due to the growing sector of palm oil plantations, and 54% due to slash-and-burn farming.

Deforestation causes the loss of habitat for millions of species, and is also a driver of climate change. Trees act as a carbon sink: that is, they absorb carbon dioxide, an unwanted greenhouse gas, out of the atmosphere. Removing trees releases carbon dioxide into the atmosphere and leaves behind fewer trees to absorb the increasing amount of carbon dioxide in the air. In this way, deforestation exacerbates climate change. When trees are removed from forests, the soils tend to dry out because there is no longer shade, and there are not enough trees to assist in the water cycle by returning water vapor back to the environment. With no trees, landscapes that were once forests can potentially become barren deserts. The removal of trees also causes extreme fluctuations in temperature.

Genetic engineering:-

Genetically engineered crops are herbicide-tolerant, and their overuse has created herbicide resistant "super weeds", which may ultimately increase the use of herbicides. Seed contamination is another problem of genetic engineering; it can occur from wind or bee pollination that is blown from genetically-engineered crops to normal crops. About 50% of corn and soybean samples and more than 80% of canola samples were found to be contaminated by Monsanto's (genetic engineering company) genes. This accidental contamination can cause organic farmers to lose a lot of money because they need to recall their products. There are various cases of this such as in the corn and alfalfa industry.

Irrigation:-

Among some of these problems is the depletion of underground aquifers through over drafting. Soil can be over-irrigated because of poor distribution, uniformity or management, waste water, chemicals, and may lead to water pollution. Over-irrigation can cause deep drainage from rising water tables that can lead to problems of irrigation salinity requiring control by some form of subsurface land drainage. However, if the soil is under irrigated, it gives poor soil salinity control which leads to increased soil salinity with consequent buildup of toxic salts on soil surface in areas with high evaporation. This requires either leaching to remove these salts and a method of drainage to carry the salts away. Irrigation with saline or high-sodium water may damage soil structure owing to the formation of alkaline soil.

Pollutants:-

Synthetic pesticides are the most widespread method of controlling pests in agriculture. Pesticides can leak through the soil and enter the groundwater, as well as linger in food products and result in death in humans. Pesticides can also kill non-target plants, birds, fish and other wildlife. A wide range of agricultural chemicals are used and some become pollutants through use, misuse, or ignorance. Pollutants from agriculture have a huge effect on water quality. Agricultural nonpoint source (NPS) solution impacts lakes, rivers, wetlands, estuaries, and groundwater. Agricultural NPS can be caused by poorly managed animal feeding operations, overgrazing, ploughing, fertilizer, and improper, excessive, or badly timed use of Pesticides. Pollutants from farming include sediments, nutrients, pathogens, pesticides, metals, and salts.

Soil Degradation:-

Soil degradation is the decline in soil quality that can be a result of many factors, especially from agriculture. Soils hold the majority of the world's biodiversity, and healthy soils are essential for food production and an adequate water supply. Common attributes of soil degradation can be salting, water logging, compaction, pesticide contamination and decline in soil structure quality, loss of fertility, changes in soil acidity, alkalinity, salinity, and erosion. Soil degradation also has a huge impact on biological degradation, which affects the microbial community of the soil and can alter nutrient cycling, pest and disease control, and chemical transformation properties of the soil.

Waste:-

Plastic culture is the use of plastic mulch in agriculture. Farmers use plastic sheets as mulch to cover 50-70% of the soil and allow them to use drip irrigation systems to have better control over soil nutrients and moisture. Rain is not required in this system, and farms that use plastic culture are built to encourage the fastest runoff of rain. The use of pesticides with plastic culture allows pesticides to be transported easier in the surface runoff towards wetlands or tidal creeks. The runoff from pesticides and chemicals in the plastic can cause serious deformations and death in shellfish as the runoff carries the chemicals towards the oceans.

In addition to the increased runoff that results from plastic culture, there is also the problem of the increased amount of waste form the plastic mulch itself. The use of plastic mulch for vegetables, strawberries, and other row and orchard crops exceeds 110 million pounds annually in the United States. Most plastic ends up in the landfill, although there are other disposal options such as disking mulches into the soil, on-site burying, on-site storage, reuse, recycling, and incineration. The incineration and recycling options are complicated by the variety of the types of plastics that are used and by the geographic dispersal of the plastics. Plastics also contain stabilizers and dyes as well as heavy metals, which limits the amount of products that can be recycled. Research is continually being conducted on creating biodegradable or photodegradable mulches. While there has been minor success with this, there is also the problem of how long the plastic takes to degrade, as many biodegradable products take a long time to break down.

Sustainable agriculture:-

The exponential population increase in recent decades has increased the practice of agricultural land conversion to meet demand for food which in turn has increased the effects on the environment. The global population is still increasing and will eventually stabilize, as some critics doubt that food production, due to lower yields from global warming, can support the global population.

Organic farming is a multifaceted sustainable agriculture set of practices that can have a lower impact on the environment at the small scale. However in most cases organic farming results in lower yields in terms of production per unit area and per unit of irrigation water. Therefore, widespread adoption of organic agriculture will require additional land to be cleared and water resources extracted to meet the same level of production.

Conclusion:-

Now a day's agriculture is getting more dependent on use of fertilizers and genetically improved seeds and artificial irrigation systems resulting in environmental degradation. It is a challenge to protect natural environment while using modern technology in agriculture. As it is our duty to protect the natural resources carefully sustainable agricultural practices should be adopted. It is necessary to create awareness about the environment as agricultural practices are impossible without environmental protection.

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PROBLEMS OF GREENHOUSE FARMING IN KOLHAPUR DISTRICT

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ABSTRACT

Kolhapur district of South Maharashtra has emerged out as the progressive district for construction of greenhouses. Kolhapur district in Maharashtra has also emerged as a major flower-growing area. The Ghodawat Agro and Shrivardhan Biotech in the Shirol and Hatkanangale tahsil, accounts for a largest of gerbera flowers exports from India. Kolhapur, Pune, Nashik and Ahmednagar are the largest flower producer district in Maharashtra, at present Kolhapur district 222 greenhouse units operating.

Greenhouse farming is of a huge investment agricultural technique for development of farmers. The average cost of construction of (20 x 28) 560 sq. meters area of greenhouse open vent poly house (OVPH) is of Rs.5,23,600/- and greenhouse (CCPH) 1008 (28x34) is of Rs.14,19,264/- construction of Greenhouse climate control poly house is highly impossible to small and ordinary farmers in the district.

The greenhouse cultivation is constantly changing new technologies are designed to improve crop yields and solve problems that occur commonly in controlled environments, resulting in increased costs and hours of work required.

The continuous non availability of transport facility, the bad roads and the ignorance of the marketing conditions of the products agriculturalist kept them adversely affected.Most of the farmers who wish to construct greenhouse do not know the idea about the media used for management. There is lack of technical information about bed, soil, (pH), water (EC) testing, water soluble fertilizers, and water management use of pesticides.

The researcher has tried to express the views of greenhouse holders regarding their problems of greenhouse farming in the district.

In this research paper an attempt is made what are the problems and challenges of greenhouse farming in Kolhapur district. The research paper mainly covers theoretical as well as practical. It is observed during the field work which type of problems in greenhouse farming have been studied in this research paper and what are the challenges, opportunity in greenhouse farming has also been studied.

KEY WORDS: Greenhouse Technology, Huge Investment, Pest, Diseases, VAT

INTRODUCTION

Since 1991, India has accepted new economic policy for overall development of a country. This policy has been introduced for agricultural and industrial development. While developing industrial sector we will have to develop agriculture sector. New Economic policy emphasizes production and marketing of agricultural and industrial commodities. The basic three features of new economic policy areas, Globalization, Privatization and Liberalization.

Greenhouse technology is a recent developed technology in India. This technique is useful for increasing agricultural and horticultural production within the small size of land. Most of the developed countries have made their economic progress by adopting this newly developed technique. India has accepted this technique since 1991 on large scale. The state like Karnataka, Maharashtra, Kerala, Panjab, Hariyana and Delhi has made considerable progress in respect of greenhouse farming. On the contrary we will have to consider the problems arising in India in respect of developing this technique in Indian climate.

We have been facing the problem of balance trade and payment since last from 1980, New Economic Policy has been adopted for achieving the goals of trade and economic development of India. Since the announcement of new economic policy greenhouse technology has been developed in India on large scale. This new technique is useful for increasing the level of income of the small as well as medium farmers in India, because the Indian farmer's economic condition is not good. Greenhouse technology has a great capacity to solve the problems before a nation. It generates employment, income and foreign trade (expert) with the help of greenhouse produce; we can increase the foreign capital. We can develop our agriculture by adopting this new technique and participated in global trade war which arises before us since 1991. We can produce qualitative products particularly in flowers (Gerbera, Carnation and Rose) as compared to the developed countries like Israel, Japan, China, and Holland, Denmark in greenhouse farming.

The cost of cultivation of poly house in India is less as compared to the developed countries. The Indian climate is favourable for the greenhouse farming. We can produce flowers vegetables, nurseries and medicinal plants in greenhouse. So greenhouse farming is a way to take benefits from international market and make economically sound position of India.

This new Agricultural Technology can solve the problem of unemployment, suicide of farmers, and scarcity of food problem. Scarcity of vegetables and foreign exchange, less productivity of agricultural sector with the help of this technique and other so many benefits by adopting and developing this new agricultural technology. We can solve the economic crisis of rural economy by develop this technology in agricultural sector in all over the India.

Greenhouse farming has been developed in India from 1991. This is the high investment technique of agricultural development. When we accept this technology within India, we must have to consider the basic features of our economy such as low per capita income, illiteracy of farmers, the problem of finance for greenhouse construction, Government policy for agricultural development.

In this connection researcher expressed some of the problems which arise before us while developing this agricultural technology on the major problems of greenhouse in Kolhapur district.

OBJECTIVES OF THE STUDY

The present research paper incorporates the following objections.

1) To assess the problems of greenhouse farming in the study area.
2) To study the problems of non-operating greenhouses in the study area.

STUDY AREA

Kolhapur district is one of the most agriculturally developed districts in the country. The location of Kolhapur district is 15^0 43 North to 17 ^{0} 17 North latitudes and 73^0 40 East 42^0 14 East longitude. The total Geographical area of Kolhapur district is 7,685 Sq. Kms. The maximum temperature of Kolhapur district is 35^0 c and the minimum is $14.^0$c an average rainfall of the district is 1,138.5 mm.

According to census 2011 the total population of the Kolhapur district is 38,76,001 out of them 19,80,658 is male population and female population is 18,95,343. The area under irrigation is Kolhapur district is 1,21,831 hectares. The main river in the district is Panchganga. Kolhapur district population constituted 3.64 percent of the total Maharashtra Population

DATA BASE

The present research paper is based on primary and secondary sources of data. The primary data is collected through intensive field work with the help of interviews and discussions with the farmers and relevant persons and authorities.

The secondary sources of data were collected from the district agriculture office and state Census Reports and Statistical Abstracts, District Gazetteers and some unpublished records.

METHODOLOGY

The collected data from different sources were processed and represented by employing different statistical techniques. The uses of statistical and quantitative techniques have been made wherever necessary. The investigator has also attempted frequent discussions with the rose greenhouse farmers and relevant authorities. This method too, proved the best in strengthening and confirming the collected information.

PROBLEMS OF GREENHOUSE TECHNOLOGY

The greenhouse technology is however facing some problems which have been recorded during field work with the farmers. They could be summarized as follows,

1) The qualitative product from greenhouse and its high cost of production always require specific market where, it receives substantial prices. These markets are few in number and they are located far from the region of production.

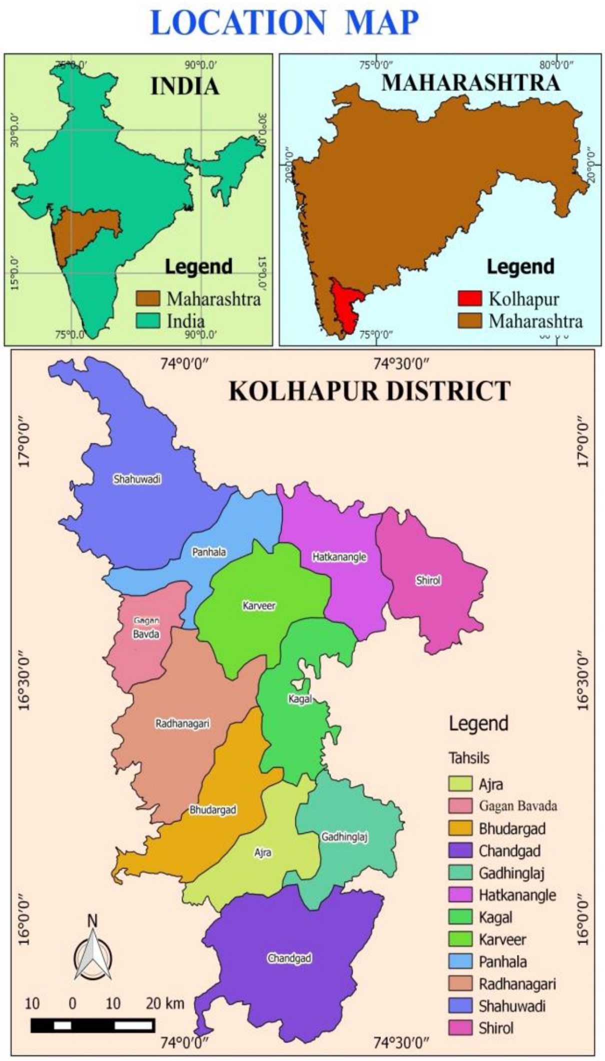

Fig.1.1

2) In foreign markets there is always fear of rejecting the produce because specifications required are not met by our farmers. When agricultural produce is rejected it leads to heavy loss of farmers.

3) Price fluctuations and overall declining trends of market prices have resulted into considerable monetary loss of farmers. Many times the amount received by them is not sufficient to compensate the cost of production.

4) From the viewpoint of electricity consumption Hi-Tech type greenhouse are considered equal to that of industry. Therefore, rates of industries are charged to these greenhouses. As a result, the cost of productions has been increased considerably.
5) In general, the common cultivators suffer from the lack of proper information and scientific knowledge regarding various factors like greenhouse construction, use of materials, marketing, availability of tissue cultured plants, financial facilities, government subsidies, other incentives and lack of knowledge and training.
6) Stable market facilities, with an assured price level, quick and efficient transportation and communication facilities with foreign market outlet s is essential to stabilize such emerging farm technology.
7) Disease and pest problems are the main problem of greenhouse farming in the study area.

A) Pest

- White fly, mites, aphides and psychological disorder, leaf folding, pseudo flower, twins flower, scape pitting or cracking and stalk bending. (See photo plate-I, II)
- Aphids: Because deformed leaves excrete some substance on which fungus develops.
- Whitefly: occurs when climate is hot and dry cause damage leaves.
- Leaf Miner: white specks on leaves caused by files, white tunnels in leaves caused by larvae which stay soil.
- Mites: Older leaves are curled up. Younger one being deformed and leathery, deformed flowers or it petals are missing.
- Thrips: causes white specks or stripes on ray flowers; flower heads may be deformed. Silvery, grayish spots on leaves; Brown spots on leaf petioles, midvein.
- Crown Rot: caused by phytophthoracryptogea results in wilting disease of Gerbera, crown of the plant becomes black.
- Root rot: caused by pythiumroot skin is easily removed.
- Fusarium: It leaf stem is cut; you can see the vessels are black.
- Root knot Nematode: Yellowing of leaves; bulbs on roots.
- Botrytis:occurs especially when the relative humidity of the air is more than 92 per cent for two hours in the morning -gray spots on the flower petals - rot in the heart of flower.
- Flower bent: pre - harvest stem break premature wilting of gerbera flower, double faced Gerbera flower.

B) Diseases

- Root rot
- Fusariumrot
- Botrytis
- Crown rot main cause of less productivity and loss of greenhouse farming.

8) Lack of knowledge about climatic conditions, careless about soil and water analysis, lack of continued technical guidance by field functioning. (See photo plate-I, II)
9) Lack of Manpower related to maintain greenhouse for cut flowers vegetables are very essential and problem related to attack of viral disease pest are sometime unsolved. It is observed in Kagal tehsil the greenhouse unit found viral attack on capsicum crops.
10) Due to the lack of advance training on cut flowers production, harvesting, packing, and handling, farmer is getting loss.
11) Weak foundation of Greenhouse and use of low grade materials is the main Problem of loss of Greenhouse farming.
12) Fluctuation in demand and supply is the main problem in case of marketing.

Constraints faced by the poly house/Greenhouse farmers

1) Continuous increasing of the prices of the material used for the construction of greenhouse.
2) The problem of adequate and cheap supply of electricity without any disturbances. Irregular supply of electricity required for irrigation.
3) The problem of sufficient water supply. The district, eastern part has lack of water. Some Greenhouses has major problems of non-availability of water. Especially Birdevwadi in Hatkanangale tehsil have all greenhouses facing scarcity of water problem.
4) The problem of faulty plants provide by the concerning companies for the grower. Due to non-availability of quality indigenous planting materials the greenhouse produce has been less.
5) Lack of profit motive attitude of greenhouse farming by the farmer due to wise management.
6) Time consuming subsidy distribution policy of government which do not give proper time to the greenhouse farmers.
7) Farmer attitude to obtain the amount of subsidy is mistaken.
8) The problem of cold-storage facilities for greenhouse produce. There is lack of cold storage facilities in the study area.
9) The problem of cheap and moderate transport facilities for greenhouse produce to the farmers.
10) There is no availability of single window for floriculture marketing.
   Artificial flowers –China made flowers. (See photo plate-I, II)
11) Poor harvesting during rainy season.
12) The continuous price fluctuations in the market.
13) Seasonal demand for greenhouse produce.
14) Pest and diseases attack. (See photo plate-I,II)
15) High labour charges/wedges.
16) High cost of fertilizers and pesticides.
17) High tax (VAT) on greenhouse soluble fertilizers
18) High initial fabrication cost of naturally ventilated poly house/greenhouse insect roof–net.
19) Poor quality of cladding material
20) Frequent occurrence of wind storm, hailstorms
21) High cost of hybrid seeds.
22) High cost of nursery raising material like coco pit, vermiculite and perlite.
23) Lack of continued technical guidance by field functionaries.
24) Lack of knowledge of value addition processes.
25) Lack of marketing knowledge/intelligence.
26) Problem of nematode (Tar) Infestation.
27) Non feasibility in poor quality water and soil conditions.
28) High cost and non-availability of refrigerated vehicles for transportation.
29) Temperature in the month of May and June is essential for poly house /greenhouse.
30) Population explosion of minute insects like mites and white flies

PHOTO PLATE – I

PROBLEMS

Insect on Gerbera, Gadmudshingi

Torn up Net, Kagal

Artificial Flowers

Torn up Net, Herle, Hatkanangale

Fungal disease that turns leaves a light tan to brown colour of Capsicum

Viral Attack of White Fly on Gerbera Kandakgaon in Karveertahsil (Downey Mildew) (Shri Ganpat Baburao Patil)

PHOTO PLATE – II

PROBLEMS

White Fly on Gerbera,
Kandalgaon, Karveer

Discussion with
Shri. Ganpat Baburao Patil (Kandalgaon)

Torn up Net, Abhijit Lohar,Pimple Tarf Satve,
(Bambarwadi) Panhala

Non-Working Greenhouse, Atigre,
Hatkanangale

Bad Road to Greenhouse, Kerli, Kerveer

Black Soil in Greenhouse, Kagal

Problems of Non-Operating Greenhouse

Here one thing must note that some of the problems of non-operating greenhouse have been observed by the researcher while conducting sample survey. The various problems faced by them are as follows.

1) They cannot obtain the technical and media level information while Constructing and developing greenhouses. They cannot take sufficient income and production from the greenhouse.
2) Because of faulty construction of greenhouse due to the wind and storm whole infrastructure is collapsed and there is no insurance policy to support.
3) Some time the plants of Gerbera and carnation were faulty which provided by the companies in Pune and Bangalore as well as from Holland. Long duration of these plants transportation such plants cannot grow property.
4) The farmer there was no idea of bed preparation, construction of greenhouse design and crop planning, testing of soil pH and water EC, fertilizer and use of pesticide. So these greenhouses were not in working after construction.
5) Lack of marketing of greenhouse produce and inadequate transport are the major problems of greenhouse farmers, in the district. The greenhouse farmers do not obtain the current information about the demand of flowers and vegetables rates.
6) Lack of water supply and electricity in summer season is also one of the major problems of greenhouse farmers. The problem of water supply is natural and the problems of adequate and continuous electricity supply is dependent upon demand and supply.
7) Lack Labour problems are main problem in greenhouse farming. Attack of high level of mites and diseases, misuse of subsidy, commission agents have cheated to the growers.
8) The greenhouse farmers have not considered the crop planning according to the market situation of greenhouse produce. So that maximum greenhouses have to face many problems in the district.
9) The scheme of greenhouse farming has been not implemented by the department of agriculture, state government of Maharashtra. So they have not given sufficient technical and other information about the greenhouse technology to the beneficiaries.

Conclusions

The greenhouse technology is still in its preliminary stage in Kolhapur district. The concerted efforts are required from all concerned agencies to improve the greenhouse technology in the district.

Economically viable and technologically feasible greenhouse technology has developed suitable for the Kolhapur district. Due to the high training needs of the greenhouse farmers and some poor quality produce with pesticides reduces has been a matter of awareness. Creating awareness within the greenhouse farmer regarding the marketing and quality of production is very important.

The greenhouse farmer must test of water and soil after each crop or after each season and fertilizers should use as per testing report. It is also suggested that the farmers have to use Farm Yard Manure (FYM) for sustainable production of greenhouse farming. It is needed to provide the subsidy for construction of from pond to the greenhouse farmers. The State Government should provide the subsidy for polythene film (UV stabilised poly film) after changing of second time. The State Government should provide pH/ EC measuring devices to the greenhouse farmers.

Acknowledgement

We are grateful to the University Grants Commission (UGC) for providing Teacher Fellowship to Shri. Sanjay Baburao Sangale and we are also grateful to Rayat Shikshan Sanstha, Satara for Inspire and support. Such government initiatives help students in gaining knowledge and that knowledge will be the base for research which may help society.

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SITE SUITABILITY FOR GROUNDNUT IN MAN RIVER BASIN

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Abstract

Groundnut is one of the most important cash crops of our country. It is called as the 'king' of oilseeds. It is a lowpriced commodity but a valuable source of all the nutrients. The main objectiveof this study is to predict Groundnut crop site suitability in Man River Basin using EcoCropmodel. Groundnut site suitability maps are useful to find out areas which will have thegreatest success for growing a Groundnut in Man River Basin. Diva_worldclim_2-5m datawas used for Groundnut site suitability analysis.

Keyword: Groundnut crop, Site Suitability**,** Diva GIS, EcoCrop

Introduction:

Agriculture is the main stay of India's economy. It contributes about 26 percentof the gross domestic product. Agriculture meets food requirements of the people andproduces several raw materials for industries. Agriculture provides direct employment to70 percent of working people in the country.

Groundnut is one of the most important cash crops of our country. It is called as the 'king' of oilseeds. It is a lowpriced commodity but a valuable source of all the nutrients. Groundnut is the sixth most important oilseed crop in the world. It contains 48-50% of oil and 26-28% of protein, and is a rich source of dietary fiber, minerals, and vitamins. Groundnut oil has several uses but it is mainlyused as cooking oil. It is also used in soap-making, fuel, cosmetics, shaving cream, lubricants etc. The crushed parts left behind after the oil is extracted are made up into oil-cake or groundnut cake, and are a valuable food for cattle. The tops of the groundnut plants after harvesting also make very good food for cattle.

Groundnuts are grown in hot regions such as West Africa, Italy, Spain and the southern part of the United States. India is the second largest producer of groundnuts after China. In India, it is cultivated in mostly Gujarat, Tamil Nadu, Andhra Pradesh, Maharashtra and Karnataka.

The international centre for tropical agriculture, with the support of biodiversityinternational and the international potato centre (CIP) has developed model based on the FAO database of crop ecological requirements EcoCrop. The model, which stands withthe same name as the FAO's database uses temperature and precipitation thresholds inorder to evaluate the suitability of a particular area to hold a certain crop species bymeans of the WorldClim database. (Hijmans*et al.*, 2003). The model was implemented inthe software DIVA-GIS and has been used to predict suitability of various crops underdifferent climatic conditions. Using these parameters, the model computes a suitabilityindex for temperature and rainfall separately in order to compute a final suitability ratingby multiplying temperature and precipitation suitability.

Objectives:

To studyGroundnutsite suitability in Man River Basin using EcoCrop model

Methodology:

Groundnut site suitability maps were prepared using EcoCrop predictionsof Diva GIS putting the optimum temperature, rainfall and growing season of Groundnut crop. EcoCrop model predicts the adaptation of a crop over geographic area. In thismodel the growing period is defined in days between Gmin and Gmax. The suitabletemperature and rainfall parameters used in this model are KTMP, TMIN, TOPMIN,TOPMX, TMAX, Rmin, Ropmin, Ropmax, Rmax.(UtpalaParthasarthy, 2006). Groundnut suitability map is preparedand the map of Man River Basin highlights the major regions for Groundnut site suitability.

GMin: start of growth, Gmax: end of growth, KTMP: absolute temperature that will kill the plant, TMIN: minimum average temperature at which the plant will grow,TOPMN:minimum average temperature at which the plant will grow optimally, TOPMX:maximum average temperature at which the plant will grow optimally, TMAX:maximum average temperature at which the plant will cease to grow, Rmin: minimum rainfall (mm) during the growing season, Ropmin: optimal minimum rainfall (mm)during the growing season, Ropmax: optimal maximum rainfall (mm) during the growingseason, Rmax: maximum rainfall (mm) during the growing season.

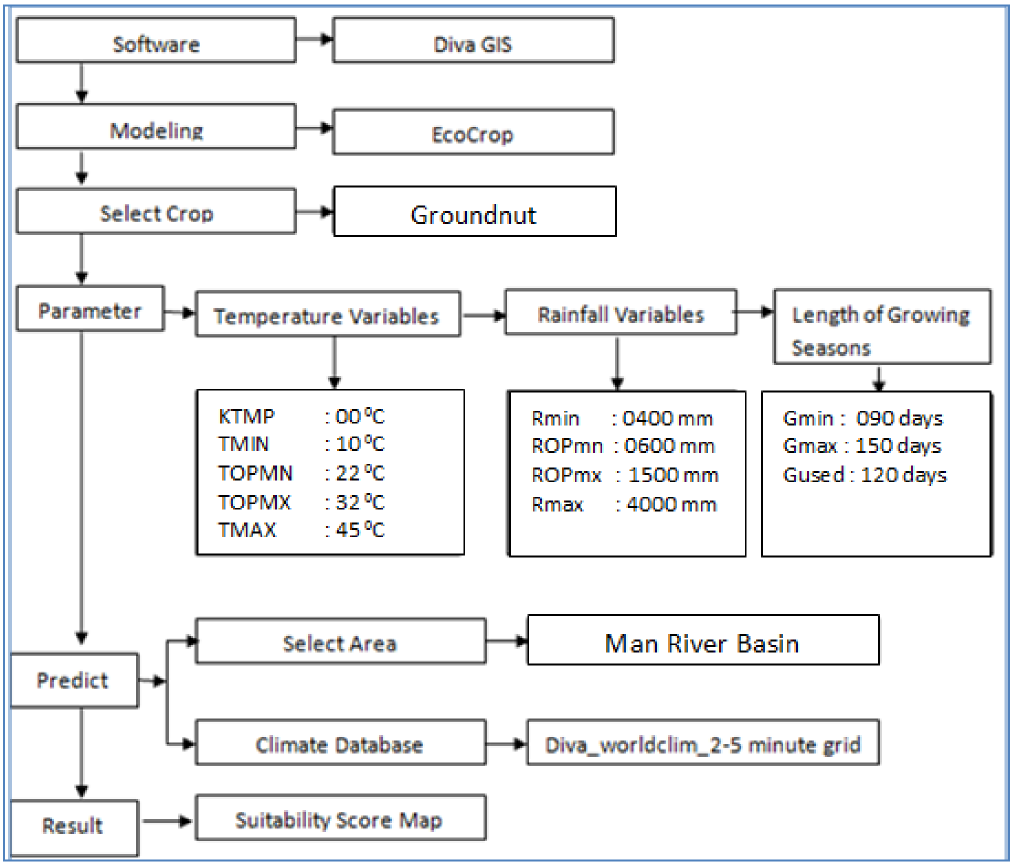

Figure 2EcoCrop Model for Groundnut

Study Region:

The Man, a right-bank tributary of the Bhima river, rises in the Phaltan range, a spur of the Mahadev range in the Man taluka of Satara district, west of Dahiwadi and runs through eastern parts of Satara district and winds through Sangola and Pandharpurtalukas of Sholapur before joining the Bhima near Sarkoli about 17 km. south-east of Pandharpur. (Solapur district Gazetteers) The total lengths of river Man is about 160 kilometer. (Patel, Ilyas Ahmed Shabbir).

Its bed is sandy and its banks are highly eroded. This basin is drought prone region.[District Census handbook, Satara, 1991) The Man basin covers total area of 4757.47 km^2 and lies between in 17^0 51'to 17^0 00'North and 74^0 22' to 75^0 30'East Longitude in Satara, Sangli and Solapur districts in Maharashtra state. (Shikalgar R. 2015)

Result and Discussion:

Result of the study in Table 1 and Fig. 2 is showing theexcellent, very suitable, suitable, marginal and very marginal areas for site suitability for Groundnut crop in Man River Basin. Area under excellent suitability is 02.13 per cent, verysuitable 23.40 per cent, suitable 27.66 per cent, marginal 21.70 per cent and very marginal 21.70 of thetotal area of the Man River Basin. That means the 53.19 per cent of the area of Man River Basin ismostly suitable for Groundnut.

TABLE NO: 1**CROP SUITABILTY FOR GROUNDNUT IN MAN RIVER BASIN**

Crop Suitability Area in Km^2(in Percent)					
Not Suited	Very Marginal	Marginal	Suitable	Very Suitable	Excellent
160.81 (3.40)	1025.19 (21.70)	1025.19 (21.70)	1306.62 (27.66)	1105.60 (23.40)	100.51 (2.13)

Source: Calculated by Author

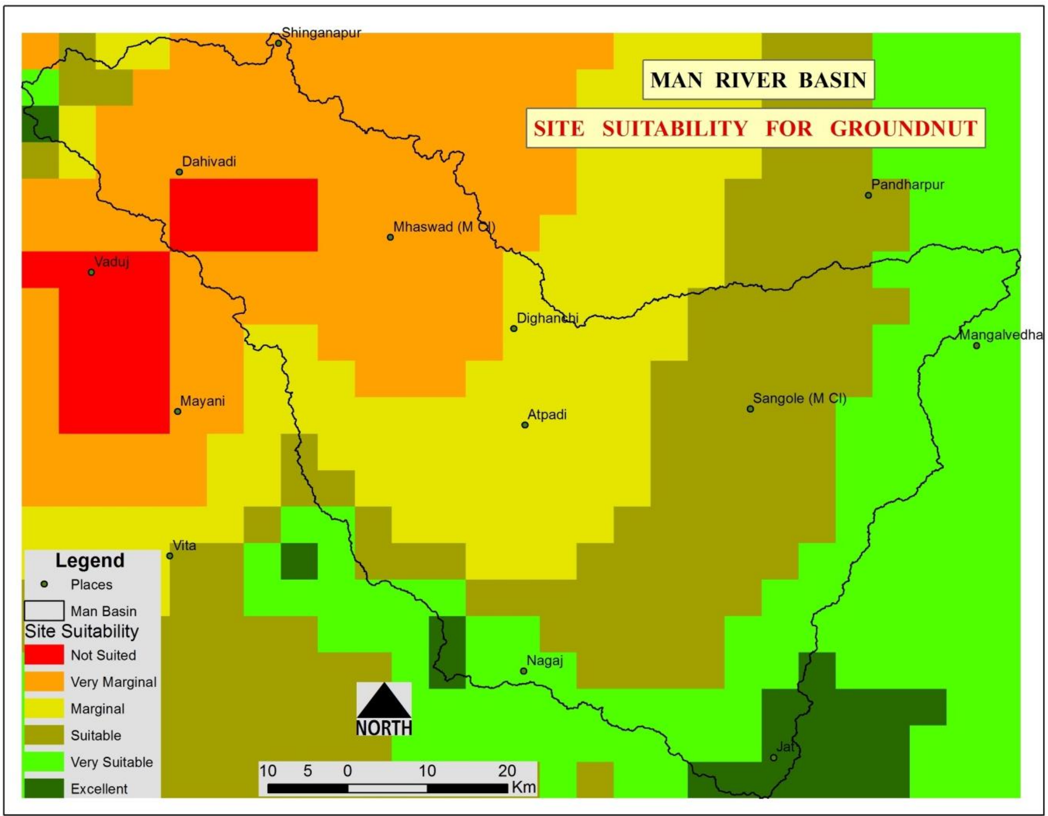

Figure 3 Site Suitability for Groundnut Crop

Conclusion:

The physical factors are mostly affecting on agriculture. It includes relief feature,type of soil, temperature, rainfall etc. The length of growing season is also affecting thecrop grown. EcoCrop model is an indication of the suitability of a geographical area forspecific crops. It is not that excellent suitable location will result in larger production than marginally suitable areas. This model can only point out the area that will have thegreatest possibility of success of growing a particular crop in a region. The presentresearch paper shows that the geographical conditions of the whole Man River Basin aresuitable for the Groundnut. Near Dahiwadi area is not suitablefor Groundnut and it is about 3.40 per cent of the total area.

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VIABILITY OF KRISHNA KOYNA LIFT IRRIGATION SCHEME, TAKARI SECTION IN SANGLI DISTRICT

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Introduction: -

Irrigation is an artificial supply of water to agriculture in the region of uneven, unassured and inadequate rainfall. The Northern part of the district Sangli comprising kadegaon, Khanapur, Tasgaon, Atpadi Tehsil, Where there is uncertain rainfall. This area of the district receives very less amount of rainfall ranging from 500 mm to 700 mm. The spatio – temporal distribution of the same is also uneven. Because of which, there has need to supply irrigation water for meet deficiency. This is the region, located on higher elevation from Krishna river. Due to Geological condition, construction of any major project except lift irrigation project in this area is not possible. It was the only source to provide irrigation facilities by major lift from Krishna river, which is suitable to provide water to agriculture.

To minimize the impact of dry condition, Krishna Koyana Lift irrigation project has undertaken by Maharashtra Krishna valley Development corporation (M. K. V. D. C.) under the Government of Maharashtra.

STUDY AREA:

The Takari lift irrigation scheme has proposed to lift water from Krishna river in successive four stages to provide irrigation facilities to 27630 hectares of land in 67 villages from five Taluka viz. Kadegaon (30 villages), Palus (1), Khanapur (10), Tasgaon (23) and Miraj (3). Though, this project is being constructed to provide water to various taluka of the district Sangli. But, yet it is not completed earthwork of canal, distributaries and miner of the project. Now a day.s water is provided only for 24 villages intaluka Kadegaon are selected for the study. Thegeographical location of the case study villages is 74º,04.N to 17º,22. north latitudes and 74º,16. east to 74º,27. east longitudes. Itis located in south eastern edge of

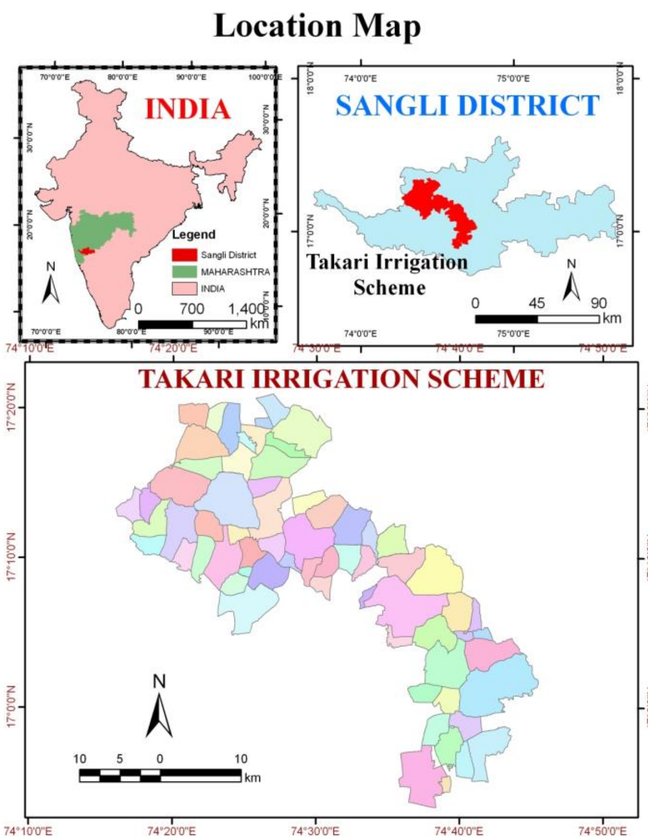

Fig. 2.1

taluka Kadegaon. Those villages are bounded and coincides with natural boundaries on south and west by Machindragad hill ranges and on west river Yerala in taluka Kadegaon.

Takari Lift lrrigation Project :

The Takari Scheme starts at Satpewadi near Takari Villege, K. T. Weir has constructed on Krishna river. About 16 pumpset with capacity of 2000 H. p. each have been setup to Lift water at 58 mts the height to storage tank located at 2.75 Kms. distance at the foot hill range of Kamal Bhairav Dongar. This is called as stage I.

Again 16 motor pumps have been setup of the same capacity by which water lifted 55 mts of height from storage tank and supplied directly to canal is already constructed near to sagreshwar sanctury at Devarashtre Villege in Kadegaon Taluka. This is the distance about 0.75 Kms and known as stage IInd.

Later, the stage IIIrd introduced to Lift the water to 48 mts of height from Jockwell constructed at km 6 on the Takari main feeder canal. The length of this Lift pipe is 2 Kms. The water delivered from stage IIIrd goes with 10 Km's flow canal to the Sonsal K. T. weir. This stage has 4 pumps of capacity of 1250 H. P. each.

Thereafter, the water lifted from Sonsal K. T. weir with 3 pumps of 250 H.P. each, to the sumpwell located at 736 mts of height at the distance of 2.74 Kms. The height of this Lifting is 48 mts. The sumpwell has two row's of underground pipe through wicih the water is supplied by gravitational pull to Shirasgaon and Sonsal areas. The length of underground pipe's are 5 Kms and 4 Kms respectively.

From Sonsal K. T. Weir, another flow canal has constructed for Tadsar at 26 Kms to the north. This Sonsal K. T. weir canal system is know as stage IVth.

The total area under the IIIrd and IVth are 2444 Ha + 512 Ha + 815 Ha = 3771 Ha. In Kadegaon Taluka. The Takari main feeder canal provides irrigation water to 23859 Ha of area of Kadegaon, khanapur Tasgaon and Miraj Talukas.

The total Proposed area under the scheme irrigated 27630 Ha. The total distance of the canal is 208 Kms.

The scheme has lifted water within 4 stages by 209 mts of height from satpewadi K. T. weir to Sonsal Sompwell. The Project will use about 9 TMC of water for irrigation from River Krishna.

Table 1.1 : Pump Sets and Water Lifting Estimates

Stages	Static Head Mts	Length of Rising main	Pump H. P.	No. of Pump
I	57	2.74 Kms	2000	16
II	55	0.765 Kms	2000	16
III	48	1.94 Kms	1250	4
IV	48	2.74 Kms	250	3

1.Total length of main feeder canal – stage II = 160 Kms.

2.Length of canal from delivered chamber of stage III = 10 Kms.

3.Length of underground row from Sumpwell of Sonsal = 5 and 4 Kms for Shirasgaon and Sonsal respectively.

4. Length of Tadsar feeder canal from sonsal K. T. weir = 26 Kms.

Limitation of the Study:

The scheme has provided irrigation to 24 villages in Kadegaon taluka up to year 2006-07 out of 67 villages under the scheme. The Takari Lift Irrigation project tested and started in 2000-2001. In beginning year, very less region irrigated, however from next year, the area irrigated increased from 250 hectares (17.85%) in 2000-01 to 2180 Ha (33.16%) of created potential created in 2006-07.

Objectives:

1) To study the actual situation of the Takari irrigation scheme in the period under study.

2) To analyse the problem and prospect of the scheme.

Data Base and Methodology:-

The paper has used the data obtained from the irrigation department, divisional office Islampur, Krishna Koyna Lift irrigation project, which is in secondary form. The field survey and observation has also done by visiting each and every village several times. The relevant data and information have been organized, classified, tabulated and mapped using suitable techniques and methods. The attempt has been made to render the interpretation and analysis of the fact as objectively and logically as possible.

Present Situation of the Scheme:-

At present the Takari section provieds irrigation facilitie to 24 villages in taluka Kadegaon through Takari main canal under stage IInd, Chinchani (A) feeder canal under stage IIIrd and underground gravitational under stage since 2006-07. In the area under study the ultimate potential of irrigation is assumed 27630 Ha. of land in 67 villages from five talukas in district Sangli. However the irrigation facility is benefited only upto km 44 to 17 villages under Takari main canal stage IInd, 5 villages under state IIIrd and 2 villages under stage IVth Taluka Kadegaon has proposed 10252 (37.10%) Ha. of agricultural land of the total proposed area of 27630 Ha. under Takari lift irrigation project.

The project, out of overall work, major work of mechanical and electrical has hereby thoroughly completed and can give irrigation facilities to the all region which has proposed since beginning. But the construction work of canal and distributary system and field channel's are partly completed from km 0 upto km 148 in all stages.

Critical Points from Viability Point of View: -

The Takari lift irrigation scheme was sanctioned in 1984 by Govt. of Maharashtra. But due to inadequate provision of funds, the scheme is not completed within decided period. So the cost of construction of scheme is increased by 7 time of the original cost. In 1984 the cost was estimated only 82.43 crores, at present it increased upto 559.16 crores in 2004.

The scheme has carried on and the farmers are utilizing the irrigation water at present because the rate of water is on subsidiary base. The water charges are at the rate of Rs. 8000/- per Ha.

The scheme will going in major problems if following critical points will arises.

1. Paid as loan as a Bank, What Interest Should be Given.

It has been estimated that the total cost for per hector of land under the scheme is Rs. 2 lacs. The interest on the existing loan, water charges and other input cost per hector of land will approximately near about Rs. 50,000. This cost is very high beyond the capacity cereals growing farmers.

2. Cost of Electricity : -

The cost of the water is much high than any other irrigation scheme provided by Govt. of Maharashtra because the scheme lifts' water at four stages. It has been estimated that 24 Hrs cost of energy is Rs.1286047.88 for all the stages of the scheme and for one hour consumption of electricity cost is about Rs. 53585.31. Electric charges including other charges, total annual expenditure on power for per hector is estimated, about Rs. 4887.26 /-.

3. Any Significant Cropping Pattern is not Observed: -

Even today the cultivators are taking traditional crops such as cereals and pulses etc, the market prices of those agricultural products are very insignificant compared to the cost of water provided to them. In the observation of record maintain by revenue officer of Shirgoan in Kadegaon Taluka, the area under sugar cane has decreased from 2002 to 2005.

4. Requirement of Water Supply Related to Soils: -

The region has various type of soils; but soils of very shallow, porous, sandy and averagely high textured has covers 58 % of the region.

This type of the soil has very low water retaining capacity. This type of soil requires frequent water. This will not possible to the scheme. The crops growing in this soils should not fight in the present condition.

5. Collection of Water Charges:-

The scheme is collecting their water revenue on the area and crop basis. There is no balance in between the total water charges and the collection of revenue from 2002-03 to 2006-07.The average defaulter amount from 2002-03 to 2006-07 is 79.75 Per Cent. The only collected amount is 20.25 Per Cent. So most of the time, the scheme is unable to pay electricity bill, operation and maintenance charges. Due to which, most of the time water is not released as per the demand of farmers. The scheme is facing a big problem of collection of water revenue. However, the sugar factories are playing an important role in the collection of water bill. They collect water revenue from the debited amount of sugarcane bill. Other than the area under sugarcane crops, the collection of water revenue is impossible in time.

In the area under study, the rate of water is related neither to the total cost of supplying the water nor to the quantity of the water used. (Dakshinamurti and et.al, 1973).Revenue collection on the area basis is equal for different crops. The table 6.1 exhibits the water charges, collection of revenue, defaulter amount and percentage of defaulter amount.

Table 1.2: Takari Irrigation Scheme: Irrigation Revenue and Collection 2002-03 to 2006-07(Rs in Lakh)

Year	Water Charges	Collected Amount	Defaulter Amount	%of Collection	% of Defaulter Amount
2002-03	77.91	16.68	61.23	21.40	78.60
2003-04	489.88	0.02	489.86	0.004	99.99
2004-05	83.88	50.45	33.43	60.14	39.46
2005-06	160.41	72.68	87.73	45.30	54.70
2006-07	208.88	68.92	149.96	31.48	68.52
Total	1030.96	208.75	822.21	20.25	79.75

Source: .Krishna Koyna Lift Irrigation Scheme, office Islampur, 2010.

The water revenue is not differentiated between cash crops like sugarcane and other crops as jowar and wheat. The average charges are adopted on the area basis irrigated in each season. According to the irrigation department the water revenue charged Rs 6875 /hectare for each season, whether they are perennial crops or seasonal crops.

Conclusion

The Cropping pattern should be changed in which the cash crop will include e.g. sugarcane, fruit, vegetables, flower etc. There are profitable from which farmers get big profit.

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Drip irrigation, diffuser and sprinkler irrigation system has to be utilized; those methods are saving more than 60 percent of water. The micro irrigation although costly, it has to be utilized and save the costly water from seepage and wastage unavoidable.

The above observation leads to conclusion, the area under the scheme required regular and adequate water supply. The farmer has to be take decision of use of modern methods of irrigation like drip, sprinkler and diffuser etc. the farmers has to be grown the marketable cash crop like grape; popogranate vegetable and sugarcane etc; for that there has to be requires to be drastic changes in the present cropping pattern.

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AGRICULTURAL ENTREPRENEURSHIP: A WAY TOWARDS RURAL INDUSTRIALIZATION AND DEVELOPMENT

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ABSTRACT

The great ones are ready to be laughed at and criticized in the beginning because they can see their path ahead and are too busy working towards their dream. An entrepreneur is a businessperson who not only conceives and organizes ventures but also frequently takes risks in doing so. Not all independent business people are true entrepreneurs, and not all entrepreneurs are created equal. The economic development of a Nation depends on its industrial development. The industrial development is based on the entrepreneurial competencies of the people. Hence, the concept of building entrepreneurship Promotion is need of the hour. Which will help for rural industrialization and growth of rural economy will take place so the present paper focus on Agricultural Entrepreneurship: A Way towards Rural Industrialization and development.

Key words: Rural**,** Industrialization, Economic development, Agricultural entrepreneurship.

INTRODUCTION

An entrepreneur is a person who either creates new combinations of production factors such as new methods of production, new products, new markets, finds new sources of supply and new organizational forms or as a person who is willing to take risks or a person who by exploiting market opportunities, eliminates disequilibrium between aggregate supply and aggregate demand or as one who owns and operates a business. The changing environment raises questions about the ability of traditional, small-scale businesses in rural areas to share the potential benefits offered by the changing environment. The rapid (though declining) population growth, coupled with even faster urbanization, creates increasing demands. In India, urban populations in general grow about twice as fast as the overall total, and by 2020 they may exceed the size of rural populations. Such a major demographic trend challenges the capacities of some traditional small-scale businesses to cope with the increasing demands. India lives in its villages, nearly 73 % of the total population live in rural areas where agriculture and allied activities are the main stay of their lives. The economic development of our country largely depends on the development of rural areas and the standard of living of its rural mass. Rural entrepreneur is one of the most important inputs in the economic development of a country and of regions within the country. Rural entrepreneur uses the scarce resources in the most efficient manner thereby increasing profits and decreasing costs. Rural development is more than ever before linked to entrepreneurship. Institutions and individuals promoting rural development now see entrepreneurship as a strategic development intervention that could accelerate the rural development process. Furthermore, institutions and individuals seem to agree on urgent need to promote rural enterprises. Rural entrepreneurship implies entrepreneurship emerging in rural areas. In other words establishing industries in rural areas refers to rural entrepreneurship. This means rural entrepreneurship is synonymous with rural industrialization.

REVIEW OF LITERATURE

Petrin (1992), in a study observed that to accelerate economic development in rural areas, it is important to build up the critical mass of first generation entrepreneurs. Keeble *et al.* (1992), in their research work found that SMEs in rural areas in the UK have better performance than that of their urban counterparts in terms of employment growth. Petrin (1994) in another article concluded that rural development is now being largely linked to entrepreneurship. It acts as a vehicle to improve the quality of life for individuals, families and communities in order to sustain a healthy economy and environment. Lyson (1995) indicated the prospects of small-enterprise framework as a possible rural development strategy for the economically disadvantaged communities. Vaessen and Keeble (1995) revealed that the external environment in the more remote rural areas presents challenges for SMEs, which they need to adapt to if they are to survive and grow. Smallbone and North (1997) revealed that firms with highest level of innovative behaviour were growing in terms of sales and employment, although the relationship between innovation and growth is an inter-dependent and mutually reinforcing one, rather than a simple cause and effect relationship. Lu Rongsen (1998) in a study in the area of western Sichuan highlighted the important factors that were responsible for rapid development of enterprises. The factors include local natural resources, development of infrastructure, strong and integrated policy support from Government, well planned marketing strategy and linkage with larger companies and organizations for nationwide marketing and abroad. Giannetti and Simonov (2003) found that apart from the role of individual characteristics, access to capital and institutions, social factors may also play in the decision to become an entrepreneur. Social interactions affect the payoffs from a variety of economic decisions. Sherief, (2005) attempted to understand the determinants of rural entrepreneurship and the environment conducive to its development. The study concluded that to accelerate economic development in rural areas, it is necessary to promote entrepreneurship.

WHY AGRICULTURAL ENTREPRENEURSHIP

1. **Provide employment opportunities**

Rural entrepreneurship is labor intensive and provides a clear solution to the growing problem of unemployment. Development of industrial units in rural areas through rural entrepreneurship has high potential for employment generation and income creation.

2. **Check on migration of rural population**

Rural entrepreneurship can fill the big gap and disparities in income rural and urban people. Rural entrepreneurship will bring in or develop infrastructural facilities like power, roads, bridges etc. It can help to check the migration of people from rural to urban areas in search of jobs.

3. **Balanced regional growth**

Rural entrepreneurship can dispel the concentration of industrial units in urban areas and promote regional development in a balanced way.

4. **Promotion of artistic activities**

The age-old rich heritage of rural India is preserved by protecting and promoting art and handicrafts through rural entrepreneurship.

5. **Check on social evils**

The growth of rural entrepreneurship can reduce the social evils like poverty, growth of slums, pollution in cities etc.

6. Awaken the rural youth

Rural entrepreneurship can awaken the rural youth and expose them to various avenues to adopt entrepreneurship and promote it as a career.

7. Improved standard of living

Rural entrepreneurship will also increase the literacy rate of rural population. Their education and self-employment will prosper the community, thus increasing their standard of living.

WAY TOWARDS RURAL INDUSTRIALIZATION AND DEVELOPMENT

1. Formation of Capital

Entrepreneurs by placing profitable business proposition attract investment to ensure private participation in the industrialization process. The otherwise idle savings are channelized for investment in business ventures which in turn provides return. Again the savings are invested giving a multiplier effect to the process of capital formation.

2. Balanced Regional Development

The entrepreneurs always look for opportunities in the environment. They capitalize on the opportunities of governmental concessions, subsidies and facilities to set up their enterprises in undeveloped areas.

3. General Employment

This is the real charm of being an entrepreneur. They are not the job seekers but job creators and job providers. With the globalization process the government jobs are shrinking leaving many unemployed. In the circumstances, the entrepreneurs and their enterprises are the only hope and source of direct and indirect employment generation.

4. Improvement in Standard of Living

Entrepreneurial initiative through employment generation leads to increase in income and purchasing power which is spent on consumption expenditure. Increased demand for goods and services boost up industrial activity. Large scale production will result in economies of scale and low cost of production. Modern concept of marketing involves creating a demand and then filling it.

5. Increase in per Capita Income

Entrepreneurs convert the latent and idle resources like land, labour and capital into goods and services resulting in increase in the national income and wealth of a nation. The increase in national income is the indication of increase in net national product and per capita income of the country.

6. National Self-reliance

Entrepreneurs are the corner stores of national self-reliance. They help to manufacture indigenous substitutes to imported products which reduce the dependence on foreign countries. There is also a possibility of exporting goods and services to earn foreign exchange for the country. Hence, the import substitution and export promotion ensure economic independence and the country becomes self-reliance.

7. Planned Production

Entrepreneurs are considered as economic agents since they unite all means of production. All the factors of production i.e., land, labour, Capital and enterprise are brought together to get the desired production. This will help to make use all the factors of production with proper judgment, perseverance and knowledge of the world of business. The least combination of factors is possible avoiding unnecessary wastages of resources.

8. Equitable Distribution Economic Power

The modern world is dominated by economic power. Economic power is the natural outcome of industrial and business activity. Industrial development may lead to concentration of economic power in few hands which results in the growth of monopolies. The increasing number of entrepreneurs helps in dispersal of economic power into the hands of many efficient managers of new enterprises. Hence setting up of a large number of enterprises helps in weakening the evil effects of monopolies.

CONCLUSION

Agricultural entrepreneur is a key figure in economic progress of India. Agricultural entrepreneurship is the way of converting developing country into developed nation. Agricultural entrepreneurship is the answer to removal of rural poverty in India. Therefore, there should be more stress on integrated rural development programs. The problem is that most of the rural youth do not think of entrepreneurship as the career option. Therefore, the rural youth need to be motivated to take up entrepreneurship as a career, with training and sustaining support systems providing all necessary assistance. There should be efficient regulated market and government should also lend its helping hand in this context. Agricultural entrepreneurship is the answer to removal of rural poverty in India. Therefore, there should be more stress on integrated rural development. This will help for rural industrialization and development.

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A STUDY ON CURRENT CROP CULTIVATION SITUATION OF KHARIF SEASON IN INDIA

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ABSTRACT

Agriculture is the backbone of Indian economy. Directly and indirectly 80% population engaged in agricultural jobs. Present study has analyzed situation, causes and suggestions of cultivation of different crops in Kharif season which includes pulses and oil seeds with major general crops. For the study secondary data which is taken from agricultural website of Crop and TMOP division DAC has used. Arc GIS 9.3x is used for analysis of all the crops. Government should give technical, economical and institutional support to inbuilt the agriculture sector. Farmers should apply different irrigational techniques for better result in cultivation and production of food crops.

Key Words- *Kharif, TMOP, DAC.*

Introduction:-

The agriculture sector of India is passing through a dynamic phase in the recent era of development. It provides 65% of employment opportunities for the working population of India. Since post-independence period, the Government of India has been initiating its policy framework for the structural, technological and institutional changes for agriculture. As per the 2010 FAO world agriculture statistics, India is the world's largest producer of many fresh fruits and vegetables, milk, major spices, select fibrous crops such as jute, staples such as millets and castor oil seed. India is the second largest producer of wheat and rice, the world's major food staples. Last year Indian agriculture is phase to severe drought and result is decrease the production of all season. Basically Indian agriculture is backbone of Indian economy. Crops which are produced in India they are responsible for seasons. Production of crops has taken in Kharif and Rabbi Season is depends on monsoon in India.

Aims and Objective

1. To Study change in agricultural production in 2015 to 2016.
2. To find out major causes of changes.

Methodology-

For present study use secondary data of crop cultivation in Kharif season in 2015 and 2016. Cultivation statistics of different crops like rice, Jowar, Bajara, oil seeds and pulses are collected from crops and TMOP division DAC. This data is analised by Arc GIS 9.3x shoftware. Agriculture data of different crops like as all pulses and oil seeds. All crops of Kharif season are shown by bar charts related to purticular states.

Table- 1.1 All India Crop Situation- Kharif (2016-17) as on 15-07-2016

State	Rice		Sugarcane		Cotton		Jute & Mesta		Jowar		Bajara	
	2016	**2015**	**2016**	**2015**	**2016**	**2015**	**2016**	**2015**	**2016**	**2015**	**2016**	**2015**
Andra Pradesh	2.13	1.01	1.40	1.17	2.03	1.06	0.04	0.05	0.01	0.01	0.12	0.06
Arunachalpradesh	1.18	1.07										
Assam	7.93	6.69					0.81	0.79				
Bihar	6.51	7.55	2.52	2.50			1.26	1.13				
Chattisgarh												
Goa	0.05	0.05										
Gujrat	0.84	1.34	1.87	2.03	13.65	23			0.35	0.06	0.63	0.83
Hariyana	7.01	8.84	1.00	0.96	4.98	5.81			0.80	1.10	0.50	1.25
Himalchal Pradesh	0.57	0.55										
J & K	2.04	2.23									0.04	0.06
Karnataka	1.50	1.61		3.96	3.10	2.88			0	0.88	1.88	0.5
Keral	0.48	0.36	0.52									
Madya Pradesh	5.87	4.95	0.76	1.10	5.00	5.31				1.13	0.86	0.69
Maharashtra	1.95	2.37	7.62	8.21	29.91	33.27				3.24	3.85	3.94
Manipur	1.79	1.95										
Meghalaya	0.90	0.90					0.06	0.06				
Mizorzm	0.36	0.37										
Nagaland	1.88	1.56					0.07	0.03				
Orissa	10.28	12.27			0.80	0.83		0.12		0.03	0.01	0.01
Panjab	26.90	24.25	0.94	0.70	0.56	4.50						
Rajsthan	0.51	0.85			3.68	3.49				0.84	22.69	27.24
Tamilnadu	0.65	1.56	2.68	2.94	0.03	0.03				0.51	0.08	0.12
Tripura	0.46	0.49					0.01					
Uttar Pradesh	15.14	10.13	21.79	19.58	0.7	0.21				0.32	0.88	0.62
West Bengal	3.85	5.18	0.21	0.20			5.18	5.57				

All Crops Cultivation in 2015 and 2016:-

Cultivation of crops in Kharif season on the date of 15 June 2015 and 2016. In that case consider only major crops including Rice, Sugarcane, Cotton, Jute and Mesta, Jowar and Bajara. Cultivation of all crops is shown in following Fig- 1.1 and Statistical table. 1.1. According to Figure and table cultivation of rice is high in Punjab, Uttar Pradesh, Orissa, Assam West Bengal and Haryana states in 2015 as well as 2016. The Medium cultivation of the Rice is in the state of Madhya Pradesh, Andhra Pradesh, Bihar and Tamil Nadu. Remaining stats are less in cultivation of Rice. Highest cultivation of sugarcane is in Uttar Pradesh and Maharashtra state Medium is in Tamil Nadu, Karnataka, Gujarat and Bihar states and others are in lower category. Cultivation of

Cotton is in Maharashtra and Gujarat and West Bengal leads in cultivation of Jute and Mesta. Maharashtra leads in crops of Jowar and Bajara.

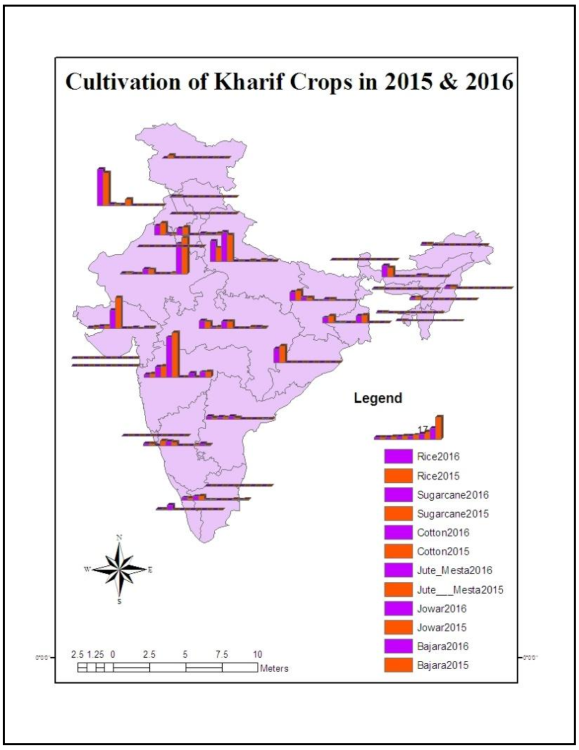

Fig- 1.1

Oil Seeds Cultivation in 2015 and 2016:-

Oil seeds are also cultivated in 2016 as well as last year. In this Groundnut, Soyabean, Sunflower and Seasmum are majorly cultivated in Kharif season. Highest cultivation of Groundnut is in the stats of Gujrat, Andhra Pradesh and Rajasthan. Soyabeans are highly cultivated in the state of Madhya Pradesh and Rajasthan. Cultivation of Sunflower and Seasmum are low in India as compare to other oilseeds shown in Fig1.2 and Table 1.2.

Table- 1.2 All India Oil Seeds Crop Situation- Kharif (2016-17) as on 15-07-2016

State	**Groundnut**		**Soyabean**		**Sunflower**		**Seasmum**	
	2016	**2015**	**2016**	**2015**	**2016**	**2015**	**2016**	**2015**
Andra Pradesh	5.88	2.41			0.01	0.01	0.26	0.19
Arunachalpradesh	0.03		0.14		0.01		0.07	
Assam								
Bihar					0.01		0.01	0.01
Chattisgarh	0.17	0.25	0.90	1.08			0.02	0.04
Goa								
Gujrat	10.10	12.18	0.63	0.70			0.23	0.62
Hariyana	0.05							
Himalchal Pradesh								
J & K	0.01						0.05	
Karnataka	2.84	1.76	2.86	2.44	0.91		0.28	0.41
Keral								
Madya Pradesh	1.52	1.14	51.80	51.87			0.44	1.35
Maharashtra	1.17	1.28	27.31	27.86	0.09	0.04	0.11	0.1

Manipur								
Meghalaya								
Mizorzm								
Nagaland								
Orissa	0.29	0.36					0.19	0.32
Panjab	0.02						0.03	
Rjsthan	3.71	3.81	8.51	9.41			1.89	2.38
Tamilnadu	0.65	0.95					0.04	0.10
Tripura								
Uttar Pradesh	0.55	0.13	0.31	0.01			1.20	0.23
West Bengal	0.02	0.02					0.01	0.01

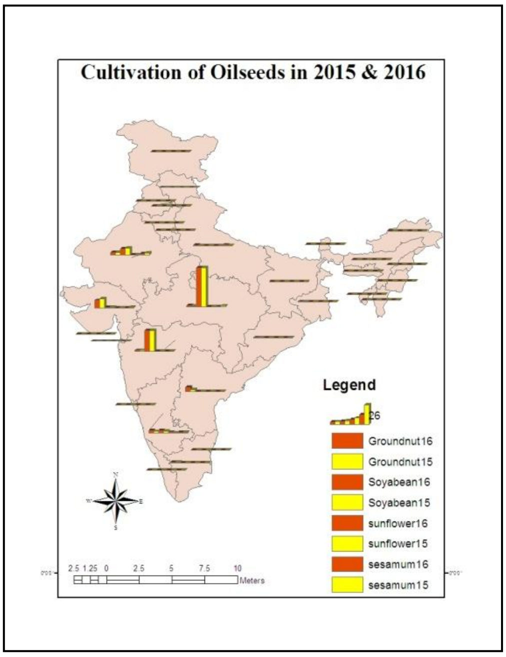

Fig- 1.2

Pulses Cultivation in 2015 and 2016:-

Majorly Tur, Moong and Urad pulses are Cultivate in India in 2015 and 2016. Higest cultivation of Tur is in Maharashtra, Karnataka and Madhya Pradesh in both the years. Cultivation of Moong is high in the states of Rajasthan, Karnataka and Maharashtra and highest cultivation of Urad is in Madhya Pradesh, Maharashtra and Rajasthan. Fig- 1.3 & Table 1.3.

Table- 1.3 All India Pulses Crop Situation- Kharif (2016-17) as on 15-07-2016

State	**Tur**		**Moong**		**Urad**	
	2016	**2015**	**2016**	**2015**	**2016**	**2015**
Andra Pradesh	0.07	0.23	0.26	0.09	0.26	0.03
Arunachal Pradesh						
Assam						
Bihar	0.12	0.11	0.05	0.04	0.07	0.01
Chattisgarh	0.30	0.37	0.05	0.04	0.15	0.18
Goa						
Gujrat	0.89	1.14	0.09	0.18	0.31	0.40

Hariyana						
Himalchal Pradesh						
J & K						
Karnataka	7.48	2.53	3.25	2.55	0.7	0.65
Keral						
Madya Pradesh	4.44	2.51	1.12	0.69	5.87	3.99
Maharashtra	10.25	8.31	3.57	3.18	3.12	2.31
Manipur	0.01	0.01			0.01	0.02
Meghalaya						
Mizorzm	0.03	0.03				
Nagaland	0.03	0.03				
Orissa	0.38	0.57	0.14	0.35	0.20	0.32
Panjab	0.07	0.03	0.03	0.03		
Rjasthan	0.15	0.18	8.46	6.33	2.67	1.59
Tamilnadu	0.14	0.20	0.16	0.24	0.29	0.10
Tripura						
Uttar Pradesh	0.08	0.66	0.22	0.06	2.69	0.58
West Bengal				0.01	0.16	0.15

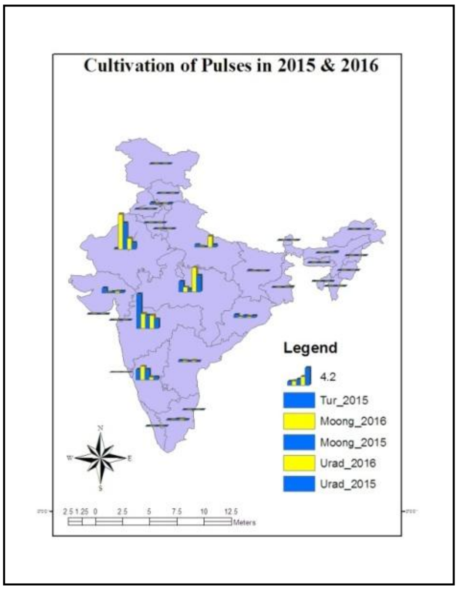

Fig- 1.3

Conclusion:-

1. Government should give technological, economical and institutional support for a few crops like pulses and oilseeds have brought significant changes in crop area and output composition in some regions.
2. Basically give support to the Tur and Moong cultivation because demand of pulses is higher than production and cultivation in last year.
3. There is lot of difference in cultivation and production of crops in all the years.
4. Cultivation of all the crops in Kharif season is high in 2016 as compared to last year.

5. Farmer should use different irrigational, tools of farms and chemical and biological techniques for increasing production of food crops.

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THE PURPOSE OF SCARCITY RELIEF WORK OF MANGI IRRIGATION MEDIUM PROJECT

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ABSTRACT

The village of Mangi Dam of Karmala Tahsil in Solapur District is one of the drought affected villages in the state. It shows all the characteristic features of the drought conditions. Very low agricultural output with high degree of uncertainty has affected the process of capital formation. The region is suffering from scarcity of water for both agriculture and domestic use. The micro level studies have put forth the need of external support for such villages. The study of Mangi Dam Project reveals that such support may be given to eight villages in the command area of the Mangi Dam. about 3004 hect. Of agricultural area will get water supply through pipe line with sufficient pressure so that farmers can go for drip irrigation system. However, this kind of water supply has 50% assurance as it depends upon rainfall and availability of water in the dam. This point is quite significant for carrying out risk analysis and designing planning strategy for sustainable agriculture.

***Keywords**: scarcity, relief, agriculture, medium project, irrigation etc.*

Introduction:

The Mangi medium irrigation project is located at Mangi village in Karmala Taluka of Solapur district. It is constructed on Kanoli river which drains into the Sina river and forms part of the Bhima sub-basin of Krishna basin. The construction work started on the site in 1897 as a scarcity relief work but was subsequently abandoned. It was again taken up and in the drought year of 1926 and later abandoned. Another drought year 1952 saw the construction being restarted, and this time the work was continued and construction of the tank was completed by 1955. The Left Bank and Right Bank canal systems were completed in 1966. The total irrigation capacity area (ICA) is 3,117 ha. The main cropping season is Rabi and accounts for about 2,500 ha of the total irrigation capacity area. The length of right bank canal (RBC) and left bank canal (LBC) is 29 km and 9 km and the ICA under them 2,307 ha and 809 ha ICA respectively. Lifting of about 20% is allowed from the dam storage – 6% under the regular quota and 14% under the drip scheme. The dam site, water storage, RBC, LBC and the command area are shown in the map.

The Figure show that A view of the Mangi RBC, LBC and emergency outlets. The Mangi dam was started as part of famine relief work as early as in 1897. The work was subsequently abandoned, taken up again in the drought year of 1926, again abandoned, taken up again in 1952 and this time completed in 1955.

Objectives:

The Major objectives of the study have been outlined as below:

- To study the physiographic set up at micro level and socio-economic environment at the village level.
- To study the scarcity relief work in various stages.
- To study the sustainable agricultural development based on optimal use of water for each micro region without compromising profitability of the sector.

Table No. 1:
Salient features of the Mangi Irrigation Project

Sr. No.	item	Detail
1	Catchment area	304.97 sq km
2	Average Annual Rainfall	500 mm
3	Type and Length of Dam Earthen	1475 m
4	Maximum Height of Dam	22.60 m
5	Storage	
6	Gross	33.77 mcum
7	Dead	1.07 mcum
8	Silted Contents	2.01 mcum
9	Live	30.69 mcum
10	Length of waste weir	240 m
11	Maximum discharge over waste weir	2,243.68 cumecs
12	Canal length and capacity	
13	LBC	10 km and 0.85 cumecs
14	RBC	27 km and 3.12 cumecs
15	Area under command	
16	GCA	4,646 ha
17	CCA	4,048 ha
18	ICA	3,117 ha

Proposals for the renovation of the distribution system as well as a proposal to raise the height of the dam have been prepared by the officials. In the proposal for the renovation of the distribution system it is mentioned that though the ICA is 3,117 ha, the area that can be actually irrigated is only 1,212 ha which comes to about 39% of the ICA which is very low irrigation intensity. The proposal for increase in the height is also pending because the data given in the height increase proposal shows that inflow into the tank has decreased because of the development in the catchment. About 13 percolation tanks (PTs) and one MI tank have already come up in the catchment of the Mangi project. Many check dams and various other soil conservation measures have also been taken up in the upstream. Hence it is proposed that one TMC of water be supplied from the Kukadi project using Mangi as a feeding tank/pond. The proposals have not yet been sanctioned.

Water from the canal:

We begin to get a better idea of what is happening on the ground after taking into consideration the land areas involved. On DO3, one of the first outlets on the RBC, in comparison with the planned irrigation calculated on the basis of the approved crop pattern, the area receiving water varied from 55 We begin to get a better idea of what is happening on the ground after taking into consideration the land areas involved. On DO3, one of the first outlets on the RBC, in comparison with the planned irrigation calculated on the basis of the approved crop pattern, the area receiving water varied from 55 to 110% in the two years it received rabi waterings, and the hot weather area comprised 4.9 to 5.9 times the planned irrigated area for hot weather. A little further down, on Dy2, the area was about 65% of planned seasonal irrigated area for the rabi and 95 to 300 % for the hot weather. DO20 did not receive any canal water in the kharif, while the proportion of area receiving canal water varied from about 25 to 50 % of the planned irrigation for rabi and from 100 to 200 % for the hot weather by kharif and summer irrigation, this implies that well irrigation adds to the variability rather than. On Dy7 further down, the proportion varied from 20 to 35% for rabi and about 105% for the single year in which it received hot weather aterings. On the last outlet, DO50, no canal water was received for the kharif in any of the years and in only one of the years did the farmers receive canal water during the hot weather.

Conclusion:

The main findings here are consistent with the findings in the Mula Project as well, when we take into account the effect of wells in the command, the apparent degree of deprivation is modified substantially and that there is a disproportionate shift in the utilisation in favour of hot weather utilisation, which rises to a level many times that originally planned for the project. One can also identify a trend that associates distance towards the tail, with the strength of these effects: that is, the effects are stronger and more pronounced as we approach the head reach within any portion.

To Develop Irrigation Central Control enables the programming, monitoring and Operation of irrigation system from a central location. Central Control System should be designed to allow a user to control a single site or a set of sites from a single computer. Central Control Software allows the water manager to set up promising to automatically. A central control system can monitor and adapt system operation and irrigation run times in response to condition in the system or surrounding area.

An additional factor in deprivation in Mangi and corroborated by irrigation officials is the conflict between those who lift water directly from the backwaters and those in the command area who receive water through canals. Earlier, lifts from the backwater were allowed only sparingly, but now there is a profusion of lifts from the backwaters. There is very little control on how much water is lifted in this way. Often the permission is obtained on grounds that are only a pretext for getting permission. For example, the permission may be obtained for drinking water or for areas in which drip irrigation is installed which are supposed to enjoy special privileges in this respect. However, in practice the water is used for agriculture and there is often no drip irrigation in sight. There is now a continual tussle between those in the command and those lifting water from the backwaters of the dam. This has often played havoc with the planning of rotations.

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AGRICULTURAL DEVELOPMENT: SPECIAL REFERENCE TO HORTICULTURAL IN OSMANABAD DISTRICT

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ABSTRACT

Horticulture is defined as an extensive art or science of cultivating fruits, vegetables, flowers, or ornamental plants. The horticulture sector encompasses a wide range of crops namely fruit crops, vegetable crops, potato and tuber crops, medicinal and aromatic crops, spices and plantation crops. The development of horticulture is one of the ways for solving the problem of poverty and economic condition of the vast peasants of India and the growing unemployment among both educated and uneducated masses of this vast region since crop husbandry has proved uneconomical in most of the areas. Development can be defined as a process of improving the capability of a country's institutions and value system to meet increasing and different demands of a social, cultural, political as well as an economic character. The horticultural development can be defined as a process of improving the capability of area under horti crops and horticultural productivity and value system to meet increasing different demands of society. The horticultural development give an idea about the agricultural income of a region. Such regions provides areal significance and strength of horticulutural crops, to advocate suitable device for planning improvements in the under developed regions. Therefore attempt is made here to find out horticultural development in Osmanbad District. The paper is based on primary as well as secondary data. To determine horticultural development ***Shrivastava. S. L (1983)*** *method i.e. "Proportional Standardized Mean and Composite Index" has been utilized. the study reveals that there is great influence of geographical factors on horticultural development in Osmanabad district.*

Key wards: Horticulture, Development, indices.

Introduction:

In the last several decades, the geography of horticulture has emerged, creating its own niche as a sub-discipline within agricultural geography. Horticulture is the applied science. The word comes from Latin 'Hortus' means Garden and 'Cultura' means Cultivation. Horticulture means the cultivation of flowers, fruit, or vegetables in small plots using intensive methods of farming. The most intensive form of horticulture is probably the cultivation of crops (Smith, 1984). Horticulture is defined as an extensive art or science of cultivating fruits, vegetables, flowers, or ornamental plants. The horticulture sector encompasses a wide range of crops namely fruit crops, vegetable crops, potato and tuber crops, medicinal and aromatic crops, spices and plantation crops (Planning Commission, GOI, June 2001). Maharashtra state has several advantages in terms of marketing of products both domestically and internationally, for development of horticulture. Horticulture can provide large year-round employment as compared to various other seasonal crops.

Development is a broader term than rural development. The concept is applicable at all levels, ranging from individuals to communities and nations and the world as a whole. Development is cherished by all individuals, communities and nations irrespective of their culture religion and spatial location (Katar sing.2009). At a symposium on Social Policy and Planning Organized by the United Nations in 1970, a working definition of 'Development' was formulated as follow. " Development can be defined as a process of improving the capability of a country's institutions and value system to meet increasing different demands of a social, cultural, political as well as an economic character"(Lawania.V.K. 2003)

Development is a multi dimensional concept and has varied facets like economic, social, cultural, political, institutional, psychological, ecological and ethical. It is often deemed as a process that attempts to improve the economic condition of the people or to increase human welfare or to improve quality of life.

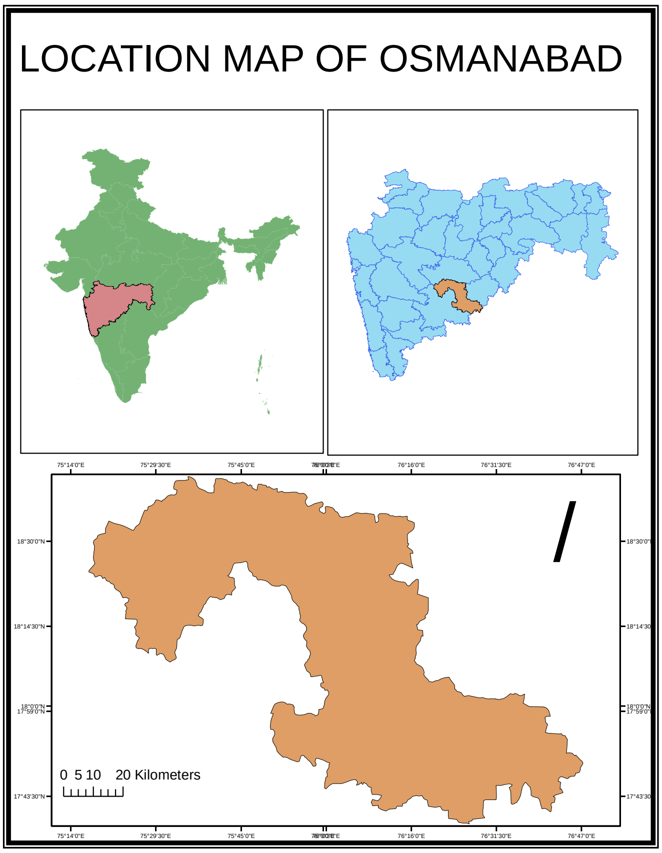
According to the World Commission on Environment and Development (WCED), sustainable development is the development that meets the needs of the present without compromising the ability of future generation to meet their own needs. In simple words sustainable development is a process in which the set of desirable societal objectives or the development index does not decrease over a time, not changing of natural capital stock, including natural resources and environment is a necessary condition for sustainable development (L.R.Singh-2003).

The horticultural development can be defined as a process of improving the capability of area under horticultural crops and horticultural productivity to meet increasing different demands of society.

The majority of farmers cultivate cereals, pulses, fiber and oil seeds according to tradition and if rainfall is scarce it results into crop failure. Price of food grains decreases considerably during harvesting season. This situation is the cause of poor economic condition of farmers. So, there is dire need to improve economic condition of farmers to overcome this problem (Nanaware, 2005). The development of horticulture is one of the ways for solving the problem of poverty and economic condition of the vast peasants of India and the growing unemployment among both educated and uneducated masses of this vast region since crop husbandry has proved uneconomical in most of the areas (Negi;1998). It is fruitful in many ways such as to understand the horticultural development in a given area. The horticultural development give an idea about the agricultural income of a region. Such regions provides areal significance and strength of horticulutural crops, to advocate suitable device for planning improvements in the under developed regions. Besides this, they are helpful in the introduction of innovations in agriculture. Therefore attempt is made here to find out crop combination region in Osmanbad District.

The Study Region:

The Osmanabad district is located in Southern part of Maharashtra. The absolute location of district is 17° 35′ to 18° 40′ North Latitudes and 75° 16′ to 76° 40′ East Longitudes. The district has an area of 7569 Sq KM. East-West extent is 280 KM. and South-North extents only 240 KM. As for as area is concerned, the district ranks 24^{th} in the state of Maharashtra. It is bounded on the South-West by Solapur district, on the North-West Ahmednagar district and South by Bidar and Gulbarga district of Karnataka State. The district consists of eight tahasils namely Osmanabad, Tuljapur, Lohara, Omerga, Kalamb, Bhoom, Paranda and Washi. It lies on the Deccan plateau with an average height of 600 metre above from sea level. most of the area of district is covered by Balaghat Ranges with patches of low level plain. Climate of the district is hot and dry, as daily mean maximum temperature ranging in between 30ºC to 39ºC and minimum temperature ranging in between 18ºC to 21ºC. Osmanabad District comes under the low rainfall region, with about 623.16 mm average annual rainfall. The soil of the district is essentially derived from the Deccan Trap, can broadly classified into four groups- shallow soil, medium soil, medium deep, and deep soil. The district consists of 8 urban centers and 735 villages. District is inhabited by 16,60,311 population (as per 2011 census) and density of population is 219 per sq. km.



Objectives:

The main objective of present study is to determine and analyze Horticultural development in the Osmanabad district.

Data Collection and Methodology:

To fulfill above objective the data regarding to ten indicators of horticultural development i.e Percentage of Net sown area, Percentage of More than one cropped area, Percentage of net irrigated area to net sown area, Percentage of area under horti crops to Gross cropped area, Percentage of Farm workers, per worker production, Density of Electric pumps, Density of Tractors, Per hectare Yield of Horti crops, Horticultural efficiency(Ei is collected and used for the period of 2009 to 2014 comes from primary as well as secondary sources. After the collection data is processed. To determine horticultural development **Shrivastava. S. L (1983)** method i.e. "Proportional Standardized Mean and Composite Index" has been utilized. Which is as Following.

$$W = \frac{Mean}{SD}$$

Where,

W= Weight of one particular indicator

Mean= The average of the series of one particular indicator.

SD = The standard deviation of same series.

$$Ci = \frac{x1w1 + x2\,w2 + x3\,w3 - - - - - -}{w1 + w2 + w3 \;- - - - - - - - - - -}$$

Where,

CI = Composite Index

X = Particular Indicator

W= Weight of series of one particular Indicator

Depending upon the composite index the indices have also calculated by taking whole region as 100 (for average composite index) by using following formula.

$$\text{Indices} = \frac{\text{Composite Index of Any Unit}x}{\text{Average Composite Index}} \text{ x 100}$$

Then on the basis of mean and standard deviation of composite index of Tahsils of Osmanabad district are divided in to very low, low, moderate and high development. On the basis of these statistical technique results and conclusions are drown.

Horticultural Development in Osmanabad District in 2013-14:

The table number 2 indicates composite index and indices value of each tahsil. The indices value of all tahsil ranging from mean minus two standard deviation to mean plus two standard deviation. Therefore all the tahsil are grouped into following five categories.

Table -1: Indicators of Horticultural Development in Osmanabad district

Tahsils	PNSA	PMTOCA	PNIA	PAUHC	PFW	PWHP	DEP	DT	PHYHC	HE
Paranda	82.83	25.07	29.08	3.44	79.8	8.04	9.94	0.52	12.07	137.17
Bhum	79.05	17.45	15.73	2.37	79.62	12.52	7.68	0.37	17.25	115.21
Washi	74.77	15.66	9.14	3.02	86.16	6.54	3.34	0.4	12.84	87.25
Kalam	88.7	21.48	8.62	1.66	76.5	3.23	10.39	0.4	10.97	77.33
Osmana	84.31	25.06	24.63	2.93	60.27	15.05	11.3	1.14	14.77	107.68
Tuljapur	71.92	24.06	26.69	2.39	66.78	22.69	6.78	0.18	17.65	118.81
Lohara	82.36	18.95	10.73	3.79	78.95	13.83	10.01	0.28	14.24	113.56
Omerga	81.43	28.44	27.2	2.97	73.17	7.06	14.87	0.25	12.35	90.61
Mean	80.67	22.02	18.98	2.82	75.16	11.12	9.29	0.44	14.02	105.95
SD	5.34	4.39	8.81	0.67	8.23	6.19	3.41	0.30	2.44	19.61
Weight	15.10	5.01	2.15	4.22	9.13	1.80	2.72	1.47	5.76	5.40
Total Weight		52.76								

Source: Complied by researcher on the basis of socio-economic review and District Statistical abstract of Osmanabad District,2009-2014 & Field survey.

(PNSA-% of Net sown area, PMTOCA-% of More than one cropped area, PNIA- % of net irrigated area to net sown area, PAUHC- % of area under horticultural crops to Gross cropped area, PFW- % of Farm workers, PWHP-per worker horticultural production, DEP- Density of Electric pumps, DT-Density of Tractors, PHYHC-Per hectare Yield of Horticultural crops, HE- Horticultural efficiency(Ei))

Table -2:Composite Index of Horticultural Development in 1980-81 Osmanabad district

Tahsil	CI	Indices
Paranda	57.51	109.70
Bhum	53.40	101.85
Washi	49.15	93.74
Kalam	50.92	97.12
Osmanabad	51.94	99.06
Tuljapur	50.92	97.12
Lohara	53.95	102.89
Omerga	51.65	98.51
Average	52.43	100.00
SD		4.85

Source: Complied by researcher on the basis of socio-economic review and District Statistical abstract of Osmanabad District,2009-2014 & Field survey.

Tahsils with High Horticultural Development:

The table 2 indicates that, Tahsils which have above mean plus one standard deviation indices value i.e.> 104.85 are included in high category. the high horticultural development is found only in Paranda tahsil mainly due to the development of surface irrigation by Sina kolegaon project and Bhima-Sina joint canal, these two project leads high percentage of net irrigated area to total net sown area, high horticulture efficiency, high per worker production, high density of tractors and high percentageof net sown and area sown more than once.

Tahsils with Moderate Horticultural Development:

The table 2 indicates that, Tahsils which have above mean to mean plus one standard deviation indices value i.e.> 100- 104.85 are included in this category. the moderate horticultural development is found in Bhum and lohara tahsils.

Tahsils with Low Horticultural Development:

Tahsils which have above mean minus one standard deviation to mean indices value i.e. >95.15 - 100 are included in low horticultural development category. the low horticultural development is found in Kalam, Omerga Osmanabad and Tuljapur tahsil. It is low in Tuljapur mainly due to rugged topography leads to low net sown area, low area under horticultural crops and low density of mechanical equipments, it is low in Kalam due to lower development of irrigation facilities resulted into lower percentage of area sown more than once, low per worker horticultural production, low density of electric pumps, low per hectare horticultural yield and low horticultural efficiency. it is low in Omerga and Osmanabad due to inadequate and uncertain rainfall.

Tahsils with very Low Horticultural Development:

Tahsils which have below mean minus one standard deviation indices value i.e. <95.15 are included in very low horticultural development category. the very low horticultural development is found only in Washi tahsil mainly due to low rainfall and lower development of irrigation facilities resulted into lower percentage of area sown more than once, low density of machanical equipments, low per hectare yield of horticultural crops, lower per worker production and low horticultural efficiency.

Conclusions:

The Forgoing analysis reveals that the high horticultural development only in Paranda tahsil is a result of development of surface irrigation by Sina-kolegaon project and Bhima-Sina joint canal, these two project leads high percentage of net irrigated area to total net sown area, high horticulture efficiency, high per worker production, high density of tractors and high percentage of net sown and area sown more than once.

the low horticultural development in Tuljapur is mainly due to rugged topography which resulted into low net sown area, low area under horticultural crops and low density of mechanical equipments, the low horticultural development in Kalam is a result of lower development of irrigation facilities which is mainly responsible for lower percentage of area sown more than once, low per worker horticultural production, low density of electric pumps, lower hectare horticultural yield and low horticultural efficiency. the very low horticultural development in Washi tahsil is mainly due to low rainfall and lower development of irrigation facilities resulted into lower percentage of area sown more than once, low density of mechanical equipments, low per hectare yield of horticultural crops, lower per worker production and low horticultural efficiency.

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THE PROBLEMS OF WOMEN BEEDI WORKERS IN SOLAPUR CITY

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ABSTRACT

The entire work based on the primary data, which is collected from selected female beedi workers through planned scheduled. There are 150 female beedi workers are selected for this study from Solapur city. Manufacturing or production activity is associated with one or the other problem irrespectively. The problem of beedi workers is categorized into two groups one is domestic and another is related to work. Beedi manufacturing is artisan oriented and is a specially the job of poor families. The families engaged in this work face many major problems namely, domestic problems and beedi work related problems. These problems are analysed in present research paper.

Introduction

A beedi (some time also spelled as bidi or *biri*) is a thin, South Asian cigarette filled with tobacco flake and wrapped in a *Tendu* leaf, tied with a string at one end. Tabacco is being used throughout the South Asia and part of the Middle East. Today beedies are popular and cheap in india and so its consumption is more than cigaratte. Beedies accounted for 48% of Indian tabacco consumption in 2008.

The commercial Indian beedi industry dates from the 1900s, and saw rapid growth during the 1930s probably driven by an expansion of tobacco cultivation at the time but also helped by movement to support of Indian industry and Indian products. Perhaps due to this support the educated classes in India grew to prefer beedies over cigarettes, though this is no longer the case Muslim leaders have also endorsed beedies over cigarettes, referring to cigarettes as foreign products. By the middle of the 20th century beedi manufacture had grown into a highly competitive industry. This stage of commercial production at the height of the beedi's popularity saw the creation of many new beedi brands as well as beedi factories employing upwards of one hundred primarily male beedi rollers.

Factory-based beedi production declined as a result of increased regulation during the 1940s, '50s and '60s, and beedi-making became a cottage industry with a home-based women workforce predominantly employed only in the beedi-rolling. In contrast, males continue to be employed in all aspects of beedi production. Over 3 million Indians are employed in the manufacture of beedies, including approximately 325,000 children.

India was the second largest tobacco producer in the nineteenth and early twentieth century's. Tobacco was used primarily for domestic consumption in different forms, including beedies, cheroots and hookahs. In 1936-37, India ranked first in tobacco production and its area under tobacco production was expanding at 2 % p.a. In 1999, India was the third largest tobacco producer in the world. In India 34 percent of tobacco is in the form of beedi which indicate the size of market for beedi.

Objective

The main objective of this study is to focus on the problems faced by female workers engaged in beedi industries of Solapur district.

Study Area

The Solapur District is Located in southern part of Maharashtra. It covering an area of 14,844.6 sq km It lies between 17^0 10' to 18^0 32' north latitudes and 74^0 42' to $76^0$15' east longitude. The proportion of the area of Solapur district compared to Maharashtra state is about five (5%) percent, and supported 38,49,543 populations as per 2001 census, which constitute 4.09 percent of state population, comprising 11 tahsils. The region is known as core of drought prone area of the state.

The Solapur district is located along the western flank of the Sahyadrian ranges in Maharashtra. It is more or less like a plateau region expects two hilly portions in Barshi and Karmala tahsils. It is a tableland with an average height of 550 meters above mean sea level. Beside this the area lies in the composite basin of the Bhima, Nira, Man, and Sina rivers.

Maharashtra is home to around 2.5 to 3 lakhs workforce in the industry. Solapur district employs nearly 65,000 workers in different activities of beedi industry. Beedi is a home-based industry and 95 percent of its workers are women. The entire process of beedi manufacturing is by human hands and no mechanical operation is involved. Beedi is an important source of income, for women earnings constitute on an average 45 to 50 percent of the total income.

Methodology

The present paper is based entirely on the primary data collected through the planned scheduled from the female beedi workers in the Solapur city. Total 396 female beedi workers from Solapur city are selected as sample for this study.

Discussion

Domestic Problems

Domestic problems are related to the effects of beedi rolling on other family members, such as their health, education and care of food.

Table 1 : Domestic Problems of Female Beedi Workers in Solapur City

Problems		Regular			Casual			Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Health	Yes	(00) (00.00)	78 (41.93)	78 (39.39)	00 (00.00)	69 (69.00)	69 (34.85)	00 (00.00)	147 (51.40)	147 (37.12)
	No	12 (100.00)	108 (58.07)	120 (60.61)	98 (100.00)	31 (31.00)	129 (65.15)	110 (100.00)	139 (48.60)	249 (62.88)
	Total	12 (100.00)	186 (100.00)	198 (100.00)	98 (100.00)	100 (100.00)	198 (100.00)	110 (100.00)	286 (100.00)	396 (100.00)
Education	Yes	00 (00.00)	73 (39.25)	73 (36.87)	04 (04.08)	85 (85.00)	89 (44.95)	04 (03.64)	158 (55.24)	162 (40.91)
	No	12 (100.00)	113 (60.75)	125 (63.13)	94 (95.92)	15 (15.00)	109 (55.05)	106 (96.36)	128 (44.75)	234 (59.09)
	Total	12 (100.00)	186 (100.00)	198 (100.00)	98 (100.00)	100 (100.00)	198 (100.00)	110 (100.00)	286 (100.00)	396 (100.00)
Care of food	Yes	00 (00.00)	75 (40.32)	75 (37.88)	00 (00.00)	40 (40.00)	40 (20.20)	00 (00.00)	115 (40.21)	115 (29.04)
	No	12 (100.00)	111 (59.67)	123 (62.12)	98 (100.00)	60 (60.00)	158 (79.78)	110 (100.00)	171 (59.79)	281 (70.96)
	Total	12 (100.00)	186 (100.00)	198 (100.00)	98 (100.00)	100 (100.00)	198 (100.00)	110 (100.00)	286 (100.00)	396 (100.00)

1. Health Problems

All in all 37.12 percentage of respondents reported that beedi work affects children's health, while 62.88 percentage of respondents respond that they do not face such problems from beedi rolling. Gender wise more than half (51.40 percentage) of female workers report that beedi work affects children's health, remaining workers (48.60 percent) respond that they do not have such problems, men respond they have not facing such type of problems. Category wise 39.39 percentage of regular female workers, more than one-third (34.85 percentage) of casual female workers reported that beedi work affects on health, remaining 60.61 percentage of regular and nearly two-third (65.15 percentage) of casual workers' response is that they do not face such problems from beedi work. It implies that all the regular and casual families are suffering from domestic health problems

2. Education Problems

Nearly half (40.91 percentage) of families focus the problem of education, remaining more than half (59.09 percentage) of respondents reported that they are not facing such any problems. Gender wise more than half (55.24 percentage) of female, 03.64 percentage of male workers focus these problems, balance of 44.75 percentage and 96.36 percentage female, male respondents do not have education problem. Category wise more than one-third (36.87 percentage) of regular, nearly half (44.95 percentage) of casual workers reported that beedi work affects children's education, while nearly two third (63.13 percentage) of regular, casual workers response is that they do not have such problems.

3. Care of Food

About 29.04 percentage of workers focus on this problem and remaining workers (70.96 percent) do not. Gender wise nearly half (40.21 percentage) of female workers report these problems, remaining do not. Category wise one-fifth (20.20 percentage) of regular, more than one-third (37.88 percentage) of casual workers reported that beedi work affects on care of food, remaining reported that it does not affect. It implies that families of both the categories are suffer from all domestic problems.

Work Related Problems

Work related problems are assumed to have arisen from taking of raw-materials to procuring or disposing of beedi bundles in the factory or traders on the basis of survey data. The nature of problems faced by beedi working families are analysed as below.

1. Sufficient Raw Materials

About nearly half (41.41 percentage) of the beedi workers have not faced any problem in getting tobacco, tendu leaves and thread from the factories, middlemen and traders. The problem is raised by more than half (58.59 percentage) of workers. It is clear that 40 percentage of the sample workers get sufficient raw-materials and 60 percentage of workers are facing problem of raw-materials. Gender wise more than four-fifth (84.55 percentage) of male, nearly half (48.60 percentage) of female beedi workers get sufficient raw-materials, remaining 15.45 percentage and more than half (59.40 percentage) of male and female workers respectively are facing the problem of raw-materials. Category wise 26.77 percentage of regular and 90.41 percentage of casual workers get sufficient raw materials from factory, remaining 73.23 percentage regular workers and 9.59 percentage casual workers do not sufficient raw-materials from beedi factories. The data shows that, extent of these problems is more among regular workers comparatively casual workers. It may be due to the regularization of job by factories. But data shows that nearly three fourth (73.23 percentage) of workers are facing the problem of raw-materials and 9.59 percentage of casual workers are facing the problem of raw-materials. Overall data analysis shows that raw-materials problem is more in regular workers over casual workers.

2. Get Sufficient Health Facilities

As per factories act casual workers are not eligible for health facilities. Regular workers were considered to health facilities. Nearly four-fifth (77.78 percentage) of the workers opine that they have sufficient medical facilities, only 22.22 percentage reported as having in sufficient medical facilities. Gender wise all male (12) workers and more than three-fourth (76.34 percentage) of female workers get sufficient medical facilities, remaining 23.66 percentage of female workers do not get sufficient medical facility. It is clear that nearly four-fifth (80 percentage) of workers had the health facilities and one-fifth (20 percentage) of workers still do not have sufficient health facilities. Government may also extent medical facilities to casual workers.

3. Satisfied Existing Piece Wage

The wage is determined by piece rate. The beedi workers wage is fixed according to each piece. The prevailing piece wage rate is 60 to 80 per thousand beedies for regular workers. All sample respondents opposed the piece rate wage because in same times due to health, domestic problem. The quantity of beedi rolling is become less for that they get less wage. The piece rate wage is very low and the demand daily wages. Casual workers get half the wage rate as compared to regular workers. Therefore, casual worker’s requirement is daily wage.

Major Findings

Major findings from present study are given below.

1. Since beedi rolling is women oriented industry and women roll the beedies nearly 10 to 12 hours per day. Hence, it not possible for women beedi workers to take care of their small children. Hence, these children face the problem of food, education and health.

2. The nutritional levels of the women beedi workers are very low because these children do not get healthy as their mothers get less wages and work for more number of hours in a day.

3. Almost all the children of the beedi workers discontinue their education below the level of S.S.L.C. only. Even though government provides scholarships for higher education, none of these children have availed thisbenefit so for.

4. Since, beedi rolling is a home industry, due to thedust and smell of tobacco leaves which contains the nicotine, these children suffer from health hazards.

5. More than half (51.77 percentage) of workers are facing problem of transport because they have to handover the rolled beedies tothe factory.

6. All sample respondents opposed the method of piece wage payment.

7. The 17.68 percentage of workers are harassed by beedi checker.

Summery

Beedi workers families are suffering from domestic and health problems. Nearly half of workers families focus the problem of education. More than half of workers are facing problem of raw materials and transportation. All workers opposed piece wage rate and less number of workers harassed by beedi factory.

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AGRICULTURAL PROBLEMS IN INDIA

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ABSTRACT

India is mainly an agricultural country. Agriculture, the backbone of Indian economy, Indian economy is classified in three sectors — Agriculture and allied, Industry and Services. Agriculture sector includes Agriculture (Agriculture proper & Livestock), Forestry & Logging, Fishing and related activities. According to Statistic Times, sector wise Indian GDP composition in 2014-2015 are as follows : Agriculture (17.9%), Industry (24.2%) and Services (57.9%). Total production of agriculture sector is $366.92 billion. India is 2nd larger producer of agriculture product. India accounts for 7.68 percent of total global agricultural output.Agriculture makes the highest contribution to India's GDP.

Todays agriculture sector is many problems faced by farmers are related to this, land holding problems, Irrigation problems, **Seed** problems, Sustainability problems and many other problems.Agriculture in India are also frequently affected by natural disasters such as drought, floods, cyclones, storms, winds, hail, frost, winterkill, fire, lightning excessive, plant diseases and any other unavoidable perils not caused by neglect or failure to follow established good farming practices etc. All these events severely affect farmers through loss in production & farm income & they are beyond the control of the farmers. There is need to recovers this loss. Government should to provide more subsidies to agriculture sector. The facilities of Irrigation, Cheaply agriculture inputs, Electricity, Fertilizers, Seeds etc. for this facilities Govt. have to encourage for farmers.In short, we can say that the prosperity of the country will depend upon the prosperity of africulture.

The main objectives of this research paper are to study the contribution of agriculture sector in Indian GDP and understand the importance of agriculturel sector in Indian Economy. The government of India have provided many facilities and subsidies to agriculture sector, but failed to achieve desired goal. This paper is significant in two ways; firstly it would try to study agricultrel problems, and secondly it would suggest the some remedial measures for greatly developed agriculturel sector.

1. Introduction

India is mainly an agricultural country. Agriculture, the backbone of Indian economy, Indian economy is classified in three sectors — Agriculture and allied, Industry and Services. Agriculture sector includes Agriculture (Agriculture proper & Livestock), Forestry & Logging, Fishing and related activities. According to Statistic Times, sector wise Indian GDP composition in 2014-2015 are as follows : Agriculture (17.9%), Industry (24.2%) and Services (57.9%). Total production of agriculture sector is $366.92 billion. India is 2nd larger producer of agriculture product. India accounts for 7.68 percent of total global agricultural output.Agriculture makes the highest contribution to India's GDP. Agriculture contributes almost about 18 percent to the country's GDP. It has been seen in the last few years that the input of the agriculture sector has been declining, but it is still the biggest contributor. Agriculture occupies a prominent position in Indian policy-making not only because of its contribution to GDP but also because of the large proportion of the population that is dependent on the sector for its livelihood.

Todays agriculture sector is many problems faced by farmers are related to this, land holding problems, Irrigation problems, Seed problems, Sustainability problems and many other problems.Agriculture in India are also frequently affected by natural disasters such as drought, floods, cyclones, storms, winds, hail, frost, winterkill, fire, lightning excessive, plant diseases and any other unavoidable perils not caused by neglect or failure to follow established good farming practices etc. All these events severely affect farmers through loss in production & farm income & they are beyond the control of the farmers. There is need to recovers this loss.

1.1. Objectives of the study:

Following are the major objectives of the study.

1. To study the importance of agriculture in Indian Economy.
2. To study the contribution of agriculture sector in indian GDP.
3. To study the problems of agriculture sector in India.
4. To study the efforts for success of agriculture sector in India.
5. To suggest some remedial measures for the better future of agriculture sector in India.

1.2. Research Methodology:

Data Collection:

Present research paper has depends on secondary data. The secondary data has collected from some books, magazines and internet etc.

1.3. Importance of Agriculture in Indian Economy

Economic Growth: Agriculture is the backbone of Indian economy. Though, with the growth of other sectors, the overall share of agriculture on GDP of the country has decreased. Still, Agriculture continues to play a dominant part in the overall economic scenario of India.

Source of Food for domestic consumption: Food is essential for life. We depend on agricultural outputs for our food requirements. India produces large quantity of food grains such as millets, cereals, pulses, etc. A major portion of the food-stuffs produced is consumed within the country. Our farmer's works day and night to feed our population that counts over 1.21 billion.

Besides agriculture with a commercial bias, subsistence agriculture with its emphasis on the production of food for the cultivator's family is widespread. Traditionally, Agriculture is followed as the simplest method of obtaining food for the family. Agriculture in India is more a 'way of life' then a 'mode of business'.

Export: India exports excess food and agricultural products. A large proportion of India's export trade is based on the agricultural products, such as jute, tea, tobacco, coffee, spices, and sugar. It helps in increasing the foreign exchange. India is ranked seventh in terms of agricultural exports. In 2013, India exported agricultural products valuing around 39 billion dollars.

Basic occupation of millions: Agriculture is the basic occupation for majority of main-workers in India. A large number of rural women are also engaged in agriculture. maximum main workers in India are engaged in agricultural and allied activities.

Agro-based industries: A number of industries are agro-based industries, such as jute, cotton, sugar, tobacco, etc. Raw materials for such industries are supplied from agricultural produce.

Green revolution: Green revolution began in India with an objective to give greater emphasis on Agriculture. The era of Green revolution that began in 1960s witnessed significant increase in the production of food crops. The introduction of improved methods of agriculture and high yielding varieties (HYV) seeds, mainly wheat, had resulted into remarkable improvement in agricultural outputs. The productivity of land increased tremendously giving huge economic boost to the nation.

1.4. Problems faced by the Agriculture Sector

1) Fragmented land holding

Nearly 80% of the 140 million farming families hold less than 2 acres of land. Large land holdings enable the farmer to implement modern agricultural techniques and boost productivity. Small land holdings restrict the farmer to use traditional methods of farming and limit productivity. As land holdings are small, more people invariably work on the farms in the rural areas and coupled with the obsolete technology, farm incomes come down.

2) Irrigation problems

Most of the farming in India is monsoon dependent – if monsoons are good, the entire economy (and not just the agricultural sector) is upbeat and when the monsoon fails, everyone everywhere takes a hit to some extent. The problem here is of proper management of water or the lack of it. Irrigation which consumes more than 80% of the total water use in the country needs a proper overhaul if the country has to improve agricultural output and boost the overall economy.

3) Seed problems

Most of the farmers – especially the poor and marginal ones – are dependent on seeds sold in the market. Moreover, the HYV seeds as well as the GM seeds which promise higher yields force the farmers to buy seeds for every crop. With spurious seeds hitting the market, the farmers' woes have exceeded all limits. Sometimes seeds do not give the stated/claimed yields and farmers run into economic troubles.

In many cases of GM and HYV seeds, farmers are forced to use high amounts of fertilisers and pesticides, provide large amounts of water (irrigation) and abide to all the other farming requirements that the companies mandate to get the proper yields. A proper regulation/legislation to hold seed companies accountable for false claims is the need of the hour as companies use legal loopholes to push the blame on to the farmers in the case of failed crops.

4) Sustainability problems

Indian agricultural productivity is very less compared to world standards due to use of obsolete farming technology. Coupled with this, lack of understanding of the need for sustainability in the poor farming community has made things worse. Water usage is also unplanned with some arid areas misusing the irrigation facilities provided by planting water intensive crops. In areas where irrigation in the form of rivers and canals is not sufficiently available, ground water resources are heavily exploited. Sustainability in agriculture is of utmost importance as many problems faced by farmers are related to this. Excess fertiliser usage not only makes the plants dependent on artificial fertilisers but also erodes the land quality, polluted ground water and in case of a surface runoff, pollutes the nearby water bodies. Similarly, planting crops which require more water like rice on the basis of irrigation facilities extended to areas which are water deficient uses up more water than required. Besides, the excessive evaporation cause salts to accumulate on the fields making them lose their fertility quickly. Lack of proper understanding of the need to grow crops sustainably will push farmers into a vicious circle – of debts, heavy use of fertilisers, water mismanagement, low productivity and thus more debts for the next cycle.

5) Over dependence on traditional crops like rice and wheat

Every crop requires certain climatic conditions to give the best yields. Though rice and wheat are produced in a large area in India, certain areas can readily switch to other crops to get better productivity. India is importing cooking oil from abroad though we have the necessary conditions to grow more oilseeds here. Heavy dependence on traditional rice and wheat points to the lack of a proper national plan on agriculture. Excess stocks in a few crops lead to problems in the selling of the produce, storage and shortage of other essential farm output. Moreover, if the farm output is skewed towards crops like rice, irrigation and ground water facilities are misused by farmers, which lead to a host of other problems.

***6)* Supply channel bottlenecks and lack of market understanding**

Supply channel bottlenecks and lack of a proper marketing channel are serious problems for a farmer who is already burdened with a host of troubles. These are issues which need to be tackled at the regional, state and national levels. Lack of a proper marketing channel forces the farmers to distress sale, makes them victims in the hands of greedy middlemen and ultimately restricts their income. An improper marketing and storage channel also leads to storage problems in the years where productivity is good, leads to poor agricultural exports due to problems in maintaining quality and in many cases leads to gross wastage of valuable food grains and other farm output. Food wastage running into thousands of crores of rupees every year is nothing short of a crime in a country where more than 25% is below poverty line and where millions go hungry day after day.

Lack of a national strategy in terms of agricultural production leads to production of some crops exceeding the requirement and to some crops well below the minimum limits. The problem is more acute in case of perishable agri output like vegetables and fruits where estimates of wastage are around 40%.

India produces over 265 million tonnes of food grains per year, which is more than enough to feed all its citizens for a long time. Yet, we see so much of unwanted food wastage, rising food price inflation and millions of hungry people.

7) Government handling of the issue

MSP, overall agricultural strategy of the country, PDS, storage/granaries, lack of export market creation. India lacks the required number of storage facilities (granaries, warehouses, cold storage etc) which negates the advantage of having a bumper crop in years of good monsoon. Exports in agricultural sector are also not very encouraging with a share of just 10% of the total exports, for a country where more than 50% of population is dependent on agriculture.

The Minimum Support Prices (MSP) offered by the Government is a double edged sword – MSPs protect farmers from being exploited by middlemen but during times of excess crop, Government runs the risk of an unnecessary fiscal deficit by buying the excess produce. Lack of proper storage facilities and lack of a proper international market linkage leads to lower exports and in many cases leads to huge amount of wastage.

1.5.Solution

1. Consolidation of village lands and cooperative farming will ease the burden of**fragmented land** holdings. When the farmers form a consortium at the village level, the aggregate land can be farmed by using the latest technology.
2. Banks too will be willing to lend money to a village consortium which can be utilised to boost farm productivity, employ sustainable farming methods, reduce over – dependence on fertilisers and thus solve many problems.
3. The overall risk of a crop failure is less in this case and small farmers have a higher chance of earning a decent income at the end of the harvest season. Agricultural intensity also rises when a planned strategy adopted at the village level is implemented.

4. Agricultural credit and farm mechanisation for small and marginal farmers will continue to be difficult unless pooling of farm resources and/or a joint usage of farm technology are employed.
5. **Irrigation problems** can be addressed by Government – preferably at the State and National levels. Though the Government cannot force farmers to produce only the designated crops in particular areas, it can surely educate them about the alternatives.
6. When proper techniques (in water management at the regional, state and national levels as well as a crop plan of what to produce and where to produce) are employed, it will be a win – win situation for both the farmers as well as the country.
7. Irrigation problems as well as problems due to single/traditional crop dependence can be solved by a national level plan for agricultural production. Government can encourage farmers to shift to cash crops (oil seeds etc) instead of food crops in areas where food crops are not at an advantage to reduce imports and also to boost exports.
8. **Seed problems** can be overcome by creating in house seed banks at the village level for traditional crops (thereby reducing farmer dependence on external seed banks), selling Government approved seeds through proper channels (to eradicate spurious seeds) and strict penalties on seed marketing companies in case the seeds do not match the claims – germination and yield - of the companies. Terminator seeds should not be encouraged as a matter of principle as they force farmers to buy seeds for every crop.
9. Scientific research in this subject is to be encouraged to promote seeds which are mild on resource requirements but help the farmers in boosting the yields.
10. Sometimes small innovations at the grass root levels can solve a host of problems specific to a particular region. District agricultural officers must make it a habit to encourage such ideas and also take part in knowledge sharing to implement the ideas at a regional level.
11. Some **sustainability** solutions are proper crop management on the basis of water availability, crop rotation, deploying modern agricultural practices to boost productivity, switching over to organic farming (village pools will reduce costs), thrust on allied activities.
12. For organic farming, first of all, a proper awareness has to be built – among both the farmers as well as consumers. **Organic farming** reduces the unnecessary usage of artificial fertilisers, reduces water consumption, strikes a good balance between the local environment and the farm output, helps the land retain its fertility for a long time, reduces costs in the long run and also with the creation of a proper market in the towns and cities establishes a virtuous cycle between consumers and farmers.
13. **Storage facilities** can be boosted by small cold storage or granaries at village level which can be established from Panchayat funds and loans to the village society (this eliminates dumping of excess crops in the market yard).
14. A 700 ton cold storage cum warehouse will cost around Rs. 1.5 crores which is very reasonable cost for a group of villages or a large Panchayat, provided the State or Union Government funds the cost. E-Mandis will also help the farmers to correctly predict the prices and thus market them profitably.
15. At the **National level** an **agricultural strategy or policy** to improve information exchange, national level cold storage chains and logistic network (If Walmart can do, then Government of India can also do!) is the need of the hour.

16. Proper management of **PDS** has to be done to cut down wastes so that a reliable estimate of the food grain needs will be made. The excess (after keeping reserves for a potential drought year) can be exported provided the quality is maintained by means of proper storage.
17. Food wastage can thus be cut down and agricultural trade balance can be improved if there is a national level plan.

1.6. Conclusion:

Agriculture makes the highest contribution to India's GDP. Agriculture contributes almost about 18 percent to the country's GDP.but todays agriculture sector is facing many problems.Government should to provide more subsidies to agriculture sector. The facilities of Irrigation, Cheaply agriculture inputs, Electricity, Fertilizers, Seeds etc. for this facilities Govt. have to encourage for farmers.In short, we can say that the prosperity of the country will depend upon the prosperity of africulture.

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TO STUDY THE POPULATION OF PRIMARY HEALTH CARE CENTERS IN WALWA TAHSIL OF SANGLI DISTRICT

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ABSTRACT

Health is one of the most important basic needs of the human being. To maintain and improve the quality and universal access of health care in the country in general and rural area in particular is a major challenge in front of government of India. Primary health care (PHC) centers are playing very significant role in providing basic health facilities and services. The present research paper an attempt to focus on the population pressure on primary health care centers in Walwa tahsil of Sangli district. The study has considered population census data of 2001 and 2011 of Walwa tahsil. Study arrived at conclusion that the population pressure on PHCs has increasing sharply adequate population is observed on every center and it has resulted in poor service quality. The population pressure also resulted in law service efficiency from PHCs in the study region and burden on medical staff as well as infrastructure. The increasing of PHC centers is best solution to reduce the pressure.

Key Words: PHCs, Population Pressure, Population Service Capacity

- **Introduction**

The quality of health and health care services are the key burring issues in India. PHC is the first drop line between village community and the Medical Officer. It is the responsibility of the PHCs to provide an integrated curative and preventive health care to the rural people with emphasis on preventive and promotive aspects of health care. The PHCs are established and maintained by the State Governments under the Minimum Needs Programme (MNP)/ Basic Minimum Services (BMS) Programme. There were 24,049 PHCs functioning in the country as on March 2012[1]. There are total 59 PHCs functioning in Sangli District out of which 11 PHCs in the Walwa tahsil. The present research paper humbly attempted to study the population pressure on primary health care centers in Walwa tahsil of Sangli district. The study has considered population census data of 2001 and 2011 of Walwa tahsil.

- **Objectives of the Study**

The major objectives of the present research work are as follw

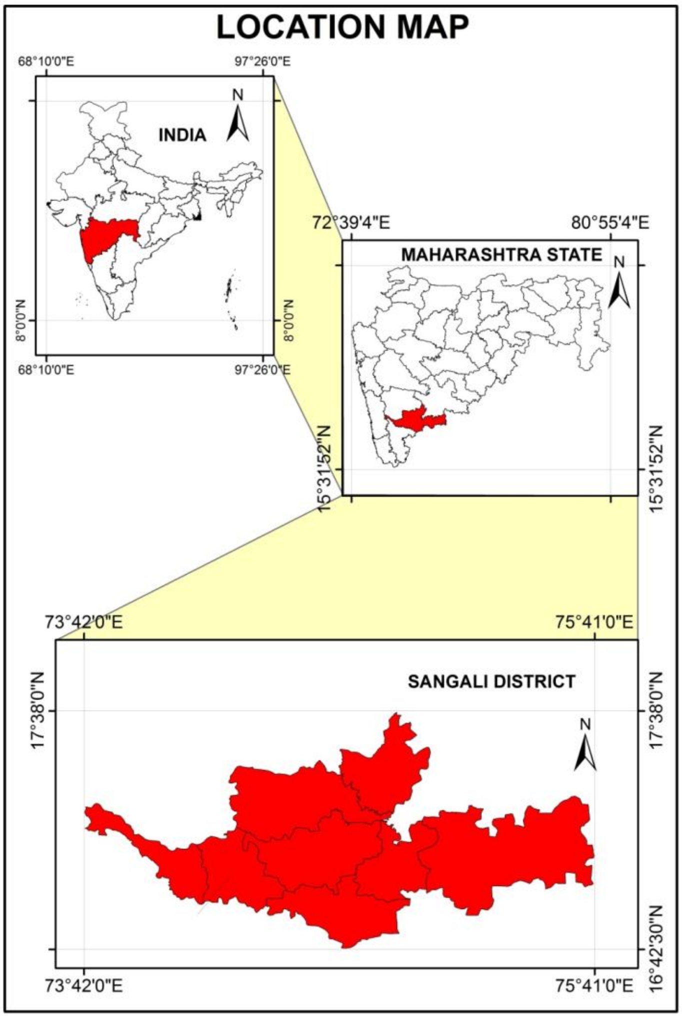
1. To study the PHC centers in Walwa Tahsil.
2. To analyzes the population pressure on PHC.

- **Study Region**

The Study area Walwa Tahsil is one of the economically and culturally developed Tahsil of Sangli district in Maharashtra state. It lies between 16^0 15' N to 17^0 10' N latitude and 24^0 5' E to 24^0 27' E longitude. The total area Walwa Tahsil is 675.25sq.km.that comprising of 96 villages and 2 towns. In Sangli district Walwa Tahsil lies on the west side. It is surrounded by Kadegaon

Tahsil in the north, Palus and Miraj Tahsil in the east and Shirala Tahsil in the west. Warna River separates Sangli district from the adjoining Kolhapur district.

The length of the Tahsil from east to west is 44.5 km while from north to south is about 30 km. The Kamalbhirav range has significant relief variation from 560 m to above 740 m. Similarly on the western side, the relief various from 620 m to 800 m. The highest elevation at Kille Machindragad (846m) lies towards Northwestern part of this region. In general the slope of the area is from north to south.



- **Methodology**

The present research paper is based on primary and secondary data. The secondary data have been collected from district socio-economic abstracts and district census report. Whereas the primary data have collected through field work by visiting to each PHC centers All eleven PHCs are selected for present investigation. The population pressure comparison has been made between censes population 2001 and 2011 for all PHCs. For the calculation of population pressure index following method have been adopted.

1) $$\text{Population Pressure Index} = \left\{ \frac{\text{Actual population of PHC}}{\text{Service capacity of PHC}} * 100 \right\} - 100$$

2) $$\text{Growth Rate} = \frac{P1-P0}{Po} * 100$$

Where as,

GR= Growth rate
P1= Census Population 2011
P0= Census Population 2001

- **Population Pressure Norms of PHC**

As per the national population norms under National Rural Health Mission (NRHM) Primary Health Centre covers a population of 20,000 in hilly, tribal, or difficult areas and 30,000 populations in plain areas with 6 indoor/observation beds[4]. It acts as a referral unit for 6 Sub-Centres and refer out cases to CHC (30 bedded hospital) and higher order public hospitals located at sub-district and district level. PHCs should become a 24 hour facility with nursing facilities. Select PHCs, especially in large blocks where the CHC/FRU is over one hour of journey time away, may be upgraded to provide 24 hour emergency hospital care for a number of conditions by increasing number of Medical Officers, preferably such PHCs should have the same IPHS normsas for a CHC[5]

- **Situation of PHCs in Sangli District**

As per census 2001, there are ten tahsils and 2822143 lakh population in the Sangli district. Out of the total 28.22 lakh population 21.02 lakh (73.44 percent) lives in rural area and 7.19 lakh (26.56 percent) in urban area. Out of the total urban population 72 percents are lives in Sangli, Miraj and Kupwad. There are 59 PHCs functioning in the district for rural population. It means that 73.44 percent (i.e 21.02 lakh) of the total population of the district were depends on the PHCs for the primary health needs and cares.

- **PHCs wise Population & Growth Rate in Walwa tahsil 2001 and 2011**

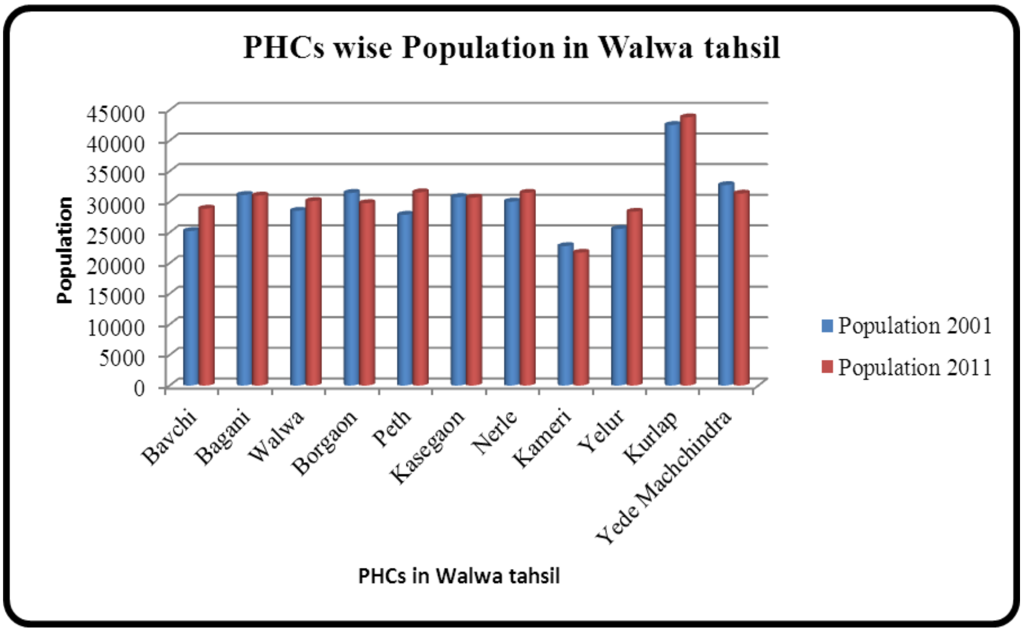
The decadal population growth rate during the decade 1991 to 2001 was 13.93% which comes down to 9.18% in decade 2001-2011 in Sangli district[2]. The decadal population growth rates (From 2001 to 2011) of rural and urban area are 8 per cent and 14 per cent respectively in the district. The population growth rate of the district is 9.24 per cent whereas it is 15.99 per cent in case of Maharashtra. It means that the growth rate of population is lower than that of Maharashtra.

As per as the Walwa tahsil is concern researcher observed highest decadal population growth rate (from 2001 to 2011) in Bavchi PHCs i.e 14.47 per cent which has followed by Peth i.e 13.17 per cent and Yelur i.e 11.05 per cent. The lowest decadal population growth rate has been observed in Borgaon PHCs i.e -5.31% followed by Kameri PHCs i.e -4.69 Percent.

Table 1: PHCs wise Population & Growth Rate in Walwa tahsil in 2001 and 2011

PHC Name	Population 2001	Population 2011	Growth Rate in %
Bavchi	25231	28884	14.47
Bagani	31125	31022	-0.33
Walwa	28526	30125	5.60
Borgaon	31447	29777	-5.31
Peth	27877	31550	13.17
Kasegaon	30771	30685	-0.27
Nerle	30032	31466	4.77
Kameri	22759	21691	-4.69
Yelur	25555	28380	11.05
Kurlap	42541	43787	2.92
Yede Machchindra	32725	31333	-4.25
Total population under PHCs in tahsil	328589	338700	

Source: District Census Report 2001 and 2011& calculated researcher.



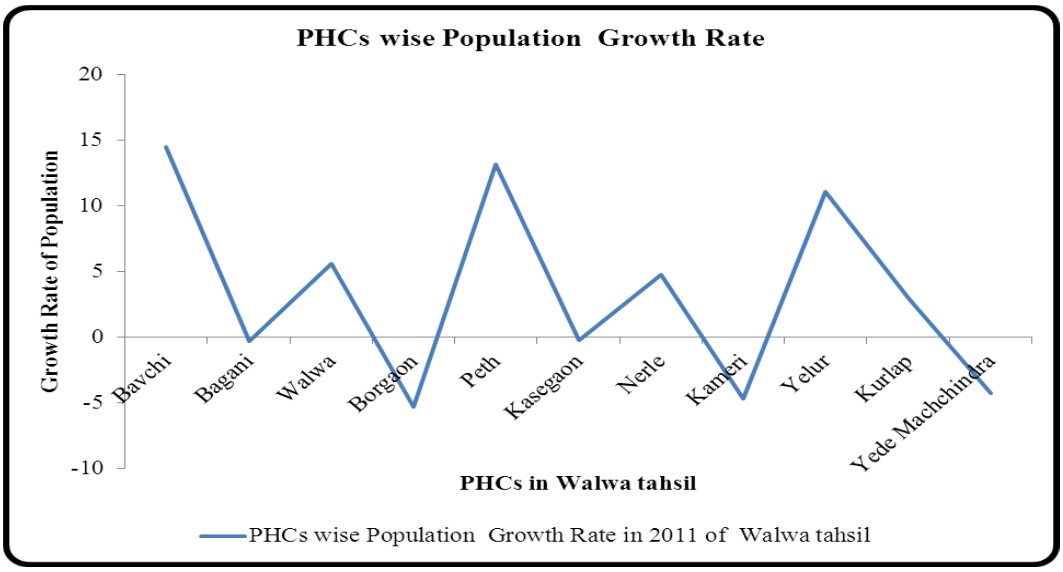


Fig 2

Figure 1 reveals that the highest population size has observed under the Kurlap PHC in both the census year. On the contrary the lowest population size has been observed under the Kameri PHC in both the concern census year. The population size of Bavchi, Walwa, Peth, Nerle, Yelur and Kurlap PHCs are significantly increased in the census year 2011[3].On the contrast the population size of Bagani, Borgaon, Kasegaon, Kameri and Yede Machchhindra PHCs are significantly decreased in the census year 2011.

- **Population Pressure on PHCs**

The main intention of the present research task is to measure the population pressure according to government norms on PHCs in Walwa Tahsil of Sangli District. Researcher has measures both population pressure in 2001 and 2011. By taking into consideration the magnitude of the pressure, it has classified into four categories that is as below.

High Pressure (above 18 %)

If the population pressure value is 18% and above 18% then it has considered as high pressure for both the census years. Only Kurlap PHC is observed in high pressure.

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Medium Pressure (9 to18%)

If the population pressure value lie between 9 to 18 per cent then it has considered as medium pressure PHCs for both the census years. In this category Yede Machchindra PHC is observed in the tahsil.

Low Pressure (0 to 9%)

If the population pressure value lie between 0 to 9 percent then it has considered as low pressure PHCs for both the census years. In this category Bagni, Borgaon, Kasegaon and Nerle PHCs is observed in tahsil.

Below Pressure (Below 0)

If the population pressure value is less than 0 then it has considered as below pressure PHCs for both the census years the table 2 shows population pressure on PHCs in Walwa Tahsil.

Table 2 Population Pressure on PHCs in Walwa Tahsil

Sr. No.	PHC Name	Population 2001	Population Pressure 2001	Population 2011	Population Pressure 2011	Net Change in Pressure in 2001 to 2011
1	Bavchi	25231	-15.9	28884	-3.72	+12.17667
2	Bagani	31125	3.75	31022	3.4	-0.34333
3	Walwa	28526	-4.92	30125	0.41	+5.33
4	Borgaon	31447	4.82	29777	-0.75	-5.56667
5	Peth	27877	-7.08	31550	5.16	+12.24333
6	Kasegaon	30771	2.57	30685	2.28	-0.28667
7	Nerle	30032	0.1	31466	4.88	+4.78
8	Kameri	22759	-24.14	21691	-27.7	-3.56
9	Yelur	25555	-14.82	28380	-5.4	+9.416667
10	Kurlap	42541	41.8	43787	45.95	+4.153333
11	Yede Machchindra	32725	9.8	31333	4.44	-4.64

Source: District Census Report 2001 and 2011. (Pressure has computed)

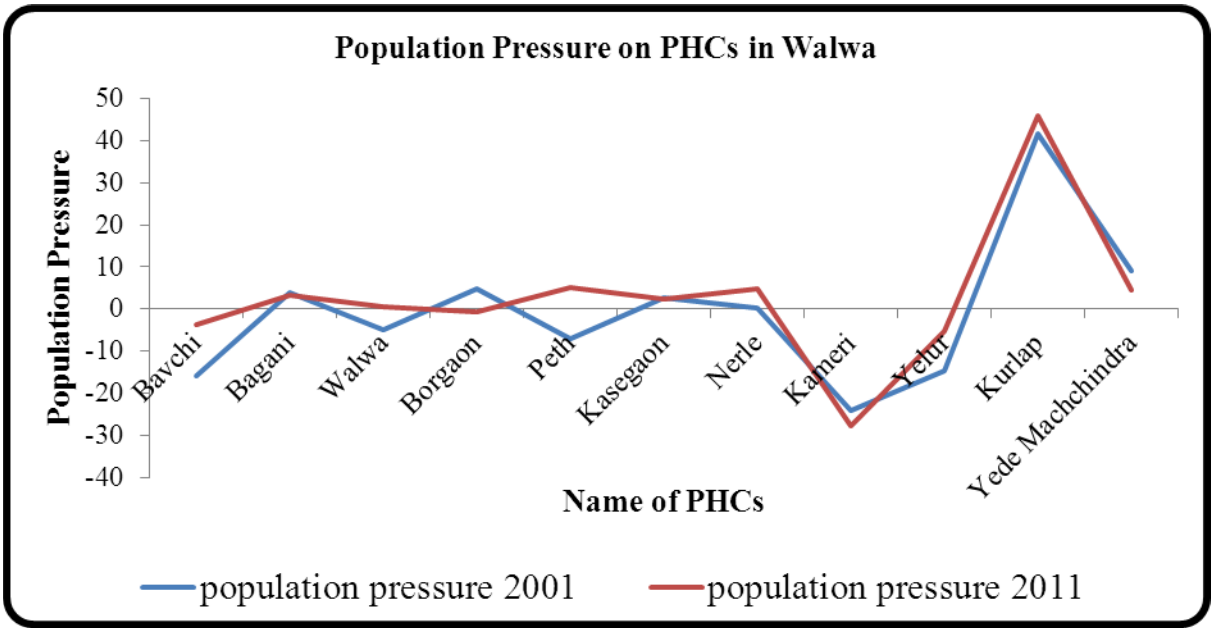

Fig. 3

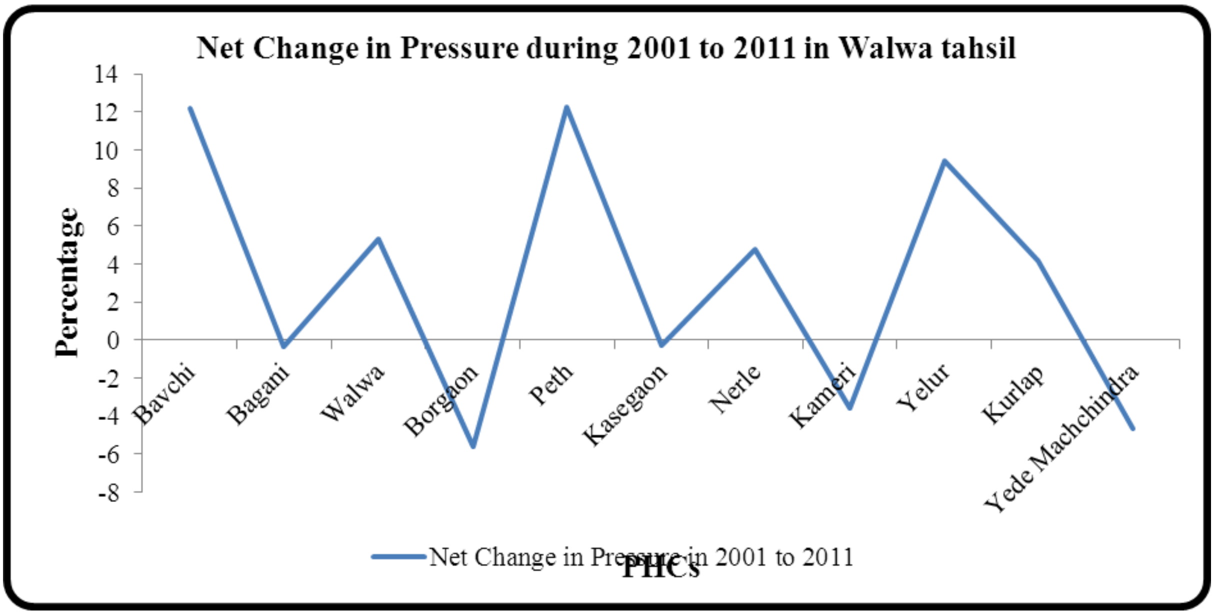

Fig4

The comparative pressure position of selected PHCs of Walwa tahsil has been presented in table 2. It has been seen from the table that the population pressure of Walwa and Peth PHCs have been increasing smoothly as these PHCs shifted from below pressure category to low pressure category in 2011. However these two PHCs are still falls under the low-pressure category. The population pressure on Boargaon PHCs is sharply declining as it is shifted from low pressure category into below pressure category in 2011. The population pressure on Yede Machindra is also declining as it has shifted from medium pressure category to low pressure category. It has also found that the population pressure on PHCs is remains high in case of Kuralap PHC in both the census year. The low population pressure position of Bagani, Kasegaon and Nerle has been observed in both the census year. It means the pressure level of these PHCs remain constant. The below population pressure position of Yelur, Kameri and Bavchi has been observed in both the census year. It means the pressure level of these PHCs remain constant

Conclusion

There should low population pressure on the PHCs, in order to provide qualitative and efficient primary medical services to the rural people. In fact in an average researcher has observed low population pressure on PHCs in Walwa tahsil. However, taking into consideration long period the pressure will have increasing trend. Hence, it has been suggested that increase the number of PHCs with all facilities and there is an urgent need of long term policy measures for reducing increasing population pressure in near future.

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SUSTAINABLE AGRICULTURAL DEVELOPMENT WITH REFERENCE TO NEW ECONOMIC ERA

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ABSTRACT

India has been witnessing a blinding pace of growth and development in recent times. There is talk of the country leapfrogging into the league of developed nations sooner than later. But this growth has raised concerns from sundry quarters as regards its basic texture and health. Experts are now calling for "sustainable development" and the term has gained currency in the last few years. In spite of fast growth in various sectors, agriculture remains the backbone of the Indian economy. This paper attempts to tackle and explore the issue of sustainable development in agriculture in India. Further it aims to compare the sustainable agriculture system with the traditional system and the current system in practice, across the dimensions of ecological, economic and social sustainability .It also tries to give long term solutions to solve the problems plaguing the system so that sustainable practices can be promoted and practiced.

Introduction

Agriculture sector is the most important position in Indian economy, as it is one of the largest private businesses in India, which continues to dominate the change in economy through its links of various sectors of production and markets. The role of agricultural sector in Indian economy can be seen through its contribution to GDP (Gross domestic Product) and employment. This sector also contributes significantly to sustainable economic development of the country. The sustainable agriculture development of any country depends upon the judicious mix of their available natural resources. In fact agriculture determine the fate of a country like India where about two-thirds of the population still lives in rural India with agriculture as its livelihood, in spite of the increasing urbanization that has been taking place since many decades. Therefore if agriculture goes wrong, it will be really bad for the economy as the falling of agricultural growth not only affects employment but GDP too (thus increasing poverty). The larger objective for the improvement of agriculture sector can be realized through rapid growth of agriculture which depends upon increasing the area of cultivation, cropping intensity and productivity. But for a country like India, increasing productivity is more important than the rest of the two. This is simply because of increasing urbanization, industrialization and the limited land size of the country.

Sustainable Agriculture Development

The issues of sustainable development can be discussed under three broad types of farming systems viz. traditional production system, modern agriculture system and sustainable agriculture system. Further we can compare them across three dimensions, ecological, economic and social sustainability.

Ecological Sustainability

Most of the traditional and conventional farm practices are not ecologically sustainable. They misuse natural resources, reducing soil fertility causing soil erosion and contributing to global climatic change. But sustainable agriculture has some major advantages over traditional practices:

Soil Fertility:

Continuous fall in soil fertility is one of the major problems in many parts of India. Sustainable agriculture improves fertility and soil structure.

Water:

Irrigation is the biggest consumer of fresh water, and fertilizer and pesticides contaminate both surface and ground water. Sustainable agriculture increase the organic matter content of the top soil, thus raising its ability to retain and store water that falls as rain.

Biodiversity:

Sustainable agriculture practices involve mixed cropping, thus increasing the diversity of crops produced and raising the diversity of insects and other animals and plants in and around the fields.

Health & Pollution:

Chemicals, pesticides and fertilizers badly affect the local ecology as well as the population. Indiscriminate use of pesticides, improper storage etc. may lead to health problems. Sustainable agriculture reduces the use of hazardous chemical and control pests.

Land use Pattern:

Over-exploitation of land causes erosion, land slides and flooding clogs irrigation channels and reduces the arability of the land. Sustainable agriculture avoids these problems by improving productivity, conserving the soil etc.

Climate:

Conventional agriculture contributes to the production of green house gases in various ways like reducing the amount of carbon stored in the soil and in vegetation, through the production of Methane in irrigated field and production of artificial fertilizers etc. By adopting sustainable agriculture system, one can easily overcome this problem.

Economic Sustainability:

For agriculture to be sustainable it should be economically viable over the long term. Conventional agriculture involves more economic risk than sustainable agriculture in the long term. Sometimes governments are inclined to view export-oriented production systems as more important than supply domestic demands. This is not right. Focusing on exports alone involves hidden costs: in transport, in assuring local food security, etc. Policies should treat domestic demand and in particular food security as equally important to the visible trade balance. It is a popular misconception that specific commodities promise high economic returns. But market production implies certain risks as markets are fickle and change quickly. Cheap foreign food may sweep into the national market, leaving Indian farmers without a market. As a World Trade Organization signatory, the Indian government is under pressure to deregulate and open its economy to the world market so it cannot protect its farmers behind tariff walls. The main source of employment for rural people is farming. Trends towards specialization and mechanization may increase narrowly measured "efficiency", but they reduce employment on the land. The welfare costs of unemployment must be taken into account when designing national agricultural support programs. Sustainable agriculture, with its emphasis on small-scale, labor-intensive activities, helps overcome these problems.

Social Sustainability

Social sustainability in farming techniques is related to the ideas of social acceptability and justice. Development can not be sustainable unless it reduces poverty. The government must find ways to enable the rural poor to benefit from agriculture development. Social injustice is where some section of the society is neglected from development opportunities. But having robust system of social sustainability can bridge the gap between "haves" and „have-nots". Many new technologies fail to become applicable in agriculture sector due to lack of acceptability by the local society. Sustainable agriculture practices are useful because it is based on local social customs, traditions and norms etc. Because of being familiar the local people are more likely to accept and adopt them .Moreover, sustainable agriculture practices are based on traditional know-how and local innovation. Local people have the knowledge about their environment crops and livestock.

Traditional agriculture is more gender oriented, where woman bear the heaviest burden in terms of labor. Sustainable agriculture ensures that the burden and benefits are shared equitably between man and woman. While conventional farming focuses on a few commodities, sustainable agriculture improves food security by improving quality andnutritional value of food, and also by producing bigger range of products throughout the years. Traditional farming was also driven by the caste and wealth oriented people. The rich and higher castes benefitted more, while the poor and lower castes are left out. Sustainable agriculture attempts to ensure equal participation which recognizes the voice and speech of every people.

Agricultural Production in India

Indian Agriculture production in most part of the country is closely related to the optimum use of available natural and human resources of the country. Therefore riding on the back of agro climatic condition and rich natural resource base, India today has become the world's largest producer of numerous commodities. The country is a leading producer of coconuts, mangoes, milk, bananas, dairy products, ginger, turmeric, cashew nut, pulses and black pepper. It is also the second largest producer of rice, wheat, sugar, cotton, fruit and vegetables.

Indian agriculture production is closely related to sufficient and wise water management practices. Most of the agriculture practices in India confined to a few monsoon months. During the monsoon season, India is usually endowed with generous rainfall; although not infrequently, this bountiful monsoon turns into terror, causing uncontrollable floods in different parts of the country and ultimately affecting agriculture production.

Mile Stones in Indian Agriculture Policy makers and planners, concerned about national independence, security and political stability realized that self sufficiency in food production was an absolute pre requisite for sustainable agriculture development. The policies considered to be a mile stone in agriculture development of the country are:

1 Green Revolution (1968):

This revolution includes packages of programs like, Intensive Agriculture District Program (IADP) which eventually led to the Green Revolution. The National Bank for Agriculture Development (NABARD) was set up. The emphasis was on high yielding varieties along with other modern inputs like chemicals, fertilizers, pesticides and mechanization and also on how productivity could be raised in agriculture sector without having substantial influences on increasing area under cultivation.

2 Ever Green Revolution (1996):

Father of India‟s Green revolution, Prof. M.S. Swaminathan claims to be pro-woman, pro-nature and pro-poor. The conservation of biodiversity, maintaining soil fertility, increasing the climate resistance of food crops combined with better and more education and technological innovation are the key to the ever green revolution. The main aim of this revolution is to produce more using less land, less water and less fertilizer. The recent visit of US President in New Delhi in March 2010, announced a new partnership with India in an agriculture sector for an evergreen revolution to achieve global food security.

3. White and Yellow Revolution:

The Green Revolution generated a mood of self confidence in our agriculture capability, which led to the next phase characterized by the Technology Mission. Under this approach, the focus was on conservation, consumption, and commerce. An end-to-end approach was introduced involving attention to all links in the production-consumption chain, owing to which progress was steady and sometimes striking as in the case of milk and egg production.

4. Blue Revolution (Water, Fish):

It has been brought about in part by a trend towards healthier eating which has increased the consumption of Fish. Additionally the supply of wild fish is declining. This revolution could give landless laborers and women a great opportunity for employment which empowered them.

5. Bio-Technology Revolution:

India is well positioned to emerge as a significant player in the Global Bio-tech Arena. Agriculture biotech in India has immense growth opportunity and the country could become the fore runner in the transgenic production rise and several other genetically engineered vegetables by 2010.In agri-biotech sector India has been growing at a blinding rate of 30% since the last five years. The food processing sectors which is considered to be prime drivers of Indian economy is currently growing at 13.5%.

Impact of Economic Reform on Indian Agriculture

The Indian agriculture sector has been undergoing economic reform since 1990s in a move to liberalize the economy to benefit from globalization. India, which is one of the largest agriculture based economies, remained closed until the early 1990s. In 1991, the new economic policies stressed both external sector reforms in the exchange rate, trade and foreign investment policies and internal reform in areas such as industrial policies, price and distribution controls, and fiscal restructuring in the financial and public sector.

India's economic reforms were initiated in July 1991, but it was observed that the expected increase in exports due to liberalization did not occur. In addition, the agriculture sector's output growth decreased during 1992-1993 to 1998-1999. The reason behind this was the decline in the environmental quality of land which reduced the marginal productivity of the modern inputs. Agriculture sector is the mainstay of the Indian economy around which socio-economic privileges and deprivation revolve, and any change in its structure is likely to have a corresponding impact on the existing pattern of social equality. No strategy of economic reform can succeed without sustained and broad based agriculture development, which is critical for raising living standards, alleviating poverty, assuring food security, making substantial contribution to the national economic growth. Since agriculture continues to be a tradable sector, this economic liberalization and reform policy has a far reaching effect on Agricultural exports, and imports, Investment in new technologies, Pattern of agricultural growth, Agricultural income and employment, Agricultural price, Food security. Reduction in Commercial Bank credit to agriculture, in lieu of this reforms process and recommendations of Khusro Committee and Narasimham Committee resulted in fall in farm investment and impaired growth.

Liberalization of agriculture and open market operations enhance competition in "resource use" and "marketing of agriculture production", which forces the small and marginal farmers to resort to " distress sale" and seek off farm employment for supplementing income.

Issues & Challenges

The central issue in agricultural development is the necessity to improve productivity, generate employment and provide a source of income to the poor segments of population. Studies by FAO have shown that small farms in developing countries contribute around 30-35% to the total agricultural output. The pace of adoption of modern technology in India is slow and the farming practices are too haphazard and unscientific. Some of the basic issues for development of Indian agriculture sector are revitalization of cooperative institutions, improving rural credits, research, human resource development, trade and export promotion, land reforms and education.

The sustainable development in India can also be achieved by full utilization of human resources .A large part of poor population of the country is engaged in agriculture, unless we increase their living standard, overall growth of this country is not possible. If we keep ignoring the poor, this disparity will keep on increasing between classes. Debt traps in country are forcing farmers to commit suicides. People are migrating towards city with the hope of better livelihood but it is also increasing the slum population in cities. Therefore rural population must be given employment in their areas and a chance to prosper. India has been carrying the tag of "developing" country for quite long now; for making the move towards "developed" countries we must shed this huge dependence on agriculture sector.

Conclusion

The agricultural technology needs to move from production oriented to profit oriented sustainable farming. The conditions for development of sustainable agriculture are becoming more and more favorable. New opportunities are opening the eyes of farmers, development workers, researchers and policy makers like agri related businesses, dairy farming, poultry farming castle farming and fisheries. Now the time is to see the potential and importance of these practices not only for their economic interest but also as the basis for further intensification and ecological sustainability. To conclude, a small-farm management to improve productivity, profitability and sustainability of the farming system will go a long way to ensure all round sustainability.

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FINANCIAL INCLUSION AND AGRICULTURE

DR. RAM NAIK

ABSTRACT

Financial Inclusion has become an issue of worldwide concern, because it only touches all lives instead of selected few. However still the full inclusion has not taken place. Mostly in country like India where large number of people are living in rural area. In the present study we are planned to study the agricultural dependent and their inclusion. The study focuses on the role of financial inclusion in agriculture development. The study is totally based on secondary data collected from different sources. We are well known about the fact that agriculture is major source of earning in rural area. Large population of the rural India is mostly depend upon agriculture and allied activities. It only provides them lively hood and employment. So if the most important factor (farm and allied) of population are not considered in inclusion the real development would not take place. Also it is too difficult to achieve our vision to becoming global leader up to 2020. So our efforts should be to include the agriculture and allied as a main factor. Then only the true inclusion is possible.

Key Words : Financial Inclusion, Agriculture and Allied Activities, debt.

1. Introduction:

Access to finance by the poor and vulnerable groups is a prerequisite for poverty reduction and social cohesion. Dr. C Rangarajan Committee rightly stated that "Access to finance, especially by the poor and vulnerable groups is a prerequisite for employment, economic growth, poverty reduction and social cohesion. Further, access to finance will empower the vulnerable groups by giving them an opportunity to have a bank account, to save and invest, to insure their homes or to partake of credit, thereby facilitating them to break the chain of poverty."[1]This has to become an integral part of government efforts to promote inclusive growth. In fact, providing access to finance is a form of empowerment of the vulnerable groups. Financial inclusion denotes delivery of financial services at an affordable cost to the vast sections of the disadvantaged and low-income groups. The various financial services include credit, savings, insurance and payments and remittance facilities.

The basic objective of financial inclusion is to extend the scope of activities of the organized financial system to include within its ambit people with low incomes. Through graduated credit, the attempt must be to lift the poor from one level to another so that they come out of poverty.

The moot point, however, is that access to such technology is restricted only to certain segments of the society. Indeed, some trends, such as increasingly sophisticated customer segmentation technology – allowing, for example, more accurate targeting of sections of the market – have led to restricted access to financial services for some groups. There is a growing divide, with an increased range of personal finance options for a segment of high and upper middle income population and a significantly large section of the population who lack access to even the most basic banking services. This is termed "financial exclusion". These people,

[1] Dr. C. Rangarajan (2008), Report on the Committee of Financial Inclusion

particularly, those living on low incomes, cannot access mainstream financial products such as bank accounts, low cost credit, remittances and payment services, financial advisory services, insurance facilities, etc.

2. Objectives and Methodology of the Study

The study is fully based on secondary data collected by different sources. The objectives of the study are as follows.

1.To study the concept of Financial Inclusion
2. To study the indebtness of different sections of Agriculture
3. To understand whether financial inclusion is necessary in agriculture or not.

3. Theoretical Background

Dr. C. Rangarajan Committee on Financial Inclusion was framed the working definition of "Financial Inclusion" as "Financial inclusion may be defined as the process of ensuring access to financial services and timely and adequate credit where needed by vulnerable groups such as weaker sections and low income groups at an affordable cost."[2] In short the financial inclusion is very important concept and its implementation is too necessary. Now the financial inclusion is considered as the world wide phenomena for inclusive development of the nation. Because it not only covers the few people of the society but covers all people of the society for inclusion."Financial inclusion, thus, has become an issue of worldwide concern, relevant equally in economies of the under-developed, developing and developed nations. Building an inclusive financial sector has gained growing global recognition bringing to the fore the need for development strategies that touch all lives, instead of a select few."[3]

However still there are some countries in the world who are not taking that much care. We as a researcher know the fact that the implementation of financial inclusion is not much easy task but the necessity of inclusion is too much. In India where large number of people are belong to the agriculture and residing in rural area where the basic infrastructure is not reached in such ground the financial inclusion is too difficult. The government of India has trying their level best for combat the situation but the complete inclusion is not taken place yet.

4. National Rural Financial Inclusion Plan (NRFIP)

Government of India is taking lot of efforts to win over the exclusion one of its programme namely National Rural Financial Inclusion Plan (NRFIP) may be launched with a clear target to provide access to comprehensive financial services, including credit, to atleast 50% of financially excluded households, say 55.77 million by 2012 through rural/semi-urban branches of Commercial Banks and Regional Rural Banks. The remaining households, with such shifts as may occur in the rural/urban population, have to be covered by 2015. Semi-urban and rural branches of commercial banks and RRBs may set for themselves a minimum target of covering 250 new cultivator and non-cultivator households per branch per annum, with an emphasis on financing marginal farmers and poor non-cultivator households.

The government also decides to strengthen the Micro Finance Institution (MFI) The proposed Microfinance Services Regulation Bill defines microfinance services as "providing financial assistance to an individual or an eligible client, either directly or through a group mechanism for : i. an amount, not exceeding rupees fifty thousand in aggregate per individual, for small and tiny enterprise, agriculture, allied activities (including for consumption purposes of such individual) or ii. an amount not exceeding rupees one lakh fifty thousand in aggregate

[2] Dr. C. Rangarajan (2008), Report on the Committee of Financial Inclusion
[3] A Project on `Obstacles of Financial Inclusion facing by the different countries` UN Department of Economic and Social Affairs (DESA) and the UN Capital Development Fund (UNCDF)

per individual for housing purposes, or iii. such other amounts, for any of the purposes mentioned at items (i) and (ii) above or other purposes, as may be prescribed."[4]

The proposed regulations further define an MFI as "an organisation or association of individuals including the following if it is established for the purpose of carrying on the business of extending microfinance services : i. a society registered under the Societies Registration Act, 1860, 88 ii. a trust created under the Indian Trust Act,1880 or public trust registered under any State enactment governing trust or public, religious or charitable purposes, iii. a cooperative society / mutual benefit society / mutually aided society registered under any State enactment relating to such societies or any multistate cooperative society registered under the Multi State Cooperative Societies Act, 2002 but not including : a cooperative bank as defined in clause (cci) of section 5 of the Banking Regulation Act, 1949 or a cooperative society engaged in agricultural operations or industrial activity or purchase or sale of any goods and services."[5]

Recently some MFIs in India are doing well business. Some MFI`s in Andhra Pradesh and Karnataka are crossed crore rupees of transaction. For example The loan portfolio of Banglore based Janalakshmi Financial Services, which started in 2008, soared from Rs 180 crore mark. In June 2011, when private equity investors were scouting exit avenues from Andhra Pradesh –based MFIs, Janalakshmi raised Rs.65 crore from through equity in Bandhan. In February this year another Banglore based MFI Unnivan Financial Services, raised Rs.127 crore from its existing investors, a Dutch and Mauritius PE Fund-Netherlands Development Finance Company and WCP Mauritius Holding III.

Ujjivan portfolio almost doubled from Rs.370 crore in financial year 2008-10 to Rs.625 crore last financial year. In fact last year the MFI recorded highest growth in profit in last year years.

Delhi based Fusion MFI, which started operations in March 2011 with a Rs.5 crore loan portfolio, expects to reach Rs.35 crore mark by March 2012. Another Delhi based MFI, Satin Creditcare Network Limited raised equity worth Rs. 40 crore from ShoreCap II Limited and Danish Microfinance Partners K/S in two tranches in December 2010 and February 2011.

These are not just stray examples. Since October 2010, the MFI sector received private equity funds worth Rs 423 Crore.

5. Analysis of Data

5.1 Level of Non-indebtedness : Across Marginal / Small Farmer Households

It can be seen from the table below that 87% of all non-indebted farm households belong to the marginal (70.6%) and small (17.1%) farmer categories. The NSSO estimates of the year 2003 show that only around 45% of marginal famer households (viz., up to 1 ha.) had access to both institutional and non-institutional credit. There are no data to show the position of finance extended exclusively to marginal farmers by institutional sources. A major portion of the credit from financial institutions for weaker sections has supported small farmers. However, marginal farmers who account for 66% of all farm holdings remain by and large excluded from the formal financial system and by rough approximation, only around 20% of these households access credit from formal banking sources.

[4] Dr. C. Rangarajan (2008), Report on the Committee of Financial Inclusion
[5] Ibid

Table 1. Level of Non-indebtedness (Marginal and Small Farmer HHs)

Category of Farmers HH	Size class of Land Owned (Ha)	Total Farmers HHs (No. Lakh)	Non-indebted farmer HHs ((No. Lakh)	Incidence of exclusion by both formal and non formal sources (%)	Proportion of non indebted HHs. (%)
Marginal	<1.00	589.06	324.04	55.0	70.6
Small	1.01-2.00	160.60	78.68	49.0	17.1
Semi-Medium	2.01-4.00	93.50	39.10	41.8	8.5
Medium	4.01-10.00	42.58	14.84	34.9	3.2
Large	10.00+	7.76	2.60	33.6	0.6
All Sizes		893.50	459.26	51.4	100.0

Source : C.Rangarajan Committee Report (2008)

It is discernible that the proportion and level of inability to access credit increases with the decline in size of farm holdings.

5.2 Level of Non-indebtedness : Across Social Groups

The highest levels of non-indebtedness to both formal and non-formal sources is observed among Scheduled Tribes (ST) with 63.7%, followed by Scheduled Castes (SC) with 49.8% as detailed below :

Table. 2 Level of Non-indebtedness (Social Groups)

Households	Scheduled Tribes	Scheduled Castes	Other Backward Classes	Others	All
Total No. of farmers HHs (Lakh)	119.24	155.93	370.43	247.90	893.50
Non-indebted farmer HHs (Lakh)	75.94	77.60	179.96	125.76	459.26
Proportion of non-indebted farmers HHs (%)	63.69	49.77	48.58	50.73	51.40

Source : C.Rangarajan Committee Report (2008)

5.3 Financial Exclusion Among Non-Cultivator HHs

Incidence of financial exclusion among all non-cultivator households was estimated at 78.2% which comprises of 78.8% of agricultural labourer households, 71.4% of artisans and 79.7% of other rural households. Out of 5.96 crore noncultivator households about 4.66 crore were estimated to be financially excluded. The number of non-cultivator households affected by financial exclusion was the highest for 'others' category (2.44 crore), followed by agricultural labourer households (1.67 crore) and artisans (0.55 crore) as detailed below :

Table. 3. Financial Exclusion Among Non-Cultivator HHs

Households	Agricultural Labourers	Artisans	Others	Total non-cultivators
Number of households (Crore)	2.12	0.77	3.06	5.96
Number of households facing financial exclusion (Crore)	1.67	0.55	2.44	4.66
Incidence of financial exclusion (%)	78.80	71.40	79.70	78.20

Source : Data based on AIDIS Report on Household Indebtedness in India (59th Round), NSSO

6. Conclusion :

As per NSSO data, 45.9 million farmer households in the country (51.4%), out of a total of 89.3 million households do not access credit, either from institutional or non-institutional sources. Only 27% of total farm households are indebted to formal sources (of which one-third also borrow from informal sources). In other words, 73% of farm households do not have access to formal credit sources. These are financial excluded. They don't have any debt to formal credit sources.

The banks can play major role for inclusion in section of economy. By taking more efforts for financial education to the people the financial inclusion can be expanded. The bank should convince people that the holding of a bank account confers a sense of identity, status and empowernment and provides access to the national payment system. They shuld come forward to banks for opening their accounts because having an bank account becomes a very important aspect of financial inclusion. Further, financial inclusion, apart from opening and providing easy access of No Frills account, should also provide access to credit, perhaps in the form of a General Credit Card (GCC) or limited OD against the no frills account. It is also important to concentrate on the other section of agriculture which is neglected by the government by many years. It should encompass access to affordable insurance and remittance facilities. It should also include credit counseling and financial education / literacy. While financial inclusion, in the narrow sense, may be achieved to some extent by offering any one of these services, the objective of "comprehensive financial inclusion" would be to provide a holistic set of services encompassing all of the above.

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"A GEOGRAPHICAL ANALYSIS OF CHANGE IN LANDUSE AND CROPPING PATTERN IN SATARA TAHSIL OF SATARA DISTRICT (M.S.)"

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ABSTRACT

Agricultural study of any region is always closely associated with the land use and existing cropping pattern in the region. The term 'Cropping pattern' as it applies to the area of reclamation can be defined as the acreage distribution of different crops in any one year in a given farm area such as a county or farmland. Thus, a change in a cropping pattern from one year to the next can occur by changing the relative acreage of existing crops, or by introducing new crops and by existing crops. In the simple word cropping pattern means the production in area under various crops at a point of time.

Generally when a region is the increasing population resulted in decrease in the agricultural area because this cultivable area used for settlement and industries. But in Satara Tahsil, it is found that agricultural area notably increases day by day due to increase in population. In Satara Tahsil population is increased it influencing increase in settlement area. Barren land including hilly area is used for agriculture. Development process is able to conserve agricultural cover with interdependence of environmental condition and human life. Thus there is a need of adopt conservation methods and management for development in agricultural area, cropping pattern and finally environmental condition.

Keywords: Cropping pattern, Agricultural area, Development process.

Introduction:

Agricultural study involves all such factors that are influencing the change in area under agriculture, means the cropping pattern. The term 'Cropping pattern' as it applies to the area of reclamation can be defined as ' The acreage distribution of different crops in any one year in a given farm area such as a county, water agency, or farm. Thus, a change in a cropping pattern from one year to the next can occur by changing the relative acreage of existing crops, and/or by introducing new crops, and / or by cropping existing crops'. In the simple word cropping pattern means the production of area under various crops at a point of time.

The cropping pattern is an important component of any farming system. Crop rotation is the process of growing different crops in succession on a piece of land in a specific period of time, to get maximum profit by using minimum inputs. The seasonal variation in cropping pattern is important aspect of the Indian agriculture.

Different factors including soil and climatic parameters determine the agriculture. These factors responsively develop agro-ecological setting for nourishment and appropriateness of a crop or set of crops for cultivation. Farmer's monetary interest and his knowledge about crops and productivity are also influencing the cropping pattern of the region. These decisions with respect to choice of crops and cropping systems are further narrowed down under influence of several other forces related to infrastructure facilities, socio-economic factors and technological developments, all operating interactively at micro-level.

The Study Region:

The Satara Tahsil located in central part of Satara District of Maharashtra. Absolute location of Satara Tahsil is between 17^0 27’ 32” to 17^0 49’ 58” North latitude and 73^0 48’ 04” to 74^0 09’ 41” East longitude. Satara Tahsil is surrounded by the east- Koregaon Tahsil, Patan and Karad Tahsil in south, Medha Tahsil in and Wai Tahsil located north side of Satara Tahsil. Satara Tahsil is situated at the average height of 518.16 m. above mean sea level. The Satara Tahsil covers mostly urban and rural area.

The Satara Tahsil has monsoon type of climate with the regional variations in the temperature and rainfall. Where, rainfall is decreasing from west side to east side. Normally, this Tahsil is observed the rainfall between 800 mm. to 1000 mm. and temperature maximum 34 ^{0}C and minimum 14^0C.

In recent decades cropping pattern in the Tahsil is changes notably. Here attempt is made to identify geographical reasoning for change in cropping pattern. It will be helpful to the administrators to management of the agricultural sustenance.

Location of the Study region:

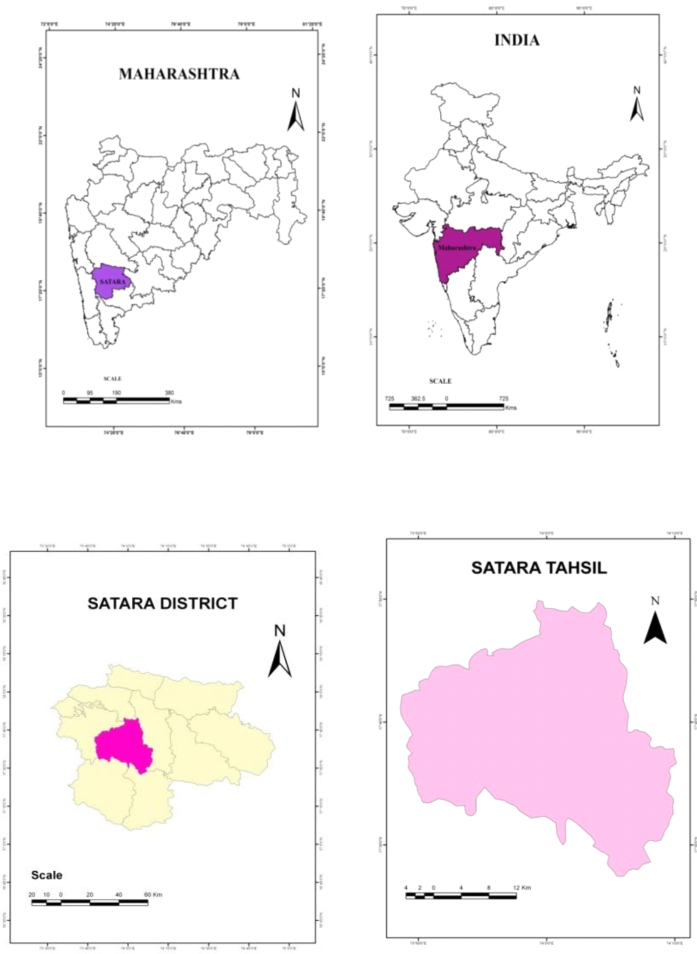

Figure No. 1

Objectives of the Study:

The primary purpose of this study is to assessment of change in cropping pattern Satara Tahsil. In the present research work an analysis is done with application of Remote sensing. The objectives of the present study are mainly –

- To study the change in cropping pattern of study area.
- To study the relationship in settlement growth with respect agricultural cover and cropping pattern.
- Assessment and mapping of settlement growth and change in cropping pattern.
- Suggestions for cropping pattern management.

Data Collection:

The research paper is based on the secondary data and information and its sources are as follows.

1. Zillah Parishad office, Satara. – Records.
2. The district Gazetteer of Satara.
3. Socio-Economic Abstracts of Satara Districts.
4. Satara District Census Hand Book CD – 2011.
5. Satara Municipal Corporation's Development Report [unpublished]
6. Satellite data [LISS III imagery remotely sensed data]

Methodology:

The present work has been largely based on satellite imageries and Remotely Sensed data. The collected secondary data it has been tabulated and represented by using different statistical techniques and cartographic techniques. Processed data is presented with the help of appropriate cartographic methods. The graphs, pie charts, and maps are drawn for understanding the comparative elements of different aspects. Methodology adopted for analysis of agricultural cropping pattern is mapping from satellite data. Steps involved are-.

1) Acquisition of satellite data.
2) Importing of the data in to system.
3) Geometric Rectification of raw data.
4) Mosaicing of rectified scenes.
5) Classification of crop type mapping.

Review of Literature:

There are number of studies devoted to study of cropping pattern. Waver, Bhatia, Kendal like scholars emphasize on study of crop combination, diversification and crop concentration, ultimately open discussion cropping pattern. Shafii, M. have discussed measurement of agricultural productivity of Greater Plains of India. He also dealt with the cropping pattern study. Swaminathan M. S.(1973) also discussed the cropping pattern and productivity relationship in his lecture, "Our Agriculture Future". A. P. Saxena and V. S. Bhatt in the book entitled ' Agricultural research and development' says that, it appears to be an appropriate time to pause and the application of its findings toward increasing agricultural production for the improvement of the wellbeing of the entire increasing population. Agricultural production is always depend on cropping pattern.

Agricultural Cropping Pattern:

Traditionally, increased food production has come from putting more land under cultivation. However, in large areas of the world, especially in Asia, all the land that can be mention economically cultivated is already in use. In future, most of the extra food needs must come from higher production from land already being farmed. A major share of this increase is likely to come from increasing the number of crops produced per year on a given land using improved crop cultivation. Such multiple cropping offers potential not only to increase food production but also land degradation.

Cropping pattern

The yearly sequence and spatial arrangement of crop or of crops on a given area is known as cropping pattern. Farmers preferred mixed cropping pattern, especially under dry land conditions, to minimise the risk of total crop failure.

Efficient Cropping Systems

Efficient cropping systems for a particular farm depend on farm resources, farm enterprises and farm technology because farm is an organized economical unit. The farm resources include land, labour, water, capital and infrastructure. Availability of these resources greatly influenced the cropping pattern of the area.

For instance when land is limited intensive cropping is adopted and when sufficient and cheap labour is available, vegetable crops are preferred in the cropping systems as they required more labour. Low rainfall regions (750 mm/annum) mono cropping is followed and when rainfall is more than 750 mm, intercropping is practiced, with sufficient irrigation water, triple and quadruple cropping is adopted, when other climatic factors are not limiting farm enterprise like daring, poultry etc. also influenced the type of cropping system. In Satara Tahsil also all these factors are influencing directly or indirectly to govern cropping pattern in the region.

Irrigation Facilities in Satara Tahsil

Irrigation assumes special importance in the agriculture. The main sources of water supply are canals, wells, bandharas and tanks. Lift irrigation from rivers, streams, and wells through installation of pumping sets has also benefited many places.

Fields are irrigated at frequent intervals. The interval depends upon the season, the type of soil and requirement of crops and varies from eight to fifteen days. During 2006-07 the total cultivable area is 69,795 hectors and 18,454 hector of it under irrigation. While in 2014 out of the total cultivable area 92,158 hectares only 18,063 hectares area is under irrigation.

Cropping Pattern In Satara Tahsil:

Satellite and airborne images are used as mapping tools to classify crops, examine their health and viability, and monitor farming practices. Agricultural aspects of cropping pattern are under:

1) Jowar: Jowar crop is produced in both Kharip and Rabby season. In Satara Tahsil the area under Jowar cultivation during 2007-08 is 17062 hect. and 32457 hect. during 2013-14. This is positive change in area under Jowar.

2) Wheat: Wheat is the most significant crop grown during the winter season. It requires cool climate with moderate rainfall less than 50 cms and irrigation. As such in the study region the post monsoon rainfall is not sufficient for optimum production. Hence the irrigation determines wheat crop occupies maximum area. The area under wheat crop in Satara Tahsil 2364hector during 2007-08 and 3819 hector during 2013-14. This shows positive change in area under wheat.

3) Rice: Among the cereals rice crop is requiring high temperature and more rainfall. The area under rice cultivation in Satara Tahsil is 3354 hectors during 2007-08 and 6670 hectors during 2013-14. This reveals positive change in area under rice.

4) Sugarcane: The area under sugarcane in Satara Tahsil is 3965 hectors during 2007-08 and 4689 hectors during 2013-14. This is positive change in area under sugarcane, in the study region observed due to availability of irrigation facilities, fertile soil and other socio-economical and political factors.

5) Groundnut: Groundnut is a leguminous crop cultivated in Kharip and Rabi season. it can grow both as an irrigated and rain crop. The area under groundnut in the study area reveals positive change as area under groundnut during 2007-08 is 14146 hector and 16701hectors during 2013-14.

6) Maize: Maize can cultivate in Kharip and Rabi season it grow both as an irrigated and rain crop. The area under maize cultivation indicates positive change during 2007-08, 660 hectors and 1631 hectors during 2013-14.

Table No. 1
Satara Tahsil area under major crops with production: 2007-08 and 2013-14

Major Crops	2007-08		2013-14	
	Area (in hector)	Production (in m.t.)	Area (in hector)	Production (in m.t.)
Rice	3354	933	6670	607
Wheat	2364	768	3819	599
Jowar	17062	1515	32457	381
Bajra	5813	246	70	464
Maze	660	252	1631	262
Sugarcane	3965	44854	4689	54000
Ground nut	14146	515	16701	350
Total	47404	49083	66037	56663

Source: Socio-economic abstract of Satara District.

Total area under the various crops in Satara Tahsil is 47404 hectors observed in 2007-08 and it increases significantly in 2013-14, to 66037 hectors. This positive change in area under major crops is suggested that the agricultural activities in the Tahsil increases notably. Total area under major crops increased as barren land is transformed to cultivable land. Recently barren land is becoming less in Satara Tahsil because it is utilized for agriculture and development of settlement.

Change in Cropping Pattern:

Most extensive crop studies so far made by remote sensing techniques through using supervised classification. There seems to be good evidence that agricultural land use, crop stress and crop disease can be mapped using satellite multispectral scanning data. An investigation of the Landsat data and the yield model response at sub-regional levels showed that drought conditions observable by Landsat data were accurately reflected by reduced yield estimates in the affected regions. Crop identification is greatly assisted if remote sensing data are available for different times during the growing season.

Detecting damage and monitoring crop health requires high-resolution imagery and multi-spectral imaging capabilities. One of the most critical factors in making imagery useful to farmers is a quick turnaround time from data acquisition to distribution of crop information. Receiving an image that reflects crop conditions of two weeks earlier does not help real-time management or damage mitigation. Images are also required at specific times during the growing season, and on a frequent basis.

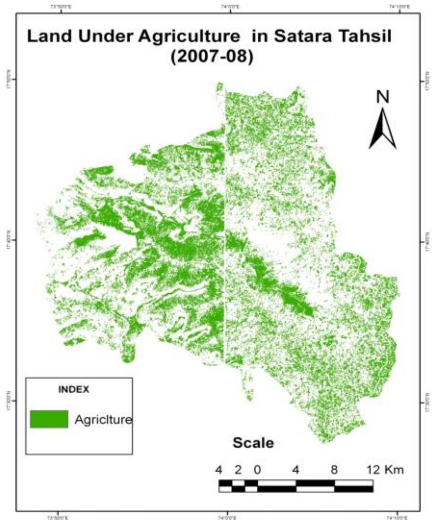

Figure No: 2

Remote Sensing does not replace the field work performed by farmers to monitor their fields, but it does direct them to the areas in need of immediate attention. On the basis of above line of analysis, in Satara Tahsil total land occupied by agriculture is 69,795 hector during 2007-08 and 73,663 hector during 2013-14.

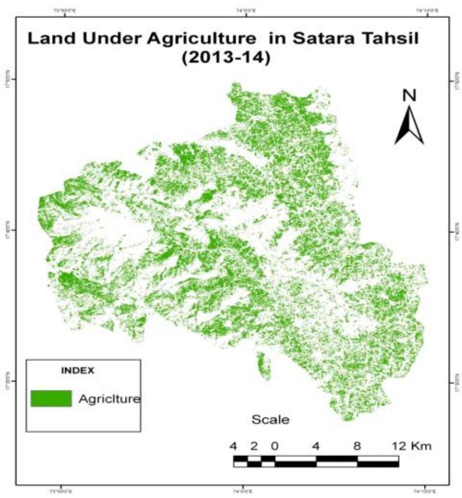

Figure No.3

Remote Sensing has a number of attributes that lead themselves to monitor the health of crops. One advantage of optical remote sensing is that it can see beyond the visible wavelengths into the infrared, where wavelengths are highly sensitive to crop vigour (growing at a force), as well as crop stress and crop damage.

Changing cropping pattern and monitoring has been confined mainly based on comparing two or more temporal sets of data, comparing old aerial photographs and present satellite imagery and comparing satellite imagery with existing old maps. Monitoring from satellite sensing system includes the detection and evaluation of sudden agricultural damage and continuous crop inventory.

The change is usually detected by comparison between two multi date images, or sometimes between an old map and an updated remote sensing image.

The changing cropping pattern can be divided into two categories, as following:

1] Seasonal change, for instance, deciduous agricultural change seasonally.
2] Annual change, for example, changes in cropping pattern, which are real changes, for instance, changing cropping areas.

Crop Area Estimation:

Assuming favourable weather and non-limiting agricultural input conditions, crop area, at district, state and country levels, becomes the first and foremost information required to assess the crop production during the season. So to estimate the area covered by the major crops of the season, say for a district, one has to procure satellite remote sensing data for at least three phonological phases of the crops. GPS-based ground truth collection should also be done during these three satellite pass period. At least 10% of the study area should be covered to collect the ground truths of crop fields. This helps in the accuracy of crop classification and correspondingly in the crop area estimation.

Infrared imageries have been extensively employed to identify farm crops in different climatic environments. Recently, Philipson and Liang developed an aerial photo-key for crop identification. The key placed emphasis on:

- Field characteristics, such as density, size, shape, assemblage and appearance.
- Management characteristics, such as relief, presence of sub-units, irrigation or drainage.
- Crop characteristics, such as intercropping, cropping pattern or density, tone, form and texture.

The accuracy of the resultant crop identification could be improved with the use of multi-season photography. In this context, one should note that an increasing number of photographic variables are being employed for the crop identification purpose. A computer-assisted approach is more appropriate.

Table No. 2

Area Under Agriculture in SataraTahsil

Sr. No.	Year	Geographical Area (in hector)	Agricultural Area (in hector)
1	2007-08	87,953	69,795
2	2013-14	87,953	73,663

Causes of changing cropping pattern in Satara Tahsil

In the duration 2007-08 Satara Tahsil has 69,795 hectors area under agriculture, it increases in 2013-14 by 73,663 hectors area. In this duration increase the agricultural area because there are many causes such as population growth, availability of barren lands, favourable climate, irrigation facilities and high standard living.

In Satara Tahsil irrigation facilities are well developed. Krishna, Venna, Urmodi rivers and Urmodi dam is very useful for increasing agricultural area. Sugarcane, Jowar, Groundnut, Maize, Wheat, Rice, Bajra these are major crops in the Tahsil. Agro based industries like sugar industry, rice mill, oil mills are well developed in Tahsil. All these factors are responsible for the increase in agricultural area in the Tahsil.

Management of Agricultural cropping Pattern:

Change detection of copping pattern helps land managers make decisions and establish policies of the utilization of particular land areas. It is a strategic process directed at the evaluation of the natural resources and the regulation of human activities in a region. In Satara Tahsil increased agricultural area with increasing population and transfer of barren land into cultivable land process is dynamic.

In Satara Tahsil Settlement area increased on barren land. Manage and secure it through the different ways. Control the increasing population that encroaches agricultural area and disturbing the cropping pattern as well as environmental balance. So manage the available resources, various crops and agricultural area is a need of the decade. It is possible by increasing the provisions of agricultural education, using new techniques to improve agricultural productivity.

Regional government agencies have an operational need of agricultural cover and cropping pattern inventory and monitoring, as it is within their mandate to manage the natural resources of their respective regions. In addition to facilitate sustainable management of the agricultural information may be used for planning, monitoring, evaluation of development, industrial activity, or reclamation.

Conclusion:

In the analysis highlighted the changing cropping pattern in Satara Tahsil, Agricultural cover mapping, affected aspects on the agricultural cropping pattern, Agricultural area damage assessment. However, the Agricultural land area management extend far beyond the scope of some activities include such tasks as Agricultural land appraisal, planning, monitoring logging and assessing applications of herbicides and fertilizer in agricultural standards, and monitoring growth in cropping pattern.

Generally when in a region population is increasing resulted in decrease in the agricultural area because cultivable area used for settlement and industries. But in Satara Tahsil, it is found that agricultural area notably increases though the population increases. Increased population in the Tahsil is influencing increase in settlement area. People are started using barren land including hilly area is for agriculture. Development process should conserve agricultural cover with interdependence of environmental condition and human life. Thus there is a need of adopt conservation methods and management for development in agricultural area, cropping pattern and finally environmental condition.

Present research reveals that Satara Tahsil is located at central part of Satara district comprise urban and rural hilly areas situated on offshoots of Sahyadri. Through analyse agricultural cropping pattern, change detection and agricultural cover mapping in the study region. In Satara Tahsil available barren land is mostly utilized for the agriculture and now for settlements. Therefore, agricultural cover is recently increased with settlement distribution. It becomes essential to know that human activities influenced the ecological balance in the region.

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IMPACT OF IRRIGATION ON UTILISATION AND CROPPING PATTERN OF SOLAPUR DISTRICT: A CASE STUDY OF MOHOL TAHSIL.

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ABSTRACT

Irrigation is an important factor in the agricultural development. Irrigation has becomes most essential part to agricultural sector because variation and uneven distribution of rainfall in the study region. Farmer always tries to develop agriculture with source of permanent irrigation. Even those crops, which are grown during rainy season, also depend upon irrigation.

In this research paper Mohol tahsil is selected for study area which came under rain shadow region. The irrigation facilities like Surface irrigation and well irrigation are consider from study region in relation to with a cropping pattern during 1989 to 2013. Irrigation practice increases with change in land use and cropping pattern.

Keywords: Irrigation, Cropping pattern, Utilizations, distribution of rainfall.

INTRODUCTION:

Water is one of the vital resources by nature. Water is indispensible for sustenance of life. However supply and demand of water are always inversely proportional. As far as agriculture is concerned defective crop pattern adds to scarcity of water for e.g. in districts like Solapur which receive scanty rainfall. Irrigation is an important factor in the agricultural development. Irrigation has becomes most essential part to agricultural sector because variation and uneven distribution of rainfall in the study region. Farmer always tries to develop agriculture with source of permanent irrigation. Even those crops, which are grown during rainy season, also depend upon irrigation.

Inadequate rainfall disturbs the ground water availability in the resources and revers, canals, gets dry and farmers became replace the importance of rainwater. Capricious monsoon pattern in space and time makes the artificial irrigation practice are necessary for most of the crops cultivated in the area. Whereas sugarcane, wheat, maize etc. are totally depends on artificial irrigation. The surface water and wells are most important in irrigation.

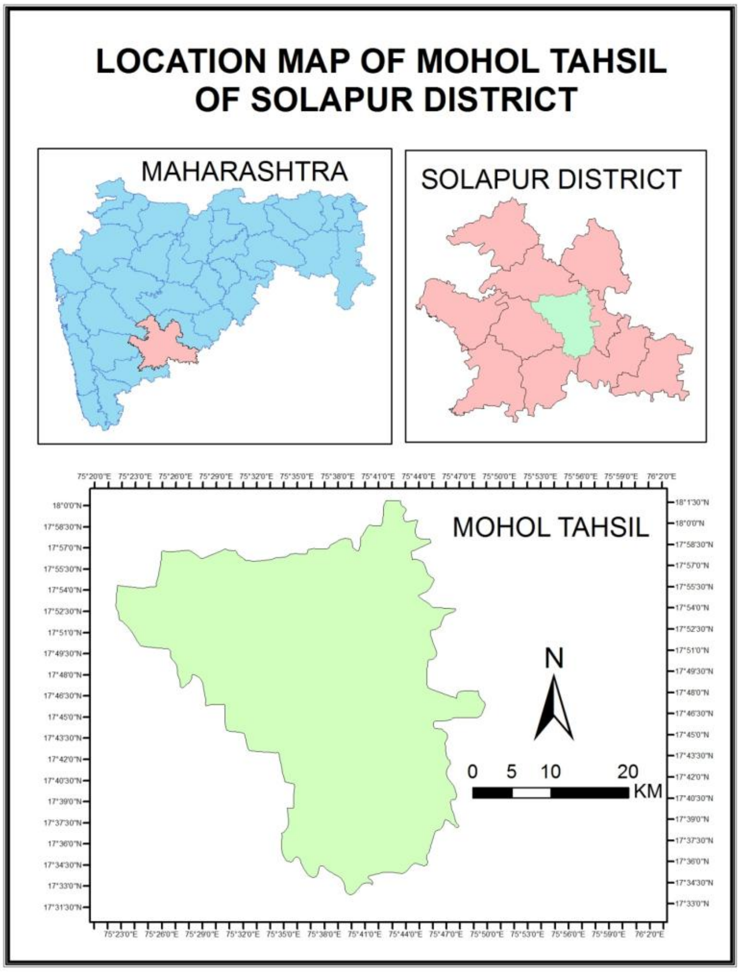
OBJECTIVE:

The main objective of this paper is to study the irrigation and cropping pattern of study area.

STUDY AREA:

Mohol tahsil is one of the most important eleven thasil of Solapur district. The Mohol tahsil is situated in the central part of Solapur district and also part of Deccan plateau. It is lies between 17° 32' 30”and 17° 59' 30” north latitude and 75° 20' 30” and 75° 50' 15” east longitude. The bounded by Madha tahsil to the north, North and South Solapur tahsil to the east and Mangalwedha to the south and Pandharpur to the west.

Study area falls in drought prone area of deccan trap of Maharashtra, receiving annual average rainfall between 500 to 600 mm. It is distributed unevenly in the study area The population is 276720 persons in 104 villages are in study region (2011 census). The south part has black cotton soil and eastern part has regur soil. The rich black soil appears the Sena river to eastern part. The variations in amount of rainfall and types of soil exerts influence on the cropping pattern of the study area. The major crops namely, Jowar, Wheat, Sugarcane and Bajara are cultivated in Mohol tahsil. The cultivation of these crops is mainly depends on monsoon as well as rainfall, so that irrigation is required for this crops.



Irrigation is dominant factor in the study area having considerable impact on land use of Mohol tahsil. The Bhima river, Sina river and Ujani canal, wells and tube wells are the source of irrigaton in the study area. This area has not been so far studied in depth from the land use point of view. Mohol tahsil covering the part of the Bhima basin is one of the economically prosperous tahsil of Solapur district.

DATA BASE AND METHDOLOGY:

The present study is based on secondary data collected from different published sources for the years 1988-89, 2000-2001 and 2013-14. The data have been collected from socio-economic review and statistical abstract of Solapur distirct. The data are used to explain the possible process and then suitable maps and diagrams, choropleth map, tables have been interpreted.

DISCUSSION:

Table No. 1 Area under Different Crops (%)

Region	Years	Vegetable	Wheat	Jowar	Bajra	Maiz	S.cane	Fruits
Solapur District	1988-89	0.69	1.59	62.13	4.43	1.10	3.08	0.39
	2000-01	0.47	4.57	60.77	1.00	1.96	5.90	2.12
	2013-14	1.67	6.90	40.29	2.60	4.73	17.97	5.69
Mohol Tahsil	1988-89	0.20	1.53	70.12	1.01	2.20	1.79	0.17
	2000-01	0.69	5.79	66.64	0.45	0.66	2.14	2.36
	2013-14	2.95	3.04	36.89	0.11	2.95	18.88	4.21

Source: Compiled by researcher based on socio-economic abstract solapur.

Table No. 2 Area under Irrigation by Different Sources.

Region	Years	Net sown Area	Net Irrigated Area	% to Total Irrigated Area	Surface Irrigated Area	Well Irrigated Area
Solapur District	1988-89	1122921	115685	10.34	47147	68538
	2000-01	1174221	257790	21.95	65665	192125
	2013-14	1031620	267889	25.96	259476	192165
Mohol Tahsil	1988-89	102440	5087	4.97	2087	3000
	2000-01	104559	18662	17.84	6261	12401
	2013-14	56164	11025	19.63	6573	14523

Source: Compiled by researcher based Socio-economic abstract solapur.

Table No.1. is the showing the area under food crops was 43.36 % whereas the area under crops was 29 .00 % in the total cultivated area of the district during 1988-89. Food crops included mostly jowar, bajara, maiz and wheat is the highest area under cultivation. Jowar, bajara and wheat is the highest area under cultivation. Cash crops included Sugarcane, Fruts and Vegetables. The total decrease in the cultivation of Jowar from 1988-89 to 2013-14 is 70.12 % whereas 36.89 % area is decreased under Jowar crop in 2013-14. In 1988-89 bajara also occupies 1.01 % in the study area and it has slightly decreased in 2000-01 by 0.56 %.

In 188-89 area under cultivation wheat was 1.53 % while it was 5.79 % in 2000-01. In 2013-14 the land under cultivation of wheat was 3.04 %. It reveals, there is increase of 4.26 % in cultivation of wheat in 2000-01. In 1988-89 sugarcane cultivation is cultivated on 1.79 % of land while in 2000-01 it covers2.14 % land. From 1988-89 to 2013-14 total increase of sugarcane in Mohol tahsil is 17.09 %. The irrigation facilities has enhanced during the study period and therefore sugarcane cultivation has increased more than ten fold in the study area.

In the study area fruits were cultivated on 0.17 % area in 1988-89, it has increased to 4.21 %, In 1988-89 the fruit were cultivated in the study area on 0.17 % of total area under cultivation. It noticed that over a period of 25 years, there is remarkable increased 4.03 %. On other hand there is decreased in the cultivation of bajara in the study area in the span of 25 years from 1988-89 to 2013-14. In 1988-89 the area under cultivation of bajara was1.01 % while it was 0.11 %. in 2013-14. It shows decrease in the cultivation bajara by 0.90 %. During the period of 25 years, demand of vegetables was increasing. The area under cultivation of vegetable also increased by 2.75 %. In 1988-89 the area under cultivation of vegetable was0.20 % while in 2013-14 it was 2.95 %. In the study area maiz crop also increase with 0.75 % from 1988-89 to 2013-14. In 1988-89 the area under cultivation of maiz was 2.20 % while in 2013-14 it was 2.95 %. From 1988-89 to 2013-14 wheat, sugarcane, maiz, fruits and vegetables have increased whereas jowar and bajara crops area have decreased during the study period in the study region.

CONCLUSTION:

In this study region irrigation factor is an important role in changing of cropping pattern. The availability of irrigation facilities reflects the land use and cropping pattern. The Mohol tahsil has decreased of food crops by 4.6 % whereas cash crop increased by 1.77 % of the total cultivated area from 1988-89 to 2013-14. The cash crop cultivation practices were increased due to availability of irrigation facilities like Ujani canal in the central part of tahsil. The wells and tub-wells facilities are influencing to the changing cropping pattern and agricultural development.

The irrigation facilities are essential to develop cash crop production. Area under cultivation of sugarcane, vegetables and fruits are increased during the study period. Area under cultivation of sugarcane is found to be increased by 17.09 % because of increase irrigation facilities. Area under cultivation of fruits is found to be increased by 4.03 % because inclination of farmers to promote horticulture. Area under vegetables increased by 2.75 %. The main factors of changing the cropping pattern are irrigation, rainfall and types of soil in the study region.

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GREEN ENVIRONMENT AND CARBON CREDIT

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ABSTRACT

In today's scenario Global Warming is costing a lot of money Every Country try to find out solution on this issue. Politician, economist, NGO's and other environment related institutes focus to promote policy and business that works for the environment. As we all know, carbon dioxide, the most important greenhouse gas (GHG) produced by combustion of fuels, has become a cause of global panic as its concentration in the Earth's atmosphere has been rising alarmingly. This has created an opportunity for the trade of carbon credits both within and outside of the regulated area, thereby creating a global "carbon market". In this system of carbon trading, controls are imposed on Greenhouse Gas (GHG) emissions under the Kyoto Protocol, and the predefined emission limits are then allocated across countries, which have to control the greenhouse gas emissions from the various industries and commercial units operating within them. The objective of the paper is to discuss the basic concepts and importance of carbon credit. It also emphasizes on the methods used to save the environment. This paper also discusses the business opportunities in the global emissions market in Indian context.

INTRODUCTION

In today's Era we all facing the problem of solution, and the causes are related to development with specially related to Industrialization, deforestation and rapid increase in fuel consumption in the last few years, the reason of the sky being darkened is nothing but the lasting effects of all the carbon dioxide being thrown into the atmosphere and radically changing our climate. This continuous accumulation of carbon dioxide in the atmosphere has contributed to what is known today as Global Warming. The several other causes besides burning of fossil fuel which has increased the level of carbon dioxide in the atmosphere are the systematic clearing of forests to make way for more factories and various other human structures. The growing awareness about harmful levels of Greenhouse Gases (GHG) and the resulting Worldwide Warming phenomena, has forced the government authorities and private organizations to implement systems that would help in reducing the amount of carbon dioxide in the atmosphere.

OBJECTIVES:

- To explain concept of carbon credit
- To find out benefits of Carbon credit
- Implementation of carbon credit for per capita income

SOURCE OF DATA

This paper is informative regarding Carbon Credit the secondary data is used from different websites and journals

CONCEPT OF CARBON CREDIT

KYOTO PROTOCOL

The Kyoto Protocol was initiated by the United Nations Framework Convention on Climate Change and ratified by 181 countries and the European Union as a whole, individual entity in 1997, and was put into effect in 2005 This protocol was proposed by the international community to address and reduce greenhouse gas emissions that have led to global climate change. The Protocol makes it mandatory for commercial entities emitting above the permitted limit of carbon dioxide to cut down their emissions to prescribed levels, or they should buy carbon credits certificates which can be transacted in the market, or alternatively pay a charge for the emissions, which is referred to as carbon tax

CARBON CREDIT

International treaties have set quotas on the amount of GHG countries can produce, which in turn set quotas for businesses. Instruments like carbon credits and carbon offset were introduced in order to improve the scenario by encouraging firms to be more environments friendly in conducting their business. One carbon credit allows one tonne of carbon dioxide or a corresponding amount of other greenhouse gases to be discharged in the air. Businesses that are over their quotas must buy carbon credits for excess emissions, while those below can sell their remaining credits. This exchange of credits between businesses has encouraged carbon trading globally. These credits can be exchanged between businesses or bought and sold in international markets at prevailing market price at two exchanges, namely the Chicago Climate Exchange and the European Climate Exchange. The Multi-Commodity Exchange of India (MCX) may soon become the third exchange in the world to trade in carbon credits. The amount of global emissions can be controlled through the buying and selling of carbon credits in the carbon trading method. It is quite simple and convenient to purchase Carbon Credits from a number of firms, just like any other monetary instrument, as they are traded in an open market. Carbon trading is used when the company's emissions exceed its quota of carbon credits, forcing it to purchase credits from other companies which have spare carbon credits. As a result, the worldwide carbon emissions stay within permissible levels, and the companies come up with ecologically sustainable ways of conducting business .The system also motivates the organizations to be more eco friendly so that they can increase their earnings by selling carbon credits. As carbon credits are freely traded in the market, they make it very easy for businesses to follow the system. There are no complex rules or procedures to adhere to, which enhances their acceptance and makes the system highly successful. Carbon credits can also be purchased even if you are not a part of any organization in order to lower your own carbon footprint. The money that you put in this manner is routed to fund ecological projects in any region on the planet so that the emissions made as a result of your activities can be neutralized. This sale and purchase in carbon credits helps limit the unchecked emissions of greenhouse gases throughout the world. Organizations responsible for atmospheric pollution are made to pay for their acts while ones taking positive steps are rewarded. In the present scenario, the market of carbon credits has a direct impact on the firm's financial analysis. This has caused firms to actively seek ways to decrease their emissions and adopt cleaner ways of doing business. Thus, the whole system motivates companies and governments to promote environment friendly processes that reduce greenhouse gas emission. Carbon trading, also referred as emissions transacting, it is a joint effort designed to limit the amount of carbon that businesses, organizations and other entities produce over a specific period of time. The ones who are selling are companies that use clean technology and those buying are the world’s polluters. In future, the menace of global warming can be effectively handled by this system

ROLE OF INDIA IN CARBON TRADING

India is emerging as a serious player in the global carbon credits market. This has prompted originator, developer and trader of carbon credits, to set up office in India. Carbon credit is very emerging domain now a day's especially in India but very few corporate are aware of this emerging segment. At present it is quite essential to create awareness about this business segment .As, India's GHG emission is below the target and so, it is entitled to sell surplus credits to developed countries. India is considered to claim about 31% of the total world carbon trade, which can give $25bn by 2010.This is what makes trading in carbon credits such a great business opportunity. Foreign companies which cannot fulfill the norms can buy the surplus credit from companies in other countries. Many Indian companies have been re-rated on the stock markets on the basis of the bonanza that will accrue to them when carbon trading kicks off. SRF Ltd and Shell Trading International have entered into sale and purchase Credit Emission Reduction. Suzlon Energy and Shriram EPC have business in wind energy which is eligible for carbon credit benefits. Shree Renuka Sugars is also expected to benefit from carbon credits. Gujarat Flour chemicals was among the early companies to register for Clean Development Mechanism (CDM) project. India has emerged as the dark horse in this race as more than 200 Indian entities have applied for registering their CDM Project for availing carbon credits. The 800 million farming community in India has also a unique opportunity where they can sell Carbon Credits to developed nations. The India's Delhi Metro Rail Corporation (DMRC) has become the first rail project in the world to earn carbon credits because of using regenerative braking system in its rolling stock. DMRC has earned the carbon credits by using regenerative braking system in its trains that reduces 30% electricity consumption. It is believed that it is not the penalty awarded to erring companies, but the rewards and recognition given to green firms is what makes this system so popular and exclusive. This means that companies with limited emissions will devise strategies to further reduce emissions so that they can sell more carbon credits in the international market and thereby increase their profits. Thus, the system keeps on de-polluting the environment increasingly.

CARBON OFFSET - METHODS TO SAVE THE ENVIRONMENT

Carbon offset is another financial solution to reduce greenhouse gas emission, which works on a similar strategy. A carbon offset credit is equivalent to reduction of one metric ton of CO_2 or equivalent greenhouse gas in the atmosphere. It immensely aids in promoting renewable and green energy options like solar energy and wind energy, and in funding projects on nature conservation and reforestation. Using cleaner and renewable energy sources like wind and tidal energy helps to achieve this crucial reduction..Even individuals are also using this method and are buying carbon offset to make the environment cleaner and to spread awareness about environment conservation. Buying carbon offset is straightforward and can be conveniently executed on the internet through one of the several carbon offset provider websites. But we must keep in mind that simply buying carbon offset does not take away our responsibilities, as all of us can play an important part in decreasing our carbon footprints by bringing small modifications to our daily lives. These small modifications can be of immense help in preventing further environmental degradation. We should adhere to certain fundamental practices like switching off lights and other electronic equipments when not needed, using low-energy bulbs and LED lighting, and opting for renewable fuels like biodiesel. According to the calculator on westnet.com if the average motorist does 400kms per week in a 2L petrol car then 19 trees should be planted to absorb all the CO_2 created. As the car drives, the trees grow. Planting 19 trees will offset all your vehicle's emissions for as long as you live, as long as the trees are not felled of course. There are certain few things that we can do to greatly reduce our carbon waste like carpooling, it cuts half of the cost and saving can also be done .The another way to reduce the footprint is by eating vegetarian food because it takes much more energy to produce animal protein then vegetable protein. We can also reduce carbon waste by reducing the size of our landfills i.e. don't take anything that cannot be eaten or reusable. A few simple changes can really make a difference, especially if all 6.75 billion of us started to adopt them.

CONCLUSION

Carbon offset and carbon credit still needs to find its place in layman's vocabulary. Thus, mass awareness on the issue through widespread education is required, to provide our future generations the better cleaner environment. But still the increased demand flowing to carbon credits and the introduction of newer financial instruments for emission trading are all signs of heightened activity. It can also be concluded that India is an emerging leader for the developing countries in designing innovative strategies and portfolios for carbon trading.

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AN ANLAYSISI OF FARMERS INDEBTEDNESS - CASE STUDY OF WALAWA AND SHIRALA

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INTRODUCTION –

Finance is an important factor is in agricultural sector and at every stage of agricultural activity finance requires to farmer. Farmer needs money for preparation of land for cultivation, seed and fertilizers, payments of labourers, irrigation facilities, transportation facilities, etc. He gets advance payments from the traders situated at taluka and district places. He receive loan from money lender either of his village or from outside also he canborrow money from his relatives. These all sources are generally called as unorganized sources of lending. The structural sources are to provide the finance in India since pre independence period. After independence the well established financial system is working to provide financial assistance to agriculture and allied activities. Central government and state governments made structural financial arrangement for this sector. NABARD is apex body for monitoring the agricultural and rural finance. At the state level State Cooperative bank is working at top level, District Central Bank- DCCB at mid level and primary Credit Cooperative Societies are working at grass root level. After 1969 by initialization of main commercial bank these nationalized banking chain is providing finance on priority basis to agricultural sector for different purposes. Regional Rural banks are in this chain. After economic reforms in India privet banking business is enlarged and in the last some years privet banks are also financing to agricultural sector too.This organized financial structure is doing well but even these farmers are trapped in privet money lending system which is totally damaging farming system in India. More than 3.50 lack farmers committed to suicides in India. After 1996 this bad dark scenario of rural India is creating new economical and social challenges. This situation comes due non favourable contents agricultural business. Increasing production cost, declining and insecure prices of crops, out of control prices of seed and fertilizers, barriers and uncertainty in financing system etc. are the major obstacles in rural economy in front of farmers.

Our study area is generally observed as developed in agricultural and rural development as compare to rest of Maharashtra. Partly it is true but if we look in interim of this area we found our common farmer is also struggling in his business of farming. None of any registered record of farmers suicide in this area but farmers are going in burden debt. We are trying to find out the situation of farm business and their difficulties; and suggest some recommendations to motivate this business on its own. If farmer become satisfied then whole rural, semi rural and urban area will become in good sustainable phase.

SIGNIFICANCE AND SCOPE OF THE STUDY:

Sangli district is one of the important and leading districts in Maharashtra state. It belongs to nine tahasils out of them five are remains in drought porn position. Walwa taluka situated in between Krishana and Warna riverbank, while Shirala situated at western end of district where we finds heavy raining, also it is hilly area. Vasantsagar dam on Warana River and Koyana dam on Koyna River are supplying sufficient water for agriculture in these two taluks since last 30 years. By this water facility cropping pattern is changed in this area. Sugarcane is major cash crop and we find that Walwa taluka is one of leading sugarcane production taluka in western Maharashtra. Seven cooperative sugarcane factories are working in Walwa and Shirala taluka. Beside this milk and soya been procurement projects are also working. Other agro base business is running in good professional position. Satisfactory food grain and cash crop production helps to increase standard of living of farmers. The socio economic face of this area is changed in positive manner in last some year. But even this situation ratio of landings of all type farmers is increased rapidly in last 10 to 15 years on this basis we are trying to observe this indebtedness in these two taluks

HYPOTHESIS: "Farmers are occurring in indebtedness in study area".

OBJECTIVES - Following are the objectives for this study.

1. To study the change in agricultural production and cropping pattern in Walwa and shiralataluka.
2. To study the general standard of living of farmers.
3. To study financial sources for farmers for their agricultural purpose.
4. To find out the causes of indebtedness.

Methodology and Data Collection

This study is based on primary and secondary data. We select total 240 respondents for the study. 120 respondents from each taluka i.e. Walwa and Shirala.12 villages are selected, 10 household family is one unit. 10 families from each village are selected. Household farmer families are representing from small, marginal, medium and large farmers group. Social structure of these families is also taken in account for analysis. With the help of questionnaires, we interviewed to respondents and collect the information regarding to the subject. It means that 240 convenient samples are taken for analysis. Analysis of collected data is related to the various components of sampled farmers and their agricultural activities, financial situation and their loan status. For processing the data statistical tools are applied. Secondary data collected from various reference books, journals, periodicals, government's publications, annual publications of cooperative institutions, information from Pancayatsamiteesand ZillaParishad,district and state census reports and statistical abstracts, Government publications, RBI bulletins. The data was also collected from different co-operative societies, offices of the district and taluka level.

Table No.1 Family Size

Family Size	Walwa	Shirala
Small	68 (56.6)	74 (61.6)
Medium	42 (35)	38 (31.6)
Large	10 (8.33)	8 (6.66)
Total	120 (100)	120 (100)

Small and medium family is treated as family in which near about four members are living together, while in the medium family members are up to five to eight. Where more than eight members in the family,it is treated as large family. Table No. 1 shows the scenario of family size in the study area. 91.6 % families are small and medium in Walwa taluka and 93 .2 % small and medium families are in Shirala taluka. Shirala stood in first rank in small and medium while Walwa stood first in large category. Percentage of small family towards selected respondent's family is high in both taluka. Shirala has 61.6% and Walwa has 56.6% of small family size.

PRODUCTIVITY OF DIFFERENT CORPS

Productivity of various crops find out by data collected by respondent farmers in the study area. Farmers are trying to increase the yield capacity of main crops especially sugarcane, soya bean, wheat, jawar and groundnuts in Walwa and Shirala taluka. Table No 4.10-A and 4.10-B are shows the per acre productivity of different crops in Walwa and Shirala Taluks.

Table 2-A :Productivity of Different Corps in Walwa Taluka

(In kg)

Crop	Marginal	Small	Medium	Large	Average
Rice	688	694	728	736	707.52
Wheat	625.6	609.6	662	667.2	643.92
Jawar	373.2	358	387.6	404	380.16
Maize	567.2	582.4	595.6	608.8	587.2
Groundnut	334	332.4	346	364	342.64
Soybean	406.8	435.6	541.2	462.4	440.24
*Sugarcane	34.9	34.9	42.3	46.2	41.69

***Source**: Field Survey* **Sugarcane Productivity in Tonne*

Table 2-:BProductivity of Different Corps in Shirala Taluka

(In kg)

Crop	Marginal	Small	Medium	Large	Average
Rice	698	696	734	739	727.42
Wheat	612.6	610.6	652	657.2	637.72
Jawer	379.2	364	377.6	429	394.18
Maize	577.2	589.4	603.6	611.6	602.3
Groundnut	339	337.4	349	369	345.54
Soybean	402.7	439.6	538.6	459.4	437.21
*Sugarcane	31.9	32.9	33.3	42.2	40.69

Source: Field Survey *Sugarcane Productivity in Tonne

Table 2-A and 2-B shows the productivity various crops in study area. Productivity of rice 688kg in Walwa and 698kg in Shirala taluka and of marginal farmers, while 694 an d 696 of small farmers in both talukas respectively.Average per acre productivity of rice, maize and groundnuts is higher in Shirala taluka as compare to Walwa taluka. It is 72.42 kg , 602.3kg and 345.54kg respectively in Shirala. Average per acre productivity of sugarcane wheat and soya bean is higher in Walwa taluka as compare to Shirala taluka. It is 41.69 tons 643.92kg and440.24kg respectively in Walwa. Productivity of all crops of small and marginal farmers is less as compare to average productivity in both talukas. Productivity of all crops of large farmers in both talukas is greater than average productivity in both taluka. It founds that productivity of sugarcane, wheat and soya bean of respondent large farmers in Walwa taluka is greater than productivity of whole taluka average productivity level. Small and marginal farmers are facing different problems regarding to increase the productivity. Most of respondents told that they are suffered by climatic fluctuations, market insecurity, insufficient prices of agricultural products etc. One more thing found that governmental programmes are not reaching towards small and marginal farmers in proper manners. Some farmers are unknown about various agricultural schemes provided by government.

PER ACRE GROSS INCOME FROM DIFFERENT CROPS

Income from agricultural business is the main source of income for farmers. Farming activities are conducted by our farmers to accumulate the income for meet out the living expenditure. Farmer needs income for reinvestment and developmental agricultural activities. Also he requires fulfilling the other need and wants of family like food and beverages, education, travelling, clothing, health and medical factors, entertainments etc. We studied the cost and income statues from agricultural business of respondent farmers and find out results. Table No.3 shows the average per acre income, cost of production, and net income from different crops of respondent farmers. It calculated as Net income = Average per acre income – Average per acre cost of production.

Table No. 3 - Average Income - Cost and Net Income

Crop	Walwa			Shirala		
	Average Income	Average Cost	Net Income	Average Income	Average Cost	Net Income
Rice	11715.6	8094.8	3620.2	10815.6	8074.6	2741.2
Wheat	12730.8	7874.8	4856	12331.7	7874.4	4457.3
Jower	5639.6	3484.4	2155.2		3398.9	2032.3
Maize	11983	6368	5615	12291	6298	5993
Groundnut	7150	6555.6	595	6756	6254.8	502
Soybean	15025	8518	6507	14980	8619	6361
*Sugarcane	77283.6	28454.58	48829.2	79976	31898.96	48077.04

Source: Field survey

Table shows that average per acre income of rice, wheat, jawar, maize, groundnut soya and sugarcane in Walwa taluka is Rs. 5639.6 to 77283.6. Per acre income from sugarcane is higher than other crop income, while per acre income from jawar is 5639.6 is at least level. It founds that income from soya bean. Wheatand rice are followed by income from sugarcane in Walwa taluka. In the range of rank, per acre income from sugarcane stood first,soya stood second, maize at third rank in Walwa taluka. Wheat and rice stood at fourth and fifth rank. Net per acre income from jawar and groundnuts are not satisfied level in Walwa taluka.

Average per acre income of rice, wheat, jawar, maize, groundnut soya and sugarcane in Shirala taluka is Rs.5429.9 to 79976.Per acre income from sugarcane is higher as like Walwa taluka than other crop income, while per acre income from jawar is 5429.9 is at least level. It founds that income from soya bean, wheat and rice are followed by income from sugarcane in Shirala taluka also. In the range of rank, per acre income from sugarcane stood first, soya stood second, maize at third rank in Shirala taluka. Wheat and rice stood at fourth and fifth rank. Net per acre income from jawar and groundnuts are not satisfied level even in Shirala taluka also. It is important that per acre income from different crops; the ranking is same in both talukas. It is because of the climatic geographical and other factors are mostly same in both regions. The only sugarcane crop gives satisfied income to farmers, remaining other crops are financially supporting to farmers. This is main cause of indebtedness of farmers in the study area.

Average per acre cost of production of above crops in Shirala taluka is greater than per acre production cost in Walwa taluka. Per acre cost of production in Shirala is Rs.31898.96 and Rs. 28454.58 is in Walwa, its difference is Rs.34444.36. except this we found that in other crops difference is remains very minute.

Table No. 4 -Sources of Income

Sr. Nos.	Sources of Income	Walwa	Shirala
1	Farming	120 (100)	120(100)
2	Milk products	78(65)	72(60)
3	Poultry	16(13.33)	14(11.66)
4	Salaries	20(16.66)	14(11.66)
5	Business	8(6.66)	6(5)
6	Other	23(19.16)	18(15)

Source: Field surveyFigures in the brackets indicts percentage to total 120 respondents.

Table No.4 shows the different sources of income of respondent farmers in Walwa and Shirala taluka. All respondent farmers from Walwa and Shirala 120 each are receiving income fromfarming. 78 farmers in Walwa taluka have getting income from milk production business; it is 65% to total. Milk production business is at second rank in source of income of respondent farmers in both talukas. 13.33% respondent earns income from poultry business, 16.66% from salaries, 6.66% earns from small business, while 19.16% earns from other activities in Walwa taluka. It is found in Shirala taluka that 60% farmers getting income from milk production, 11.66% from poultry, 11.66% earns from salaries, 5% earns income from business and 15% from other activities. Percentage of income from all sources in Walwa taluka is greater than percentage of income sources in Shirala taluka. It founds that agricultural business is main source for earning income in both taluka. Poultry business and other small business have big potential to earn income in study area.

Income status of farmers:

As per table 4it proved that main income source of respondent farmers is farming. Major income is coming from agricultural activities to the farmers. 84.9% respondent farmers are marginal and small in Walwa taluka and 91.6% in Shirala taluka. Due to limitations of enough substitution of income sources, major respondent farmers have not getting sufficient annul income to maintain their living standard. Table No.4.18 shows the annual income status of respondent farmer families.

Loans and indebtedness profile in study area.

Farmers requires loan for different purposes in agricultural activities conducted by them at time to time. From the initial stage of *kharip*and rubbyseason till its end, farmer needs the money. The surplus income from agriculture and allied activities is much difficult to our farmers due to number of obstacles and unfavourable factors. Lending structure and financial institutions have their own problems and on the other hand farmers are not getting required money as per their needs. This controversy situation is not making a good platform for the agricultural and rural development. It found in the study area that farmers taking loans from various financial agencies and trying to best on own for the proper utilization of loans. Due to increase in input cost, other cost increases, uncertainty in prices of agricultural goods, increasing living cost, less market surplus from agricultural business; it is becoming to the farmer to refund the loan amounts to the providing agencies. This uncertain and insecure situation makes the trap of loan. Once farmer trapped in the loan trap it becomes difficult to break it to them and then farmers are pushed and thrown in the darkness of indebtedness.

Table No 5Indebtedness of farmers

Sr. Nos.	Annual Income	Walwa	Shirala
	Non loan	4	3
1	Up to 20,000	4	3
2	20,001 to 40,000	16	12
3	40,001 to 60,000	57	62
4	60,001 to 80,000	23	26
5	Above 80001	12	9
6	Total	117	115

Source: Field survey

Table No 5 shows the status of loans taken by respondent farmers in the study area. It indicates that 76 farmers in Walwa taluka carrying with loan between Rs.20000 to Rs.60000, it is 63.33% to total. 0nly 4 farmers have not loans. 23 farmers having loan between Rs. 60000 to

Rs. 80000 it is 20 % and 12 farmers have loan above Rs.80000 it is 10% to total. The similar scenario is found in Shirala taluka also, 63% it means 76 farmers having loan amount Rs.20000 to Rs.60000. 3farmers have not loans, 26 farmers having loan between Rs. 60000 to Rs. 80000 it is 24.16 % and 9 farmers have loan above Rs.80000 it is 8.33 % to total. It founds that above 60% farmers in both talukas are carrying average annual loan amount up to Rs. 60000 and most of farmers belongs to marginal and small category

Farmers have different sources of loans. Specifically loans are available through financial chains of cooperative institutes and various national and privet banks. Table No. 4.20 shows that number of respondent farmers who took loans from available sources.

Table No.6:Sources of loans

Sources of loans	Walwa	Shirala
PACS	48	45
National banks	24	22
Land developed bank	-	
Urban banks	32	30
Money lender	-	-
Friends	4	5
Other	9	13
No loan	3	5
Total	120	120

Table No.6 explains the loan taken by farmers from different sources. It founds that of 120, 117 farmers having loans. Only three farmers in Walwa and 5 farmers have not any type of loan amount. 48 farmers in Walawa and 45 in Shirala are getting short term loans from PACCS. It's percentage to total 117 loan holders is 45.82%in Walwa and39.13% to total 115 in Shirala. 32 farmers in Walwa and 30 in Shirala are urban bank holders it's percentage is 27.35% and 26.8%. Percentage of loan holders through national banks is 20.51% and 19.13% respectively in Walwa and Shirala. Borrowing from friends occurs in farmers , it is 3.41% and 4.34% . None of respondent farmer is loan holder of money lender in both taluka. It is achievement of expansion of financial institutions in this study area. It means that major portion of loan is covered by PACCS, national and urban banks, 88.88% loan holdersin Walwa and 84.34% are under this system.

Table No7 :Purpose of loan

Sr. Nos.	Sources of loans	Walwa	Shirala
1	Cultivation	106(90.5)	104(90.43)
2	Agri. equipments	48(41)	37(32.17)
3	Livestock	97(82.9)	31(26.95)
4	Milk business	37(31.62)	42(36.52)
5	Poultry business	13(11.1)	11(9.56)
6	Irrigation	102(87.17)	91(79.13)
7	Home loan	37(31.62)	21(18.26)
8	Education	8(6.83)	4(3.47)
9	Other home necessities	5(4.27)	4(3.47)

Figures in the brackets indicates % to total loan holders

Table No 7 shows that purpose of loan taken by farmers, it founds that major part of loan is demanded for various agricultural activities. Different cultivation activities in the work, purchasing of seeds and fertilizers, purchasing of livestock, purchasing of agro equipments, irrigation- digging wells and tube-wells, drip and sprinklers , pipe lines , etc. are major areas of loan purposes and farmer use these loan amounts for these. Respondent farmers used their lone amounts mostly for cultivations, irrigations, and live stocks, its percentages are 90.5%, 87.17%, and 82.9% respectively in Walwa. In Shirala it shows 90.43%, respondents used lone for cultivation and 79.13% for irrigation purposes. 36.52% in Shirala and 31.62% in Walwa shows for milk business. Share of irrigation loan in Walwa is higher rather than Shirala. The ratio of other purposes of loans is under limitation because respondents are not sure about refunding to these loans due insecurity in the agricultural business. Farmers response to this issue was that most of loan requires for short term needs and therefore they are not willing face the risk of other types of loans beyond the agricultural needs.

Table No. 8Loan status Walwa

Year	Walwa		Shirala	
	Total loan	Average Loan	Total loan	Average Loan
2010-11	5040000	42000	4560000	38000
2011-12	5662000	47183	5390720	44921
2012-13	6113000	50941	5740890	47840
2013-14	6472240	51783	6472240	53985

Total loan amount in Walwa taluka from all loan categories and sources the year was Rs. 5040000, it increased to Rs.6472240. Its total increase is123%, SGR is 30.82%. Average lone of farmers family is minimum Rs.42000 and maximum Rs.51783. The same situation founds in Shirala taluka, total loan amount of 115 farmers is Rs.4560000 in the year 2010-11 it increased in 2013-14 Rs.6472240. It is 142% increase and its SGR is 35.51%. Average lone of farmers family is minimum Rs.38000 and maximum Rs.53985.

Opinion taken of these selected farmers regarding to the rate of interest for loans. 90.60% respondent in Walwa and 88.69% in Shirala taluka viewed that interest rate are not reasonable to them. Very few, 8 farmers in Walwa and 5 in Shirala are agree that these interest are reasonable it is shown in table No.4.25

Table No - 9
Consumption expenditure structure of respondent Walwa %

Particular	Walwa				Shirala			
	Marginal	Small	Medium	large	Marginal	Small	Medium	large
Food grain	64	60	52	47	66	64	51	48
Clothing	4	4	5	6	2	3	4	5
Education	2	3	4	4	2	3	4	4
Healt-Medi.	3	4	5	8	3	5	5	8
Entertainment	2	3	4	4	2	3	3	4
Travelling	6	7	7	10	7	8	8	11
Festivals functions	9	10	10	11	8	10	11	12
Other	10	9	13	10	10	7	13	8

Table 9 shows that expenditure of all farmers is mostly spend on food grain and other consumers durables. Large farmers spend 47 % in Walwa and 48% in Shirala on food grain and marginal farmers spend 64 % in Walwa and 66% in Shirala on it. Remaining amounts spends on other contents of family requirements.

Every person trying to earn more income from various sources, they try to live in good standard, we found some results in study area about income and expenditure statues and its relevance to the loan amount. The scenario is explained through Table No. 10

Table No.10 -Comparative Position

Particulars	Walwa	Shirala
Average Annual Income of family	89929.2	85195.6
Average Annual Expenditure offamily	62950.44	59636.92
Average Annual Loan of family	47976.95	46186.5

(Figures shows in Rs.)

Table No. 10 shows the financial comparative position of responded farmers in Walwa and Shirala taluka. It found that annual income of respondent farmer family in Walwa is Rs.89929 and expenditure on different factors is Rs.62950. It means that family have a net annual income is Rs.26979. The same situation founds in Shirala taluka its income is Rs.85195.6 and expenditure is Rs. 59636.92 so net income Rs. 25559.6. Average loan of family in Walwa is Rs.47976.95 and Rs.46186.5 in Shirala it is very painful found is that if whole net income amount transfer to loan then also loan remains of farmers family. This situation brings very bad hangover for our farmer and it resulted that farmers are forever carrying the big burden of loan and they are pushed in the deep dark valley of uncertainty of life.They trapped in the trap of indebtedness, it is the prime object of we all to think and activate to break up this bad crises occurred in our agricultural sector.

CONCLUSTIONS AND RECOMMENDATIONS

1. Productivity of all crops of small and marginal farmers is less as compare to average productivity in both talukas. Productivity of all crops of large farmers in both talukas is greater than average productivity in both taluka. Marginal and small farmers have not enough resources to increase yield capacity of crops in their farms. Climatic fluctuation and uncertainty, limited capital investment, obstacles in irrigation facilities, limited use of natural and chemical fertilizers are the main causes of less productivity of crops.
2. It founds that productivity of sugarcane, wheat and soya bean of respondent large farmers in Walwa taluka is greater than productivity of whole taluka average productivity level. Large and medium farmers are innovating at their own in farming. New techniques and methods are utilizing by them, drip and sprinkler is used so large farmers able to increase yield capacity in their agriculture.
3. Average per acre cost of production of main crops in Shirala taluka is greater than per acre production cost in Walwa taluka. Climatic and geographical, condition is different in Shirala taluka, irrigation facilities are less as compare to Walwa taluka. It is cause of difference in cost of production.
4. It found that only sugarcane crop can give maximum net income to farmers. So farmers cultivating the sugarcane as a prime crop in both talukas. According to some farmers this sugarcane crop is also not as convenient to them as compare to period for of this crop and income is not coming with in time to them.
5. Percentage of net income from gross of rice, jawar and wheat are 30.90%, 38.22% and 38.14% respectively in Walwa taluka. It is found in Shirala taluka that rice, jawar and wheat are 25.34%, 34.32% and 36.47% respectively. Percentage of these crops in Walwa founds greater than percentage in Shirala taluka.
6. 80% farmer families in Walwa taluka and 79.16% in Shirala taluka are living with below Rs.60000 annual income. It means that they have only Rs.5000 monthly income which is not sustainable for maintain the standard of living; this is one of main causes of indebtedness of farmers.
7. It founds that above 60% farmers in both talukas are carrying average annual loan amount up to Rs. 60000 and most of farmers belongs to marginal and small category

8. Major portion of loan is covered by PACCS, national banks and urban banks, 88.88% loan holders in Walwa and 84.34% are under this system. 77% loans are short term loans 22.22% are medium and long term loans in Walawa. It found in Shirala that 85.21% are short term and 14.78% are medium and long term loans. 42.73 % farmers prefers to annual installment system 32% prefers half year installments in Walwa taluka, it 48.69% and 27.82% respectively in Shirala.
9. 55% farmers in Walwa and 58.26% in Shirala have not got any type of subsidies. Those who subsidies, out of them 71.15% farmers in Walwa belongs to medium and large category, it is 75% in Shirala.
10. Expenditure of all farmers is mostly spending on food grain and other consumers durables. Large farmers spend 47 % in Walwa and 48% in Shirala on food grain and marginal farmers spend 64 % in Walwa and 66% in Shirala on it.
11. Net income in Walwa is Rs. 26979 and in Shirala it is Rs25559.6, if this whole net income amount transfer to loan amount then also loan remains of farmers family. It means that loan amount increases year by year and farmer becomes indebted.

Testing of hypothesis:

Hypothesis for this study is, "Farmers are occurring in indebtedness in study area".

The analysis of data shows that our hypothesis is proved. Indebtedness of farmers founds in Walwa and Shirala taluka in Sangli district.

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CHANDOLI NATIONAL PARK: A PROSPECTIVE OF ECOTOURISM IN SANGLI DISTRICT (MAHARASHTRA STATE)

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ABSTRACT

Ecotourism is entirely a new approach in tourism. In India, Ecotourism comprised of Wildlife areas. National parks are the most developed tourism destinations in this category. In present study Chandoli National Park in Warana River Catchment area is given as a prospective place for ecotourism. To delineate the potentiality it is calculated through Development Index. As a result it is the potential place for Ecotourism. There are some tourist places to visit along the National Park. The Sadaa, Waterfall, rich Flora and Fauna are the common but distinguished features of this park. The SWOT analysis is made to make this place clear for Ecotourism development.

Keywords: *Ecotourism, National Park, Development Index, Flora, Fauna etc.*

1.1 Introduction:

The phenomena of tourism have received worldwide recognition and it is growing by leaps and bounds. Nature-based tourism a sub-sector of tourism can be an important channel for redistributing resources from countries, which comprise mega-biodiversity regions and protected parks *(Gosling, 1990)*. Ecotourism is entirely a new approach in tourism. It was introduced in Africa with legalization of hunting in Africa in 1950. This need for recreational hunting zones lead to the creation of protected areas, national parks, and game reserves. The term was coined by Hector Ceballos-Lascurian in 1983 and was initially used to describe nature-based travel to relatively undisturbed areas with an emphasis on education. The concept of Ecotourism was emerged in 1990s. There seems to be universal acceptance of the fact that ecotourism was viable long before the 1980s in practice, it not in name. 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.

India is the country of diversity of nature, culture, traditions, and so on. There are various types of tourism area where tourist attracts in India. Recently 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. Recently Western Ghats got the nomination from UNESCO's World Heritage Centre Committee for some sites i.e. Kas Plateau, Koyna Wildlife Sanctuary, Chandoli National Park and Radhanagari Wildlife Sanctuary.

1.2 Concept of National Park:

India is one of the 17 mega diverse countries of the world (Ministry of Environment Forest and Climate change, 2015). The National Tourism Policy (NTP), 2002 states - "wildlife sanctuaries and national parks need to be integrated as an integral part of an India tourism product, and priority needs to be given to the preparation of site and visitor management plans for key parks, after a prioritization of parks" (Viswanath, R and others, 2011, p. 24). UNESCO has declared five protected area to become World Heritage Site. Out of them there are four categories are found in India these are;

i) Sanctuary:

It is an area having sufficient ecological, geomorphological and natural importance. It is decided for protect and develop the wildlife. Under some rights people can reside into the sanctuary

ii) National Park:

As same as Sanctuary, it also give importance to ecological, geomorphological and natural characteristics. It is also decided for protect and develop wildlife. National park conferring the rights of the people residing in it. None of the right to the people in this type. Unlike the sanctuary National park doesn't allow grazing of livestock.

iii) Conservation Reserves:

It can be decided by local government, which includes the area between two or more protected areas. They are decided for the protection of land, sea, animal and vegetation. The rights of people residing there not affect.

iv) Community reserve:

It can develop by local government at the community land. This area doesn't come under Sanctuary, National Park and conservation Reserve. This area decides for protecting flora, fauna and cultural conservation values (Ibid, 2015). The right of people residing there also doesn't affect.

Wildlife Sanctuary is recognized by IUCN (International Union for Conservation of Nature) category II protected areas. India has total around 500 wildlife sanctuaries. In Maharashtra state there are six National Parks, 35 Wildlife Sanctuaries and one Conservation Reserve.

1.3 Objective:

Present study aim at the study of Chandoli National Park as a potential Ecotourist destination in Maharashtra state.

1.4 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 tabulated, analyzed, interpreted and conclusion has been drawn.

1.5 Study Area:

Chandoli National park is located at 17^{o} 05' 24.29" North to 17^{o} 16' 01.14" North Latitude and 73^{o} 42' 05.46" East to 73^{o} 52' 02.21" East Longitude. It comes under Shirala Tehsil in Sangli district, Shahuwadi Tehsil in Kolhapur district and Patan Tehsil in Satara district. The total area of the forest is 317.67 sq. km. In 1985, Chandoli Wildlife Sanctuary was notified and it was changed into National Park in 14th May, 2004. This is only Sanctuary in Maharashtra where no any human inhabitation found. This National Park is located on the catchment area of River Warana. The forest is covered on the surrounding area of Chandoli Dam reservoir i.e. Vasant Sagar. The terrain is inaccessible and hilly; most of the hills are flat-topped with steep slopes sustaining grasslands and scrub vegetation on the hilltops and dense, tall forests on the slopes and valleys. The altitude of CNP ranges from 589 to 1044 m (Kanade R. and others, 2008).

1.6 Delineation of Potentiality of Chandoli National Park:

For getting the result of potentiality in tourist places various criteria are used. They are in the following,

Criteria used for Prospective of Ecotourism:

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

All the above criteria are used to get the status of development as an Ecotourism Destination. Criteria of population is 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. Number 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 criteria 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 has come.

1.7 Development Index of Ecotourist Destinations in Chandoli National Park:

To distinguish the ecotourist destinations Development Index is given. The index is measured in two type of answers i.e.,

i) 0.51 to 1.00 = Developed Tourist Destination
ii) 0.01 to 0.50 = Potential Tourist Destination

As per the above index values, Developed or Potential Ecotourist Destination can be explained. Chandoli National Park is explained in the following,

Table 1.1

Development Index of Chandoli National Park

Sr. No.	Name of Tourist Destination	Development Index
10	Chandoli	0.45

As per the Development Index of Ecotourism Destinations, Potentiality is marked as below 0.50 of Index value. The place with below 0.50 index value is known as Potential Ecotourist Destination.

Chandoli is an important destination in respect of biodiversity. Chandoli National Park introduce the diversity of flora and fauna. The Development Index of this place is 0.45, which indicate that it is Potential Ecotourism Destination. Except the National Park this place has not been developed like Koyna and Radhanagari Wildlife Sanctuary. Less variety of tourist attractions leads to become this place as backward one till now. The number of tourist has not been increased from last ten years at National Park. There is restriction for tourist in the core area of the National Park. Except this it is very important place for biodiversity observation. The Ecotourism attractions are given in the following.

1.8 Detailed Explanation of Chandoli National Park:

The detailed explanation of Chandoli National Park is given below;

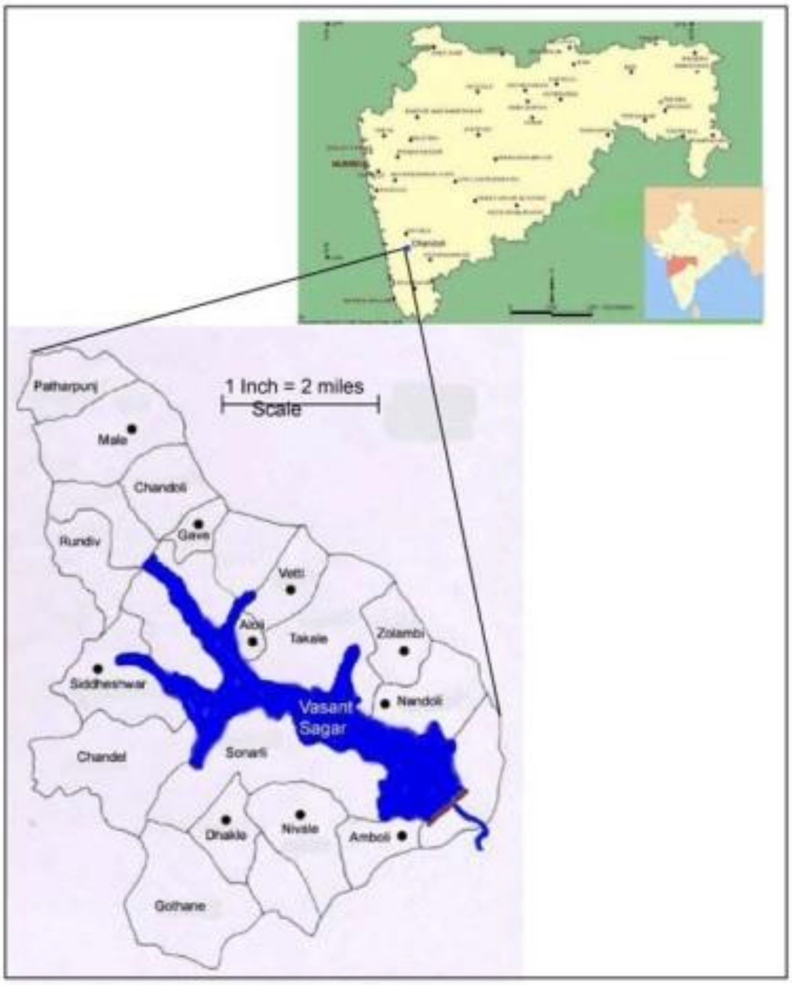
Table 1.2

Distribution of Core forest area in Chandoli National Park

Sr. No.	Type of forest	Area in Sq. km	Area in Percentage
1.	Reserved Forests	122.60	39.06
2.	Protected Forests	3.30	1.05
3.	Unclassed forests	72.66	23.15
4.	Irrigation and Revenue area	28.54	9.09
5.	Private area	86.72	27.63
	Total Area under Core Forest	313.84	100.00

Source: Divisional Forest Office, Kolhapur, p. 18.

The above table shows the core forest area in Chandoli N.P. About 39.06 per cent area is covered by reserved forest, whereas lowest area is covered by protected forest i.e. 1.05 per cent. About 9.09 per cent area is covered by the forest under Area In charge of other departments (Irrigation and Revenue).



Source: Vegetation composition and woody species diversity at Chandoli National Park, northern Western Ghats, IndiaCURRENT SCIENCE, VOL. 95, NO. 5, 10 SEPTEMBER 2008, p. 639.

Figure 1.1

Location Map of Chandoli National Park

1.8.1 Floral and Faunal Distribution in Chandoli National Park:

The flora of Chandoli are spread along the reservoir of Chandoli dam. It is disconnected by very small area of Patan Tehsil of Satara district. But the types of vegetation are as same as Koyna Wildlife Sanctuary. In the tree category, Jambhul, Pisa, Nana, Kokum tree, Karavand, Amla, Devil Fig, Amba, fig, Anjan, etc. are found. In grass category, Dongar, Bangal, kalikusal, buffalo grass, etc. are found. There are other plants which have medicinal importance i.e. Ranmire, Tamalpatra, Kadipatta, Narkya etc. are found.

The fauna of Chandoli N.P. are nearly same as to Koyna Wildlife Sanctuary. Recently in 10th June, 2010 Government of India has been sanctioned Tiger Project in this area because this area is highly suitable for the growth of tiger. The continuous forest area and grassland leads to the increase in herbivores. The increased population of herbivores leads to increase in the carnivores. There is a crocodile breeding ground in the park recently. Bronze back tree snake is found in this park. There are about nine types of Geckoes are found. This forest is good habitat for tiger than Koyna Wildlife Sanctuary. This area is having gentle slopes, small sized water body, etc. are available. On the other hand Koyna W.L.S. have steep slopes and dividing water body of Shivsagar reservoir. The detailed information of important Fauna in Chandoli N.P. is as follows.

Table 1.3

Distribution and growth of Fauna in Chandoli National Park

Sr. No.	Name of Animal	2007	2008	Growth in percentage	2009	Growth in Percentage
1.	Tiger	03	03	0	03	0
2.	Leopard	25	30	20.00	22	-26.66
3.	Indian Gaur	192	209	08.85	200	-4.30
4.	Sambar	66	57	-13.63	82	43.85
5.	Barking Deer	92	59	-35.86	73	23.72
6.	Sloth Bear	26	11	-57.69	21	90.90
7.	Mouse Deer	11	08	-27.27	01	-87.50
8.	Wild Boar	111	33	-70.27	82	148.48
9.	Porcupine	12	09	-25.00	00	-0.01
10.	Wild Dog	08	07	-187.50	03	-57.14
11.	Peacock	-	-	-	32	-
12.	Jackal	-	-	-	08	-
13.	Giant Squirrel	-	10	-	09	-10.00
14.	Hare	-	13	-	15	15.38
15.	Langur	-	107	-	84	-21.49
16.	Mongoose	-	11	-	-	-
17.	Jungle fowl	-	72	-	43	-40.27
18.	Monkey	-	-	-	22	-
19.	Chital	-	-	-	04	-
20.	Wild Cat	-	-	-	11	-
21.	Four horned antelope	-	-	-	04	-
22.	Crocodile	-	-	-	04	-
23.	Pangolin	-	-	-	-	-
24.	Monitor Lizard	-	-	-	-	-

Source: Divisional Forest Office, Kolhapur, Wildlife, Vol. II, p. 177.

The above table shows the animal count from the year 2007 to 2009. In these years 24 animals are selected in the table. The tiger population has not been increased in three years. According to the recent count of animals, the tiger has not been trapped by the cameras. The count is considered with the help of other signage like footprint. The change of animal population is counted in percentage. The leopard population is negatively changed by -26.66 per cent in 2009 as compared to 2008. The Indian Gaur, Mouse Deer, Wild dog, Giant squirrel, Langur and Jungle fowl are changed negatively. The satisfactorily change is of Sambar, Barking Deer, Sloth Bear and Wild Boar.

1.8.2 Ecotourism Attractions in Chandoli National Park:

There are some ecotourist places in Chandoli National Park. It includes Kandhardoh waterfalls, Tanali waterfalls, Vasantsagar Reservoir, Chandoli Dam, Bhairavgad fort, etc. Though some destinations are in the extreme wild and restricted area there is a possibility to develop them under the limitation of norms for tourism.

1.8.3 Tourist Arrivals at Chandoli National Park:

Best period to visit the Chandoli National Park is from November to May month. There are two shifts for tourist to go inside the forest. First shift is from 6.00 am to 1.30 pm. And second shift is from 2.00 pm to 6.00 pm. As compare to Koyna Wildlife Sanctuary the frequency of siting is high about animals. Thus the Chandoli National Park is ultimate place for ecotourist, students, researchers, nature lovers etc. The arrival of tourists at Chandoli National Park is given below;

Table 1.4

Arrival of Tourist in Chandoli National Park

Sr. No.	Years	Number of Tourist	Growth in Percentage
1.	2007-08	1197	0
2.	2008-09	1219	1.83
3.	2009-10	2183	79.08
4.	2010-11	3569	63.49
5.	2011-12	4234	18.63

Source: Divisional Forest Office, Kolhapur, Wildlife, Vol. II, p. 46.

As per the above table, the arrival of tourists is lower than Koyna W.L.S. But there is timely positive change in Chandoli National Park. Comparatively, Koyna W.L.S. have negative change periodically. In 2009-10 the number of tourists was increased. In 2011-12 it was again decreased but maintained the positive figure. The dam site was closed for some period after Mumbai attack in 2008, but it was opened under the security for tourists after legal permission. This condition helped the National park. The people coming for seeing the dam, comes to National Park. This condition has led to the increase of tourists time to time. Tourists comes to take the special non-veg lunch at the outside of the dam area. They cook and eat near Manadur village. Most of the tourists comes from Pune, Mumbai, and Satara district to visit the forest.

1.8.4 Potential Ecotourist attractions:

i) Sadaa (Plateau): Like Koyna Wildlife Sanctuary area Chandoli National park is also have Sadaa in the northern part of National Park. But here plateaus have less flora than Kas like plateaus in Koyna Wildlife Sanctuary area. There are Durgwadi, Tanali, Sonarli plateaus in the north catchment area of Chandoli N.P. On the scarp of Western Ghats in the west there are some ranges of flat top hills located in the forest.

ii) Trek trails: There are some trek points for tourists which can be develop in the future. But due to restriction of forest department the trek to the internal areas of Kandardoh waterfall and Prachitgad fort is not allowed.

a) Pachagani-Atoli-Kandardoh waterfall
b) Pachagani-Atoli-Kandardoh waterfall-Prachitgad fort
c) Devale-Karde-Prachitgad fort

iii) Chandoli Dam:

Chandoli dam is located at 17° 08' 14.40" North Latitude and 73° 51' 44.42" East Longitude. The height of this dam is 626 m. from MSL. It is 80 km south-west from Karad on Asian Highway No. 47 via Shedgewadi and Arala village. And 64 km north-west from Shirala Tehsil place of Sangli District. It comes in Shirala Tehsil of Sangli district. This dam is constructed for the irrigation purpose on River Varna. The backwater of this dam is called as 'Vasant Sagar'. This is may be world's first soil dam. Its work was started in the year 1976 and completed in 1993. The height of dam wall is 77 m. from the base and the length is 1850 m. The total storage capacity of this dam is 34 TMC. It is soil dam on the centre part and left and right sides are constructed in Concrete. There are two hydroelectricity power generation plants. The first is at the left side of the dam and another is at Sonavade village.

The tourists from Sangli, Satara, and Kolhapur and Solapur district visit this dam. Except the ban for tourist to climb the dam wall at large dams in Maharashtra, this dam allows the tourist with conditions of security. The Irrigation Department of Waranwati is located near the dam site where one can get the pass to reach the dam wall and observe the scenery of backwater of Vasant Sagar. Due to security reasons the dam wall area is free from littering of plastic material. This leads to observe the scenery by tourist without any obstruction of vehicle, shouting tourists, crowd etc. It is needful for the development of Ecotourism in this area. As it is the part of Chandoli National Park therefore special efforts to be done for the development of this dam site. Due to the National Park area the dam backwater cannot be used for commercial boating, because habitat of organisms leads to disturb.

The dam site of Mandur village is to be used by tourists comes from various areas for cooking of the food and doing party specially, during summer season. It result into lots garbage they left after cooking and eating. The broken bottles of liquor is common in the surrounding area of Mandur village. Accommodation facility is available at Shirala and Karad. Food facility is available at Shirala Tehsil place. The dam site is good place for starting the trek to the National Park via Khundalapur and Zolambi village. The vast Sada (table land) of Tanali village can be accessed after this trek. The trek accompanied the Vasant Sagar at the left upto Tanali Sada. One can feel the bird's singing from the dam wall. Presently this dam site is not that much famous due to the restrictions led by Government of Maharashtra for security purpose.

iv) Other places:

a) Kundalpur to Zolambi road track
b) Amboli to Tambave road
c) Kolane to Bhairavgad
d) Ukhalu to Tanali ferry boat.

1.9 SWOT Analysis: For the development of this place as an ecotourist place SWOT analysis is helpful. This reveals the present status of the tourist destination.

1.9.1 Strength:

a) This National Park have high biodiversity due the natural favourable conditions.
b) Water reservoir of Vasant Sagar given the water to all biological elements.
c) There is protection of hill ranges on three sides of this forest.

d) The settlements have displaced due to reservoir in the construction time. This gives maximum natural areas to animals.
e) There is very good scope for animals to migrate in the forest, as the forest area is shaped in circular manner.

1.9.2 Weakness:

a) This National park is allowed to the tourist only up to 20 km in the forest. After that core area starts where no permission for tourist.
b) There is no any vehicle to ride in the forest organized by the government through participation of local people.
c) The separate conservation efforts are not taking place for any animal or plant in the forest.
d) No any Ecotourism programme was run in this National Park.
e) The facility of amusement park for children has not developed outside the forest.
f) Large number of livestock in the buffer zone of the forest leads to scarcity to the herbivores in the forest.
g) Accommodation is not available still near the forest.
h) The planning for increasing number of carnivores and their periphery is absent.
i) Due to the high security of dam and internal area the number of tourist is remain low.
j) This place have Lack of tourism infrastructure like, drinking water, parking, foods etc.

1.9.3 Opportunities:

a) In respect of conservation practices of animal and plants this forest is good.
b) The continuous area under Tiger Reserve proposed by Government will be helpful for the increase of core and buffer zone to the north and south.
c) High opportunities to the locals as a tourist guide, trek helper, hoteling, shop owner etc.
d) The production of local crop or any other produce will increase due to the implementation of Ecotourism practices.
e) The increased proportion of tourists visiting to the Dam and reservoir will be helpful to the increase in arrival of tourists in National Park.
f) The permanent and temporary tent services should be given in the forest area.
g) In recent period the crocodile breeding has been increased. This type of breeding of any other animal will be helpful for conservation.
h) The breeding of crocodile in this area will be helpful for the researchers.

1.9.4 Threats:

a) The mass tourism is dangerous for the forest as it is increased now a days.
b) Still illegal hunting of animal is taking place by some communities.
c) The wild animals like leopard, deer, wild boar, Indian Gaur are coming out of the forest in search of food and water. This has become serious issue.
d) Illegal grazing of livestock is common in buffer zone.
e) Forest fire is increasing at present due to the increasing droughts or dry season, burning of field for the sake of agriculture, for wood etc.

1.10 Conclusion:

As per the SWOT analysis the situation of this National Park is still in the potential state. The development Index of this National Park itself states the backwardness with the help of criteria used for getting development Index. The number of tourist have not been increased from last 10 years. Except the all above elements discussed in the SWOT analysis there is a bright future for this National Park in Ecotourism.

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REGIONAL DISPARITIES IN LEVELS OF HUMAN RESOURCE DEVELOPMENT IN SATARA DISTRICT:A GEOGRAPHICAL STUDAY

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ABSTRACT

Human resources plays a significant role in the explotation of basics resources and coisevation at any stage.Human resource development is onsiderde as a bs a basics factor in the pocess of national development. Satara district is well known district in western Maharashtra, but the levels of human Resource development is medium class in satara district Karad Tahsil has first rank in human resource development ,because development of Agriculture, industries,infrastructural,factilities, Educational institution are largest proportion as compared to other tahsils. Lowest human resource development is found in man Khatav ,Mahable-shwar, Khandala tahsils ,because hhese are dryprone yeara, adiguate rain fall, and other physiogrphic conditions.

KEY WORDS:Human resources ,pattern ,development ,distribution.

INTRODUCTION:

Human resources is one of the most important resources. Human resoures development is considered, as a basic factor in the process of national development ,It is guantiiative aspect of population Geography. Human resource is defined as the process of increasing gualitative values such as knowledge,skills, creative abilities ,talent etc.These elements of human resources are the result of education ,health food and nutrition etc In brief human resource development means resource nothing but a development of meantal and physical guality of individual, This guality of individuals brings a region to the way of devoplement. It is clear that a country which is unable to development the skill and knowledge of it's people and to utilize them on effectively in national economy will be unable to develop anything elase

Human resources are uneven frpm one region to another due to the variation in nature and human 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 analyse the variation in the development of human resources in satara district at tahsil level.

STUDAY AREA:

Objectives:

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

1. Toidentify spatial disparities in various attributes of population .
2. To analyse and find out the levels of human resource development in the study region at the tahsil level.
3. To making the planning strategies for improving the levels of human resource development in thestudy region.

Data base and Methodology:

The present studay is based on the secondary data ,which is obtained from census of Indian -2011,socioeconomic abstract of satara district -2015, In this research paper Ten variables have been selected for measuring the levels of human resource development for each of the tahsil ,with the help of kendais 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-effcient index=-£R—N

Where,£R=sum of the all ranks .

N=No of variabies.

Results and Discussion:

Table No.

Human Resourse Development in Satara District(2014)

		r1	r2	r3	r4	r5	r6	r7	r8	r9	r10		
Sr. No.	Tahsil Name	Literacy	Education	Sex-Ratio	Population Density	Urban Population	Health	Post Office	Bank Facility	Drinking Water	Working Population	ΣR	Co-efficient index
1	Sataea	2	3	6	1	1	3	2	2	3	11	34	3.4
2	Karad	1	2	7	2	2	2	1	1	2	9	29	2.9
3	Wai	8	7	4	3	5	8	6	7	7	7	62	6.2
4	Phaltan	3	8	9	4	3	5	6	6	8	6	58	5.8
5	Mahabaleshwar	11	9	10	11	6	11	10	9	9	10	96	9.6
6	Koregoan	9	6	5	6	4	7	5	4	5	8	59	5.9
7	Man	6	10	6	5	7	6	9	5	10	1	62	6.2
8	Khatav	5	5	3	10	11	4	4	3	6	2	53	5.3
9	Javali	10	4	1	9	10	9	8	8	4	3	66	6.6
10	Patan	4	1	2	8	9	1	3	5	1	4	38	3.8
11	Khandala	7	11	8	7	8	10	7	9	11	5	83	8.3

Source:-Census of India 2011

Levels of Human Resourse development in satara district (2014)

Levels of development	Scale Value	No.of Tahsil	Name of the Tahsil
High	Below 4	03	Karad,Satara,Patan
Medium	4 to 8	06	Wai,Phaltan,Koregoan,Man, Khatav,Javali
Low	Above 8	02	Khandala,Mahableshwar

Source:-Census of India 2011

The table NO.1 Shown the, human the ,Human Resource development in Satara District with demographic characteristics such as, literacy, sex-ratio, Education, Urban Population, working population etc. some other variables like post office, educational facilities and health facilities, these all variable adopted to find out ranking co-efficient index method. Table No. 1 reveals the co-efficient index of Satara district has human 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 6),development of moderate levels (index value 6 to 8),and development of low levels (index value above 8)respectively. High co-efficient index value is found in two tahsil of

Satara district namely Khandala Mahableshwar which shows low levels of Human resource development. The low co-efficient index value is found in Karad, Satara and Patan tahsil of Satara district, which shows high levels of human resource development.

Levels of Human Resources Development

1. **High Developed Region:**

In the study area, there are three tahsils included in this category. Highly developed region covers an area of 332528 sq km.(31.42%) with the 13585643 (46.13%)population of the region.These tahsil are laying in the central and southern part of the study region. It comprises Karad, Satara and Patan tahsils. In this region urban population educational and health facilities, Bank and Drinking water facilities, literacy, post office, population density, working population is very better than other region. Indistrial sector, agricultural sector, marketing as well as transport abd communication facilities are the highest proportion, due to this the levels of Human 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.

2.Moderately Developed Region:

In this region six tahsils area Wai, Phaltan, Koregaon, Man, Khatav and Javali. These tahsils having less development of human resources, because physiographic and climate conditions are responsible for it. This region also cover an area of 649917 sq km. (31.42%) and the population of this region is 1407880 (46.87%) included. Wai and Javali tahsils have more than 50 per cent of hilly area. Undulating topography high rainfall in this region. Phaltan, koregaon, Man, and Khatav tahsils have adequate rainfall which adversely affected on agriculture irrigation, mining industries, transportation and infrastructural facilities are less developed therefore the levels of human resource development is low as compared to developed region. In this region natural resources, health, education facilities status are well but proper utilization 0f natural resources are not sufficient.

3.Low Developed Region:

It is called as problematic region. In this region there are two tahsils included namely Khandala and Mahableshwar. These regions are mostly hilly and highest rainfall is found there. Above tahsils have lack of infractural, educational, health facilities and urban population ,work participation rate is also compared other tahsils of Satara District. Low developed region occupies an area about 75798 sq km. (7.16%) and 210248(6.99%) population is concentrated. These Mahabaleshwar tahsil are facing problem of less urbanization and indlistrilization, due to that reason most of people migrated from rural to urban area of Satara, Pune, Mumbai in search of better job and education. Population density and literacy rate is less in this region because hilly area, inaccessibility and educational institution also low in proportion.

Conclusion:

Satara district is well known district in western Maharashtra, but of Human Resource development is medium class. In Satara District Karad tahsil has first rank in human resource development, because of agriculture, Industries, infrastructural facilities, educations are largest proportion as compared to other thasils. 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 Human resource development is found in Mahabaleshwar and Khandala tahsil, because these are under thick forest excess rainfall and other physiographic condition.

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EFFECTS OF MONSOON FAILURES OF AGRARIAN ECONOMY IN INDIA- A HISTORICAL PERSPECTIVE

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ABSTRACT

Present paper focuses on the impact of drought and vulnerability of Indian agriculture. This paper also emphasis on the types of drought, frequency of occurrence of drought and distribution of rainfall in India. It is clear that drought results in crop losses of different magnitude depending on their geographic incidence, intensity and duration. There is direct relation between food grain production and rainfall in India. Drought and crop failure which adversely affects' the economic condition of the agricultural community and create acute food problem of livelihood and livestock survival. The importance of drought lies in its overall social, economic and environmental impacts.

I. INTRODUCTION:

India accounts for only about 2.4 % of the world's geographical area and 4 % of its water resources, but has to support about 17 % of the world's human population and 15 % of the livestock. Agriculture is an important sector of the Indian economy, accounting for 14% of the nation's GDP, about 11% of its exports, about half of the population still relies on agriculture as its principal source of income and it is a source of raw material for a large number of industries. India is amongst the most vulnerable drought-prone countries of the world; a drought is reported at least once in every 3 years in the last 5 decades. What is of more concern is its increasing frequency.

The impact of droughts is more severe on the food and agricultural sector. The loss of crop and livelihood and its effect on the agrarian economy have severe consequences to the overall. India has an average annual rainfall of around 1150 mm; no other country has such a high annual average; however, more than 80% of rainfall is received in less than 100 days during the Southwest Monsoon. According to Government of India reports, about 68% of the country is prone to drought in varying degrees. The 'chronically drought-prone areas around 33% receive less than 750 mm of rainfall, while 35%, classified as 'drought-prone' receive rainfall of 750-1125 mm. Drought implies a situation of water shortage for human, cattle and agriculture consumption resulting in economic losses, primarily in agriculture sector. Drought is regular affair in India its agriculture continues to be a gamble with the monsoon as 68 per cent of the sown area is vulnerable and impacts 50 million people every year. The incidence of drought remains a threat to the country's agricultural production at macro level and to the livelihoods of people dependent on agriculture at micro level. Drought affects availability of water for people and livestock and crop and fodder production. It has direct and negative impact on agricultural production and it reduces by almost 20 to 40 per cent. Rainfed areas are highly drought prone and hence drought in rainfed area hits small and marginal farmers more, threatens their food and livelihood security. Drought leads to large-scale migration in search of alternative livelihoods, loss of human life due to stress, suicide, starvation or unhygienic conditions. While many definitions of drought exist, the importance of drought lies in its overall social, economic and environmental impacts. With non-structural nature and greater spatial extend, Drought hits the largest number people. The agrarian economies of the developing nations are therefore more vulnerable. In fact, drought has been one of the primary reasons for widespread poverty and environmental degradation. The impact of droughts on societies widely varies depending on `coping capabilities' and the general health of the national economies concerned.

II. TYPES OF DROUGHTS:

Drought proceeds in sequential manner. Its impacts are spread across different domains as listed below.

Meteorological drought
⇩
Agricultural drought
⇩
Hydrological drought
⇩
Socioeconomic drought

A. Meteorological drought

Meteorological drought is simple absence/deficit of rainfall from the normal. It is the least severe form of drought and is often identified by sunny days and hot weather. According to the India Meteorological Department (IMD), meteorological drought occurs when the seasonal rainfall received over an area is less than 75per cent of its long-term average value (30 year/88cm).

Measuring metrological drought: Metrological drought Rainfall deficiency (long period average)

25 per cent or Less ⇒ Normal
26 to - 50 per cent ⇒ Moderate drought
More than- 50 per cent ⇒ Severe drought

B. Hydrological drought

Meteorological drought often leads to reduction of natural stream flows or groundwater levels, plus stored water supplies. Main impact is on water resource systems.

C. Agricultural drought

This form of drought occurs when moisture level in soils is insufficient to maintain average crop yields. Initial consequences are in the reduced seasonal output of crops & other related production. An extreme agricultural drought can lead to a famine, which is a prolonged shortage of food in a restricted region causing widespread disease and death from starvation.

D. Socioeconomic drought

Socioeconomic drought correlates the supply and demand of goods and services with the three above-mentioned types of drought. When the supply of some goods or services such as water and electricity are weather dependant then drought may cause shortages in supply of these economic goods.

III. HISTORICAL DROUGHT EVENTS:

The drought prone areas in the country classified on annual rainfall departures fall either in arid, semi-arid and dry sub-humid regions where droughts occur frequently. The probabilities of occurrence of droughts in different meteorological sub-divisions are given in the Table below:

Table No: 1

Probability of occurrence of drought in different meteorological sub-divisions:

Meteorological sub-division	Frequency of deficient Rainfall 75 % of normal or less
Assam	Very rare. Once in 15 years
West Bengal, Madhya Pradesh, Konkan, Bihar and Orissa	Once in 5 years
South Interior Karnataka, Eastern Uttar Pradesh and Vidarbha	Once in 4 years
Gujarat, East Rajasthan, Western Uttar Pradesh	Once in 3 years
Tamil Nadu, Jammu & Kashmir and Telangana,	Once in 2.5 years
West Rajasthan	Once in 2 years

Source: National Rainfed Area Authority, 2009

As expected, the probabilities are high in the arid zone – West Rajasthan, Jammu and Kashmir, Telangana and some part of Tamil Nadu (Western India) compared with other sub-divisions. However, droughts occur at random and no periodicity has been noticed.

Broad Distribution of Seasonal Rainfall:

Table No. 2

Broad distribution (seasonal) of rainfall in India

Season	Month's	% distribution of rainfall
Pre-monsoon	March-May	10.4
South-west monsoon	June-September	73.4
Post-monsoon	October-December	13.3
Winter rains	January-February	2.9

Source: IMD, GoI.

Table shoes that percentage departure of the rainfall in south-west monsoon (June-September) is highest (73.4) as compared to other seasons.

Departure of Rainfall and Area Affected By Drought:

Table No: 3

Departure of rainfall from normal long-term average and areas affected of moderate and severe drought during major drought year in India

(Percentage)

Sr. No.	Drought Year	Rainfall monsoon season (June - September) Departure from normal	Rank as per % Departure of rainfall	areas affected in % of total area of the country by			Rank as per area affected drought
				Moderate drought	Severe drought	Total	
1	1877	-33.3	1	30.6	28.9	59.5	3
2	1891	-6.3	28	22.4	0.3	22.7	26
3	1899	-29.4	2	44.1	24.3	68.4	2
4	1901	-13.1	18	19.3	10.7	30	18
5	1904	-11.8	20	17.5	16.9	34.4	15
6	1905	-17.4	11	25.2	12	37.2	10

Table contd..

7	1907	-10	22	27.9	1.2	29.1	20
8	1911	-14.7	13	13	15.4	28.4	24
9	1913	-10	23	24.5	0	24.5	25
10	1915	-9.4	24	18.8	3.4	22.2	27
11	1918	-24.9	3	44.3	25.7	70	1
12	1920	-16.7	12	35.7	2.3	38	9
13	1925	-3.3	29	21.1	0	21.1	29
14	1939	-8.7	25	17.8	10.7	28.5	23
15	1941	-13.3	16	35.5	0	35.5	11
16	1951	-18.7	8	35.1	0	35.1	13
17	1965	-18.2	10	38.3	0	38.3	8
18	1966	-13.2	17	35.4	0	35.4	12
19	1968	-11.3	21	21.9	0	21.9	28
20	1972	-23.9	4	36.6	3.8	40.4	7
21	1974	-12	19	27.1	6.9	34	16
22	1979	-18.4	9	33	1.8	34.8	14
23	1982	-14.5	14	29.1	0	29.1	21
24	1985	-7.1	27	25.6	16.7	42.3	6
25	1987	-19.4	6	29.8	17.9	47.7	4
26	2002	-19.2	7	19	10	29	22
27	2009	-22.7	5	32.5	13.5	46	5
28	2012	-7.6	26	19	11	30	19
29	2015	-14	15	14.62	15.79	30.41	17

Source: IMD and DAC, Ministry of Agriculture.

Indian metrological department receiving rainfall with deficiency of 26% or more has been assumed to be drought affected. Above table shows that in a year 1918 the country seems to be affected as never before when 70% of Indian experienced drought. The second large scale drought was in 1899 with 68% of the area affected, followed by 1877 with 59%, 1987 with 48% and in the year 2009 was 46% area affected by drought. The ranking of droughts by both these methods is given in above table. Difference in some of the worst droughts identified by either method can be seen. As per this definition, the worst drought the country faced was in 1877 with ISMR deficiency of 33% followed by 1899 with 29% deficiency, 1918 with 25% deficiency 1972 with nearly 24% deficiency and 2009 with nearly 23% deficiency. It can also be observed that in some years like 1891, 1907, 1913, 1915, 1925, 1939, 1985 and 2009 drought identify by the criteria of area affected did not reflect in the criteria of rainfall deficiency.

IV. IMPACT OF DROUGHTS:

Drought has a direct and indirect impact on the economic, social and environmental fabric of the country. Depending on its reach and scale it could bring about social unrest. The immediate visible impact of monsoon failure leading to drought is felt by the agricultural sector. The impact passes on to other sectors, including industry, through one or more of the following routes:

1 A shortage of raw material supplies to agro-based industries.

2 Reduced rural demand for industrial/consumer products due to reduced agricultural incomes.

3 Potential shifts in public sector resource allocation from investment expenditure to financing of drought relief measures.

Impact on crop production

One of the sectors where the immediate impact of drought is felt is agriculture. With the increased intensity or extended duration of drought prevalence, a significant fall in food production is often noticed. Drought results in crop losses of different magnitude depending on their geographic incidence, intensity and duration. The droughts not only affect the food production at the farm level but also the national economy and the overall food security as well. India being a large country, the national level shocks in crop production caused by monsoon failure do not reveal the full severity of adverse effects experienced at the regional level. This can be seen from the fluctuations in output of kharif food grains from the trend presented in Table 4. The table presents estimates of deviation in output at an all-India level and negative deviation for the top three states in terms of decline in the food grain production in various years during 1972-73 to 2015-16.

Table No: 4

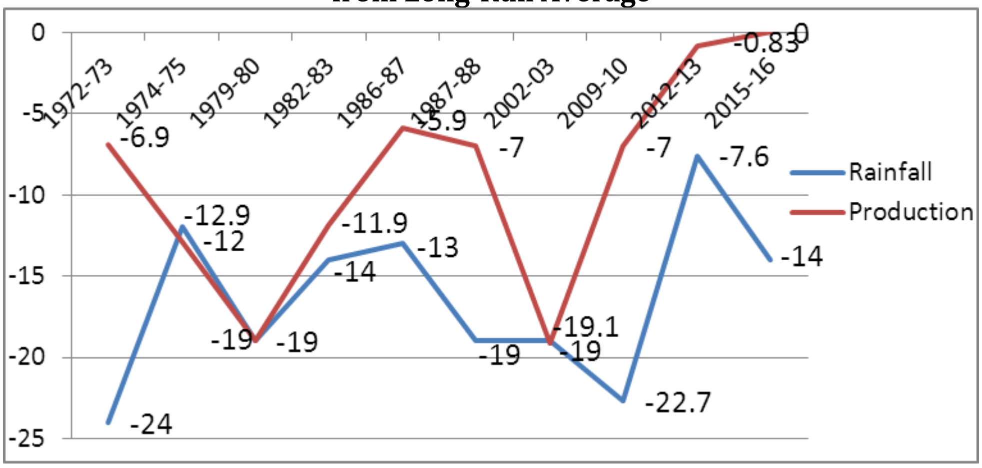
Per Cent Deviation in Value of Crop Output from the Trend and in South-West Monsoon from Long-Run Average

Year	monsoon rainfall % departure	kharif food grain production % decline
1972-73	-24	-6.9
1974-75	-12	-12.9
1979-80	-19	-19.0
1982-83	-14	-11.9
1986-87	-13	-5.9
1987-88	-19	-7.0
2002-03	-19	-19.1
2009-10	-22.7	-7.0
2012-13	-7.6	-0.83
2015-16	-14	NA

Source: DAC, Ministry of Agriculture

Figure: 1

Per Cent Deviation in Value of Crop Output from the Trend and in South-West Monsoon from Long-Run Average



Agriculture in the rest of the country during kharif season is largely dependent on rainfall during south- west monsoon. From the above table it can be shows that the production of food grains has declined in the drought year. The all- India output of kharif food grains during 1972-73 was -6.9% lower than the trend value/previous year. In the year 1979-80 kharif food grains has -19% declines. No other drought in the past led to such a drop in food production as the 2002 drought. Food grain production dipped by 29 million tonnes (183 million tonnes compared to 212 million tonnes in 2001). The 2002 drought was one of the worst in terms of impact on kharif grain production (-19.1% decline).

V. STRATEGIE/DROUGHT MITIGATION:

Monsoon failure and drought being, a recurrent phenomenon, call for an effective strategy to deal with such situations. This involves short-term as well as long-term measures. One of the strategies used to stabilise agricultural output in the country has been the development of irrigation. While monsoon failure results in heavy loss to crops in rainfed agriculture, it may not cause a decline in crop output in irrigated agriculture if the producers are able to compensate for the shortage in water due to poor rain by irrigation. However, monsoon failure results in decline in agricultural income due to cost of additional irrigation. According to the official estimate, India can expand its irrigation up to 140 million hectares which can provide irrigation to about 72% of the area under cultivation. This will certainly help in moderating the effect of the monsoon failure on crop output. However, it needs to be kept in mind that sustenance of most irrigation sources ultimately depends upon the monsoon rain. Second, when irrigation becomes available, farmers switch over to more water- intensive crops because of which actual area under irrigation turns out to be lower than the potential created. Thus, even after exploitation of full irrigation potential, a large area under cultivation in the country will remain rainfed. The effect of monsoon failure is felt strongly in irrigated areas where the water table has gone down due to over-exploitation and where water supply in surface irrigation sources like canals and tanks depends on the monsoon rains. There is considerable scope to raise efficiency of water use and to conserve rain water through development of watershed, ponds and other traditional water harvesting structures. These should form part of long-term strategy to face rainfall deficiency.

1) Watershed development project relating to agricultural sector.
2) Incorporated and inclusive approach – production, post-harvest management, marketing.
3) Development of Water Resource management.
4) Development of water harvesting structures.
5) Development of micro irrigation.
6) Solar Pumping System for irrigation.
7) Auxiliary occupations like dairy, poultry, Off-farm, etc.
8) Banks to contribute in to the lending suitable activities.

VI. CONCLUSION:

Departure of the rainfall in south-west monsoon (June-September) is highest (73.4) as compared to other seasons. The majority of cropped area in India around 68% – falls within the medium and low rainfall ranges. The probabilities of drought are highly in the West Rajasthan, Jammu and Kashmir, Telangana and some part of Tamil Nadu (Western India) compared with other sub-divisions. In a year 1918 the country seems to be affected as never before when 70% of Indian experienced drought. In a year's like 1891, 1907, 1913, 1915, 1925, 1939, 1985 and 2009 drought identify by the criteria of area affected did not reflect in the criteria of rainfall deficiency. Drought has badly affected by agricultural sector because the production of food grains has declined in the drought year.

India faces drought and monsoon failure frequently. Even if rainfall is normal at the country level, some region in the country always suffers from serious deficiency of monsoon rainfall which adversely affects agriculture labour, food production, farmers' income and often results in abnormal increase in prices of food. Due to increasing pressure on water resources, the effect of a monsoon failure is now felt more strongly than before. It is also felt that with the improvement in infrastructure, communication and technology we should be better equipped to moderate the adverse effects of a monsoon failure. Thus, besides relief measures, more attention needs to be paid to maintain production activity during the monsoon failure. This requires both a short-term and a long-term strategy. Agricultural scientists have developed varieties of rice, coarse grain, pulses and oilseeds that are of much shorter duration and are drought tolerant. They also have alternative crop plans for different rainfall regimes in different agro-ecological settings. These options give a lesser return than the main crops and varieties in a normal situation, but they are much better choices under moisture stress, rainfall deficiency and monsoon failure. The IMD forecasts on monsoon rains are too general and aggregate to be used in planning for alternative production strategies in the event of monsoon failure in a particular area like a district.

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PROBLEMS AND PROSPECTS OF RURAL SETTLEMENTS IN SOLAPUR DISTRICT (M.S)

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ABSTRACT

Food, clothes and shelter are the basic and fundamental needs of mankind. All the three are essential to a certain extent for mankind in day today life. The present work is an attempt to study the Geography of settlement both, rural as well as for urban settlements in the Solapur District. Since, the development of mankind, as he has inhabited in the groups of houses, hence, the significance of the settlements becomes most vital. There are number of studies which have been taken into consideration at National and International levels. Types of settlements, the distribution, size, functions and internal structure are the basic points to study in settlement Geography.

Historically and logically, the most basic requirement of dwelling is that, it provides shelter against the more serious environmental stresses. The nature and the intensity of these stresses vary from place to place, even within the small geographical region.

The basic requirements of shelter have been made for comfort and retain efficiency in the sense of the security to a degree, closely link with the culture of the dwellers. India is a predominantly rural country, where more than two-third of its population still live in the villages. The life style and the nature of economic activities differ from rural to urban areas.

Key words: settlements, structure, shelter, environmental.

INTRODUCTION:

Now days, the modern civilization is characterized by faster growth of urban centers. Particularly, in the developing areas of the world, the technological innovations have been responsible for the industrialization in some areas. The growth of settlements to a certain extent is the result of rapid growing population in the history of human civilization. The rural-urban interaction is, therefore, ever on the increase. The study of settlement geography, has naturally assumed tremendous significance for this reason, during contemporary times. The area under study is a relatively backward area with high potential for industrialization, urbanization and social and economic development', considering its natural resources found in the region.

CHOICE OF THE PAPER:-

Among the various problems, the problems of the settlements stand, perhaps, the most important for the welfare of mankind. India is a rural country, where about two-third population of the total is still living in rural sector and only one-third population of the total resides in urban areas. Both the rural and urban areas have their own different problems. Even today, many studies pertaining to settlement have been carried out at national and international

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levels. No doubt, such study furnishes the basis for the fundamental information which gives generalization of the problems and their magnitude for regional levels. This enables to understand their problems very clearly.

In view of the preceding discussion, it is most suitable and appropriate to undertake a study pertaining to settlement problems in developing regions like India. The selection of the topic is not very arbitrary, since no study of the **" PROBLEMS AND PROSPECTS OF RURAL SETTLEMENTS IN SOLAPUR DISTRICT "** has been seriously carried out so far from Geographical point of view. Hence, the solapur district has been select for the study.

CHOICE OF THE STUDY REGION:

The District of Solapur lies entirely in the Bhīma-Sina-Man river basin. The district is bounded by 17° 10' north and 18° 32' north latitudes and 74° 42' east and 76° 15' east longitudes. The district is fairly well defined to its west as well as to its east by inward looking scarps of Phaltan Range and Osmanabad Plateau respectively. The adjoining districts are Sangli to the South-west, Satara to its west, Pune to its north-west, Ahmadnagar to its north, Beed and Osmanabad to its east and Bijapur district in Karnataka State to its south. Though, of an irregular shape, the district is roughly squarish. It is about 200 kms, east-west and 150 kms, north-south. The district has a total area of 14878 square kilometer and population of 38,55,383 as per 2001 census which constitute 4.88 percent population of the Maharashtra State.

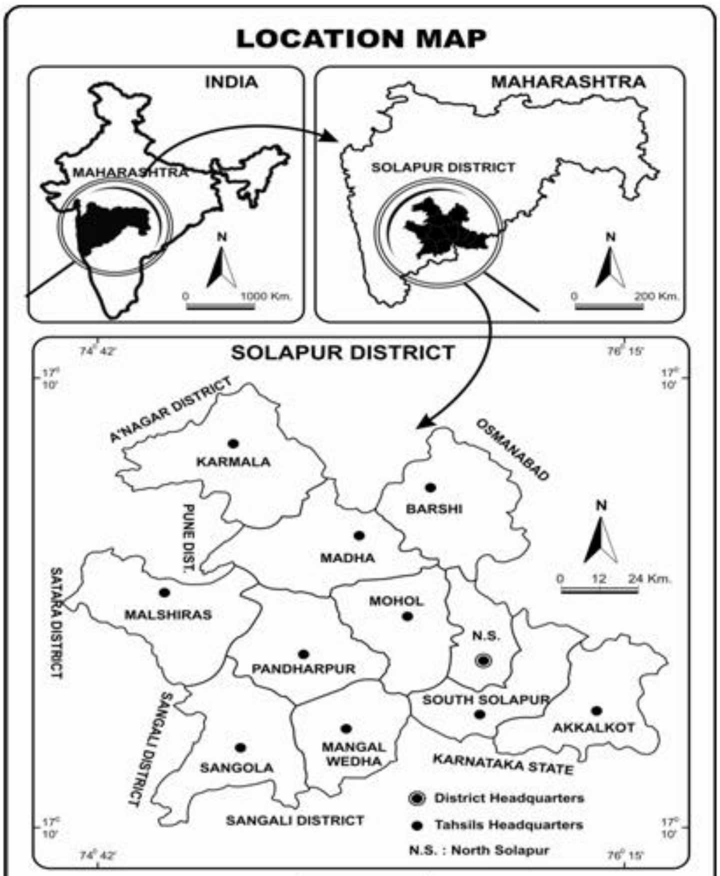

Fig. No.1

OBJECTIVES:

Without objectives, no study can be fulfilled and completed. As a matter of fact, the chief purpose of research is to obtain, the result by fulfilling its objectives. Each and every study is carried out on the basis of certain hypotheses and objectives. In fact, the objectives are the goals to obtain by the researcher. Study entitled **" PROBLEMS AND PROSPECTS OF RURAL SETTLEMENTS IN SOLAPUR DISTRICT "** has the following objectives.

1) To understand the spatial pattern of settlements in Solapur district.
2) To classify the different kinds of settlements both from rural and urban areas of the Solapur district.
3) To know about the internal structure of the urban places in Solapur district.
4) To understand the functional characteristics of the settlements in Solapur district.
5) To find out the rural urban fringe for certain urban places.

6) To draw conclusion, and find out the settlement problem and suggest suitable remedies to solve them.

SOURCE OF DATA & METHODOLOGY :

The information and data are the most vital requirement for research without proper information and data, research cannot be carried out. No desirable conclusion and generalization may be obtained without proper data analysis. Hence, the data which is basic tools of research; will be collected from different sources such as published and unpublished works.

Annual socio-economic review and district statistical abstracts of Solapur district have been the source for the data. Apart from this, various socio economic abstracts for different years and census of Maharashtra for Solapur district and Gazetteer will be used extensively for present study.

Thus, the data collected from the different sources, have been processed and the proportions and percentages have been calculated. The processed data has been tabulated and certain cartographic techniques will be applied to represent the data as per requirements. Choropleth maps are prepared. Some data will be represented through graphs, charts, and bar graphs. The represented data will be interpreted and analyzed to find out the result and conclusions and finally to suggest suitable remedies to solve them. At the end of each paper the relevant references will be given.

The first of all we will deal with the introduction of the paper and the region. The justification of the problem under taken for research and choice of the region has been considered. The significance of the subject and area will be discussed in depth. The meaning scope and the field of settlement geography will be discussed in the depth. Some important hypotheses, on which the entire research work depends, will also be formulated in order to test them. Objectives, which are the goals to be obtained by the researcher, will also be included in this chapter. The sources of the data and information, which are the tools for the analysis, will be collected from the various sources and processed in proportions and percentages by adopting various cartographic techniques, the data will be represented in the form of maps and diagrams. The review of the literature concerned with the problem will also be traced out in this paper.

After that, the regional geographical setting comprising the account of relief, climate, drainage, soil, natural vegetation and water resources.

In order to understand the basic facts and the nature of the region, different backgrounds of the region, such as physical, historical, social and economic have also been taken in to consideration in the chapter two. These backgrounds will help researcher in interpreting various aspects of settlement geography within the region under study. The geographical understanding of the region in terms of location and extension of the region, physiographic divisions, climatic conditions, soil types and natural vegetation will enable researcher to co-relate their interaction with one another. Therefore, physical backgrounds of the Solapur district have taken in to account in this paper. Apart from this historical background of the Solapur district will also be discussed which will reveal many past historical facts to apply for the improvement of settlements in the Solapur district, likewise, social, economic and political backgrounds will be discussed, which have influenced the region under study to a greater extent.

Distributional pattern of the settlements: The special distribution of settlements and its various patterns is the subject matter of this region. Distribution of settlements according to size, settlement according to population density area the important part consisting in this parts, size of the settlements according to population, highest and lowest density of settlements and the nearest neighbor analysis will be found in this region.

CONCLUSIONS AND SUGGESTIONS:

This paper gives the conclusions and suggestions of the analysis done, at the same time it also provide, the findings and results along with problems found in the region. Some of the recommendations in order to solve the problems existing in the region have also been suggested. The paper is associated with the introduction of the topic and region. Food, cloth and shelter are the basic and fundamental needs of man kinds. The present work is an attempt to study the geography of settlement both for rural and urban settlements. Since, the development of mankind as he has inhabited in the groups of houses, hence, the significance of the settlements becomes most vital. The growth of settlements, types of settlements, distribution size of the settlements and functions of the settlements are the basic point to study in settlement geography. Historically and logically, the most basic requirement of dwelling is that it provides shelter against the more serious environmental stresses, which vary from place to place, even within the small geographical area.

The basic requirement of shelter have been made for comfort and retain efficiency in the sense of the security to a degree closely link with the culture of the dwellers. Now a day, the modern civilization is characterize, in the developing areas of the world. The technological innovations have been responsible for the industrialization in certain areas.

The growth of settlements to a certain extant is the result of rapid growing population in the history of human civilization. The rural urban interaction is therefore, ever on the increase. The study of settlement geography has naturally assumed tremendous significance during contemporary times. The area under study is relatively backward area, is high potential for industrialization, urbanization and social and economic development considering its natural sources.

The meaning, scope and field of settlement geography hold and exceptional place in the geographical hierarchy of human phenomena a very recent branch of human geography. Modern innovations in the field of technology communication and transport have provided new amenities to people and rise to different setup occupancies it has been observed that many settlements have grown up due to various developments. The functional structure of the settlement is closely related to social economic and political behaviors of the society. These aspects influence the location farm and size of the settlement. The spatial distribution and the functional characteristics of urban settlements are generally, oriented by the need of rural settlements.

Though, a relatively recently developed branch the settlement geography is an important branch of human geography because it studies various characteristics of human settlements. The space relations of the settlements and the pattern of land use facilities, sites and situations are some basic theme of the study in settlement geography. The settlements are considered as an index of human adjustment to the environment. The discipline of settlement geography has been divided in to two sub fields namely rural geography and urban geography.

This paper is associated with conclusions and suggestions. It will give certain generalizations and findings in the form of summary. At the same time, it will also provides the conclusions of the research work done in all concerned related to the settlements problems of the study region. It would be also suggests some recommendations to implement for the planning purpose to improve the settlements conditions.

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IRRIGATION PROJECT IN KOLHAPUR DISTRICT: A GEOGRAPHICAL ANALYSIS

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INTRODUCTION:

In Kolhapur district 2011 – 2012 there are working Radhanagri, Tulshi, Dudhooganga and Varna four major irrigation projects, 12 Medium, 91 minor 147 percolation tank and 26 KT Wear (Kolhapur Type Bandhare). There are estimated under Major and Medium Irrigation Project 1.59 lakh and 0.97 lakh hector areas. The is having uneven distribution of rainfall like as 400 to 6000 mm. Western part of district accorded more than 3000 mm and eastern part Shirol and Hatkanangale accorded less than 500 mm rainfall. Geographical most of Sahyadri hill ranges spread towards weast to east at hence area of western part of district is more suitable for Irrigation Project. Most of all Major and Medium irrigation project are located in western hilly region because there is high rainfall and suitable relief future for irrigation Project.

The present research paper we have to studied geographical locations of Irrigation project and there water storage capacity. For the purpose of this research secondary data have been used which is collected from district census handbook, Googol Earth and Cartosat-1/CartoDEM Version-3 R1 data downloaded from bhuvan.nrsc.gov.in website. Statistical methods and GIS mapping techniques have been used for creating map for this research paper.

STUDY AREA:

Kolhapur district is situated in the extreme southern part of Maharashtra State. It lies between 15^{o} 43' and 17^{o} 17' north latitudes and 73^{o} 40' and 74^{o} 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 boundries. The district has an area of 7,685.00 sq.kms. and a population of 3,523,162 persons as per Census 2001. While the area of the district accounts for 2.5 percent of the total area of the State, the districts population constitutes 3.6 percent of the total population of the State. The district lies in the Eastern Plateau, the Micro level division of Deccan plateau, in the extreme southern part of the state. The district as a whole is a table land which descends towards south-east. In general, the physiography of the district may be grouped into 3 (three) parts. i.e. (i) The Sahyadri Hills, (ii) The Plateaux and (iii) The basin of Krishna river. (i) The Sahyadri hills are spread in a north-south direction along the western boundary of district covering the entire tahsils of Bavda and Shahuwadi, a major part of Panhala and Radhanagri tahsils, parts of Ajra, Bhudargad and Chandgad tahsils, a small part of Karvir tahsil. This part of Sahyadri hills has an elevation between 800 and 1,000 metres. Some peaks have heights more than 1000 metres. A number of finger like spurs run eastwards from the Sahyadri hills and finally they merge with the plateau. The intervening areas between the spurs are the small valleys as a number of streams originate from the Sahyadri within the district. Hill millets and paddy are grown in these valleys. This is the eastern face of the Sahyadri hills and compared to the western, it is less steep. The region slopes in general towards east. These hills are covered under dense forests.

OBJECTIVES:

1. To Study Geographical Situations of Irrigation Project in Kolhapur district.
2. To Analyze Water storage Capacity of Major, Medium and Minor Irrigation Projects.

DATABASE AND METHODOLOGY:

Present study is totally based on secondary source of data, which is collected from Kolhapur district census handbook, Googol Earth and Cartosat-1/CartoDEM Version-3 R1 data downloaded from bhuvan.nrsc.gov.in website. Statistical methods and GIS mapping techniques have been used for creating map for this research paper.

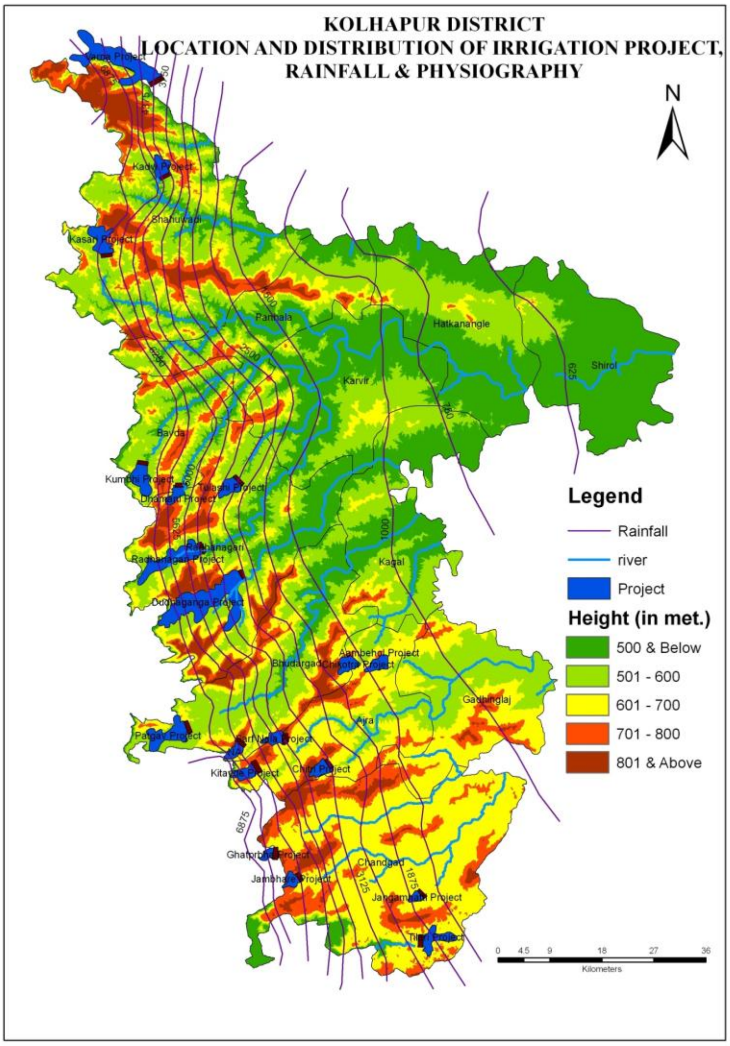
IRRIGATION PROJECT IN KOLHAPUR DISTRICT:

Dudhganga (Kalammawadi) Project:

Kalammawadi is a prestigious canal irrigation project on the river Dudhaganga at Asangaon in Radhanagari taluka and is a joint venture of States of Maharashtra and Karnataka. The project was completed in May, 2004, at a cost of Rs.79,865 lakh. The height of the dam is 73.08 mts. and its reservoir capacity is 719.12 million cu.mt. The total command area of the project is 93,209 ha. (73,340 ha. in Maharashtra and 29,869 ha. in Karnataka). Presently, it irrigates 16,806 ha. Perennially cropped and 9,935 ha. Seasonally cropped lands.

Geographical Location and Water Storage Capacity of Irrigation Project:

Sr.No	Name of the Project	Location (Tahsil)	Capacity (M.C.F.T.)	Command Area (Hectors)	No. of Villages Benifited	Cost of Project Rs. Crores
Major Projects						
1	Dudhganga	Radhanagari	719.12	54438	125	798.65
2	Warna	Shahuwadi	974.19	50131	105	117.67
Medium Projects						
1	Kadavi	Shahuwadi	71.24	12372	53	69.74
2	Kumbhi	Gaganbawada	76.88	11615	45	48.63
3	Chitri	Ajara	53.41	13087	54	79.94
4	Chikotra	Bhudargadh	43.11	7887	31	137.94
5	Fatakwadi	Chandgadh	NA	5945	37	NA
6	Patgaon	Bhudargadh	105.24	6249	43	82.20
7	Jambare	Chandgadh	23.23	5685	34	63.04
8	Jangamhatti	Chandgadh	34.21	4424	14	26.33
9	Ambeolol	Ajara	35.11	6250	24	50.56
10	Sarfnala	Ajara	18.98	3350	14	46.56
Minor Projects						
1	Manoli	Shahuwadi	5.20	700	6	8.71
2	Nandari	Shahuwadi	3.21	449	6	6.05
3	Kumbhawade	Shahuwadi	5.61	825	2	6.52
4	Kesarkarwadi	Shahuwadi	5.68	451	2	9.52
5	Manpaleshwar	Shahuwadi	9.11	1069	7	15.54
6	Padsali	Panhala	6.90	1233	5	9.93
7	Hanbarwadi	Kagal	2.67	367	3	3.73
8	Megholi	Bhudargadh	2.79	348	3	7.93
9	Nittur – 2	Chandgadh	4.38	460	5	7.04
10	Yenechawandi	Gadhinglaj	1.54	340	2	2.64



Warana Project:

Warana is a large canal irrigation project on the river Warana at Amboli in Shahuwadi taluka of Kolhapur district and Chandoli in Shirala taluka of Sangli district. The project was completed in May, 2004, at a cost of Rs.1,11,786 lakh. The height of the dam is 77 mts. and its reservoir capacity is 974.20 million cu.mt. Its total command area is 1,46,871 ha. (93,046 ha. in Kolhapur district and 53,825 ha. in Sangli district). Presently, it irrigates 250 ha. Perennially cropped lands and 1,700 ha. seasonally cropped lands.

Medium Irrigation Projects in Kolhapur District:

Kasari Project:

Kasari project is situating at Yelavade village in Shahuwadi taluka on the river Kasari. The project was completed in June, 2001, at a cost Rs.2,895 lakh. The height of the dam is 44.25 mts. and its reservoir capacity is 78.56 million cu.mt. The total command area of the project is 12741 ha. Presently the project irrigation 5222ha. perennially and 764 ha. seasonally cropped land.

Patgaon Project:

Patgaon project is situate at Patgaon village in Bhudargad taluka on the river Vedganga. The project was completed in June, 2001, at a cost Rs.8220 lakh. The height of the dam is 39.2 mts. and its reservoir capacity is 105.25 million cu.mt. The total command area is

10,882 ha. At present, the project irrigates 1,944 ha. Perennially and 152 ha. Seasonally cropped lands.

Kumbhi Project:

Kumbhi project is situate at Narveli village in Gagan Bavda taluka on the river Kumbhi. The project was completed in June, 2001, at a cost Rs.4,863 lakh. The height of the dam is 42.6 mts. and its reservoir capacity is 76.88 million cu.mt. The total command area is 10,179 ha. Presently, it irrigates 1,624 ha. perennially cropped and 303 ha. seasonally cropped lands.

Kadavi Project:

Kadavi project is situate at Golivade village in Shahuwadi taluka on the river Kadavi. The project was completed in June, 2001, at a cost Rs.6,973 lakh. The height of the dam is 36 mts. and its reservoir capacity is 71 million cu.mt. The total command area is 12,000 ha. No irrigation hectarage is as yet covered under this Project.

Chitri Project:

Chitri project is situating at Rayawada village in Ajra taluka on the river Chitri. The project was completed in June, 2001, at a cost Rs.7,994 lakh. The height of the dam is 55.11 mts. and its reservoir capacity is 53.4 million cu.mt. The total command area is 13,085 ha. Presently, it irrigates 2,437 ha. perennially cropped lands and 133 ha. seasonally cropped lands.

Chikotra Project:

Chikotra project is situate at Zulpewadi village in Ajra taluka on the river Chikotra. It was completed in June, 2001, at a cost Rs.13,794 lakh. The height of the dam is 60.2 mts. and its reservoir capacity is 43.11 million cu.mt. The total command area of the project is 7,888 ha. Presently, it irrigates 406 ha. perennially cropped and 290 ha. seasonally cropped lands.

Jangamhatti Project:

Jangamhatti project is situate at Jangamhatti village in Chandgad taluka on the river on the Honhal tributary of the river Tamraparni. The project was completed in June, 2001, at a cost Rs.2, 632 lakh. The height of the dam is 31.4 mts. and its reservoir capacity is34.21 million cu.mt. The total command area of the project is 4,530 ha. Presently, it irrigates 485 ha. perennially cropped lands and 38 ha. seasonally cropped lands.

Jambare Project:

Jambare project is situate in Chandgad taluka and was completed in 2001 at a cost Rs.6, 603 lakh. The height of the dam is 39.16 mts. and its reservoir capacity is 23.23 million cu.mt. Its total command area is 6,642 ha. Now, it irrigates 2,150 ha. perennially and 365 ha. Seasonally cropped lands.

Ghatprabha Project:

Ghatprabha project is situate at Phatakwadi village in Chandgad taluka on the river Ghatprabha. The project was completed in 2001 at a cost Rs.3,942 lakh. The height of the dam is 48.30 mts. and its reservoir capacity is 43.606 million cu.mt. The total command area of the project is 7,695 ha. Presently, it irrigates 1210 ha. perennially and 25 ha. sea sonally cropped lands.

Dhamani Project:

Dhamani project is situate at Rai village in Radhanagari taluka on the river Dhamni. The project was completed in 2003 at a cost Rs.15,639 lakh. The height of the dam is 78 mts. and its reservoir capacity is 109 million cu.mt. The total command area of the project is 2,500 ha. No irrigation hectarage is as yet coverd under this project.

Minor Irrigation Projects in Kolhapur District

More than 50 minor irrigation projects have already been completed in Kolhapur district. Their taluka-wise distribution is: 9 in Chandgad taluka, 7 each in Ajra, Gadhinglaj and Kagal talukas, 4 in Karveer, 3 in Radhanagari and Gagan Bavda talukas and 2 each in Shahuwadi and Shirol talukas. The aggregate cost of these projects is Rs.659.19 lakh. These projects collectively irrigate 14,936 ha. in Kolhapur district and 3,209 ha. in Sangli district. In addition, construction work of 18 another minor irrigation projects is in progress at a cost of Rs.573.97 lakh for bringing 4,479 ha. under irrigation.

Kolhapur-type (KT) Weirs

Kolhapur-type (KT) weirs are unique to Kolhapur District. There are 71 such weirs on different rivers, as: 11 on the Hiranyakeshi, 10 on the Vedganga, 9 on the Warana, 7 each on the Kasari, the Chikotra, the Kumbhi, 6 on the Tamraparni, and 3 each on the Kadvi, Ghatprabha and Dhamani. The collective reservoir capacities of these weirs is 3,425 million cu.mt., which is used for irrigating 16,653 ha.

Percolation Tanks

The Kolhapur Zilla Parishad has constructed 55 percolation tanks at a cost of Rs.277.57 lakh for bringing 4,564 ha. land under irrigation. The Zilla Parishad has also commissioned 28 lift irrigation schemes at a cost of Rs.39.44 lakh for irrigating 2,456 ha.

CONCLUSTION:

1. The Average height of western part of Kolhapur region is more than 700 met. Above mean sea level and sahyadri mouton ranges are spread over west to east. All irrigation project are located in this hilly region.
2. Shirol and Hatkanangale tehsil are rain shadow area in this tehsil there is no any on irrigation project but those two tehsil are having maximum area of under Irrigation. Total geographical area out of 47.63% in Shirol and 28.55% in Hatkanangle are under net Irrigated land.
3. Out of 22 major and medium irrigation project vis. Shahuwadi (7), Chandgad (4), Ajra (3), Bhudargad (3), Radhanagri (1), Gaganbavda (1), Panhala (1), Gadhinglaj (1) and Kagal (1) are located.

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भारतातील शेतीच्या समस्या व उपाययोजना

घोलप विशाल सर्जेराव
संशोधन विद्यार्थी
भूगोल अधिविभाग
शिवाजी विद्यापीठ,कोल्हापूर.

प्रस्तावना

भारत हा कृषीप्रधान देश म्हणून ओळखला जातो सध्या भारतातील 70 : लोक उदरनिर्वाहाचे साधन म्हणून शेतीवर सर्वस्वी अवलबून आहेत.म्हणून की काय भारताचा शेती हाच प्रमुख व्यवसाय बनला आहे. भारतातील 70 : लोक शेती करत असुन देखिलही भारतातील शेती इतर देशाच्या मानाने मागासलेली दिसून येते म्हणूनच भारतातील शेतीचा विकास पाहिजे तेवढा झालेला दिसुन येते नाही म्हणून शेतीमधून दर हेक्टरी उत्पादन सुध्दा कमी आहे जगामध्ये सयुंक्त संस्थाने, रशियाचा नंतर कृषीक्षेत्रात भारताचा तिसरा क्रमांक लागतो तरीही अनेक पिकांचा दर हेकटरी उत्पादनात भारताचाक्रमांक बराच खालाचा असलेला दिसून येतो (उदा. ज्वारी उत्पादनात जगात चौथा, भात उत्पादनात दुसरा, गहू उत्पादनात दुसरा, उस उत्पादनात दुसरा, तबांखू उत्पादनात तिसरा, कॉफी उत्पादनात पाचवा, आणि सफरचंद उत्पादनात पाचवा) म्हणून सदर पेपरमध्ये भारतातील ‘शेतीचा नैसगिक, आर्थिक व सामाजिक समस्या व त्यावरील उपाययोजनाचा अभ्यास केलेला दिसून येतो

अभ्यास क्षेत्र

जगातील भारत देशाचा अभ्यासक्षेत्र म्हणून अभ्यासासाठी निवड केली आहे. भारताचे भौगोलिक क्षेत्र 32,87,263 चौ.कि.आहे. भारताचे स्थान उत्तर व पुर्व गोलार्धातून जाते. व ते आशिया खंडाचा दक्षिण मध्यवर्ती भागात आहे. कर्कवत्त भारताचा मध्यातून जातो भारताचा अक्ष्यवत्तीय विस्तार 8ह्4‘28’’ उत्तर ते 26ह्6‘53’’ उत्तर आणि रेखातत्तीय विस्तार 68ह्7‘33’’ ते 97ह्24‘47’’ पूर्व असा आहे. क्षेत्रफळाचा दष्टीने भारताचा जगात सातवा क्रमांक लागतो तसेच भारताची भूसिमा 15,200 कि.मी लांबीची आणि सागरी किनारा 7.517 कि.मी लांबीची आहे तसेच भारताचा व्यापलेली पाकिस्थान, अफगाणिस्थान ,ईशाण्येला नेपाळ ,चीन,भूतान तसेच पुर्वेला बांग्लादेश, म्यानमार, आग्नेयला बंगालाचा उपसागर , दक्षिणेला श्रीलंका आणि हिंदी महासागर नैऋतल्या अरबी समुद्र असे देश समुद्र तसेच उपसागर आहेत.

अभ्यास क्षेत्र

उदिद्ष्टये

1) भारतातील कृषीच्या प्राकृतिक , आर्थिक व सामाजिक समस्याचा अभ्यास करणे

2)भारतातील कृषीच्या समस्यावरील उपाययोजना

अभ्यास पध्दती

सदर पेपर हा प्राथमिक ,दुय्यम पेपरव वेबसाईडसच्या साधानसामग्रीच्या आधारीत असून भारतातील कृषीचा नैसगिक, आर्थिक ,सामाजिक व इतर समस्याचा अभ्यास व त्यावरील कोणत्या उपाययोजना राबविता येतील याचा अभ्यास केलेला दिसून येतो

भारतातील कृषीच्या/शेतीच्या समस्या

भारतातील शेतीच्या समस्या पुढील कारणामुळे स्पष्ट करता येतील.

अ) प्राकृतिक /भौगोलिक /नैसर्गिक समस्या

1 हवामानाची स्थिती

2 भुपृष्ठाची रचना

3 जमिनीची धुप

4 महापूर

5 क्षारयुक्त जमिन

6 पिकावरपडनारी कीड/रोग

ब) आर्थिक समस्या

1 अपूरे भाडवंल

2 बाजारपेठाचा अभाव

3 जलसिंचनाचा अपुऱ्या सोयी

4 खतांचा कमी वापर

5उत्तम बी–बियाणाचा अभाव

6 वाहतुकीचा अभाव

7 यांत्रिकीकरणाचा अभाव

8 किटकनाशकाचा अभाव

क)सामाजिक समस्या

1 ‘शेतजमिनीचे विभाजन

2 ‘शेती करण्याची जुनी पध्दत

3 रूढीप्रीय शेतकरी

4 ‘शेती संशोधन

5 ‘शेतीकडे उदर निर्वाहाचे साधन म्हणून पाहण्याचा दृष्टीकोन

अ)नैसर्गिक समस्या /भौगोलिक /प्राकृतिक

1. हवामानाची स्थिती

हवामानाची स्थिती ही भारतीय शेतीवर अतिशय प्रतिकूल परिणाम करते भात शेतीही मान्सूनवर आधारीत आहे. त्याच प्रमाणे शेतीचे उत्पादन ही पावसावर अवलंबून आहे. भारतात पावसाचे अयोग्य वितरण असुन गाराचा पाऊस, अपूरा पाऊस, चाक्रीय वादळे, अतिपर्जण्य, धुवीचे वादळ, दुष्काळ, थंड हवा , इ. कारणामुळे शेतीवर परिणाम होऊन उत्पादनवर त्याचा परिणाम होतो म्हणूनच या नैसर्गिक आपत्तीला भारतातील शेतकऱ्याला तोंड दयावे लागते.

2 भुपृष्ठरचना

सर्वसाधारणपणे भुपृष्ठरचना ही पर्वत, पठार,मैदान या पध्दतीने विभागलेली दिसून येते भारताती अरवली पर्वतीय प्रदेशात शेतीकरणे अवघड जाते कारण पर्वतीय प्रदेशातील जमिनीला उतार तीव्र असतो म्हणून तेथे शेती ही मर्यादीत पिके घेतली जातात उदा. कॉफी , चहा, इ. तसेच मैदानी प्रदेशात तेथे नदया आहेत तेथे शेतीचे प्रमाण जास्त असलेले दिसून येते उदा. गंगा, सिंधु , ब्रम्हपूत्रा, गोदावरी,कृष्णा, महानंदा, तापी, कावेरी इ.

3.जमिनीची धूप

बाहय शक्तीच्या कारणामुळे जमिनीवरचे थर निघुन जावे या प्रक्रियेला जमिनीची धूप म्हणतात भारतामध्ये जमिनीची धूप खुप मोठ्या प्रमाणात होते. प्राकृतिक घटकांमध्ये मातीची पुन्हा निर्मिती होण्यासाठी 100–200 वर्ष लागतात. मानव हा मुख्य घटक आहे की जो खुप जास्त जमिनीचा आयोग्य वापर करतो साधारणतः जमिनीची धुप ही जगंलतोड, स्थलांतरीत शेती, जोरदार वारे, महापूर, प्राणी इ.

4. क्षारयुक्त जमिन –

क्षारयुक्त जमिनीचे प्रमाणात भारत वाढत आहे. सध्या 6 दशलक्ष हेक्टर्स क्षेत्रात क्षारयुक्त व आम्ल जमिन भारत आढवली पंजाब, हरियाणा, उत्तरप्रदेश, बिहार, राजस्थान, आंधप्रदेश, महाराष्ट्र व कर्नाटक तसेच गुजरातच्या किणारवती भागात सागरी भरतीमुळे तेथील जमिन क्षारयुक्त झाली आहे. यांचा परिणम असा की सुपीक जमिनीवर क्षारयुक्तामुळे तेथिल पिकावर त्याचा परिणाम झालेला दिसुन येतो.

5. महापूर –

नदयांना महापूर येणे ही एक मोठी नैसर्गिक समस्या आहे. भारतात दरवर्षी नदयांना पूर येतात व खुपमोठ्याप्रमाणात शेतीचे नूकसान होते जवळपास ४०ः हानी ही पूरामुळे होते. भारतामध्ये ब्रम्हपूत्रा, कोसी , गंगा, दामोदर या नदया सर्वात जास्त पिंक उध्दवस्त करतात साधारणपणे बंगाल, उत्तरप्रदेश पंजाब, आसाम, पुर्व ओरिसा, आंध्र ,गुजरात, हरियाणा या राज्यात नदयांचा पुरामुळे सर्वात
जास्त पिकांचे नुकसान होते.

ब) आर्थिक समस्या

1.अपुऱ्या जलसिचंनाच्या सोई

भारतात पाऊसाच्या पाण्याचा 100 पैकी फक्त 20 पाण्याचा वापर हा जलसिंचन व शेतीसाठी होतो व उरलेला ८० :पाणी हे वाहून व विविध ठिकाणी पावसाच्या पाण्यावर पिके घेतली जातात म्हणुन त्यांना त्या पाण्यावर अवलंबून राहावे लागते. त्यातच की भारतातील पाऊसाचे प्रमाण हे अनिश्चित असते त्यामुळे त्याचा परिणाम शेतीवर होतो.

2. अपुरे भांडवल –

भारतीय शेतकऱ्याकडे भांडवलाचा प्रश्न खुप मोठा आहे व त्याचा परिणाम ही उत्पन्नावर होतो व म्हणून तो काही बचत करू शकत नाही. शेतकऱ्यांना बहुदा शेतीमध्ये, नांगरणी, कोळपणी, बैलजोडी, अवजारासाठी इत्यादीची खरेदीसाठी भांडवलाची गरज निर्माण होते व ते भारतीय शेतकऱ्याकडे सहजा सहजी भांडवल उपलब्ध असत नाही म्हणुनच त्याचा परिणाम शेतकऱ्याच्या शेतीवर होतो.

3. खतांचा कमी वापर –

भारतामध्ये काही भागात अजुनही एकसारखी पिके घेतली जातात. त्यामुळे जमिनीचा कस जातो व उत्पादन ही कमी होते. जमिनीचा कस टिकण्यासाठी नैसर्गिक व कृत्रिम खताची आवश्यकता असते. परंतु भारती शेतकऱ्याला सेंद्रीयखत परवडणारे नसते म्हणुन हे एक महत्वाचे समस्या मानले जाते.

4. वाहतुकीचा अभाव –

सध्या भारतातील खेडयामध्ये वाहतुकीचा जलद सोईचा अभाव आहे. तर काही ठिकाणी रस्तेच नाहीत, आहेत पण निष्कृष्ट दर्जाचे, त्यामुळे मालाचे ने–आण करण्यासाठी त्यांना खुप त्रास होतो. म्हणुन ही एक महत्वाची समस्या म्हणता येईल.

क) सामाजिक समस्या

1. ‘**शेतीचे विभाजन/वारसाहक्क तुकडीकरण –**

भारतातील शेतजमिनीचे विभाजन करणे एक शाप आहे. कारण विभागणीमुळे शेतजमीनीचे लहान लहान तुकडे निर्माण होतात. की भारतामध्ये सुधारीत वारसहक्कांच्या कादयात मुलाचा बरोबर मुलींनाही जमिनीवरील हक्क प्राप्त होतेा. साहजिकच शेतजमिनीचे आणखी विभाजन होते.

2. शेतीकरण्याची जुनी पद्धत –

भारतीय शेतकरी अजुनही जुन्या परंपरेला चिकटुन आहे. शेतकरी शेतामध्ये जुल्हा परपरेने म्हणजेच पेरणी करणे, नांगरणे, मशागतीच्या इ. जुन्या पद्धतीने करतो व त्याचा परिणाम हा शेतातील उत्पादनावर होतो.

3.शेती संशोधन –

आधुनिकशेतीमध्ये शेती संशोधन करणे, खुप महत्वाचे आहे. मातीची सुपिकता कशा पध्दतीची आहे. त्यानुसार जर पिके घेतली तर ती अधिक चांगल्या पद्धतीचे येतात. त्याप्रमाणे रसायनिक,कृत्रिम खतांचा किती वापर करावा. जमिनीनुसार कोणते पिक घ्यावे, पिकाची वाढ व संरक्षण इ. संशोधन करून पिके करणे गरजेचे आहे.

4. दैववादी व रूढीप्रिय शेतकरी –

भारतात अजुन शेतकरी पिक चांगल्या पध्दतीने येण्यासाठी ‘शेतामध्ये कोंबडे कापतात ते आपल्या परिश्रमापेक्षा देवावर आणि त्यांच्या जुन्या वंशपरंपरेने आलेल्या गोष्टीवर विश्वास ठेवतात म्हणुन ही एक महत्वाची सामाजिक समस्या समजली जाते.

भारतीय शेतीच्या समस्यावरील उपाययोजना

1) उत्कृष्ट प्रतिचे बी–बियाणे उपलब्ध करणे.

2) जमिनीची धुप थांबविणे.

3) जलसिंचनाची सोय करणे.

4) विभाजनाविरूध्द कायदे.

5) भांडवल पुरवठा करणे.

6) रसायनिक खतांचा योग्य वापर

7) क्षारयुक्त जमिनीची सुधारणा करणे.

8) जुन्या पध्दतीत बदल करणे.

९) शेतकऱ्याना शिक्षण देणे.

१०) शेतीमधुन अधिक उत्पादनावर पुरस्कार देणे

११) पिक विमा देणे.

१२) शेती संशोधन करण्यास भर देणे.

१३) बाजारपेठ उपलब्ध करून देणे.

१४) जोड व्यवसायाची माहिती देणे.

१५) शेतमालाला हमी भाव देणे.

१६) कृषी केंद्राची उभारणी.

१७)शेती तज्ञाचे मार्गदर्शन

निष्कर्ष–

भारत हा कृषी प्रधान देश असुन सुध्दा भारतामध्ये शेतीचा पाहिजे तेवढा विकास झालेला दिसुन येत नाही. भारतामध्ये शेतीच्या काही आर्थिक, नैसर्गिक व सामजिक समस्या आहेत. ज्या त्यावर उपाययोजना व काही नियम ठेवले तर भारत हा विकसित कृषी प्रधान देश होईल व शेतकऱ्याच्या सर्व अडचणी दुर होतील. जोपर्यंत ''शेतकरी सुखी होत नाही तो पर्यंत देश सुखी होणार नाही'' म्हणून सदर पेपरमध्ये शेतीच्या समस्या ज्या उत्पन्न आहेत व त्यावर काही उपाययोजना स्पष्ट केलेल्या दिसुन येतात.

संदर्भग्रह –

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पाटोदा तालुक्यातील भोतीच्या समस्याः एक भौगोलिक अभ्यास

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सारांश

भारत कृषीप्रधान देश आहे. भारतातील एकूण लोकसंख्येपैकी सुमारे ६० टक्के लोक कृषी व्यवसाय करतात. महाराष्ट्र राज्यात देखील फारशी वेगळी स्थिती नाही. महाराष्ट्रातील शेती प्रामुख्याने कोरडवाहू आहे. राज्यातील बीड जिल्हा दुष्काळी असून आवर्षणग्रस्त प्रदेशामध्ये येतो. या ठिकाणचा प्रदेश डोंगराळ व जमिनी पातळ थराच्या व खडकाळ आहेत. पाटोदा तालुका पूर्णपणे डोंगराळ व ग्रामीण आहे. या ठिकाणच्या बहुतांश लोकांचा व्यवसाय शेती हाच आहे. तालुक्यातील ६० टक्के शेती कोरडवाहू असून पावसाच्या पाण्यावर अवलंबून आहे.

पाटोदा तालुक्यामध्ये शेतीच्या अनेक समस्या निर्माण झालेल्या आहेत. यामध्ये अनिश्चित मान्सून, दुष्काळ या नैसर्गिक समस्या आहेत. याशिवाय सुधारित बी-बियाणे व खतांचा अभाव पिकांवरील कीड व रोग, आधुनिक सिंचन पध्दतींचा अभाव, भांडवलाचा अभाव, विद्युत पुरवठयाचा अभाव इ. समस्यांचा अभ्यास करण्यासाठी नमुना निवड पध्दतीने ११० शेतकऱ्यांची निवड करुन प्रश्नावलीच्या माध्यमातून माहिती गोळा केली. व समस्यांचा सविस्तर अभ्यास करण्यात आला. फक्त समस्यांचा अभ्यास करुन चालणार नाही तर त्यावर उपाय योजना ही करणे गरजेचे आहे. त्यासाठी काही उपाय देखी सुचविण्यात आले आहेत. याचा फायदा तालुक्यातील शेतकऱ्यांना होईल हाच अभ्यासाचा हेतू आहे.

१.१ प्रस्तावनाः

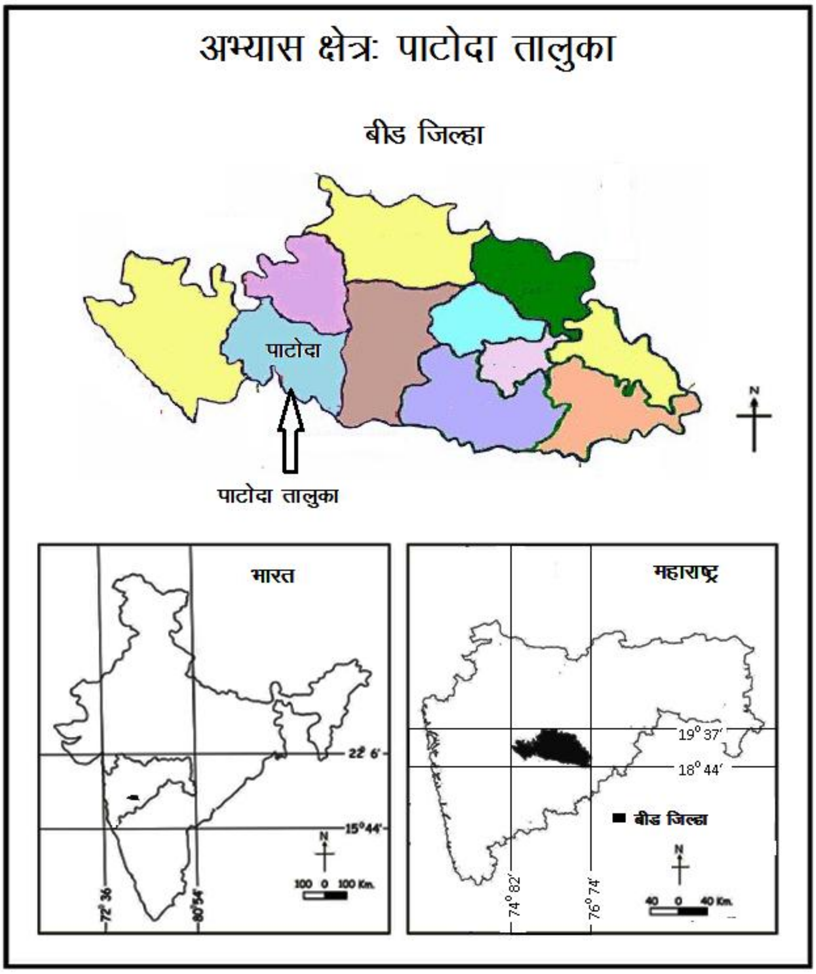
भारत हा एक कृषी प्रधान देश आहे. भारतातील एकूण लोकसंख्येपैकी जवळ जवळ ६० टक्के लोक कृषी व्यवसायात गुंतलेले आहेत. तर देशाच्या अर्थव्यवस्थेतील शेतीचा वाटा सुमारे १६ टक्के एवढा आहे. भारतातील शेती ही मौसमी पावसावर अवलंबून आहे. त्यामुळे भारताच्या शेतीला मान्सूनचा जुगार असे म्हटले जाते. महाराष्ट्र राज्यात देखील फारशी वेगळी स्थिती नाही. राज्यातील ५५ टक्के लोक शेती व्यवसाय करतात. शेतीचा राज्याच्या अर्थव्यवस्थेतील वाटा १५ टक्के आहे.

महाराष्ट्रातील शेती प्रामुख्याने कोरडवाहू आहे. राज्यातील एकूण पिक लागवडीखालील क्षेत्रापैकी (२२५.७ लाख हेक्टर) ८४ टक्के शेती जिरायती असून सुमारे १६ टक्के क्षेत्र बागायती शेती खाली आहे. महाराष्ट्र राज्यातील बीड जिल्हा दुष्काळी असून आवर्षणग्रस्त प्रदेशामध्ये येतो. जिल्हयामध्ये एकूण ११ तालुके आहेत. यापैकी गेवराई व माजलगाव तालुक्यातील जमिनी सुपिक असून गोदावरी नदी काठावरील आहेत. तर इतर तालुक्यातील प्रदेश डोंगराळ व जमिनी पातळ थराच्या आहेत. पाटोदा तालुका पूर्णपणे डोंगराळ व ग्रामीण आहे. याठिकाणच्या बहुतांश लोकांचा व्यवसाय शेती हाच आहे. ७० टक्के लोक शेती व्यवसायात गुंतलेले आहेत. तालुक्यातील बहुतांश शेती कोरडवाहू असून पावसाच्या पाण्यावर अवलंबून आहे. येथील शेतीमध्ये खरीप हंगामात बाजरी, कडधान्य, कापूस, सोयाबीन, मका ही पिके घेतली जातात. तर रबी हंगामात ज्वारी, गहू, हरबरा, करडी ही पिके घेतली जातात. सध्या अलिकडील आठ दहा वर्षामध्ये कापूस व सोयाबीन या पिकांखालील क्षेत्रामध्ये मोठया प्रमाणात वाढ झालेली दिसून येते. तरी देखील हा प्रदेश आवर्षणग्रस्त पटटयामध्ये येत असल्यामुळे तसेच येथील जमिनी पातळ व खडकाळ आहेत. त्याचबरोबर शेती सिंचनासाठी मोठया स्वरुपाचे सिंचन प्रकल्प उपलब्ध नसल्यामुळे या ठिकाणी अनेक शेती विषयक समस्या मोठया प्रमाणात निर्माण

झालेल्या आहेत. म्हणून या समस्यांचा अभ्यास होणे गरजेचे आहे. या समस्यांचा अभ्यास करुन त्यावर उपाययोजना केल्यास समस्या सोडविण्यास मदत होईल. हाच या अभ्यासाचा हेतू आहे.

१.२ अभ्यास क्षेत्रः

पाटोदा तालुक्याचे स्थान हे महाराष्ट्र राज्याच्या मध्ये-अग्नेयेस व बीड जिल्हयाच्या पश्चिमेस आहे. तालुक्याचा अक्षवृत्तीय विस्तार १८.८६ उत्तर असून रेखावृत्तीय विस्तार ७५.४८ पूर्व आहे. तालुक्याचे एकूण क्षेत्रफळ ११७८२१ हेक्टर्स आहे. तालुक्यामध्ये बालाघाट पर्वतरांग पसरलेली असून तालुक्याची समुद्रसपाटी पासूनची सरासरी उंची ६१० मीटर ते ६७० मीटर आहे. तालुक्यामध्ये मांजरा आणि सिंदफणा या दोन महत्त्वपूर्ण नदयांचा उगम झालेला आहे. तालुक्याचे हवामान उष्ण व कोरडे असून कमीतकमी तापमान २०° से. व जास्तीत जास्त ३६.६° से. एवढे आहे. तर पर्जन्याचे सरासरी प्रमाण ५६६.४० मी.मी. एवढे आहे. २०११ च्या जनगणनेनुसार पाटोदा तालुक्यातील एकूण लोकसंख्या १२५०८१ आहे. त्यापैकी पुरुषांची संख्या ६५८५४ व स्त्रियांची संख्या ५६२२७ आहे.



आकृती क्र. 1

१.३ संशोधनाची उद्दिष्ट्येः

१) पाटोदा तालुक्यातील शेती समस्याचा अभ्यास करणे.

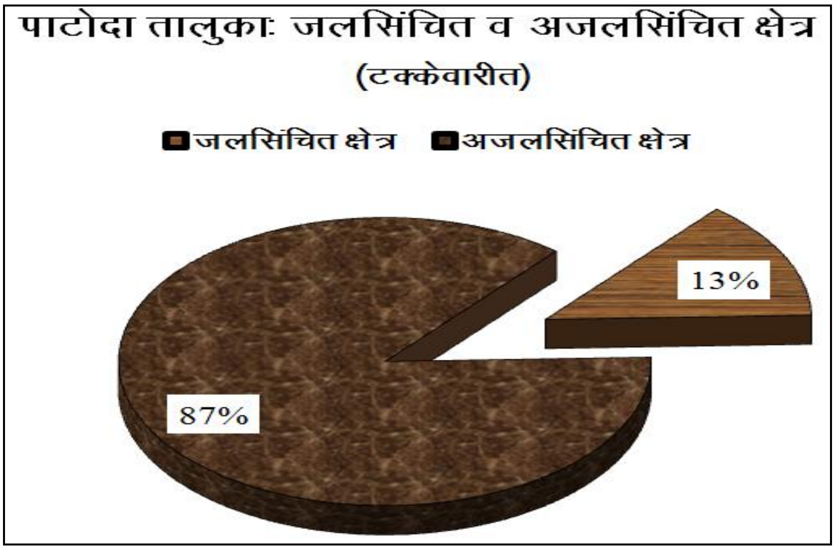
२) पाटोदा तालुक्यातील शेती समस्यांवर उपाययोजना सुचविणे

१.४ संशोधन पद्धती व माहिती संकलनः

प्रस्तुत शोध निबंधामध्ये प्राथमिक व द्वितीयक माहिती स्त्रोतांचा उपयोग केला आहे. प्राथमिक माहिती ही प्रत्यक्ष नमुना निवड पद्धतीने १० गावांची निवड करुन प्रत्येक गावातील १० शेतकऱ्यांकडून प्रश्नावली द्वारे तसेच काही ठराविक शेतकऱ्यांच्या मुलाखती घेऊन व प्रत्यक्ष निरीक्षणाद्वारे गोळा करण्यात आली. तर, द्वितीयक स्वरुपाची माहिती कृषी कार्यालये, तलाठी सजा, जिल्हा सामाजिक व आर्थिक समालोचन, गॅझेटियर, सांख्यिकीय कार्यालये, मासिके, वर्तमानपत्रे, इंटरनेट इत्यादी मार्फत संकलित करण्यात आली.

१.५ विश्लेषणः

आकृती क्र २: जलसिंचित व अजलसिंचित क्षेत्र



स्त्रोतः बीड जिल्हा सामाजिक व आर्थिक समालोचन २०१२

पाटोदा तालुक्यातील शेती ही प्रामुख्याने कोरडवाहू असून मौसमी पावसावर अवलंबून आहे. एकूण लागवडीखालील क्षेत्रापैकी (४१३०३ हेक्टर्स) ८६.६६ टक्के शेती जिरायती आहे तर ५५३६ हेक्टर्स म्हणजेच १३.४१ टक्के क्षेत्र ओलिताखाली आहे. तालुक्यातील एकूण लोकसंख्यापैकी सुमारे ७० टक्के लोक शेतीवर अवलंबून आहेत.

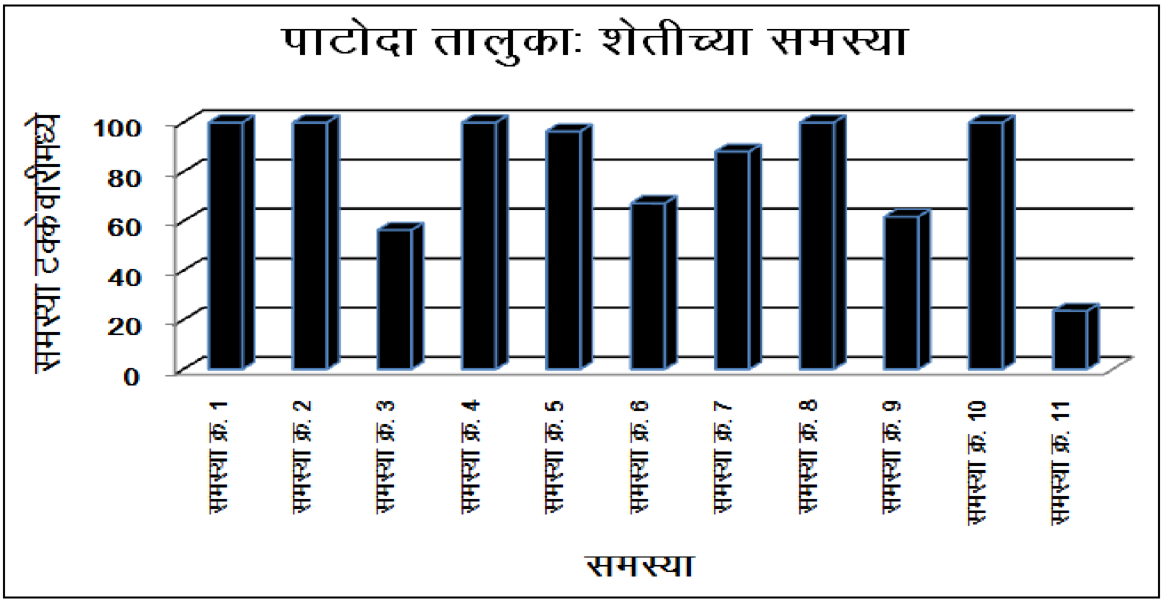
तालुक्यातील शेतीच्या समस्याः

नमुना निवड पद्धतीने तालुक्यातील शेतीच्या समस्यांचा अभ्यास करण्यासाठी निवडलेल्या ११ गावातील एकूण ११० शेतकऱ्यांकडून समस्यांबद्दल मिळालेली माहिती पुढील सारणीमध्ये दिली आहे.

तक्ता क्र. १ :- शेती समस्या व समस्याग्रस्त शेतकऱ्यांची संख्या

अ. क्र.	शेती समस्या	समस्याग्रस्त शेतकऱ्यांची संख्या (११० पैकी)	समस्येची टक्केवारी
१	अनिश्चित मान्सून	११०	१००.००
२	दुष्काळ व पूर	११०	१००.००
३	सुधारित बियाणे व खताचा अभाव	६२	५६.३६
४	पिकांवरील कीड व रोग	११०	१००.००
५	आधुनिक सिंचन पद्धतीचा अभाव	१०६	६६.३६
६	भांडवलाचा अभाव	७४	६७.२७
७	कृषी मार्गदर्शनाचा अभाव	६७	८८.१८
८	विद्युत पुरवठयाचा तुटवडा	११०	१००.००
९	शेतकरी शेतमजूरांचा प्रश्न	६८	६१.८१
१०	शेती मालाच्या किंमतीची समस्या	११०	१००.००
११	शेती कामगार/मजूरांची कमतरता	२६	२३.६३

आकृती क्र. ३: पाटोदा तालुक्यातील शेतीच्या समस्या (टक्केवारीत)



१) अनिश्चित मान्सून:

ही समस्या नैसर्गिक असून ती तालुक्यातील सर्वच शेतकऱ्यांना भेडसावते. त्याचे कारण असे की पाटोदा तालुक्यातील शेती ही कोरडवाहू व जमीन डोंगराळ असल्यामुळे ती पूर्णपणे पावसाच्या पाण्यावर अवलंबून आहे. परंतु मान्सून हा अनिश्चित स्वरुपाचा आहे. कधी लवकर तर कधी उशीरा पाऊस पडतो. कधी जास्त तर कधी कमी पाऊस पडतो. त्यामुळे ११० पैकी सर्वच्या सर्व शेतकऱ्यांना या समस्येचा सामना करावा लागतो.

२) दुष्काळ व पूर:

मिळालेली माहिती व आकडेवारीवरुन असे स्पष्ट होते की, तालुक्यातील सर्वच्या सर्व शेतकऱ्यांना व शेती व्यवसायाला दुष्काळाच्या झळा मोठ्याप्रमाणात बसत आहेत. कारण तालुक्यातील शेती पूर्णपणे पावसाच्या पाण्यावर अवलंबून असून तालुक्यात जलसिंचनासाठी एकही मोठा प्रकल्प अस्तित्वात नाही. त्यामुळे एखादया वर्षी पाऊस पडला नाही किंवा कमी प्रमाणात पडला तर शेती करणे शक्य होत नाही. तालुक्यात लघुसिंचन प्रकल्प असले तरी प्रत्येक वर्षी पाऊस पडणे आवश्यक आहे.

३) सुधारीत बियाणे व खतांचा अभाव:

ही समस्या तालुक्यातील सुमारे ५६.३६ टक्के शेतकऱ्यांची आहे. या शेतकऱ्यांचे असे म्हणणे आहे की, चांगल्या व उत्कृष्ट बियाणांचा व खतांचा पुरवठा पेरणीच्या कालावधीमध्ये आवश्यक तेवढया प्रमाणात होत नाही. त्यामुळे कृषीकेंद्रावाले शेतकऱ्यांची अडवणुक करतात. तर काही शेतकरी सुधारीत बीबियाणे व खतांच्या किंमती जास्त असल्याने ते कमी प्रतीचे स्वस्त दरातील बी बियाणे व खते खरेदी करतात.

४) पिकांवरील कीड व रोग:

तालुक्यातील सर्वच शेतकऱ्यांना पिकांवरील वेगवेगळया रोगांचा, टोळधाडीचा सामना करावा लागतो.

५) आधुनिक सिंचन पद्धतींचा अभाव:

तालुक्यातील निवडलेल्या ११० शेतकऱ्यांपैकी फक्त ४ शेतकरी आधुनिक सिंचन पद्धतींचा सिंचनासाठी अवलंब करतात. म्हणजेच फक्त ३.६४ टक्के शेतकरी ठिबक व तुषार पद्धतीने सिंचन करतात. इतर ९६.३६ टक्के शेतकरी पारंपारीक पद्धतीने सिंचन करतात.

६) भांडवलाचा अभावः

एकूण शेतकऱ्यांपैकी ६७.२७ टक्के शेतकऱ्यांची ही समस्या आहे. त्यांचे असे मत आहे की, शेतीसाठी आवश्यक भांडवल सरकारने सहकारी बॅंकांच्या माध्यमातून पुरवणे गरजेचे आहे. परंतु ते उपलब्ध होत नसल्याने शेतकऱ्यांना खाजगी सावकारांकडून कर्ज घ्यावे लागते. शेतीतील उत्पन्न चांगले मिळाले तर ठिक नाही तर दुष्काळामुळे, अनिश्चित मान्सुनमुळे शेती उत्पन्नावर परिणाम होतो व शेतकरी कर्जबाजारी होतो.

७) कृषि मार्गदर्शनाचा अभावः

एकूण शेतकऱ्यांपैकी ८८ टक्के शेतकऱ्यांनी असे सांगितले की, आम्हाला कोणत्याच थरावरुन शेतीसाठी मार्गदर्शन केले जात नाही. ना कधी कृषी अधिकारी मार्गदर्शन करतात ना इतर त्यामुळे शेतकऱ्यांपुढे अनेक समस्या निर्माण होतात.

८) विद्युत पुरवठयाचा तुटवडाः

ही एक अलीकडील काळात निर्माण झालेली शेतीची समस्या आहे. मिळालेली माहिती अशी की, शेतीसाठी विद्युतपुरवठा हा २४ तासातून फक्त ८ तासच केला जातो. तो ही अखंडितपणे नसतो. त्यामुळे शेतीला आवश्यक असणारा पाणीपुरवठा करणे शक्य होत नाही. याचा खूप मोठा परिणाम शेती उत्तन्नावर होतो.

९) शेतकरी शेतमजुरांचा प्रश्नः

दिवसेंदिवस वाढत्या लोकसंख्येमुळे तालुक्यातील जमिनीचे तुकडीकरणे होत आहे. शेत जमिन तेवढीच राहते व शेतीवर जगणाऱ्या लोकांचे प्रमाण वाढत आहे. जमिनीची विभागणी करुन जमिनीची पोसण्याची क्षमता कमी होते. त्यामुळे शेतकरी अडचणीत येतो व अल्प भुधारक शेतकरी शेतमजूर बनतो.

मिळालेली माहिती अशी की, ११० पैकी ५० टक्के शेतकरी ऊसतोडणीसाठी पश्चिम महाराष्ट्रामध्ये जातात तर ११ टक्के शेतकरी दुसऱ्यांच्या शेतामध्ये मजुरीसाठी जातात.

१०) शेती मालाला योग्य किंमत मिळत नाहीः

सर्वच शेतकऱ्यांपुढील ही समस्या आहे. शेतकऱ्यांना शेतात पिकवलेल्या शेत मालाचा भाव

स्वतःला ठरविण्याचा अधिकार नाही. व्यापारी शेतमाल अतिशय कमी किंमतीमध्ये शेतकऱ्यांकडून विकत घेतात. त्यामुळे शेतकऱ्यांची खूप मोठया प्रमाणात फसवणूक होते.

११) शेतमजूर किंवा कामगारांची कमतरताः

तालुक्यातील २८ शेतकऱ्यांची म्हणजेच २३.६३ टक्के शेतकऱ्यांची ही समस्या आहे. तालुक्यातील ५० टक्के शेतकरी ऊसतोडणीसाठी पश्चिम महाराष्ट्रात जातात. त्यामुळे रब्बी हंगामातील पिकांच्या किंवा शेतीच्या कामासाठी योग्यवेळी आवश्यक तेवढया प्रमाणात मजुर किंवा कामगार मिळत नाहीत. त्यामुळे शेतीच्या उत्पन्नावर त्याचा परिणाम होतो.

१.६ तालुक्यातील शेती समस्यांवरील उपायः

१) शेतकऱ्यांची अनिश्चित मान्सून ही नैसर्गिक समस्या सोडविण्यासाठी शासन स्तरावर तसेच सामाजिक स्तरावर व लोक वर्गणीतून लहान व मध्यम जलसिंचन योजना उभारणे, पाणी अडवा पाणी जिरवा मोहीम काटेकोरपणे राबविणे तसेच, शेतामध्ये ताली बांधणे , परिसरामध्ये वृक्षारोपण करणे व भूजल पातळी वाढविण्यासाठी जास्तीत जास्त पाणी जमिनीमध्ये मुरविणे आवश्यक आहे.

२) वारंवार पडणाऱ्या दुष्काळांवर उपाय म्हणजे तीन-चार वर्षात चांगला पाऊस ज्या वर्षी पडतो त्या वर्षीचे पावसाचे पाणी साठवून ठेवणे , साठवण तलावांची उभारणी करणे, पाटबंधारे प्रकल्प उभारणे आवश्यक आहे. तसेच, ”पाणी अडवा, पाणी जिरवा “ या राळेगणसिध्दीच्या प्रयोगाचे अनुकरण येथे होणे गरजेचे आहे.

३) सर्व शेतकऱ्यांना पुरवठा होईल अशाप्रकारे सुधारित बी-बियाणे व खतांचा पुरवठा करावा. तसेच शासकीय यंत्रणेमार्फत थेट गरीब शेतकऱ्यांना खते व बियाणांचा पुरवठा करणारी व्यवस्था निर्माण करावी. सहकारी संस्थांच्या मार्फत शेतकऱ्यांना उत्तम प्रतीच्या खतांचा व बी-बियाणांचा तसेच किटकनाशकांचा पुरवठा करावा.

४) पिकांवर किड पडू नये म्हणून आधीच चांगल्या प्रतीचे बियाणे शेतकऱ्यांनी वापरणे गरजेचे आहे. त्यासाठी योग्य अशा जंतुनाशकांचा वापर जपून कमी प्रमाणात करावा.

५) शेतकऱ्यांनी कमीत कमी पाण्यामध्ये जास्तीत जास्त सिंचन करण्यासाठी व पाण्याची बचत करण्यासाठी शक्य होईल त्या ठिकाणी ठिबक व तुषार यासारख्या आधुनिक सिंचन पध्दतींचा वापर करणे आवश्यक आहे.

६) शेतीला बी बियाणे, खते, कीटकनाशके, मशागतीची साधने, यंत्रे इ. खरेदीसाठी सध्या दिले जात असलेल्या पिक कर्जाचे प्रमाणे वाढविणे आवश्यक आहे. त्याचबरोबर गावपातळीवर कर्ज - पतपुरवठा संस्था निर्माण करणे व त्या उत्स्फूर्तपणे गरीब शेतकऱ्यांसाठी राबविणे आवश्यक आहे.

७) शेतकऱ्यांना कृषी विषयक मार्गदर्शन कृषि अधिकाऱ्यांमार्फत वेळोवेळी करणे आवश्यक आहे.

८) दिवसातून कमीत कमी १८ तास शेतीसाठी विद्युतपुरवठा आवश्यक आहे. हा विद्युत पुरवठा अखंडीत स्वरुपाचा असावा.

९) कुटुंबाचे कुटुंबनियोजन, आर्थिक नियोजन करावे. शेतीबरोबर पूरक व्यवसाय सुरु करावेत.

१०) शेतकऱ्यांच्या शेतमालाला योग्य ती किंमत मिळाली पाहिजे. त्यासाठी शासनाने जास्तीत जास्त हमीभाव देणे आवश्यक आहे.

११) शेतीमध्ये जास्तीत जास्त शक्य होईल तेवढया प्रमाणात आधुनिक यंत्र सामुग्रीचा व तंत्रज्ञानाचा वापर करावा.

१.७ सारांश व निष्कर्षः

वरील अभ्यासावरुन असे दिसून येते की, पाटोदा तालुक्यातील शेतीच्या अनेक समस्या आहेत. पाटोदा तालुक्यातील प्रदेश डोंगराळ असून जमिनी पातळ थराच्या व खडकाळ आहेत. हा तालुका आवर्षणग्रस्त पट्टयामध्ये येतो. त्यामुळे येथील बहुतांश शेती कोरडवाहू आहे. शेतीमधून मिळणारे उत्पादन अल्पप्रमाणात आहे. त्यामुळे शेतीसाठी पाण्याची कमतरता, दुष्काळ, बी-बियाणे व खतांचा अभाव, पिकांवरील रोग, आधुनिक सिंचन पध्दतीचा अभाव, कृषी मार्गदर्शनाचा अभाव या सारख्या अनेक समस्या निर्माण झालेल्या आहेत.

या समस्यांवर मात करण्यासाठी वर सांगितलेले उपाय केल्यास येथील समस्यांची तिव्रता कमी होण्यास मदत होईल. शेतीच्या उत्पादनात वाढ झाल्यास विकास साध्य करता येईल.

१.८ संदर्भ ग्रंथः

१) डॉ. प्रकाश सावंत - कृषी भूगोल, फडके प्रकाशन, कोल्हापूर.
२) ए. बी. सवदी - भारताचा समग्र भूगोल, निराली प्रकाशन, पुणे
३) डॉ. प्रकाश सावंत - महाराष्ट्राचा भूगोल, फडके प्रकाशन, कोल्हापूर.
४) एच. एन. मिश्रा, विजय पी सिंग - भूगोल संशोधन पध्दती, रावत पब्लिकेशन
५) बीड जिल्हा आर्थिक व सामाजिक समालोचन
६) नियतकालिके व वृत्तपत्रे.

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आसना नदी खोऱ्यातील ग्रामीण वसाहतीची प्रारूपे : एक भौगोलिक अभ्यास

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सारांश :

ज्ञामीज वसाहतीला घरामुळे जो भूमितीय आकार प्राप्त होतो व या बाह्य आकारावरून वसाहतीचे प्रारूप ठरविले जाते. ग्रामीण वसाहतीच्या प्रारूपांच्या निर्मितीसाठी प्राकृतिक, सामाजिक आणि आर्थिक घटक साहाय्यभूत ठरतात. ग्रामीण वसाहतीच्या प्रारूपांना ग्रामीण वसाहतीचे आकार असेही म्हणतात. ग्रामीण वसाहतीत विभिन्न गृहांच्या निर्मितीचा प्रभाव स्थानाच्या स्वरूपावर होतो आणि स्थानाचे एका विशेष प्रतिरूपात परिवर्तन होते. विशिष्ट ठिकाणच्या भूपृष्ठाच्या संरचनेनुसार वसाहतीची अंतर्गत रचना व बहिर्गत स्वरूप निर्धारीत होते. प्रस्तुत अभ्यास क्षेत्रात उपखोरेनिहाय वसाहतीचे प्रारुपे दर्शविले आहे. आसना खोऱ्यातील ग्रामीण वसाहतीच्या प्रारूपाचा अभ्यास करण्यासाठी गुगलअर्थ इमेजरी आणि भारतीय स्थलदर्शक नकाशांचा आधार घेतला आहे. अभ्यास क्षेत्रात प्रामुज्याने रेषीय, चौरसाकार, त्रिकोनाकार प्रारूपे आढळतात.

बीजसंज्ञा :

ज्ञामीण वसाहत, प्रारुप, अंतर्गत रचना व आसना खोरे

प्रस्तावना :

ग्रामीण वसाहतीचे प्रारूप निश्‍चित करीत असतांना वसाहतीतील घरांचे अंतर व संख्या लक्षात न घेता वसाहतीतील घरामुळे वसाहतीला जो भूमितीय आकार किंवा जो बाह्य आकार प्राप्त होतो, यावरून वसाहतीचे प्रारूप ठरविले जाते. वसाहतीच्या प्रारूपावर भौगोलिक, सांस्कृतिक, आर्थिक, धार्मिक आणि ऐतिहासिक घटकांचा प्रत्यक्ष-अप्रत्यक्ष परिणाम होतो. ग्रामीण वसाहतीच्या प्रारूपांच्या निर्मितीसाठी एका बाजूने प्राकृतिक घटक त्यामध्ये भूपृष्ठाचे स्वरूप, प्रवाहप्रणाली, मृदेचे प्रकार, पाणीपुरवठ्याचे स्रोत इत्यादी घटक आणि दुसऱ्या बाजूने सामाजिक-आर्थिक घटक जसे भूमीउपयोजन, पिक संघटन, शेतीची उत्पादकता, वाहतूक व लोकसंख्येची घनता हे घटक साहाय्यभूत ठरतात (Kumbhar, १९८६). ग्रामीण वसाहतीच्या प्रारूपांना ग्रामीण वसाहतीचे आकार असेही म्हणतात. त्यामध्ये लहा-न-लहान गृहसमूह विकसित होतांना अनुकूल पर्यावरणात सघन किंवा केंद्रीत होतात, त्यामुळे ग्रामीण वसाहतींना जो विशिष्ट आकार प्राप्त होतो त्यास ग्रामीण वसाहतीचे प्रारूप असे म्हणतात. ग्रामीण वसाहतीत विभिन्न गृहांच्या निर्मितीचा प्रभाव स्थानाच्या स्वरूपावर होतो आणि स्थानाचे एका विशेष प्रतिरूपात परिवर्तन होते. विशिष्ट ठिकाणच्या भूपृष्ठाच्या संरचनेनुसार वसाहतीची अंतर्गत रचना व बहिर्गत स्वरूप निर्धारीत होते (Desai, १९८५).

प्रत्येक ग्रामीण वसाहतीला विशिष्ट आकार प्राप्त करून देण्यात कित्येक वेळा जमीनीचा चढ-
उतार, जलाशय, मृदा प्रकार, खाड्या, वनस्पतीचे आच्छादन, शेती क्षेत्राचा आकार यासारखे भौगोलिक घटक कारणीभूत ठरतात. या भौगोलिक घटकाबरोबर आर्थिक, ऐतिहासिक आणि सांस्कृतिक घटकांचा प्रभाव ज्ञामीज वसाहतीच्या प्रारूपाच्या निर्मितीवर दिसून येतो. आर्थिक घटकात शेती, पशुपालन, मासेमारी, खानकाम, भूमीउपयोजन, बाजारपेठ आणि कारखानदारी या घटकांचा परिणाम वसाहतीच्या आकारावर झालेला आढळून येतो. तर ऐतिहासिक घटकात किल्ले, राजवाडे, छावण्या, गढी इत्यादी घटकांचा परिणाम वसाहतीच्या आकारावर झालेला दिसतो. सांस्कृतिक घटक वैविध्यपूर्ण असून यामध्ये धर्मस्थाने, आवडी-निवडी, रूढी, सामाजिक वैशिष्ट्ये यांचा

प्रभाव वस्तीच्या आकारावर झालेला दिसून येतो (Chandel, २००९). ज्या प्रदेशामध्ये संसाधनांचे केंद्रीकरण जास्त प्रमाणात झालेले आहे तेथे द्विकेंद्रीत वसाहतीचे प्रमाण जास्त आढळते. सामान्यतः नदीच्या खोऱ्यात सुपीक मृदा व पाणी यांचे वितरण जवळपास समान असते यामुळे सघन ग्रामीण वसाहती आढळतात. तर पर्वतीय प्रदेशात साधन संपत्तीचे वितरण असमान असल्यामुळे विखुरीत ग्रामीण वसाहती आढळतात.

अभ्यास क्षेत्र :

आसना नदी ही गोदावरीची उपनदी असून तीचा विस्तार हिंगोली व नांदेड जिल्ह्यातील औंढा नागनाथ, वसमत, कळमनुरी, हदगाव, अर्धापूर व नांदेड या तालुक्यात समाविष्ट आहे. अक्षवृत्तीय विस्तार १९° १०' ते १९° ३०' उत्तर व रेखावृत्तीय विस्तार ७७° ०५' ते ७७° ३०' पूर्व या दरम्यान आहे. आसना नदीच्या उघडी, लोणारी, कुरुंदा, टोर व मेंढला या उपनद्या आहेत. आसना खोऱ्याचे एकूण क्षेत्रफळ १३४९.६७ चौ.कि.मी. एवढे आहे. तसेच उत्तर-दजिज लांबी ३४.५३ जि .मी. व पूर्व-पश्चिम रुंदी ४२.१५ कि.मी. आहे. तर समुद्रसपाटीपासूनची उंची ५४८ ते ३५० मीटरच्या दरम्यान असून मुख्य नदीप्रवाहाची लांबी ५९.०५ कि.मी. एवढी आहे. आसना खोऱ्यामध्ये २०११ च्या जनगणनेनुसार एकूण २३५ वसाहती असून त्यापैकी १७ वसाहती ओसाड आहेत. तर एकूण लोकसंख्या ५७४८५० इतकी असून त्यापैकी २९६२७२ पुरुष तर २७८५७८ स्त्रिया आहेत. तसेच ग्रामीण लोकसंख्येची घनता दर चौ.कि.मी.ला २८१.९४ एवढी आहे.

उद्दिष्ट्ये :

१) उपजोरेनिहाय ग्रामीण वसाहतीच्या प्रारुपांचा अभ्यास करणे.

माहिती संकलन व अभ्यास पद्धती :

प्रस्तुत अभ्यासासाठी वापरण्यात आलेली आधार सामुग्री ही प्राथमिक व दुय्यम स्वरुपाची असून त्यामध्ये प्राथमिक माहिती संकलनासाठी ग्रामीण वसाहतीचा क्षेत्र अभ्यास केलेला आहे. दुय्यम स्वरुपाची माहिती प्राप्त करण्यासाठी हिंगोली व नांदेड जिल्ह्यांच्या जनगणना अहवाल (२०११), जिल्हा सामाजिक व आर्थिक समालोच-न २०११, संशोध-न पत्रिज ा Google earth softwer यांचा वापर करण्यात आला आहे.

ग्रामीण वसाहतीची प्रारूपे :

प्राकृतिक आणि सांस्कृतिक घटकांच्या प्रभावामुळे ग्रामीण वसाहतीला विशिष्ट आकार प्राप्त होतो. यामध्ये नैसर्गिक घटकातील नदीचा प्रवाह, शेती क्षेत्र, जमीनीचा उंच-सखलपणा, समुद्रकिनारा इत्यादी घटक ग्रामीण वसाहतीचे विशिष्ट प्रारूपे तयार होण्यासाठी कारणीभूत ठरतात. या नैसर्गिक घटकाशिवाय बाजारपेठ, जा-नज ाम, पशुपालन, मासेमारी, शेती व्यवस्था, कालवे, रस्ते, किल्ला आणि धार्मिक ठिकाण या सांस्कृतिक, आर्थिक व ऐतिहासिक घटकांचा परिणाम वसाहतीच्या प्रारूपावर होत असतो. आकाराचा अभ्यास अंतर्गत आकार व बाह्य आकार या दोन्ही दृष्टीकोनातून केला आहे. सिन्हा (१९७६) यांच्या मते वसाहतीच्या प्रारूपावर घरांची रचना, रस्ते, सेवा सुविधांची उपलब्धता यांचा प्रभाव आढळून येतो. क्षेत्राचा आकार, मृदा प्रकार, रस्ते, मंदिर व मशीद हे घटक वसाहतीच्या प्रारूपाला प्रभावित करतात (सिंग, १९५५). वस्ती या सांस्कृतिक भूदृश्यामध्ये व वस्तीच्या प्रारूपामध्ये अभिक्षेत्रानुसार आणि काळानुसार बदल होत असतो.

आसना खोऱ्यातील ग्रामीण वसाहतीचे प्रारूपे:

आसना खोऱ्यातील ग्रामीण वसाहतीच्या प्रारूपाचा अभ्यास करण्यासाठी गुगलअर्थ इमेजरी
आणि भारतीय स्थलदर्शक नकाशा यांचा आधार घेतला आहे.

१) आयाताकार प्रारूप :

ज्या वसाहतीचा आकार आयाताकार दिसतो अशा वसाहतींना आयाताकार वसाहती म्हणतात. आयाताकार वसाहती प्रामुख्याने शेती क्षेत्राच्या आयाताकृती आकारामुळे निर्माण झाल्याचे दिसून येते. मुख्यतः शेतीचा आकार मशागत करण्यासाठी सोईस्कर असतो. शेतीचे मोजणी क्षेत्र सोपे असते. या ग्रामीण वसाहतीच्या मधील रस्ते पूर्व-पश्चिम किंवा उत्तर-दक्षिण सरळ असतात. बऱ्याच वेळा दोन रस्त्यांच्या छेदन स्थानावर वसाहतीचा आयाताकृती आकृतीबंध विकसित होतो. मुख्य रस्त्याच्या दोन्ही बाजूस लांबच-लांब घरे असतात आणि छेदून जाणाऱ्या दुय्यम रस्त्यांच्या कडेला त्यामाणाने कमी घरे आढळतात. चौरसाकार वसाहतीपासून पुढे आयाताकार वसाहती निर्माण होतात. हवा, प्रकाश, सौरऊर्जा या दृष्टीने घरांची रचना केलेली दिसून येते. अभ्यास क्षेत्रातील स्थलदर्शज -नज़ाशा क्र. ५६ E/३ मध्ये टेभूर्णी, पारवा, पळसगाव (उपखोरे २), स्थलदर्शक नकाशा ज़. ५६ E/७ मध्ये लो-नी बुद्रुज़ (उपखोरे ८), गणपूर, कासारखेडा (उपखोरे ९), स्थलदर्शक नकाशा क्र. ५६ E/८ मधील देगाव, उपखोरे ९ मधील चिमेगाव, खुरगाव (उपखोरे ८) इत्यादी आयाताकृती प्रारूपाच्या ग्रामीण वसाहती असल्याचे दिसून येतात.

२) वर्तुळाकृती प्रारूप :

वसाहतीला वर्तुळाकृती आकार सामान्यतः पाणीपुरवठ्याची सुविधा, संरक्षण, वाहतूक अशा घटकांमुळे प्राप्त होतो. वसाहतीच्या मध्यभागी पाण्याची विहीर, तलाव, मंदिर, किल्ला, वटवृक्ष किंवा एखादे महत्त्वाचे घर यांच्या सभोवताली वसाहत वाढते आणि या वसाहतीला वर्तुळासारखा गोलाकार आकार प्राप्त होतो. म्हजू-न या वसाहतीला गोलाकार प्रारूपाची वसाहत म्हणतात. आसना खोऱ्यातील स्थलदर्शक नकाशा क्र. ५६ E/३ मध्ये किन्होळा, कवठा (उपखोरे ४), स्थलदर्शक नकाशा क्र. ५६ E/७ मध्ये सांगवी (उपखोरे ७) आणि स्थलदर्शक नकाशा क्र. ५६ E/८ मध्ये शेलगाव खूर्द (उपखोरे ९), कलाडगाव (उपखोरे ८) या ग्रामीण वसाहती वर्तुळाकृती प्रारूपाच्या असल्याचे दिसून येतात.

३) रेषाकृती प्रारूप :

ज्या ग्रामीण वसाहतीचा आकार रेषेसारखा असतो, त्या ग्रामीण वसाहतीस रेषाकृती प्रारूपाची ग्रामीण वसाहत असे म्हणतात. अशा वसाहती नदी, कालवा, रस्ता आणि समुद्रकिनारा यांच्यालगत निर्माण होतात. रेषाकृती वसाहतीतील घरांची दारे रस्त्याकडे किंवा कालव्याकडील बाजूकडे असतात. जर रस्त्यांच्या किंवा कालव्याच्या दोन्ही बाजूला घरे असतील तर घरांची दारे समोरासमोर असतात. या वसाहतीतील घरे जवळजवळ किंवा दूरदूर असतात. अभ्यास क्षेत्रामध्ये स्थलदर्शक नकाशा क्र. ५६ E/३ मध्ये बोरगाव बुद्रुक, शिरडशहापूर (उपखोरे ३) आणि थोरावा (उपखोरे १), स्थलदर्शक नकाशा क्र. ५६ E/७ मध्ये हिवरा तर्फे जवळा (उपखोरे ६), पांगरी तर्फे कारवाडी आणि सोनाळा (उपखोरे ८) या ग्रामीण वसाहती रेषाकृती प्रारूपाच्या आढळतात.

४) त्रिकोणाकृती प्रारूप :

काही वसाहतींच्या पार्श्वभूमीत भूरचनेमुळे किंवा जलभागामुळे विकासाला मर्यादा येतात. त्यामध्ये टेकडी, नाला, नदीचा संगम आणि शेती यामुळे वसाहतीच्या तीन्ही बाजूला अडथळा आल्याने त्रिकोणाकृती आकार निर्माण होतो. आसना खोऱ्यामध्ये स्थलदर्शक नकाशा क्र. ५६ E/३ मध्ये आसेगाव (उपखोरे १), खुदनापूर आणि सोमठाणा (उपखोरे ३) स्थलदर्शक नकाशा क्र. ५६ E/३ मध्ये भोगाव, जवळा पांचाळ (उपखोरे ५), स्थलदर्शक नकाशा क्र. ५६ E/४ मध्ये पिंपरी महिपाल, क्र. ५६ E/८ मध्ये भालकी इत्यादी ग्रामीण वसाहती त्रिकोणाकृती प्रारूपाच्या असल्याचे आढळतात.

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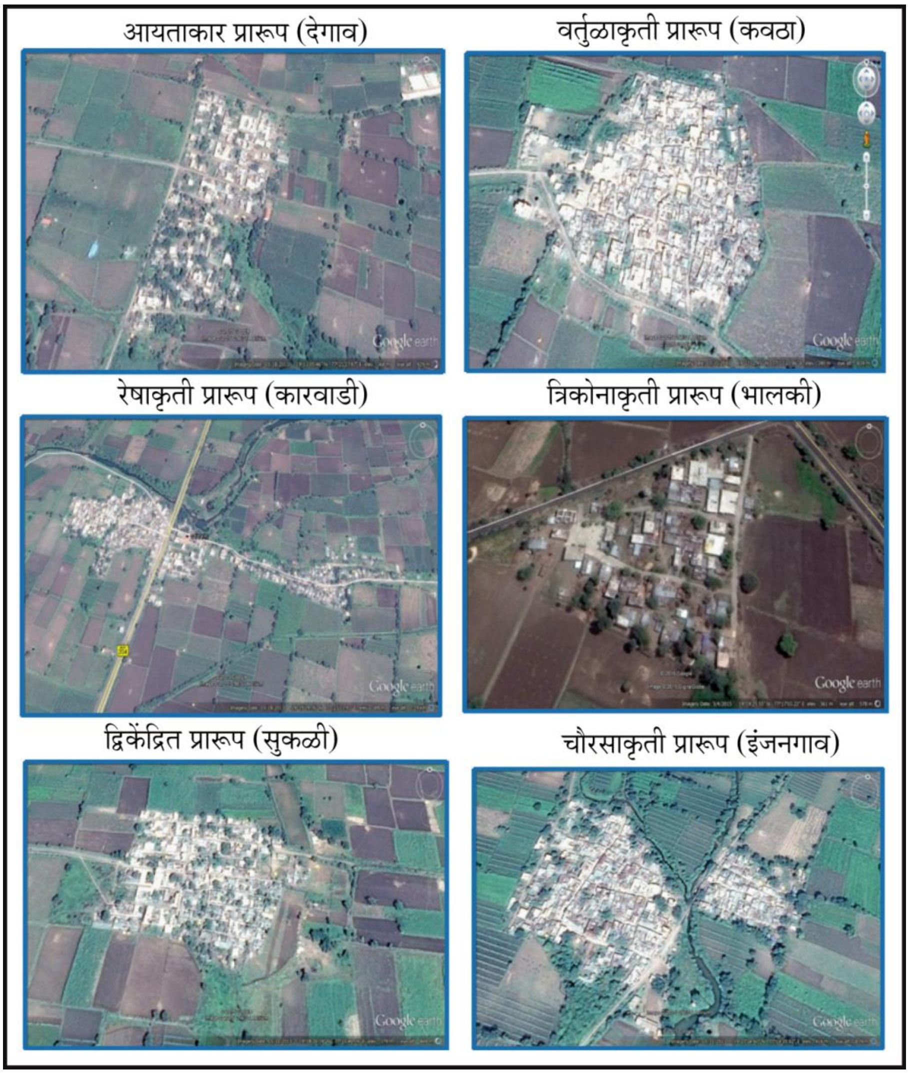
५) चौरसाकृती प्रारूप :

सामान्यतः जेथे दोन रस्ते किंवा एक कालवा दुसऱ्या कालव्यास मिळतो अशा ठिकाणी चौरसाकृती वसाहती निर्माण होतात. ही वसाहत रस्त्याच्या चोहोबाजूनी विकसित होऊन चौरसाकृती आकाराच्या वसाहती निर्माज होतात. सुरक्षिततेच्या दृष्टीने वसाहतीची निर्मिती चौकोनी स्वरुपाची करतात. परिणामी तेथील वसाहतीस चौकोनाकृती आकार प्राप्त होतो. त्या वसाहती केंद्रीत स्वरूपाच्या असतात. अभ्यास क्षेत्रामध्ये स्थलदर्शज नज ाशा क्र. ५६ E/३ मध्ये आलेगाव (उपखोरे १), इंजनगाव (उपखोरे ३), कन्हेरगाव (उपखोरे २) स्थलदर्शक नकाशा ज्र. ५६ E/८ मध्ये चिखली (उपखोरे १) आणि पासदगाव (उपखोरे ९) इत्यादी ग्रामीण वसाहती चौरसाकृती प्रारूपाच्या असल्याचे आढळतात.

६) द्विकेंद्रीत प्रारूप :

प्राकृतिक आणि सांस्कृतिक घटकामुळे एकाच ग्रामीण वसाहतीचे दोन वेगवेगळ्या केंद्रावर विभक्तीकरण झ ाल्यास त्यांना द्विकेंद्रीत वसाहती म्हणतात. नदीच्या किंवा रस्त्यांच्या आलीकडे आणि पलीकडे जेंव्हा एकाच वसाहतीचे दोन वेगवेगळ्या ठिकाणी केंद्रीकरण होते. त्या वसाहतीस द्विकेंद्रीत



वसाहत म्हणतात. अशी दोन केंद्रे टेकडी, तळे, नदी, नाला, रस्ता, लोहमार्ग यामुळे निर्माण होतात. त्या वसाहतीना मुळ केंद्र आणि दुय्यम केंद्र यावरून स्थलनामे प्राप्त होतात. या मुळ केंद्रीय वसाहतीला बुद्रुक आणि दुय्यम वसाहतीला खूर्द म्हणतात. कालांतराने वसाहतीची स्थलनामे बदलू शकतात. तसेच सामाजिक जाती व्यवस्थेमुळे

बहुतेक खेडी द्विकेंद्रीत प्रारूपाच्या वसाहती निर्माण झाल्या आहेत. मुळ वसाहतीचे स्थान अनुकूल ठिकाणी तर दुय्यम वसाहतीचे स्थान गावापासून दूर प्रतिकूल ठिकाणी असते.

अभ्यास क्षेत्रामध्ये स्थलदर्शक नकाशा क्र. ५६ E/३ मध्ये धामणगाव तर्फे बारेपूरवाडी, जुनूना, वाघी-सिंजी, मुरुंबा बुद्रुक आणि मुरुंबा खूर्द, डोणवाडा (उपखोरे ३), वाखारी (उपखोरे १), रोडगा (उपखोरे २) स्थलदर्शक नकाशा क्र. ५६ E/७ मध्ये दांडेगाव (उपखोरे ५) आणि सुकळी (उपखोरे ४) या ग्रामीण वसाहती आढळतात.

ग्रामीण वसाहतीच्या प्रारूपांचे प्रादेशिक वितरण:

भारतीय स्थलदर्शक नकाशाच्या आधारे अभ्यास क्षेत्रातील ग्रामीण वसाहतीच्या प्रारूपांच्या निरीक्षणावरून आणि वरील विश्लेषणावरून असे दिसून येते की, ग्रामीण वसाहतीच्या प्रारूपांच्या निश्चितीवर विविध भौजोलिज घटक जसे स्थानाची वैशिष्ट्ये, अंतर्गत सुविधा आणि रस्त्यांची सुविधा यांचा प्रभाव पडलेला दिसतो. अभ्यास क्षेत्रात चौरसाकृती, आयाताकृती व रेषाकृती प्रारूपांच्या ग्रामीण वसाहती सर्वत्र निदर्शनास येतात. अशा प्रकारे ज्रामीज वसाहतीच्या प्रकारांचा आणि प्रारूपांच्या अभ्यासावरून असे आढळून येते की, ग्रामीण वसाहतीची वाढ आजि विकास तसेच वसाहतीच्या स्थितीमध्ये झालेला बदल व अंतर्गत नवीन कार्यात्मक सेवा सुविधांची निर्मिती यामुळे वसाहतीचे प्रकार व प्रारूपे यामध्ये परिवर्तन झाल्याचे दिसते.

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श्री क्षेत्र खिद्रापूर पर्यटनाचे प्रारूप

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गोषवारा

श्री क्षेत्र खिद्रापूर हे पर्यटनाच्या दृष्टीकोनातून अतिशय योग्य आहे. कोपेश्वर मंदिर हे वास्तुशास्त्र व शिल्पकला यांचा मनोहर संगम आहे. सुमारे दीड हजार वर्षापूर्वी आपली शिल्पकला कशी बहराला आली होती त्याची साक्ष देत हे मंदिर अजून उभे आहे. अशा पूरातन पर्यटन क्षेत्रांचे सर्वेक्षण करणे गरजेचे आहे. कारण अशा ठिकाणी अनेक भाविक, अभ्यासक, इतिहासकार लोक येतात. त्यांना विविध सेवा, सुविधा तसेच निवासी व्यवस्था व मनाला समाधान शांती मिळण्यासाठी पर्यटन क्षेत्रांचे विकास करणे गरजेचे आहे. या दृष्टीने येथील पर्यटनाचे सामान्य प्रारूप, स्थळाचे धार्मिक महत्व, पर्यटन विषयक तसेच पर्यटकांच्या समस्या व त्यावरील उपया योजना सुचविण्याच्या हेतूने सर्वेक्षण करण्यात आले. या घटकांची पाहणीव्दारे अभ्यास करताना निरिक्षण ही पध्दती अवलंबण्यात आली. या व्दारे माहिती गोळा करण्यात आली. या पाहणीत निरिक्षणाव्दारे संकलन करताना रस्त्यांची अवस्था, वाहतूक दळणवळण, मंदिर ट्रस्ट, निवासी व्यवस्था, धर्मशाळा, भोजनोलय, इतर पायाभूत सेवा सुविधा यांचे विषयी रितसर माहिति प्रश्नावली व्दारे भरून घेण्यात आली. धार्मिक विधीच्या बाबतीतील माहिती तेथील पुजारी व इतर कर्मचाऱ्यांकडून घेतली. इतर भागातून आलेले पर्यटकांची खिद्रापूर क्षेत्राबद्दलची माहिती घेतली व त्यांचे या क्षेत्राबद्दलचे मत जाणून घेतले. धार्मिक पर्यटनामुळे तेथील आर्थिक व सामाजिक घटकांवर पडलेला प्रभाव पाहण्यासाठी तेथील दुकाने, हॉटेल्स व स्थानिक लोकांच्या मुलाखती घेण्यात आल्या. यावरून असे दिसून आले की आधुनिक सेवा सुविधा, बाग बगीचा तसेच खाजगी निवासी गृहे इत्यादी सुविधा उपलब्ध झाल्यास या क्षेत्राचा अधिक मोठया प्रमाणात विकास होऊ शकेल.

१. प्रस्तावनाः

प्राचीन काळापासूनच प्रवास हा मानवी जीवनाचा एक अविभाज्य घटक मानला जातो. वेगवेगळया कारणांनी मानव प्रवास करू लागला तेव्हा नवीन प्रदेशांचा शोध घेणे, पर्यावरणातील बदल अनुभवणे, धार्मिकदृष्टया पवित्र स्थळांना भेटी देणे, डोंगर, दऱ्या, पर्वत, सरोवरे, समुद्र किनारे यांचे निसर्ग सौंदर्य अनुभवणे इत्यादी गोष्टींचा प्रामुख्याने समावेश होतो. २० व्या शतकाच्या उत्तरार्धात वाढते औद्योगिकरण, वाढते नागरिकीकरण, शिक्षणाचा प्रसार, व्यापार व वाहतूकीचा विस्तार परिणामी पर्यटनाला विशेष अशी चालना मिळाली. जागतिक पर्यटन संघटनेनुसार (वतसक ज्वनतपेउ व्तहंदप्रंजपवद)१९८८ मध्ये जागतिक पर्यटनामध्ये सुमारे ३८० दशलक्ष पर्यटक सामिल झालेले होते तर १९९० मध्ये ४५० दशलक्ष इतके पर्यटक संख्या होती. जगातील कोणत्याही देशातील एखादे धार्मिक क्षेत्र हे इतर धार्मिक पर्यटन क्षेत्रांचे प्रतिनिधीक नमुना असल्याने पर्यटनाचे गतीशील स्वरूप सर्वेक्षणाव्दारे पाहिले जाते. धार्मिक पर्यटन हा एक महत्वाचा घटक असल्याने श्री क्षेत्र खिद्रापूर हे पर्यटनाच्या दृष्टीकोनातून अतिशय योग्य आहे. कोपेश्वर मंदिर हे वास्तुशास्त्र व शिल्पकला यांचा मनोहर संगम आहे. सुमारे दीड हजार वर्षापूर्वी आपली शिल्पकला कशी बहराला आली होती त्याची साक्ष देत हे मंदिर अजून उभे आहे. चार वैशिष्टयपूर्ण प्रकाराने हे मंदिर इतरांपेक्षा निराळे आहे. संपूर्ण भारतात एकमेव आहे. गाभाऱ्यातील वेगळेपणाः इथे गाभाऱ्यात प्रवेश केल्यावर प्रथम दृष्टी जाते ती पिंडीच्या समोर असलेल्या एका शाळुंखवर हीच ती विष्णूची प्रतिकात्मक प्रतिमा धोपेश्वर. गाभाऱ्यात दोन लिंगांची स्थापना केलेली आहे. एक कोपेश्वर व दुसरा धोपेश्वर. पूर्वाभिमुख मंदिरातील गाभाऱ्यात मधोमध शिवलिंग व त्याच्या पूर्वेला लागूनच विष्णूरूपातील लिंग स्थापनेमागे एक पौराणिक कथा निगडीत आहे. शंखनाथ (संकेश्वर), बकनाथ (रायबाग) व कोपनाथ (कोप्पम उर्फ खिद्रापूर) या तीन ठिकाणच्या शिवलिंगाचे दर्शन जो भक्त एका दिवसात करील त्याला स्वर्गात प्रवेश मिळेल असा वर शंकरांनी आपल्या भक्तांना दिला होता. नंदी नसलेला सभामंडपः शिवदर्शन घेण्यापूर्वी प्रथम नंदीचे दर्शन घेण्याची परंपरा आहे. येथील मंडपात नंदी नाही. याला पौराणिक पार्श्वभूमी आहे. प्रजापती दक्षाच्या १६ कन्यापैकी सतीने शंकराला वरले. दक्षाने केलेल्या वाजपेय यज्ञात

त्याने शंकराला व कन्येलाही बोलावले नाही. शंकर मानी असल्याने न बोलावता तो गेला नाही, पण सतीने माहेरी जाण्याचा आग्रह धरला. शंकरांनी तिला नंदीसोबत दक्षाच्या घरी पाठविले म्हणून येथे नंदी नाही. दक्ष यज्ञ घडलेले पौराणिक ठिकाण यड्डूर येथे दक्षिणेला कृष्णा नदीच्या पलिकडे आहे. स्वर्ग मंडपः इतरत्र क्वचित असणाऱ्या स्वर्ग मंडप मांडणीत कोपेश्वराचा स्वर्ग मंडप सर्वोत्तम आहे. स्वर्ग मंडपाबाहेर २४ हत्तींची मूळ रचना होती पैकी ११ हत्ती आज पहावयास मिळतात. हा स्वर्गमंडप ४८ खांबावर उभारलेला असून चार प्रमुख दिशांना चार प्रवेशद्वारे आहेत. आकाशाच्या दिशेने १३ फूट व्यासाचे गवाक्ष असून त्याच्या खाली बरोबर त्याच मापाची १३ फूट व्यासाची अखंड रंगशिला असून भोवती १२ खांब वर्तुळाकृती आहेत. अप्रतिम शिल्प वैभवः गजावर आरूढ देव-देवतांचा अखंड पट्टा म्हणजे गजपट्ट. गजपट्टाखाली नक्षीदार कठडयांची मालिका आहे. गाभारा व सभामंडपाच्या बाहेरील बाजूने ६२ हत्तींची मालिका आहे. हत्तींवर बसलेल्या देवता, त्यांची आभुषणे, पोषाख, हातातील आयुधे, त्यांनी घातलेले अलंकार इत्यादींचे अत्यंत बारीक बारकावे येथे पहायला मिळतात. इथे गजशिल्प प्रमुख आहे. नंदीची शिल्पे, अश्व, बोकड, वराह, मकर, मेष, महिष, आंबा, काजू, केळी, ऊस, द्राक्षघड यांची शिल्पे आहेत. पक्व आंबा व कैरी असा सूक्ष्म फरकही इथे शिल्पीत आहे. सभा मंडपालातील प्रवेशद्वारे आहेत. पहिले मुख्य प्रवेशद्वार स्वर्ग मंडपातून आहे. दुसरी दोन दक्षिण व उत्तर बाजूने आहेत. सर्व द्वारांची रचना पाच पातळीतील चौकटीत केलेली आहे. पूर्वेचे मुख्य द्वार भक्कमपणा व भव्यतेने भारून टाकते. चौकटीवर मध्यभागी शक्तीदेवतेची शिल्पाकृती आहे. उंबऱ्याला लागून प्रत्येक बाजूला पाच गदाधारी द्वारपालांची ओळ आहे. चौकटीवरील नक्षीकाम प्रेक्षणीय आहे. अशा पर्यटन क्षेत्रात सुयोग्य नियोजन, नवीन पर्यटन स्थळांचा शोध, योग्य व परिणामकारक जाहिरात, पर्यटकांच्या मूलभूत सेवा सुविधांची उपलब्धता याव्दारे पर्यटनाचा विकास करता येतो.

२. अभ्यासाचे महत्वः

श्री क्षेत्र खिद्रापूर येथील कोपेश्वर मंदिर हे सुमारे दीड हजार वर्षापूर्वी आपली शिल्पकला कशी बहराला आली होती त्याची साक्ष देते. अशा पूरातन पर्यटन क्षेत्रांचे सर्वेक्षण करणे गरजेचे आहे. कारण अशा ठिकाणी अनेक भाविक, अभ्यासक, इतिहासकार लोक येतात. त्यांना वाहतूक, दळणवळण, मंदिर ट्रस्ट, निवासी व्यवस्था, धर्मशाळा, भोजनालय, इतर पायाभूत सेवा सुविधा व मनाला समाधान शांती मिळण्यासाठी पर्यटन क्षेत्रांचे विकास करणे गरजेचे आहे. या दृष्टीने येथील पर्यटनाचे सामान्य प्रारूप, स्थळाचे धार्मिक महत्व, पर्यटन विषयक तसेच पर्यटकांच्या समस्या व त्यावरील उपाय योजना सुचविण्याच्या हेतूने सर्वेक्षण करणे महत्वाचे आहे.

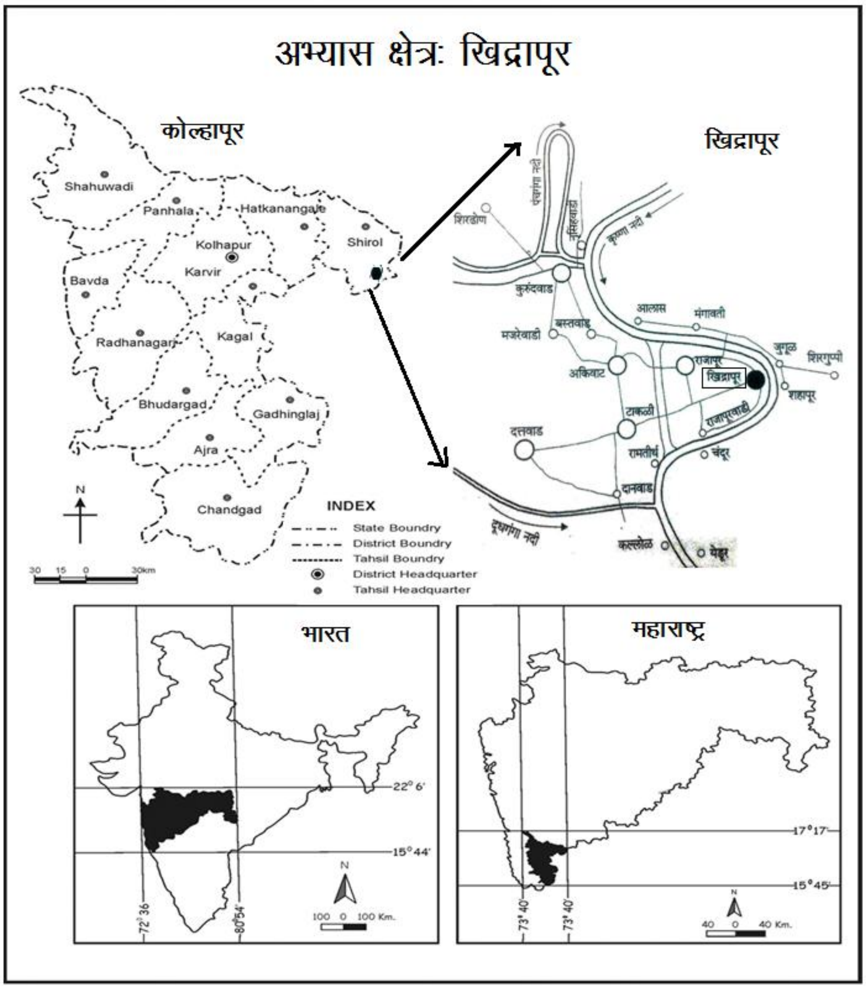


Fig. 1

३. अभ्यास क्षेत्रः

खिद्रापूर हे भूतपूर्व कोल्हापूर संस्थानातील, शिरोळ तालुक्यातील पूर्वेकडील शेवटचे गांव. कोल्हापूर संस्थानच्या विलीनीकरणानंतरही हे गांव कोल्हापूर जिल्हयांतील पूर्वेकडील शेवटचे गांव आहे. कृष्णा नदीच्या पश्चिम तीरावर सुमारे २५०० लोकसंख्येचे हे गांव आहे. नदी खिद्रापूर गावाजवळ दक्षिणवाहिनी होते. नंतर गावाला वळसा घालून पश्चिम वाहिनी होते. यामुळे खिद्रापूर गावाला तीनही बाजूनी कृष्णा नदीने विळखा घातलेला आहे (थ्पहण१).

४. अभ्यासाची उद्दिष्टेः

1. पर्यटनाचे सामान्य प्रारूप अभ्यासणे.
2. श्री क्षेत्र खिद्रापूर पर्यटन स्थळाचे धार्मिक महत्व अभ्यासणे
3. धार्मिक पर्यटनाच्या निकषांचे विवेचन करणे
4. या पर्यटन स्थळाच्या पर्यटनविषयक समस्या अभ्यासणे व उपाय योजना सुचविणे

५. अभ्यास पध्दतीः

प्रस्तुत शोधनिबंध हा प्राथमिक व दुय्यम तथ्यसंकलनावर आधारीत असून प्राथमिक माहिती ही निरीक्षण, प्रश्नावली व मूलाखतीव्दारे तर दुय्यम साधनसामग्रीची माहिती वेगवेगळे संदर्भ ग्रंथ, मासिके, नियतकालीके, वार्षिक अहवाल, वर्तमान पत्रातील लेख इत्यादीचा संदर्भ साहित्य म्हणून वापर करुन विश्लेषण केलेले आहे.

६. विश्लेषणः

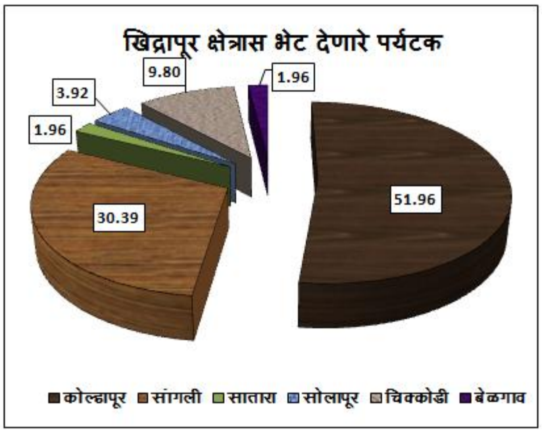
खिद्रापूर पर्यटन क्षेत्राचा सर्वेक्षणात्मक अभ्यास करण्यासाठी तेथे आलेल्या १०२ पर्यटकांची ते कोठून आलेत, कोणत्या उद्देशाने या पर्यटन क्षेत्रास भेट देतात, त्यांचे वय, उत्पन्न इत्यादी बद्दलची माहिती प्रश्नावलीव्दारे घेतली व त्यानुसार यांचे विश्लेषण पुढीलप्रमाणे केले आहे.

६.१ खिद्रापूर क्षेत्रास भेट देणारे पर्यटकः

टेबल नं १ः भारताच्या वेगवेगळया प्रदेशातून खिद्रापूर क्षेत्रास भेट देणारे पर्यटक

अ. नं.	राज्य	जिल्हा	पर्यटक	टक्केवारी
१	महाराष्ट्र	कोल्हापूर	५३	५१.९६
२	महाराष्ट्र	सांगली	३१	३०.३६
३	महाराष्ट्र	सातारा	०२	१.९६
४	महाराष्ट्र	सोलापूर	०४	३.९२
५	कर्नाटक	चिक्कोडी	१०	९.८०
६	कर्नाटक	बेळगाव	०२	१.९६
एकूण			१०२	१००

आधारः सर्वेक्षण



सरदच्या खिद्रापूर पर्यटन क्षेत्रास आसपासच्या राज्यातील अनेक लोक भेट देत असतात. यामध्ये कोल्हापूर जिल्हयातील पर्यटकांची संख्या जास्त आहे. ५१.९६ टक्के पर्यटक हे कोल्हापूरातून येतात. त्यानंतर सांगली (३०.३६ :) जिल्हयाचा क्रमांक लागतो (टेबल नं.१). कारण सांगली व मिरजेतून येताना जयसिंगपूर व अर्जुनवाड मार्गे कुरूंदवाड, मिरज डेपोच्या बसेस जास्त आहेत. त्यानंतर सातारा, सोलापूर, चिक्कोडी, बेळगाव इत्यादींचा क्रमांक लागतो.

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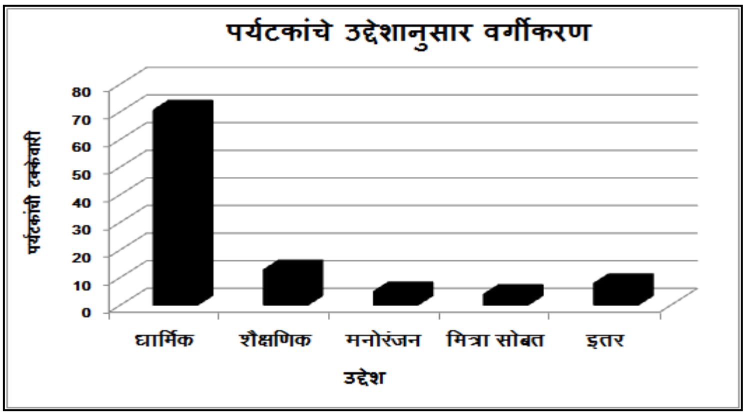
६.२ भेट देणाऱ्या पर्यटकांच्या येणाच्या उद्देशानुसार वर्गीकरण:

टेबल नं २: भेट देणाऱ्या पर्यटकांच्या येणाच्या उद्देशानुसार वर्गीकरण

अ. नं.	उद्देश	पर्यटक	टक्केवारी
१	धार्मिक	७२	७०.५६
२	शैक्षणिक	१३	१२.७५
३	मनोरंजन	०५	४.९०
४	मित्रा सोबत	०४	३.९२
५	इतर	०८	७.८४
एकूण		१०२	१००

आधार: सर्वेक्षण



वरील टेबल नं. २ नुसार खिद्रापूर पर्यटन क्षेत्रास भेट देणाऱ्या पर्यटकांमध्ये धार्मिक उद्देशाने भेट देण्याचे प्रमाण जास्त आहे. ते ७०.५६ टक्के आहे. त्यानंतर या धार्मिक स्थळाचा इतिहास, शिल्प कला तसेच पौरोणिक दृष्टीने अभ्यास करण्यासाठी अभ्यासक येतात त्यांची टक्केवारी १२.७५ इतकी आहे. जवळच नृसिंहवाडी ठिकाण असल्याने मनोरंजनाच्या उद्देशाने येणाऱ्या पर्यटकांची संख्या ४.९० टक्के आहे.

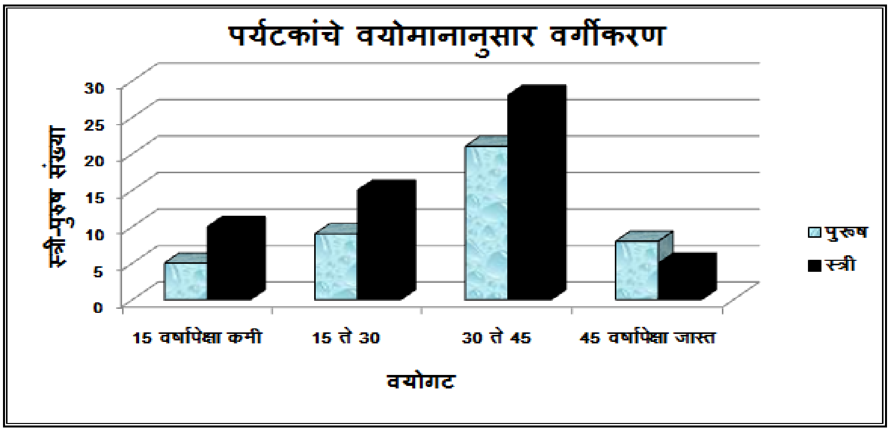
६.३ भेट देणाऱ्या पर्यटकांच्या वयोमानानुसार वर्गीकरण:

टेबल नं ३: भेट देणाऱ्या पर्यटकांच्या वयोमानानुसार वर्गीकरण

अ. नं.	वयोगट	पुरूष	स्त्री	एकूण	टक्केवारी
१	१५ वर्षापेक्षा कमी	०५	१०	१५	१४.७०
२	१५ ते ३०	०९	१५	२४	२३.५२
३	३० ते ४५	२१	२८	४९	४८.०३
४	४५ वर्षापेक्षा जास्त	०८	०५	१३	१२.७४
एकूण		४४	५८	१०२	१००

आधार: सर्वेक्षण

खिद्रापूर या पर्यटन क्षेत्रास भेट देणाऱ्या पर्यटकांचे वयोगटानुसार वर्गीकरण केल्यास असे दिसून येते की, ३० ते ४५ वयोगटातील पर्यटकांची संख्या जास्त आहे. ती ४८.०३ टक्के असून यामध्ये स्त्रियांचे प्रमाण जास्त आहे. यानंतर १५ ते ३० वयोगटातील भेट देणाऱ्या पर्यटकांची संख्या २३.५२ टक्के आहे. तसेच पुरूषांच्या पेक्षा स्त्रियांचे प्रमाण हे जास्त आहे (टेबल नं. ३).



६.४ भेट देणाऱ्या पर्यटकांच्या उत्पन्नानुसार वर्गीकरणः

टेबल नं ४ः भेट देणाऱ्या पर्यटकांच्या उत्पन्नानुसार वर्गीकरण

अ. नं.	मसिक उत्पन्न	पर्यटक	टक्केवारी
१	उत्पन्न नसणारे/काम न करणारे	७३	७१.५६
२	५००० पेक्षाकमी	०४	३.९२
३	५००० - १००००	१३	१२.७४
४	१०००० - १५०००	०४	३.९२
५	१५००० पेक्षा जास्त	०२	१.९६
एकूण		१०२	१००

आधारः सर्वेक्षण

सदरच्या सर्वेक्षणानुसार पर्यटकांचे दर मासिक उत्पन्नानुसार वर्गीकरण केले तर या मध्ये उत्पन्न नसणारे किंवा काम न करणारे अशा पर्यटकांचे प्रमाण ७१.५६ टक्के इतके जास्त आहे. कारण या पर्यटन क्षेत्राास भेट देणाऱ्यामध्ये स्त्रियांचे प्रमाण जास्त आहे. यातील बहुतांश स्त्रिया घरकाम करतात. त्यानंतर १०००० ते १५००० उत्पन्नाच्या या वयोगटातील पर्यटकांचे प्रमाण १२.७४ टक्के आहे. कारण कोल्हापूर, सांगली पासून हे क्षेत्र जवळ असल्याने या मध्यम उत्पन्न गटातील लोक जास्त भेट देणारे आहेत (टेबल नं. ४).

६.५ भेट देणाऱ्या पर्यटकांच्या उत्पन्नानुसार वर्गीकरणः

टेबल नं ५ः खिद्रापूरास भेट देणाऱ्या पर्यटकांच्या समस्या

अ. नं.	समस्या	पर्यटक	टक्केवारी
१	वाहतूक व दळणवळण	६७	६५.०६
२	लॉजिंग	१८	१७.६४
३	अन्नछत्र	८९	८७.२५
४	इतर	३५	३४.३१

आधारः सर्वेक्षण

खिद्रापूर या पर्यटन क्षेत्रास भेट देणाऱ्या पर्यटकांना विविध समस्यांना तोंड द्यावे लागते हे या सर्वेक्षणावरून दिसून आले. आम्हाला प्रश्नावलीद्वारे असे दिसून आले की, ६५.०६ टक्के समस्या या वाहतूक व दळणवळण संबंधी आहेत. एखाद्या पर्यटन क्षेत्राचा विकास होण्यासाठी तेथील वाहतूक सुविधा महत्वाची असते. पण खिद्रापूरला वाहतुकीची प्रमुख समस्या दिसून येते. कारण बसेस या वेळेवर नसतात. शिवाय रोड खराब व अरूंद आहेत. यानंतर येथे येणाऱ्या पर्यटकांना राहण्यासाठी लॉजिंगची सोय नाही की अन्नछत्राची सोय नाही. बाहेरून येणाऱ्या पर्यटकांना अन्नछत्राची कमतरता प्रकर्शाने दिसून येते याची टक्केवारी ८७.२५ इतकी आहे. याशिवाय मूलभूत सुविधांचा अभाव आढळतो. इतर समस्यामध्ये रस्त्याची अवस्था, पार्किंगची सोय, आधुनिक सेवा सुविधा, बागबगिचा झाडे नसणे तसेच संडास व बाथरूम अशा प्राथमिक सुविधांची कमतरता दिसून येते (टेबल नं. ५).

७. उपायः

१. भेट देणाऱ्या भाविकांसाठी अन्नछत्राची सोय करण्यात यावी परिणामी त्यांना जेवणाची व्यवस्था होईल.
२. संडास, बाथरूम, विज, पिण्याचे पाणी, हॉटेल्स इत्यादी सारख्या पायाभूत तसेच आधुनिक सेवा सुविधा उपलब्ध करून घाव्यात.
३. रस्त्यांचे योग्यरितीने डांबरीकरण, रूंदीकरण केल्यास वाहतूकीला अडथळा निर्माण होणार नाही.
४. ट्रस्टच्या गाडया किंवा महामंडळाच्या गाडया प्रत्येक तासाला उपलब्ध झाल्यास वाहतूक सोयी उत्तमरित्या उपलब्ध होतील.

५. सण, उत्सव व शिबीरे इत्यांदीमुळे मोठया प्रमाणात भाविक व पर्यटक येतात. परिणामी पार्किंगची सोय अपूरी पडते. त्यासाठी पार्किंगची सोय करून घ्यावी.

६. बागबगिचा फुलवण्यासाठी वेगवेगळया शोभेच्या झाडांच्यापासून रंगबेरंगी फुलांच्या झाडांचा वापर व्हावा यातून मनोरंजनाच्या साधनांत वाढ होऊन पर्यटक आकर्षीत होतील.

८. संदर्भ साहित्यः

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३ण हुद्दार गजानन (२०१६)ः श्री क्षेत्र खिद्रापूर व श्री कोपेश्वर मंदिराची माहिती, कुमार प्रिंटर्स, सांगली

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श्री. क्षेत्र रामलिंग बेट धार्मिक पर्यटन केद्राचा एक भौगोलिक अभ्यास

प्रा. सर्जेराव आबा गायकवाड
भूगोल विभाग प्रमुख
श्रीमती कुसुमताई राजारामबापू पाटील,
कन्या महाविदयालय, इस्लामपूर

सारांश

महाराष्ट्र राज्यातील सांगली जिल्हा हा भौगोलिक, ऐतिहासिक, धार्मिक, सांस्कृतिक, औद्योगिक, शैक्षणिक आणि पर्यटन इत्यादी विविधतेने नटलेला आहे. सांगली जिल्हयाचे एकूण १० तालुके असून त्यापैकी वाळवा तालुक्याचे विविध लहान-मोठया सहलीचे आयोजन केले जाते. किंबहुना लहान मोठया सहलीसाठी या परिसरात निसर्गरम्य ठिकाणे उपलब्ध आहेत. प्रामुख्याने श्री क्षेत्र रामलिंग बेट, नरसिंह मंदीर (नरसिंहपूर), किल्लेमच्छिंद्रगड, सागरेश्वर, अभयारण्ये, पशुपथीनाथ मंदीर, रेठरेहरणाक्ष, अष्टलिंग मंदीर (आष्टा) इत्यादी अनेक पर्यटन स्थळे आहेत.

पर्यटनाचे आकर्षण प्रत्येक व्यक्तीला नेहमीच आकर्षित करीत असते. निसर्गाने जे जे दिले आहे त्याचा आस्वाद पर्यटकांना नेहमीच मोहित करीत असतो. अशा एका/एखादया ठिकाणचा विचार केल्यास श्री क्षेत्र रामलिंग बेट हे ठिकाण होय. रामलिंग बेट हे रामायण कालखंडातील असून श्री समर्थ रामदास स्वामींनी मारूती पैकी तेथे एका मारूतीची स्थापना केलेली आहे. कृष्णा नदीच्या मध्यभागी निसर्गरम्य ठिकाणी हे बेट पर्यटकांना नेहमीच आकर्षित करते.

बीज संज्ञा – पर्यटन विकास, नैसर्गिक, धार्मिक, ऐतिहासिक.

१. प्रस्तावना –

वरदायिनी, जीवनदायिनी संथ वाहणाऱ्या कृष्णामाईच्या पात्रामध्ये प्रसिध्द असे रामलिंग बेट बहे ता. वाळवा, जि. सांगली येथे आहे. याशिवाय समर्थ रामदास स्वामींनी स्थापन केलेले अकरा मारूती पैकी एका मारूतींची स्थापना केलेली आहे.

बहे या गावापासून कृष्णा नदीवर इस्लामपूर, नरसिंहपूर या गावांना जोडणारा पूल बांधला असून या पुलाच्या पूर्वेला ५०० मी. अंतरावर रामलिंग हे बेट आहे. या बेटाचे एकूण क्षेत्रफळ २० एकर आहे. सर्वप्रथम येथे हनुमान मंदीर लागते. श्री समर्थ रामदास स्वामींनी स्थापन केलेला (चाफळ, उंब्रज, माझगांव, शिंगणवाडी, पारगाव, मनपाडळे, ३२ शिराळा, मसूर आणि बहे) ११ मारूती पैकी हे ठिकाण आहे. या मंदीरामध्ये हनुमानाची ७ फुट उंचीची भव्य मुर्ती असून मंदीरातून नरसिंहपूरला जाण्यासाठी एक भुयारी मार्ग आहे. परंतु हा मार्ग सध्या बंद आहे. हनुमान मंदीराच्या डाव्या बाजूस गणेश मंदीर आहे. हनुमान मंदीराच्या समोर पूर्वेला राममंदीर असून या मंदीरामध्ये राम, लक्ष्मण, सीता यांची गारेची मुर्ती व एक प्रचंड शिवलिंग आढळते. या मंदीराची उंची ६० फुट आहे. मंदीराच्या बाहेर मोठी दगडी नदी आहे. या प्रवेशद्वारापासूनच खाली पूर्वेला चिंतामणी, गणेशाची स्वयंभू मुर्ती निर्माण झालेली आहे. काही अंतरावर पूर्वेस लक्ष्मण मंदीर असून त्याच्या पूर्वेस गोमाता समाधी आहे. त्याच्या समोर पूर्वेला ब्रम्हचैतन्य परमपूज्य नृसिंहभारती पा. वि. जोगळेकर महाराजांची समाधी आहे.

२. उद्देश –

अ. पर्यटन ठिकाणातील भौगोलिक, ऐतिहासिक आणि धार्मिक स्थितीचा अभ्यास करणे.

ब. श्री रामलिंग बेटाच्या पर्यटन विकासाचा अभ्यास करणे.

क. रामलिंग बेट या पर्यटन ठिकाणाच्या विकासाबरोबर तेथील समस्यांचा अभ्यास करणे.

३. अभ्यासक्षेत्र –

सांगली जिल्हयातील वाळवा तालुक्यामध्ये बहे या ठिकाणी कृष्णा नदीच्या पात्रामध्ये श्री क्षेत्र रामलिंग बेट असून इस्लामपूर पासून उत्तरेस १५ कि.मी. अंतरावर आहे. तसेच सांगली जिल्हयापासून ५५ कि.मी. अंतरावर आहे.

श्री क्षेत्र रामलिंग बेट या धार्मिक पर्यटन केंद्राचे निरपेक्ष स्थान १७ अंश ६ उत्तर ते ७४ अंश १६ पूर्व आहे. या धार्मिक पर्यटन केंद्राचे क्षेत्रफळ २० एकर आहे.

४. माहिती स्त्रोत आणि संशोधन पध्दती –

अ. प्रत्यक्ष माहिती संकलनासाठी निरपेक्ष पध्दती व भाविकांच्या मुलाखती या पध्दतीचा वापर केलेला आहे.

ब. दुय्यम स्वरूपाची माहिती देवस्थान ट्रस्ट, संशोधन लेख, धार्मिक पुस्तके इत्यादी संदर्भ ग्रंथातून घेतलेली आहे.

क. उपलब्ध झालेल्या माहितीवर योग्य संस्करण करून त्या माहितीचे विश्लेषण केलेले आहे.

५. विषय विवेचन –

श्री क्षेत्र रामलिंग बेट या धार्मिक पर्यटन केंद्राचा विषय विवेचनाचा विचार केल्यास प्रामुख्याने खालील दोन विभागात वर्गीकरण करण्यात आलेले आहे.

१. बहे गावचा इतिहास –

रामायणमध्ये या गावाचा उल्लेख ‘बाहुक्षेत्र’ असा होतो. याविषयी एक आख्यायिका सांगितली जाते. प्रभू रामचंद्र जेव्हा वनवासात गेले तेव्हा लंकेवरून परत येताना बहे याठिकाणी कृष्णानदीवर आंघोळीसाठी थांबले होते. प्रभू रामचंद्रानी आंघोळ करून वाळूचे शिवलिंग स्थापन केले व त्याची पूजा केली. त्यावेळी कृष्णामाईस खूपच आनंद झाला व ती आनंदाने गर्जना करू लागली. तेव्हा प्रभु रामचंद्राच्या पाठीमागे मारूतीराया उभा होता. त्यांनी हा आवाज कसला आहे म्हणून पाहिले तर कृष्णानदीस महापूर येत असल्याचे दिसले व त्याच क्षणी मारूतीरायांनी आपले बलवान बाहु बाजूस केले व नदीचे पाणी थोपवून धरले त्यावेळी नदीचे दोन प्रवाह वेगवेगळे वाहू लागले आणि बेट तयार झाले. त्यानंतर हे दोन प्रवाह रामलिंग मंदीराच्या समोर काही अंतरावर एक होऊन वाहू लागले म्हणूनच मारूतीरायांच्या बाहूमुळे या गावाचे नाव ‘बाहे’ असे पडले व पुढे अपभ्रंश होऊन ‘बहे’ हे गावाचे नांव रूढ झाले असावे.

रामायणामध्ये या गावाचा उल्लेख येतो तो बाहुक्षेत्र प्रभु रामचंद्र या ठिकाणी येण्यापूर्वी येथे बाहू नावाचा राक्षस होता. त्याच वध प्रभु रामचंद्रांनी केला ते ठिकाण म्हणजे बाहुक्षेत्र कालांतराने ते बहे असे म्हणू लागले.

२. रामदास स्वामी स्थापित मारूती –

श्री क्षेत्र रामलिंग बेटावर श्री समर्थ रामदास स्वामी हे ही येऊन गेले आहेत. त्यावेळी प्रभु रामचंद्र या ठिकाणी काही काळ वास्तव्यास होते असे ज्यांना गावकऱ्यांकडून समजले त्यांच्या सोबत मारूतीराया ही आले होते व ते या डोहामध्ये बुडी मारून बसले आहेत असे समजले. तेव्हा श्री समर्थ रामदासांनी या डोहामध्ये उडी मारली तर त्यांना एक मारूतींची सुंदर मुर्ती सापडली आणि त्यांनी या मूर्तीची स्थापना केली.

६. वैशिष्टये –

अ. रामायण कालखंडापासून हिंदु धर्मियांचे जागृत देवस्थान.

आ. श्री क्षेत्र रामलिंग बेटावर राम, लक्ष्मण आणि सीता व प्रचंड मोठे शिवलिंग आढळते.

इ. रामदास स्वामी स्थापित अकरा मारूती पैकी एक मारूती या ठिकाणी आहे.

ई. दर सोमवार व शनिवार, महाशिवरात्री, श्रावण महिना, रामनवमी या दिवशी अनेक उत्सव साजरे केले जातात.

उ. निसर्गरम्य ठिकाण संथ वाहणारी कृष्णानदी, नदीच्या दोन्ही बाजूला हिरवीगार झाडी याशिवाय सुंदर परिसर उपलब्ध.

७. समस्या -

श्री क्षेत्र रामलिंग बेट या धार्मिक पर्यटन ठिकाणी पर्यटकांची संख्या सातत्याने वाढतच आहे. परंतु त्याबरोबरच उपलब्ध सोईसुविधांवर ताण पडून विविध समस्यांची निर्मिती होत आहे. साहजिकच याचा त्रास पर्यटक स्थानिक नागरिक यांना सहन करावा लागतो. श्री क्षेत्र रामलिंग बेट या ठिकाणी खालील समस्या जाणवतात.

१. वाहतूक व दळणवळण सुविधांचा अभाव.
२. पार्किंग/वाहतूक सुविधांचा अभाव.
३. मनोरंजन सुविधांचा अभाव.
४. लॉजिंग बोर्डींग सुविधांचा अभाव.
५. प्रेमी युगुलांचा वाढत चाललेला वावर.
६. अस्वच्छता
७. महापूराचा धोका

८. उपाययोजना -

श्री क्षेत्र रामलिंग बेट या निसर्ग सौंदर्याने नटलेला धार्मिक पर्यटन ठिकाणी उपलब्ध असलेल्या सर्व सुविधा या अविकसित असून त्यामध्ये फार मोठया सुधारणण करणे गरजेचे आहे. उदा. पार्किंग सुविधा, बागबगीचा, शौचालये, पाणीपुरवठा, विद्युत यंत्रणा, बोटींग सुविधा, वाहतुक व दळणवळण, पर्यटन ठिकाणची देखभाल, खादयपदार्थ स्टॉल इत्यादी गरज फार मोठया प्रमाणात करणे गरजेचे आहे.

तसेच विविध शिबिराचे आयोजन, शाळा, महाविद्यालय यांच्या सहलीसाठी पॅकेज दुर ची व्यवस्था करणे इत्यादी सुविधा निर्माण केल्यास या पर्यटन केंद्राचा व परिसराचा विकास मोठया प्रमाणात होऊन रोजगाराची संधी निर्माण होतील.

९. निष्कर्ष -

श्री क्षेत्र रामलिंग बेट हे एक धार्मिक पर्यटन ठिकाण असून या पर्यटन ठिकाणाला मा. नामदार जयंतरावजी पाटील ग्रामीण विकासमंत्री महाराष्ट्र राज्य यांच्या प्रयत्नातून या पर्यटन स्थळास तीर्थक्षेत्र विकास अंतर्गत पर्यटन स्थळाचा दर्जा मिळाला आहे. विशेषतः ६.८१ कोटी रूपये मंजूर झाले असून जवळ जवळ ५० टक्के रक्कम या ठिकाणी खर्च झाली असून या संपूर्ण परिसराचा कायापालट अत्यंत चांगल्या पध्दतीने झालेला दिसून येतो. नजीकच्या कालखंडात सांगली जिल्हयातच नव्हे तर महाराष्ट्र राज्यात एक आदर्श पर्यटन स्थळ तयार होऊ शकते.

संदर्भ :-

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भारतीय किसानों की आत्महत्या : एक विवेचन

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भारत कृषि प्रधान देश है। वास्तविक भारत वर्ष गांव में बसा है। कृषि सम्पूर्ण अर्थव्यवस्था के भाग्य का निर्धारण करती है। कृषि भारतीय अर्थव्यवस्था की रीढ़ की हड्‌डी हैं। भारत के दो तिहाई नागरिकों के लिए जीविकोपार्जन का साधन है। खेती हमारे जीवन का सबसे महत्वपूर्ण अंग हैं। कृषि करनेवालों को कृषक कहते है, जो कि ग्राम्य जीवन का एक मुख्य अंग है। भारतवर्ष गाँवों से बना है, गाँवों में रहनेवाले अधिकतर लोग कृषि से सम्बद्ध रहते है। अतः भारत कृषकों का देश है। भारतीय कृषक जीवन दरिद्रता, शोषण और निरक्षरता आदि का शिकार हो गया है। इस कारण वह दिन–ब–दिन गरीब होता जाने लगा हैं। आर्थिक असमानता, जमींदारों, सेठ–साहूकारों, व्यापारियों, कारखानदारों, उद्योगपतियों, देशी–विदेशी ठेकेदारों, शासकीय, अर्धशासकीय अधिकारियों आदि के शोषण के परिणामस्वरूप कृषक वर्ग दयनीय हो गया है। ऋण लेना किसानों के लिए आवश्यक हो गया है। ''आजकल ऋण बैंक्स, सहकारिता बैंक्स, लैसेंस्ड बैंक और गैर लैंसेंस बैंक भी देने लगे। ऋण का अर्थ है 'लोन'। वर्तमान ग्रामीण समाज में बैंको से ऋण लेना एक फैशन बन गया है। जब किसान अकाल के कारण या फसल ठीक न होने के कारण जब ऋण न चुकाकर वह कष्टों के बवंडर में गिर जाता है, तब सहायता करनेवाले बैंक भी किसान को सताते हैं। ऋण वसूल करने के लिए वे किसान को सताते हैं और अपमान करते हैं। घर के दरवाजे भी खींच ले जाते हैं। कोई इज्जतदार अपना सर्वस्व बेचकर ऋण चुकाता है। जब ऋण नहीं चुका सकता तब वह बेइज्जती का या आत्महत्या का भागी बन जाता है।'' **(1)**

किसान की खेती मौसम की मेहरबानी पर निर्भर है। मौसम के उतार–चढाव के कारण खेती पर संकट आता है। मौसम का परिवर्तन इस तेजी के साथ होता है कि किसान को संभलने का अवसर ही नहीं मिलता। अतिवृष्टि, सूखा, बाढ, ओलावृष्टि, आग आदि कारणों से किसान की खेती घाटे में आती है। प्रथम तो नाना प्रकार के विघ्न हैं। हवा हैं, पानी हैं, आग है। पशु हैं, पक्षी हैं और वन्य जीव हैं। चोर–लुटेरे भी हैं। इन सबसे बचता–बचाता यदि सारा अनाज घर पहुँचता है तो वह ऋण चुकाने–भर को तो होता ही है। यदि कुछ बचता है तो दो–एक महिनें में समाप्त हो जाता है। लगान है, भोजन है, बीज है बिमारियाँ है, कोऑपरेटिव का कर्जा है। कपडा–लत्ता, तमाखू, शादी–ब्याह, नाना रस्मरिवाज आदि का व्यय बढता ही जाता हैं। '' उसे पुनः ऋण लेना पडता है, यदि ऐसी बात हो कि वह जितना लेता है उतना ही देना पडे तब भी खैरियत होती। ऋण प्रगतिशील होता है। उसकी गतिशीलता के आगे किसान का श्रम गतिशून्य हो जाता है। यह ऋण कभी–कभी तो दूना–चौगुना, यहाँ तक कि बीस गुना–तीस गुना हो जाता है।.........सारे जीवन को ऋण के बादल आच्छादित करके एकदम धुआँधार कर देते हैं। इस प्रकार यह ऋणचक्र अनवरत गति से चलता रहता है। यदि ऋण बैंक का है, सरकार का है, तब और आफत।'' **(2)**

किसान और साहूकार का आपसी रिश्ता पीढ़ियों पुराना होता है और पूरी तरह विश्वास पर आधारित होता है। साहूकार ने तो अपना ही गणित और पहाडे बना रखे हैं। किसान चुपचाप अपना अँगूठा लगाकर ऋण ले आता है। ये साहूकार 5 रू. प्रति सैकडा प्रति माह की दर से ब्याज पर किसान को ऋण दे देते है जिसकी कोई गारंटी नहीं होती है, और न ही कोई अभिलेख मांगे जाते हैं बल्कि

उसकी चल–अचल संपत्ति और उसकी सामाजिक प्रतिष्ठा को देखते हुए ऋण दिया जाता है। आजकल साहूकार 8 रूपये से 10 रूपये तक प्रति सैकडा प्रति माह की दर से ब्याज ले रहें है जिससे किसान आकण्ठ ऋण में डूब रहे है। इतनी भारी ब्याज की रकम अदा करने के बाद भी वह ऋणमुक्त नहीं हो सकता है। अतः लोक–लाज के कारण वह आत्महत्या कर लेता है। ऐसी स्थिति में वित्तिय संस्थाओं से लिए गए ऋण तो प्रकाश में आते है परंतु साहूकार द्वारा दिया गया ऋण कहीं भी उजागर नहीं होता। फिर धीरे–धीरे महिलाओं के शरीर पर से जेवर कम होता जाता है। जेवर जो शरीर से उतरकर किसी साहूकार की तिजोरी में गिरवी हो जाते है। नई बहू जब घर आती है तो नए घागरे, लुघडे, पोलके, तोडी, बजपट्‌टी, ठुस्सी, झालर, लच्छे, बैंदा, करघनी भी धीरे–धीरे साहूकार की तिजोरी की शोभा बढाते हैं। गाँवों में आज भी विवाह और मृत्यु दोनों ही किसान–परिवार को समान रूप से कर्जे में डूबाकर चले जाते हैं। विवाह में मेहमान जुटते है, पूरे गाँव को और आस–पास के रिश्तेदारों को खाना दिया जाता है और मृत्यु होने पर वहीं होता है। अंतर सिर्फ इतना ही है कि विवाह के अवसर पर उल्लास होता हैं और किसान की आत्महत्या के कारण हुई मृत्यु पर दुःख।

खरपतवार नाशक, कीट नाशक और खाद का खर्चा प्रति एकड बहुत ही आता है। पलेवा और सिंचाई, बिजली या डीजल पर का खर्चा करीब ज्यादा ही आता हैं। फसल की कटाई और मेहनत–मजदूरी आदि अन्य खर्च मिलकर इस प्रकार मोटा–मोटा हिसाब लगाया जाए तो प्रति एकड जो व्याय होता है कि किसान के पास इतना भी नहीं बचता है कि वह ऋण का भुगतान कर सके, परिवार का भरण–पोषण कर सके। छोटे किसान का पूरा परिवार खेतों में मजदूर की तरह लगा रहता है। इसके बाद भी आसमानी–सुलतानी (प्राकृतिक अपदाएँ) हो गई, मौसम की मार पड गई और उपज घट गई तो छोटा और सीमान्त किसान जीवनभर ऋण में रहता है और उसके लिए आत्महत्या एकमात्र पर्याय बचता हैं।

किसानों का समर्थन कर रहे समूह का कहना है कि अनाज की वास्तविक कीमतें किसानों को नहीं मिलती और उन्हें जीएम कंपनियों से काफी महंगे बीज और खाद खरिदने होते हैं। जीएम बीज को खरिदने में कई किसान गहरे कर्ज में डूब जाते है। जब फसल की सही कीमत नहीं मिलती है तो उनके लिए आत्महत्या करना यह एकमात्र विकल्प बनता हैं। बिडम्बना यह है कि जब भी कृषि उत्पाद बाजार में आता है तो उसके मूल्य निरंतर गिरने लगते है और मध्यस्थ या ठेकेदार सस्ती दरों पर उनका माल क्रय कर लेते हैं जिससे कृषि घाटे का व्यावसाय बना हुआ हैं। दुर्भाग्य है कि संबंधित लोग औद्योगिक क्षेत्रों के उत्पादन की दरें लागत, मांग और पूर्ति को ध्यान में रखते हुए निर्धारित करते हैं। परंतु, कृषि उत्पाद का मूल्य या दरें या तो सरकार या क्रेता द्वारा निर्धारित किया जाता हैं। उसमें भी तत्काल नष्ट हो जानेवाले उत्पाद की विक्री के समय किसान असहाय दिखाई देता है।

भूमंडलीकरण के दौर में कृशि पर आधुनिक तकनीकी बहुराश्ट्रीय कंपनियों के माध्यम से जो इस दे ा में आती है उसे कृशि का प्रचार–प्रसार तंत्र उन किसानों तक पहुँचाने में लाचार नजर आते हैं, यह विचारणीय एवं गंभीर विशय है। कृशि योग्य भूमि का अंधाधुंध अधिग्रहण किए जाने से कृशि योग्य भूमि अत्याधिक संकुचित होती चली जा रहीं है, जो बढती हुई जनसंख्य के भरण हेतू कृशि उत्पादन के लिए अक्षम होगी। संपन्न राष्ट्रों ने विकासशील देशों में कई कारखानों का निर्माण कर वहाँ के जल और वायू के प्रदुषण को बढाया हैं। बहुराष्ट्रीय कंपनियाँ औद्योगिक विकास की आड में प्राकृतिक संसाधनों का अंधाधुंध दोहन कर रही हैं। परिणमतः ग्लोबल वार्मिंग के खतरे बढ रहे हैं। परंतु, 'पाप' बेचने का व्यापार यहाँ खूब चला सकते हैं। कार्बन क्रेडिट की खरीद फरोख्त करके। अपितु, किसानों को डिजल पम्प की जगह पैरो से चलनेवाला पम्प मुक्त में दे देंगे। 'सेज' बनाने के लिए दो–चार सौ किसानों को उजाड देंगे। उनकी गंधी की हुई हवा को साफ करने के लिए किसान यहाँ पेड लगाते रहें और घोडों–बैलों की तरह शरीर के जोर से सारे काम करते रहे। ग्लोबल वार्मिंग का दायित्व किसानों पर लादा जा रहा हैं। कार्बन क्रेडिट का व्यावसाय जोरों पर हैं। विकास के नाम पर किसान, आदिवासी, देहाती, गरीब लोगों को विस्थापित किया जा रहा हैं। रवि कान्तजी के शब्दों में–''वैश्वीकरण और

बाजारवाद का प्रभाव विशेषकर भारतीय संदर्भ में किसान, मजदूर, आदिवासी, स्त्री, अल्पसंख्याक और दलित वर्ग पर, संक्षेप में कहें, तो दमित व शोषित वर्गों पर व्यापक रूप से दिखाई दे रहा है।'' (3)

1990 दशक से भारत में किसानों की आत्महत्या के मामले सामने आते रहे हैं। पहले–पहल महाराश्ट्र में बडे पैमाने पर किसानों की आत्महत्या की घटनाएं सामने आईं और उसके बाद दे ा के अन्य राज्यों में भी किसानों की आत्महत्या देखने को मिली। जहाँ पहले देश में किसानों की आत्महत्या की खबरें महाराष्ट्र के विदर्भ और आंध्र प्रदेश के तेलंगना क्षेत्र से ही आती थी, वही अब इसमें नए इलाके जुड गए है। इनमें बुदेलखण्ड जैसे पिछडे इलाके नहीं, बल्कि देश की हरित क्रांति की कामयाबी में अहम भूमिका वाले हरियाणा, पंजाब, पश्चिमी उत्तर प्रदेश जेसे राज्य शमिल है। इसके साथ ही औद्योगिक और कृषि विकास के आंकडों मे रिकार्ड बनाने वाले गुजरात के क्षेत्र शमिल है। राज्यस्थान और मध्यप्रदेश के किसान भी अब आत्महत्या जैसे घातक कदम उठा रहें हैं। ब्रिटेन के निवे ाक जिम रोजर्स ने बीबीसी के एक बहस के दौरान कहा कि पिछले कुछ सालों में भारत में लाखों किसानों ने आत्महत्या की हैं। अधिकारिक तौरपर वर्श 1995 से अब तक 2,70,000 किसानों ने आत्महत्या की हैं। हर साल भारत में हजारों किसान आत्महत्या करते हैं। सरकार के ताजा आकंडो के मुताबिक 2011 में करीब 14 हजार किसानों ने आत्महत्या की हैं। प्रभात झा के अनुसार वर्श 2010 में करीब 1,90,000 आत्महत्याएं हुई है, इसमें किसान महज 10 फीसदी है। प्रभात झा के नतीजों और संयुक्त राश्ट्र के आंकडों के मुताबिक, भारत में प्रति एक लाख लोगों में 15 लोग आत्महत्या करते हैं। खेती से जुडे लोगों में यह हिस्सेदारी घटकर प्रति लाख 7 लोगों की हो जाती है। वर्श 2007 तक महाराश्ट्र में 4238, आंध्र प्रदेश में 1797, कर्नाटक में 2135, मध्यप्रदे ा में 1263 किसानों ने आत्महत्या की है।

'बैंक का कर्ज चुकाने में अपनी पूरी जिंदगी की कमाई लुटा देने के बाद मौसम और सरकारी नीतियों की मार झेलते किसी किसान की आत्महत्या सिर्फ इस आधार पर सरकारी दस्तावेजों में किसान की आत्महत्या के रूप में दर्ज नहीं होती कि बैंक के लेजर्स में उसके विरूद्ध कर्ज की कोई रकम बाकी नहीं है। जिंदगी की महत्वपूर्ण जिम्मेदारियों के बीच बार–बार हानि उठाने के बाद आत्महत्या को मजबूर हुये किसी नवयुवक की आत्महत्या एक किसान की आत्महत्या नहीं मानी जाती। क्योंकि सरकारी दस्तावेजों में भू–स्वामी के नाम के सामने उस किसान–पुत्र का नाम न हो कर उसके पिता का नाम अंकित होता हैं। आंकडो के गणित के आधार पर अपने राज्यों की छबि और सरकारी कोषों की निधि बचाने सरकारी कवायदें अंततः किसान विरोधी ही साबित होती है।'' **(4)**

महाराष्ट्र की कृषि समस्या का एक छोर कपास से जुडा है तो दूसरा गन्ने की खेती से। कपास की खेती करनेवाले किसान जहां अनुचित मूल्य निर्धारण, मंहगे और धरती की उर्वरा शक्ति का दोहन करनेवाले बीज, महाजनों और साहूकार के रक्तचूसक ब्याज और बिघडते मौसम चक्र के प्रतिकूल आघातों के बीच पारिवारिक जिम्मेदारी और सामाजिक प्रतिष्ठा के निर्वहन में नाकामयाब होकर आत्महत्या करने को मजबूर है। गन्ना किसानों का सुख–चैन भी प्रदेश की राजनीति दखल रखनेवाले चीनी मिल मालिकों की आंतरिक उठापटक और रायवलरी की भेट चढ़ जाता हैं। नेशनल क्राइम रिकार्ड ब्यूरों द्वारा प्रस्तुत आंकडों के अनुसार 1995 के बाद हमारे देश में आठ लाख किसानों ने आत्महत्या की है, जिसमें महाराष्ट्र के कपास–किसानों की संख्या सर्वाधिक हैं। कपास की खेती करनेवाला चीनी किसान लगातार समृद्ध होता जा रहा है और भारतीय किसान लगातार आत्महत्य को मजबूर क्यों हैं ? पिछले साल उत्तर प्रदेश से किसानों के आत्महत्या की खबरें आई तो उसकी वजह वहां किसानों का चीनी मिलों पर हजारों करोड रूपयों का बकाया है। उसके बाद हालात और बदतर हुए हैं। अभी भी उत्तर प्रदेश की चीनी मिलों पर किसानों का करीब आठ हजार करोड रूपये बकाया है। बडी तादाद में ऐसे किसान है जिनकी जोत दो एकड या इससे भी कम है, लेकिन उनको दो साल से गन्ना मूल्य का अंशिक भुगतान ही हो सका है।

मिडिया फॉर राइटस् विकास संवाद की अपनी वेब सामग्री में लिखते हैं–'' किसानों की आत्महत्या के तात्कालिक 8 प्रकरणों का विश्लेषण हमें इस नतीजे पर पहुंचाता है कि सभी किसानों पर कर्ज का दबाव था। फसल का उचित दाम नहीं मिलना, घटता उत्पादन, बिजली नहीं मिलना परंतु बिल

का बढते जाना, समय पर खाद, बीज नहीं मिलना और उत्पाद कम होना। म. प्र. के किसानों की आर्थिक स्थिति के बारे में चौंकाने वाले आंकडे सामने आ रहें हैं। प्रदेश के हर किसान पर औसतन 14 हजार 218 रूपये का कर्ज है। वहीं प्रदेश के कर्ज में डूबे किसान परिवार की संख्या भी चौकानें वाली है। यह संख्या 32,11,000 है। मं. प्र. के कर्जदार किसानों में 23 फीसदी किसान ऐसे हैं, जिनके पास 2 से 4 हेक्टेयर भूमि है। साथ ही 4 हेक्टेयर भूमि वाले कृषको पर 23,456 रूपये कर्ज चढ़ा हुआ है। कृषि मामलों के जानकारों का कहना है कि प्रदेश के 50 प्रतिशत से अधिक किसानों पर संस्थागत कर्ज चढ़ा हुआ है। किसानों के कर्ज का यह प्रतिशत सरकारी आंकडों के अनुसार है, जबकि किसान नाते/रिश्तेदारों, व्यावसायिक साहूकारों, व्यापारियों और नौकरीपेशा से भी कज्र लेते हैं। जिसके चलते प्रदेश में 80 से 90 प्रतिशत किसान कर्ज के बोझ तले दबे हैं।'' (5)

पश्चिम बंगाल में और भारत वर्ष में कृषक वर्ग के असंतोष और विद्रोह का इतिहास समकालीन घटना मात्र नहीं हैं। दार्जिलिंग जिले के नक्सलवाडी, खडीबाडी और फॉंसी लगने वाले अधिकांश भाग के रहने वाले भूमिहीन किसान है। स्थानीय जमींदारों ने बहुत दिनों से चली आ रही 'अधिया' की व्यवस्था में उन पर अपना शोषण जारी रखा। इसके विरोध ही किसानों का असंतोष और विद्रोह हैं। उस आंदोलन में एक ही तरह से वंचित–शोषित किसान को आंध्र में, केरल में, तमिलनाडू में, बिहार में और उडिसा में प्रेरणा दी। जिसे नक्सलवाडी आंदोलन नाम दिया गया है।

''आज विश्व एक ऐसी जटिल और खतरनाक अवस्था से गुजर रहा है कि भूमंडलीकरण एक शब्द नहीं रहा–एक संस्कृति है।......आज विश्व बाजार–व्यवस्था में राष्ट्रीय पूँजी और अंतरराष्ट्रीय पूँजी की पारस्पारिकता इतनी बढी है कि दोनों एक हो गए हैं।'' **(6)**

निष्कर्ष :

भारत में बडे पैमाने पर किसान आत्महत्या कर रहें है। आज यह समस्या केवल राष्ट्रीय समस्या नहीं रही है भूमंडलीकरण के कारण अंतरराष्ट्रीय समस्या बन गई हैं। सरकार दावा कर रही है कि उन्होंने आत्महत्या के मामलों को कम करने हेतू कई कदम उठाएं है, लेकिन मौजूदा स्थिति ज्यों–का–त्यों है। आज तक लाखों किसानों ने आत्महत्या की है, कर रहे है क्योंकि वे जीने लायक पैसे भी नहीं कमा पाते। ऋण का पहाड उन पर गिरता ही रहता हैं। समय–समय पर केंद्र या राज्य सरकार ने ऋण माफी की अनेक योजनाएं कार्यान्वित की है। परंतु उसका सही दिशा में अमल होता तो किसानों की इतनी दुर्दशा शायद नहीं होती। अगर सरकार किसानों के उत्पाद को उचित मूल्य देने के लिए कानून बनायेगी तो किसानों को उचित न्याय मिल सकता हैं। बीज, उर्वरक, कीटकनाशक, खाद तथा आधुनिक यंत्र–सामग्री अत्यल्प मूल्यों पर सरकार की ओर से उपलब्ध होनी चाहिए। उत्पाद बढ़े इसलिए आधुनिक प्रणाली का विकास करना चाहिए। रासायनिक खाद एवं औषधियों का प्रयोग कम करके देशी बीज एवं प्रकृतिक साधन–सामग्री का प्रयोग ही व्यापक मात्रा में करना चाहिए। धरती की छ़ाती को चिरकर अन्न उगाने वाले किसान, हम सबके पालनहार को अब फांसी के फंदे से बचाकर ही हम अपने राष्ट्र की उन्नती कर सकते हैं।

संदर्भ :

(1) अंतिम दशक के हिंदी उपन्यासों में ग्रामीण जीवन का चित्रण–डॉ. मोहम्मद जमील अहमद, अन्नपूर्ण प्रकाशन, कानपुर, पृ.164.
(2) अंतिम दशक के हिंदी उपन्यासों में ग्रामीण जीवन का चित्रण–डॉ. मोहम्मद जमील अहमद, अन्नपूर्ण प्रकाशन, कानपुर, पृ.238.
(3) 'वागर्थ', मासिक पत्रिका, अंक–224. मार्च, 2014. पृ. 66.
(4) समालोचनः परखः फॉंस (संजीव): राकेश बिहारी, पृ.3.
(5) www.mediaforright.org पृ.2.
(6) समकालीन भारतीय साहित्य–द्वैमासिक पत्रिका, जुलाई–अगस्त, 2011. पृ. 204.

सेंद्रिय शेती: काळाची गरज

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सारांश

कृषी हा एक भारतातील प्राचीन व्यवसाय आहे. कृषी हा भारतीय अर्थव्यवस्थेचा कणा आहे. अलिकडच्या काळात कृषीक्षेत्रामध्ये अनेक समस्या निर्माण झाल्या आहेत. मृदा अवनती ही त्यापैकी एक गंभीर समस्या आहे. हरितक्रांतीमुळे अन्नधान्य उत्पादन वाढीसाठी शेतामध्ये रासायनिक खते व रासायनिक कीड कीटक नाशकांचा तसेच जलसिंचन इ.चा अनिर्बंध वापर वाढला. त्यामुळे मृदा अवनतीची समस्या निर्माण झाली.

मृदा अवनतीमुळे मृदेची उत्पादन क्षमता व मृदेची गुणवत्ता कमी होत आहे. त्याचबरोबर मृदा या नैसर्गिक साधनसंपत्तीचा ऱ्हास होत आहे. सेंद्रीय शेती ही पर्यावरण पूरक शेती पद्धती आहे. सेंद्रिय शेतीमध्ये नैसर्गिक खते व नैसर्गिक कीड-कीटकनाशकांचा वापर केल्याने मृदेची सुपीकता व उत्पादनक्षमता वाढते. मृदेची अवनती रोखली जाते. सेंद्रिय शेतीमुळे अन्नसुरक्षा टिकून राहते व पर्यावरणाचे संतुलन राखले जाते म्हणून सेंद्रिय शेती एक काळाची गरज बनली आहे.

बीज संज्ञा- मृदा अवनती, जैवविविधता, मृदासंवर्धन.

प्रस्तावना -

जगात अनेक देशामधून अधिक शेती उत्पन्न घेण्याच्या उद्देशाने रासायनिक पद्धतीची शेती केली जाऊ लागली. रासायनिक शेतीपद्धतीमुळे शेतीमध्ये रासायनिक खतांचा, रासायनिक कीड व कीटकनाशकांचा आणि जलसिंचन इत्यादींचा अनिर्बंध वापर वाढला. परिणामी अलिकडच्या काळात शेतीक्षेत्रामध्ये अनेक समस्या निर्माण झाल्या आहेत. मृदेची अवनती ही त्यापैकी एक गंभीर समस्या आहे. मृदेच्या अवनतीमुळे मृदेच्या उत्पादनक्षमतेत व मृदेच्या गुणवत्तेत घट झाली आहे. उत्पादित कृषीमालाचा दर्जा निकृष्ठ होत आहे. रासायनिक शेती पद्धतीमुळे मृदास्त्रोत व जलस्त्रोत प्रदूषित होत आहेत. कृषी उत्पादनामध्ये विषद्रव्ये उतरत असल्यामुळे सजीवांच्या आरोग्याचा प्रश्न निर्माज झाला आहे. परिणामी पर्यावरणीय संतुलन बिघडत आहे. त्यामुळे मृदेच्या अवनतीस प्रतिबंध करणे आवश्यक आहे.

सेंद्रिय शेती ही पर्यावरण पूरक असून तिला नैसर्गिक शेती असेही म्हणतात. सेंद्रिय शेतीमध्ये रासायनिक खते व रासायनिक कीड-कीटकनाशकांचा वापर केला जात नसल्याने मृदेची अवनती टाळता येणे शक्य आहे. सेंद्रिय शेतीमध्ये नैर्सज्जि खते, नैसर्गिक कीड-कीटकनाशकांचा वापर केल्याने मृदेचा कस वाढतो. मृदा या नैसर्गिक साधनसंपत्तीचे संवर्धन होते. पर्यावरण संतुलन टिकून राहते म्हणून सेंद्रिय शेती ही एक काळाची गरज बनली आहे.

उद्देश -

१) सेंद्रीय शेती पद्धतीची माहिती घेणे

२) मृदा अवनतीच्या प्रतिबंधक उपाययोजनांचा अभ्यास करणे

अभ्यासपद्धती - प्रस्तुत शोधनिबंधासाठी दुय्यम श्रेणीच्या साधनांचा वापर केलेला आहे. संदर्भ पुस्तके, मासिके, वर्तमा-नपत्रज्े इत्यादीमधून माहिती घेतली आहे.

अभ्यास विषय - विवेचन

सेंद्रिय शेती-

सर अल्बर्ट हॉवर्ड यांना सेंद्रिय शेतीचे जनक मानतात.

व्याज्या- लॉर्ड नॉर्थबॉर्न यांच्यामते "पारिस्थितीकी दृष्टया स्थिर, स्वयंपूर्ण, जीवशास्त्रीयदृष्टया पूर्णपणे समतोल अशी शेती म्हणजे सेंद्रिय शेती होय"

छो-ऱ्ज्ञ ार यांच्यामते "सेंद्रिय शेती म्हणजे कृत्रिम खते वगळून सुधारित जैविक खतावर शेती करणे"

सेंद्रिय शेती पध्दती आणि स्वरुप

सेंद्रिय शेतीपध्दतीमध्ये रासायनिक खते व रासायनिक कीड-कीटकनाशकांचा वापर केला जात नाही तर मृदेचा कस जिवंत ठेवण्यासाठी शेतामधीलच सेंद्रिय टाकाऊ पदार्थ, पिकांचे व प्राण्यांचे अवशेष, जैविक व सेंद्रिय खतांचा वापर, नैसर्गिक कीड व कीटकनाशकांचा वापर केला जातो.

सेंद्रिय शेती ही एक अशी उत्पादन प्रणाली आहे की ज्यामुळे मृदा, परिसंस्था आणि लोकांच्या आरोग्याची शाश्वतता राखत ही शेती विपरीत परिणामांच्या आंदानापेक्षा पारिस्थितीकी प्रक्रिया, जैवविविधता आणि स्थानिक परिस्थतीने स्वीकारलेल्या चक्रावर अवलंबून असते. सेंद्रिय शेतीमध्ये सहभागी होणा-या पर्यावरणाच्या फायदयासाठी परंपरा, नविन शोध पध्दती आणि विज्ञानाची सांगड घातली जाते यामुळे त्यांच्यात चांगले नातेसंबंध आणि यामध्ये समाविष्ट होणा-या सर्वांच्या जीवनाचा दर्जा सुधारतो.

सेंद्रिय शेतीचे घटक -

पशूधन, पिके, सेंद्रिय खते, मानवी आरोग्य जमीन व जमीनीचे आरोग्य, सामाजिक व आर्थिक ग्राह्यता इत्यादी सेंद्रिय शेतीचे घटक आहेत.

सेंद्रिय शेतीचे फायदे -

१. सेंद्रिय शेतीमध्ये सेंद्रिय खतांचा व नैसर्गिक कीड व कीटकनाशकांचा वापर केला जातो त्यामुळे मृदेचे चांगले आरोग्य जोपासले जाते.
२. सेंद्रिय शेतीमध्ये रासायनिक खते व कीड-कीटकनाशकांचा वापर केला जात नसल्याने जैवविविधता टिकून राहते.
३. मृदेतील विविध प्रकारचे सूक्ष्मजंतू आणि बुरशी, रासायनिक पदार्थ पिकांचा अवशिष्ट भाग आणि प्राण्यांची विष्ठा यांचे रुपांतर मृदेच्या पोषणमूल्यात झाल्यामुळे उत्तम दर्जाचे पीक येते.
४. सेंद्रिय शेतीत अन्नसुरक्षा टिकून राहते. नागरिकांना चांगला पोषणयुक्त आहार मिळतो.
५. सेंद्रिय शेतीमुळे जमीनीचा ओलावा टिकवून धरण्याची क्षमता वाढते त्यामुळे पाण्याची बचत होते.
६. सेंद्रिय शेतीमुळे मृदेची अवनतीस प्रतिबंध होतो.
७. ग्रामीण अर्थव्यवस्था बळकट होण्यास मदत होते.
८. सेंद्रिय शेतीमुळे पर्यावरणावर कोणताही दुष्परिणाम होत नसल्याने पर्यावरण संतुलन राहते.

जग - सेंद्रिय शेती

२०१३ च्या आकडेवारीनुसार जगामध्ये प्रमाणित सेंद्रिय शेती करणारे १७० देश होते. प्रामुख्याने युरोपियन देश, उत्तर अमेरिका, चीन, ब्राझील, लॅटिन अमेरिका इत्यादी ठिकाणी सेंद्रिय शेती केली जाते. जगात सर्वाधिक सेंद्रिय शेतीचे क्षेत्र अनुज्र मे ऑस्ट्रेलिया (१७.२ दशलक्ष हेक्टर) अर्जेटिना, अमेरिका, चीन, स्पेन, इटली, फ्रान्स, जर्मनी, कॅनडा या १० देशात आहे.

सेंद्रिय शेतीमध्ये सर्वाधिक क्षेत्र अनुक्रमे भात, चारापिके, तेलबिया, भाज्या, प्रथिन पिके इ. खाली आहे आणि कायम पिज ाजालील जेत्रामध्ये अनुक्रमे कॉफी (०.७ दशलक्ष हेक्टर) ऑलिव्ह (०.६ दशलक्ष हेक्टर) द्राक्षे व अन्य (०.३ दशलक्ष हेक्टर) कोको (०.३ दशलक्ष हेक्टर) याचा क्रम लागतो.

जगातील सर्वात मोठी सेंद्रिय बाजारपेठ अनुक्रमे अमेरिका (४३ टक्के), जर्मनी (१३ टक्के), फ्रान्स (८ टक्के) चीन, कॅनडा, इंग्लंड, इटली (४ टक्के), स्वित्र्झलंड (३ टक्के) अन्य (१७ टक्के) आहे.

भारत - सेंद्रिय शेती

भारत सरकार तर्फे राष्ट्रीय सेंद्रिय उत्पादन कार्यक्रम राबविला जातो त्याव्दारे प्रमाणिकीकरण करणा-या संस्था, सेंद्रिय उत्पादनासाठीचे निकष, सेंद्रिय शेतीला प्रोत्साहन देण्याचे उपक्रम राबविले जातात.

२०१३-१४ च्या आकडेवारीनुसार भारतातील सेंद्रिय शेतीखालील प्रमाणित क्षेत्र हेक्टर ४.७२ दशलक्ष हेक्टर होते. भरतामध्ये सुमारे १.२४ दशलक्ष टन प्रमाणित सेंद्रिय उत्पादने घेतली गेली . त्यामध्ये ऊस, कापूस, तेलबिया, तांदूळ, कडधान्ये, मसाले, चहा, फळे, सुकामेवा, भाज्या, कॉफी आणि अन्य मूल्यवर्धित पदार्थांचा तसेच अखादय कपाशी या पिकाचा समावेश होता.

भारतात उत्तराखंड, नागालँड, सिक्कीम आणि मिझोराम , मध्यप्रदेश, हिमाचल प्रदेश, राज्यस्थान महाराष्ट्र इ. राज्यामध्ये सेंद्रिय शेती केली जाते. भारतामधील सर्व राज्यामध्ये सर्वाधिक सेंद्रिय शेतीक्षेत्रात अनुक्रमे मध्यप्रदेश, हिमाचल प्रदेश व राजस्थान या राज्यांचा क्रम लागतो.

भारतातून सेंद्रिंय मालाची निर्यात अमेरिका, युरोपियन, युनियन, कॅनडा, स्विर्त्झलंड, न्यूझीलंड, आग्नेय व आशियाई देश, मध्यपूर्व देश आणि दक्षिण अफ्रिका येथे होते. सर्वाधिक निर्यात तेलबियांची (७०टक्के) होते. त्यानंतर तृणधान्ये, दुय्यमधान्ये (६%), प्रक्रियायुक्त खादयपदार्थ (५%), बासमती तांदूळ (४%), चहा (२ %) कडधान्ये (१%) ड्रायफ्रूटस् व मसाले आणि अन्य (१ %) असा क्रम लागतो.

डिसेंबर २०१५ मध्ये सिक्कीमला पूर्ण सेंद्रिय शेतीचे राज्य म्हणून घोषित केले आहे. उत्तराखंड, नागालँड, मिझोराम इ. राज्यांनीही १०० % सेंद्रिय शेतीचे राज्य बनविण्याचे घोषित केले आहे.

भारतामध्ये अजूनही सेंद्रिय शेतीचे प्रमाण कमी आहे. हे प्रमाण वाढविणसाठी केंद्रशासनाने सेंद्रिय शेतीविषयी पथदर्शी कार्यक्रम आखला आहे. त्यानुसार ईशान्येकडील राज्यांना सेंद्रिय शेतीचे हब बनविण्याचे ठरविले आहे. त्याचबरोबर बिहार, ओडिसा, पश्चिमबंगाल, उत्तरप्रदेश इत्यादीमध्ये सेंद्रिय शेतीचे हब बनविण्यासाठी विशेष प्रयत्न केले जाणार आहे.

सेंद्रिय शेतीच्या मर्यादा -

१. सेंद्रिय शेती मालाला वाजवी दर मिळत नाही व पुरेशा प्रमाणात बाजारपेठ उपलब्ध होत नाहीत.
२. सेंद्रिय खतांच्या बाजारपेठा विकसित नाहीत.
३. सेंद्रिय खतांसाठी मोठया प्रमाणात जैविक उत्पादने व पशूपालनाची आवश्यकता असते.
४. सेंद्रिय खते वजनाने जास्त व आकाराने मोठी असतात तसेच खत साठविण्यास जागा जास्त लागते.
५. सेंद्रिय शेतीसाठी आवश्यक त्या बियाणांचा पुरेशा प्रमाणात पुरवठा होत नाही.
६. सेंद्रिय खतांना विघटन प्रक्रियेमुळे पिकांच्या वाढीवर त्याचा प्रभाव पाडण्यास वेळ लागतो.
७. उत्पादित मालाची विश्वासार्हता वाढविण्याठी सेंद्रिय प्रमाणीकरणाची गरज असते ही प्रक्रिया शेतक-याला आर्थिकदृष्टया न परवडणारी आहे.

उपाययोजना -

१. सेंद्रिय शेतमालासाठी योग्य दर दिला पाहिजे तसेच बाजारपेठा विकसित करणे.
२. सेंद्रिय जतांची मोठया प्रमाणावर निर्मिती करणे.
३. सेंद्रिय शेतीस आवश्यक बियाणांची पुरेशा प्रमाणात उपलब्धता करणे
४. शेतक-याला परवडेल अशी सेंद्रिय प्रमाणीकरण पध्दती असावी.
५. सेंद्रिय उत्पादन व विपणनासाठी पायाभूत सुविधांसाठी आर्थिक पाठबळ उभे करणे गरजेचे आहे.

निष्कर्ष -

सेंद्रिय शेतीमुळे रासायनिक शेतीव्दारे होणारे दुष्परिणाम टाळता येतात. मृदेच्या अवनतीस प्रतिबंध होतो. सेंद्रिय शेतीमुळे विषमुक्त व गुणवत्तापूर्ण कृषीमालाचे उत्पादन होते. सजीवांचे व मृदेचे आरोग्य चांगले राहते. पर्यावरण संतुलन राहते. त्यामुळे पर्यावरणपूरक सेंद्रिय शेतीचा प्रचार, प्रसार, अंमलबजावणी होणे आवश्यक आहे. त्यासाठी शासनाकडून, स्वयंसेवी संस्थाकडून सेंद्रिय शेतीविषयक प्रभावीपणे, जागृती होणे आवश्यक आहे.

संदर्भसूची -

१. कृषी भूजोल - डॉ. कुंभारे
२. कृषी विज्ञान - प्रा. सवदी, प्रा. कोळेकर
३. Agricultural Geography- Jasbri Singh
४. लोकराज्य - जून २०१२
५. महाराष्ट्र आर्थिक पाहणी - २०१२-१३
६. दैनिक सकाळ ॲग्रोवन अंक - दि. १४,१८,२५,२९ जून २०१४
७. दैनिक सकाळ ॲग्रोवन - सेंद्रिय शेती विशेषांक २५ सप्टेंबर २०१५
८. संपूर्ज पर्यावरज शास्त्र - प्रा.ए.पी.चौधरी, प्रा. सौ. अर्चना चौधरी
९. महाराष्ट्र टाईम्स - २५ जानेवारी २०१६
१०. कृषीविचार मासिक अंक : ५ सप्टेंबर २०१४

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जलस्त्रोतांच्या व्यवस्थापनातून कृषी विकास

डॉ.संतोष कावडे
राज्यशास्त्र विभाग
आर्टस् ॲण्ड कॉमर्स कॉलेज,आष्टा

प्रस्तावना :

मानवाच्या अस्तित्वासाठी व कृषी विकासासाठी पाणी हा महत्त्वाचा स्त्रोत आहे. लोकसंख्या वाढ, दुष्काळ, आर्थिक विकास यामुळे पाण्याची मागणी वाढत आहे. परंतू पाण्याचे उपलब्ध स्त्रोत मर्यादित आहेत आणि म्हणून अस्तित्वात असणाऱ्या जलस्त्रोतांच्या स्थितीवर नजर टाकली असता व देशातील कृषी समस्या, वाढती लोकसंख्येची मागणी लक्षात घेऊन भविष्यात निर्माण होणाऱ्या संकटांची शक्यता पाहता अधिक काळासाठी सुनियोजीत जलस्त्रोतांची व्यवस्थापन करण्याची गरज आहे. वाढता पाणीपुरवठा व मर्यादित साठ्याव्दारे वाढती मागणी पूर्ण करण्याचा प्रयत्न जलस्त्रोत व्यवस्थापन करते.

पाणी आणि जमीन निसर्गाने मानवाला उपलब्ध करून दिलेली अत्यंत महत्त्वाची साधन–सामुग्री आहे. कृषी उत्पादन हे राज्याची व देशाची आर्थिक घडी मजबूत करणारे अंग आहे. औद्योगिक विकास व तंत्रज्ञानातील प्रगती कृषी क्षेत्राच्या पायांवर उभी असते. देशाचे व राज्याचे अर्थकारण आजही पावसळी शेतीवर अवलंबून आहे. येणाऱ्या काळामध्ये पाण्याचे नियोजन आणि व्यवस्थापन यावरच विकास दराची दिशा अवलंबून राहणार आहे. त्यामुळे पाण्याचे महत्त्व ओळखून देशाची व राज्याची अर्थव्यवस्था बदलावी लागेल. म्हणूनच अस्तित्वात असणाऱ्या जलस्त्रोताच्या स्थितीवर नजर टाकली असता व देशातील वेगाने वाढणाऱ्या लोकसंख्येची वाढती मागणी लक्षात घेऊन भविष्यात निर्माण होणाऱ्या लक्षात घेता संकटाची शक्यता पाहता अधिक काळासाठी सुनियोजीत जलस्त्रोताची व्यवस्थापन (दुष्काळ व्यवस्थापन, पूरआपत्ती व्यवस्थापन, भूगर्भातील पाण्याचे व्यवस्थापन, पाण्याचे जतन व कृषी विकास, पावसाच्या पाण्याचा पुर्नवापर) करण्याची गरज आहे.

दुष्काळ व्यवस्थापन :

आज एकूण क्षेत्रफळापैकी ५१.१२% इतके क्षेत्र भारतामध्ये दुष्काळी आहे. सर्वांचेच धरसोडीचे/वेळखाऊ धोरण व दुष्काळाची निश्चित सुरूवात व शेवट ठरवण्यात अडचण येत आहे. त्यामुळे दुष्काळाबाबतच्या योजना व व्यवस्थापनाला कमी प्राधान्य दिले जात आहे. आज 'महाराष्ट्रात' या २८,५०० ग्रामपंचायतीखाली एकूण गावे व वाड्या–वस्त्या मिळून ८८.६८१ मनुष्यवस्त्या आहेत. त्यापैकी २५,५०० वस्त्यांना पुरेसे म्हणजे ४० हजार पाणी दररोज दरडोई मिळत नाही. सरासरी २०,००० वस्त्यांना दरसाल पाणी टंचाईची झळ पोहचते. दरवर्षी ५००० ते १०००० (वा अधिक) वस्त्यांना टॅंकरने पाणी पुरवठा करावा लागतो आणि टंचाईच्या तात्पुरत्या उपाययोजनावर दरवर्षी १०० कोटी रूपये (२००३–०४ मध्ये २०० कोटीच्या घरात) खर्च होत असतो किंबहुना जास्तच !

केंद्र व राज्य सरकारच्या स्वजलधारा, आपलं पाणी, शिवकालीन पाणीपुरवठा योजना, महात्मा फुले जलभूमी अभियान, जलशिवार योजना, संत गाडगेबाबा ग्रामस्वच्छता अभियान, संपूर्ण अभियान, हागणदारी हटाव, निर्मल ग्राम अशा विविध प्रकारच्या योजना राबवून देखील भरपूर पैसे खर्च होऊनही लोकांची साधी पिण्याच्या पाण्याची गरज का भागू शकली नाही? आणि म्हणून दुष्काळ व्यवस्थापन राबविल्यास मानवाचा आणि कृषि विकास होण्यास मदत होईल.

पूरआपत्ती व्यवस्थापन :

निसर्गामध्ये घडणाऱ्या इतर आपत्तीपेक्षा पूरआपत्तीला भारताला सातत्याने सामोरे जावे लागते. भारताच्या पूर्वेकडील ओरिसा, प.बंगाल, बिहार, आंध्रप्रदेश तसेच महाराष्ट्र यासारख्या राज्यामध्ये आलेले पूर हे ताजी व समर्पक उदाहरणे होय. विविध शासकीय एजन्सीमार्फत प्रसिध्द केलेल्या आकडेवारीनुसार प्रत्यक्ष व अप्रत्यक्ष पूरआपत्तीचे प्रमाण धोकादायक व मोठ्या प्रमाणात वाढत आहे. १९५४ च्या भयानक पूर आपत्तीनंतर राष्ट्रीय स्तरावर पूरआपत्ती व्यवस्थापन कार्यालय सुरू करण्यात

आले. पूर आपत्ती व्यवस्थापनाच्या दृष्टीने भारत सरकारने काही पावले उचलली आहेत. यामध्ये जनसमुदाय/जनसहभाग आवश्यक ठेवलेला आहे. शेतकरी, व्यवसायातील गट, उद्योगधंदे व स्वयंसेवी संघटना यांना सतत सतर्क राहण्याच्या सूचना दिलेल्या आहेत. तसेच आपत्तीपूर्व जाणीव जागृती/पूर्व तयारी, पूराचा सामना करण्यासाठी आपत्ती प्रतिसाद इ. साठी लोकांचा सहभाग होण्यासाठी शिक्षण देण्यात आले आहे. तसेच माध्यमे या काळात (उदा. दूरदर्शन, नभोवाणी, दैनिक इ.) महत्त्वाची भूमिका बजावू शकतात. असेही सूचित केलेले आढळते. पुराचे पाणी दुष्काळ भागामध्ये शेतीला दिल्यास कृषी विकास साध्य करण्यास मदत होईल.

भूगर्भातील पाण्याचे व्यवस्थापन :

एकीकडे वाढती लोकसंख्या, दूषित पाणी, अपूरा पाऊस आणि भूगर्भातील खालावत जाणारी पातळी अशा समस्या उग्र होत असताना 'ग्लोबल वॉर्मिंग' मुळे भूगर्भातील पाणीसाठे लुप्त होत असल्याचे स्पष्ट होऊ लागल्याने पिण्याचे पाणी ही आगामी काळातील आर्थिक नियोजनाची पहिली पसंती राहणार आहे असे मला वाटते. देशात वर्षाकाठी सुमारे १.१२३ अब्ज घनमीटर वापरण्यायोग्य पाणी उपलब्ध असल्याचा ढोबख अंदाज असला, तरी राज्या–राज्यांमधील पाणी स्थिती भिन्न असल्याने दरडोई पाणी वापराची नेमकी आकडेवारी स्पष्ट झालेली नाही. मात्र, ग्लोबल वॉर्मिंग आणि वातावरणातील बदलांमुळे निर्माण झालेल्या विविध समस्यांमुळे पाणीसाठी कमी होऊ लागले आहेत. येत्या काही वर्षांत तापमान बदलाचा परिणाम म्हणून समुद्राची पातळी वाढेल. हिमशिखरे वितळतील आणि भूगर्भातील पाणी साठ्यांचा समतोल बिघडेल. समुद्राच्या वाढलेल्या पातळीमुळे किनारी भागातील पिण्याचे पाणी साठे क्षारयुक्त होतील. महापूरामुळे जमिनी खालील पाणी साठ्यांची पातळी खालावेल असे अंदाज या पाहणीतून वर्तविण्यात आले आहेत.

रूरकी येथील "नॅशनल इन्स्टिट्यु ऑफ हायडॉलॉजी" आणि बंगळूर येथील "इंडियन इन्स्टिट्युट ऑफ सायन्स" च्या सहकार्याने केंद्र सरकारने केलेल्या संशोधनातही वातावरण बदल आणि ग्लोबल वॉर्मिंगमुळे भूगर्भातील पाणीसाठ्यावर होणाऱ्या विपरीत परिणामांचे स्पष्ट चित्र उभे करण्यात आले आहे. त्यामुळे केंद्रीय जल आयोगाने या समस्येची गंभीर दखल घेतली. ग्लोबल वॉर्मिंगच्या समस्येचे पाणी साठ्यावर होणारे परिणाम आणि त्यावरील उपाययोजना शोधण्यासाठी केंद्रीय भूजल मंडख, ब्रह्मपुत्र आणि "नॅशनल इन्स्टिट्यूट ऑफ हायडॉलॉजी" तसेच या क्षेत्रातील तज्ज्ञांच्या सहकार्याने संशोधन सुरू करण्यात आले आहे.

अतिपिळवणूक अतिवापरापासून वाचवण्यासाठी भूगर्भातील पाणी व्यवस्थापन धोरणाची सुरूवात केली. त्यामध्ये कार्यक्षमता, समानता, सातत्य यांना अग्रक्रम दिला. भारतामध्ये शेतजमिनीची मालकी तुकड्यांच्या स्वरूपात आहे. (कमीत–कमी शेती) व ग्रामीण लोकसंख्या अधिक आहे. सामाजिक समानता आणण्यासाठी भूगर्भातील जलस्त्रोतांच्या अतिवापरामुळे निर्माण होणारे पर्यावरणाचे हानिकारक परिणाम टाळण्यासाठी राज्य व केंद्र सरकारने लक्ष देणे गरजेचे आहे. स्वच्छ पाण्यांमध्ये समुद्राचे पाणी मिसळू नये यासाठी सुमद्रकिनाऱ्याजवळील भागात पाणी उपसा करू नये. एकत्रित व्यवस्थापनाचा दृष्टीकोन म्हणजे शासन–प्रशासन व कार्यक्षम लोकांचा सहभाग हा भूगर्भातील पाणी शिक्षणाच्या व्यवस्थापनातून कृषी विकास कसे साध्य करता येई हे पाहणे काळाची गरज आहे.

पाण्याचे जतन व कृषी विकास :

भूपृष्ठावर पाणी साठवण, टँक, मातीमध्ये पाणी मुरवणे तसेच जमिनीतील पाण्याचे झरे इ. माध्यमातून पाण्याची उपलब्धता वाढविणे तसेच पाण्याचे जतन करता येऊ शकते. पाण्याची मागणी पूर्ण करण्यासाठी पाण्याचे ठिकाण व वेळ उपलब्धतेनुसार बदल करण्यामध्ये भर देण्यात आला आहे. वरील संकल्पना पाण्याचा योग्य वापर करण्यावर भर देते. विविध वापरासाठी उपयोगात येणाऱ्या पाण्याचे व्यवस्थापन व योग्य साठवन करण्यासाठी अधिक वाव (संधी) आहे.

पाण्याच्या मागणीच्या बाजूने विचार केला ते विविध आर्थिक, प्रशासकीय व समाजाभिमुख घटक पाण्याचे जतन करण्यासाठी मदत करू शकतात. प्रचंड लोकसंख्येच्या सर्वच नैसर्गिक स्त्रोतांवर भार पडत असल्याने लोकसंख्या नियंत्रण करणे हाही उपाय आहे. तसेच कृषीला हवे तेवढेच पाणी पुरवठा केल्यास कृषःी विकास साध्य होईल.

पाणलोट क्षेत्र व्यवस्थापन :

पाणलोट हे IWRM चे व्यवस्थापकीय युनिट आहे. यामध्ये भूपृष्ठावरील व भूगर्भातील पाण्याचा सहसंबंध व जमिनीचा वापर व व्यवस्थापनाशी त्यांचा संबंध निगडीत आहे. सामाजिक, आर्थिक विकासासाठी पाणी व जमिनीच्या विकासासाठी कार्यक्रम व परिणामकारक आराखडा तयार करणे हे पाणलोट क्षेत्र व्यवस्थापनाचा हेतू आहे.

पाणलोट क्षेत्र विकासासाठी व समाजकेंद्रीत कार्यक्रम वाढवण्यासाठी सुरूवातीला लोकांचा पूर्वज्ञान, उपलब्ध संसाधने, कल्पनाशक्ती व निर्मिती क्षमता यांचा वापर करण्यात येत आहे.

पावसाच्या पाण्याचा पुनर्वापर :

पावसाच्या पाण्यातून मातीचे कण सुपीक माती, तसेच अन्नद्रव्ये वाहून जातात हे वाचवण्यासाठी पावसाचे पाणी प्रभावी उपयोगासाठी साठवून ठेवणे, तसेच वाफ होऊ नये, वाहून जाऊ नये यासाठी टिकवून ठेवणे याचा समावेश मध्ये होतो. याचे अनेक फायदे आहेत. पाण्याची उपलब्धता वाढते, भूगर्भातील पाण्याची शुध्दता वाढते, मृदासंवर्धन होते, शहरी भागातील पुरांना आळा बसतो इ.

समारोप :

भारतासारख्या विकसनशील देशातील वाढत्या लोकसंख्येची अन्नधान्याची गरज भागविण्यासाठी शेतीमधून अधिकाधिक उत्पन्न मिळवणे ही काळाची गरज आहे. ही बाब विचारात घेऊन जलस्त्रोतांचे व्यवस्थापन करून कृषी विकास करणे आवश्यक आहे. सिंचनामुळे पिकांचे क्षेत्र वाढवणे, पिकांच्या उत्पादनात वाढ होते, पाणलोट क्षेत्रातील विहिरींचे पुनर्भरणा करून भूगर्भातील पाणी पातळीत वाढ करणे, पशुधन व नागरिकांना वापरासाठी पाणी उपलब्ध करून देणे. पाणथळ जमीन सुधारणे, मत्स्यपालन व दुग्धव्यवसाय या सारख्या शेतीपूरक व्यवसायातून शेतकऱ्यांच्या उत्पन्नात वाढ करणे इत्यादी कृषी विकास साध्य करण्यासाठी जलस्त्रोतांचे व्यवस्थापन करणे आवश्यक आहे.

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भारतातील स्त्री-पुरूष साक्षरतेमधील अंतराचे विश्लेषण

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संशोधक विद्यार्थी, शिवाजी विद्यापीठ कोल्हापूर

प्रस्तावना :

साक्षरता हे प्रगत समाजाचे लक्षण आहे.सामाजिक विकासासाठी वाढत जाणारी साक्षरता ही महत्वपूर्ण असून भारतात शिक्षणाचा मूलभूत हक्क लागू झाल्या पासून साक्षरतेचे प्रमाण वाढत आहे. साक्षरतेचे प्रमाण वाढल्यामूळे व्यक्तिचा नागरी विकास, कौशल्यामध्ये वाढ होत आहे. मानवाचे जीवन उंचावत आहे. त्यामुळे आपले जीवन अधिक सुसह्य आरामदायी करण्याकडे मानवी कल वाढत आहे. यासाठी बौध्दिक संपादन प्राप्त करून नवीन तंत्रज्ञान विकसित होत आहे. शिक्षणाच्या जोरावर मानवाला आपल्यासमोर असलेल्या अनेक संधी योग्य प्रकारे निवडता येतात. शिक्षणाचा विकास होत गेला आणि कृषी क्रांती, औद्योगिक क्रांती आणि माहिती तंत्रज्ञान क्रांती घडून आली. माहिती तंत्रज्ञानाच्या क्रांतीमुळे शिक्षण क्षेत्रामध्ये अमूलाग्र बदल घडून आला.

भारतीय जनगणनेचा आढावा घेताना असे लक्षात येते की, भारतामध्ये साक्षरतेचे प्रमाण वाढत आहे. या सर्वांमध्येसुध्दा पुरूष साक्षरतेचे प्रमाण अधिक आहे मात्र सध्या स्त्रीयासुध्दा शिक्षण घेत आहेत, हे एक सुचिन्ह म्हणावे लागेल. जनगणना अहवालावरून असे लक्षात येते की, स्त्री-पुरूष साक्षरता यामधील अंतर यामधील आता कमी होत आहे ही परिस्थिती अशीच राहिल्यास निश्चितच देशात समाजाचा विकास होऊ शकेल. कारण एक सुशिक्षित स्त्री एका कुटुंबाचे जसे शिक्षण सुधारू शकते तसेच सामाजिक शैक्षणिक विकासात हातभार लावू शकते.

अभ्यासाचे उद्दिष्टे :

१. १९५१ ते २०११ दशकातील स्त्री-पुरूष साक्षरतेमधील अंतराचे विश्लेषण

अभ्यास पध्दती :

प्रस्तुत शोधनिबंध लिहिण्यासाठी दुय्यम तथ्य संकलन पध्दतीचा अवलंब करण्यात आला आहे. यामध्ये भारतीय जनगणना अहवाल, संदर्भ पुस्तके, इंटरनेट, मासिके इत्यादीचा वापर करण्यात आला.

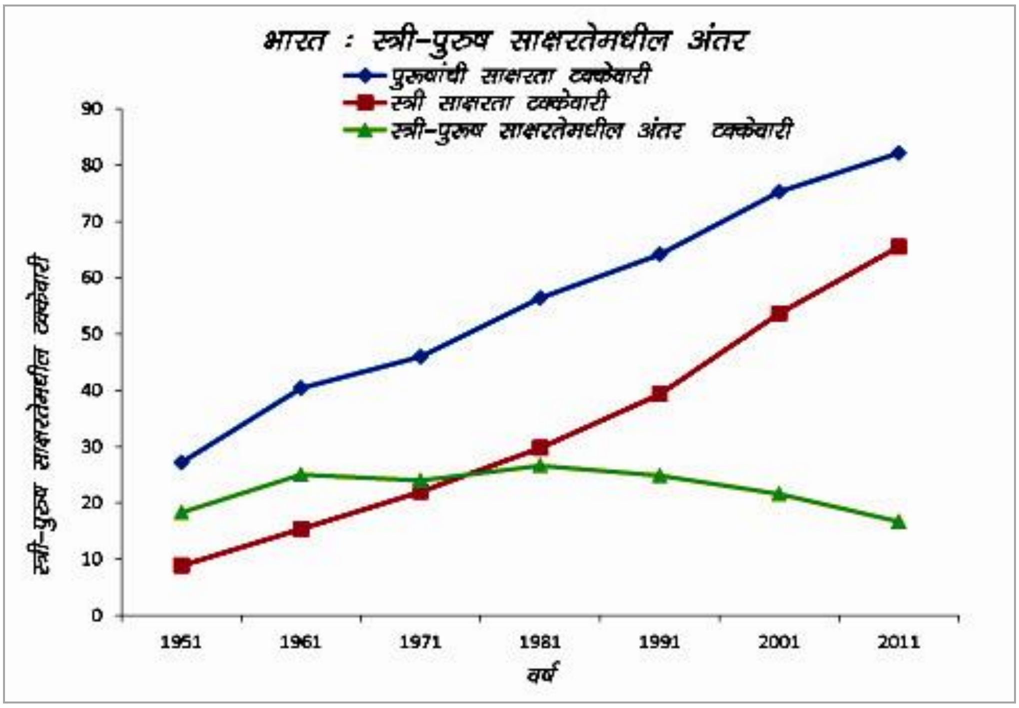
अभ्यास क्षेत्र :

भारताचा अक्षवृत्तीय विस्तार ८°४'२८" उत्तर अक्षवृत्त ते ३७°६'५३" उत्तर अक्षवृत्त आहे तर रेखावृत्तीय विस्तार ६८°७'३३" पूर्व रेखावृत्त ते ९७°२५'४७" पूर्व रेखावृत्त आहे. भारताचा क्षेत्रफळाच्या दृष्टीने जगात सातवा क्रमांक आहे. भारताचे एकूण क्षेत्रफळ ३२,८७,२६३ चौ.कि.मी. इतके आहे. भारताचे प्राकृतिक दृष्ट्या पाच भागात विभाजन केले आहे. उत्तरेकडील पर्वतीय प्रदेश, उत्तर भारतीय मैदानी प्रदेश, भारतीय द्विपकल्पीय पठारी प्रदेश, भारतीय किनारी मैदानी प्रदेश आणि भारतीय बेटे. भारताची एकूण लोकसंख्या १२१,०५,६६,५७३ (२०११ नुसार) तर लोकसंख्येच्याबाबतीत भारताचा जगात दुसरा क्रमांक लागतो.

भारतः साक्षरता दर (1951 & 2011)

जनगणना वर्ष	एकूण साक्षरता टक्केवारी	पुरूषांची साक्षरता टक्केवारी	स्त्री साक्षरता टक्केवारी	स्त्री-पुरूष साक्षरतेमधील अंतर टक्केवारी
१९५१	१८.३३	२७.१६	८.८६	१८.३०
१९६१	२८.३०	४०.४०	१५.३५	२५.०५
१९७१	३४.४५	४५.९६	२१.९७	२३.९८
१९८१	४३.५७	५६.३८	२९.७६	२६.६२
१९९१	५२.२१	६४.१३	३९.२९	२४.८४
२००१	६४.८४	७५.२६	५३.६७	२१.५९
२०११	७४.०४	८२.१४	६५.४६	१६.६८

स्त्रोत : भारतीय जनगणना अहवाल २०११



विषय विश्लेषण :

❖ स्वातंत्र्यप्राप्ती नंतरच्या जनगणनेचे विश्लेषण केले असता सन १९५१ मध्ये भारताची एकूण साक्षरता १८.३३% होती. स्त्री व पुरूष साक्षरता अनुक्रमे ८.८६% व २७.१६% होती. या साक्षरतेमधील अंतर १८.३०% इतके होते.

स्वातंत्र्यानंतर १९४७ साली भारत पाकिस्तानची फाळणी झाली यामध्ये लाखो लोक भारतात स्थलांतरीत झाले. यामुळे साक्षरता दरावर याचा परिणाम झाला.

❖ सन १९६१ साली एकूण साक्षरता २८.३०% इतकी होती, तर पुरूष साक्षरता ४०.४०% होती ती १९५१ च्या तुलनेत १३.२४% एवढी वाढझाली तर स्त्रीयांची साक्षरता १५.३५% असून ६.४९% ने वाढझाली. यामुळे स्त्री-पुरूष साक्षरतेमधील अंतर देखिल वाढत गेले व ते २५.०५% ईतके झाले.

❖ १९७१ साली भारताची एकूण साक्षरता ३४.४५% एवढी होती त्यात ४५.९६% पुरूष साक्षरता व २१.९७%स्त्री साक्षरता होती. साक्षरतेमधील अंतर १९५१-१९६१ सालपेक्षा १९६१-१९७१ या दशकात १.०६% ने कमी झाली.

सन १९६४-६६ साली कोठरी आयोगाने शिक्षणाच्या समान संधीचा आग्रह धरला आणि विविध बदल करण्यास सुचविले. त्याचा परिणाम म्हणून साक्षरतेचे प्रमाण वाढले. त्यामध्येसुध्दा स्त्री साक्षरतेचे प्रमाण मोठ्या प्रमाणात वाढले. व स्त्री साक्षरतेमध्ये वाढझाल्याचे दिसून येते.

❖ सन १९८१ मध्ये एकूण साक्षरता ४३.५७% तर पुरूष साक्षरता ५०% पेक्षा म्हणजेच ५६.३८% इतकी झाली ती १९७१ च्या तुलनेत १०.४२% नी वाढली. परंतु स्त्रीया व पुरूष साक्षरतेमधील अंतर २६.६२% इतके वाढले. ते १९७१ च्या तुलनेत २.२३% नी वाढली. मात्र या जनगणनेच्या अहवालामध्ये आसाम राज्याच्या साक्षरतेचा समावेश केला गेला नाही.

❖ १९८१-१९९१ या दशकात भारतात निम्म्यापेक्षा जास्त लोकसंख्या साक्षर होती. म्हणजेच भारताची साक्षरता १९९१ साली ५२.२१% तर पुरूष साक्षरता ६४.१३% व स्त्री साक्षरता ३९.२९% होती. स्त्री-पुरूष साक्षरतेमधील अंतर २४.८४% इतके होते.

प्रौढ शिक्षा अभियान, रात्रशाळा याशिवाय १९८६ साली राष्ट्रीय शैक्षणिक धोरण जाहिर करण्यात आले भारतीय घटनेच्या ४५ व्या कलमानुसार देशातील सर्व मुला-मुलींना वयाच्या १४ वर्षांपर्यंत शिक्षण देण्याची घटनात्मक जबाबदारी देण्यात आली व 'सक्तीचे प्राथमिक शिक्षण योजना' अस्तित्वात आली.

❖ २००१ साली भारताची एकूण साक्षरता ६४.८४% इतकी होती तर पुरूष साक्षरता एक तृतीअंशापेक्षा जास्त ७५.२६%झाली व स्त्री साक्षरता निम्म्यापेक्षा जास्त म्हणजेच ५३.६७% झाली. सन १९९१ च्या तुलनेत १४.३८% नी स्त्रीयांच्या साक्षरतेमध्ये अधिक वाढझाली. तर ३.२५%स्त्री-पुरूष साक्षरतेमधील अंतर कमी झाले.

❖ २००१-२०११ या दशकामध्ये भारताची जवळजवळ ७५% जनता साक्षर म्हणजेच ७४.०४% इतके नागरिक साक्षर होते. तर पुरूष साक्षरता ८२.१४% तर स्त्री साक्षरता ६४.४६% होते. २००१ च्या तुलनेत ४.९१% नी स्त्री-पुरूष साक्षरतेमधील अंतर कमी झाले व ते १६.६८% इतके झाले.

भारतातील शिक्षण क्षेत्रात अमूलाग्र बदल घडवून आणण्यासाठी वर्धा परिषद (१९३७), डॉ. राधाकृष्णन आयोग (१९४८-४९), डॉ. मुदलियार आयोग(१९५२-५३), श्री प्रकाश समिती (१९५९), डॉ. संपुर्णानंद समिती(१९६१), राष्ट्रीय शैक्षणिक धोरण (१९८६) या धोरणांचा आणि समित्यांचा खूप फायदा झाला आज भारतात स्त्री शिक्षणाचे प्रमाण जे वाढले आहे यातील प्रमुख धोरणच कारणीभूत आहेत. देशाच्या आणि पर्यायानेच समाजाच्या सर्वांगिण विकासाठी ही अत्यंत महत्वाची बाब मानावी लागेल.

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शाहूवाडी तालुक्यातील दुर्लक्षीत नांदारी गावाचा सुक्ष्म अभ्यास.

प्रा. सुनिल गुंगा भोसले* डॉ. डी.सी. कांबळे प्रा.सौ. अश्विनी भोसले***

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*** भूगोल विभाग, गोपाळकृष्ण गोखले कॉलेज, कोल्हापूर.

प्रस्तावना :-

नांदारी हे कोल्हापूर जिल्ह्यातील पन्हाळा व शाहूवाडी तालुक्याच्या सीमेवर शाहूवाडी तालुक्यामध्ये वसलेले आहे. या गावाची भौगोलिक स्थितीची पाहणी केली असता शाहूवाडी तालुक्याच्या दक्षिण भागात अतिषय दुर्गम भागात दऱ्याखोऱ्यामध्ये हे गाव वसलेले आहे. नांदारी ग्रामपंचायतीमध्ये विचारेवाडी व दोन धनगरवाड्यांचा समावेश होतो. २००१ च्या जनगणनेनुसार १२८२ इतकी लोकसंख्या व २१८ कुटूंबे आहेत. विकासाच्या बाबतीत विचार करता या ग्रामपंचायतीपैकी दोन धनगर वाड्यांमध्ये आज एकाही घरामध्ये विद्यूत पुरवठ्याची सोय नाही. यावरुन या गावच्या विकासाची कल्पना येऊ शकते.

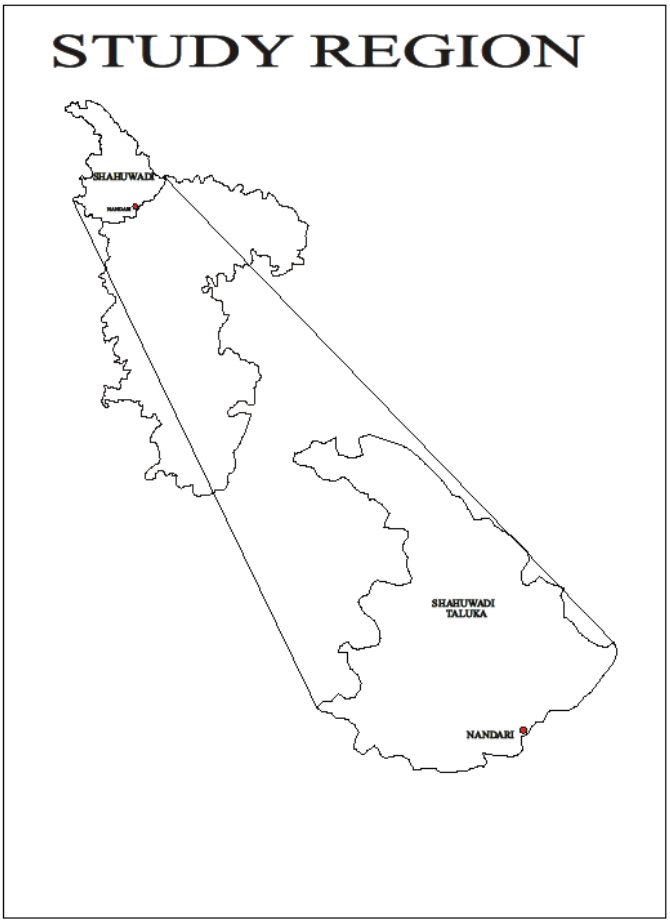
प्रस्तुत शोधनिबंधामध्ये नांदारी गावच्या शैक्षणिक, आर्थिक व सामाजिक स्थितीचा प्रामुख्याने अभ्यास केलेला आहे. या शोधनिबंधास आवश्यक सांख्यिकी सामग्री ही १००% सर्वेक्षणाच्या माध्यमातून संकलित केली आहे. तसेच पूर्व स्थितीच्या अभ्यासासाठी आवश्यक माहिती जनगणना अहवालातून (१९९१ व २००१) संकलित केली आहे. गावचा आराखडा व भौगोलिक स्थितीच्या अभ्यासासाठी GPS प्रणालीचा वापर करण्यात आला आहे. संशोधनाअंती असे निदर्शनास आले की आजही २१ व्या शतकामध्ये या ग्रामीण भागात पायाभूत सोई सुविधांचा वणवा आहे.तसेच शासकीय सोई सुविधा पासून दुर्लक्षीत आहे.

अभ्यासक्षेत्र

प्रस्तुत शोधबंधामध्ये कोल्हापूर जिल्ह्याच्या शाहूवाडी तालुक्यातील नांदारी या दुलक्षीत गावाच्या सुक्ष्म अभ्यास केला आहे .नांदारी हे गाव सह्याद्री पर्वताच्या पन्हाळा - विशाळगड डोंगररांगेमध्ये वसले आहे नांदारी गावचे अक्षवृत्तीय स्थान १६° ४७ '२३६" उत्तर व रेखावृत्तीय स्थान ७३° ५७' २७९" पुर्व आहे गावची समुद्र सपाटी पासूनची उंची ५८५ मीटर इतकी असून नांदारी व.पाझर तलावाच्या पायथ्याशी वसलेले आहे . प्रशासकीय दृष्ट्या नांदारी गावची स्वतंत्र ग्रामपंचायत असून या ग्रामपंचायती अंतर्गत विचारे वाडी व दोन धनगरवाड्यांचा समावेश होतो. ग्रामपंचायतीच्या एकूण ५८६ हेक्टर इतके अधिग्रहण कलेले क्षोत्र आहे. नांदारी व विचारेवाडी च्या सभोवतालच्या डोंगरांगा व घणदाट अरण्याने वेढलेले आहे .नांदारी गाव कोतोली -नांदगाव या तालुका मार्गावर असून या मार्गावरील हे शेवटचे टोक आहे.

उद्दिष्ट्ये -

१. भौगोलिक स्थान निश्चितीचा (GPS) माध्यमातून नांदारी,विचायवाडी व दोन धनगरवाड्याची भौगौलिक माहिती संकलित करुन प्रत्यक्ष आराखडा तयार करणे .
२. नांदारी ,विचारेवाडी व दोन धणगरवाड्यांच्या लिंग - गणोत्तरे व साक्षरतेचा अभ्यास करणे.
३. सर्वेक्षणाच्या माध्यमातून गावाच्या सामाजिक,आर्थिक व इतर समस्या जाणून घेणे आणि त्यावर उपाययोजना सुचवणे.



अभ्यासपध्दती :

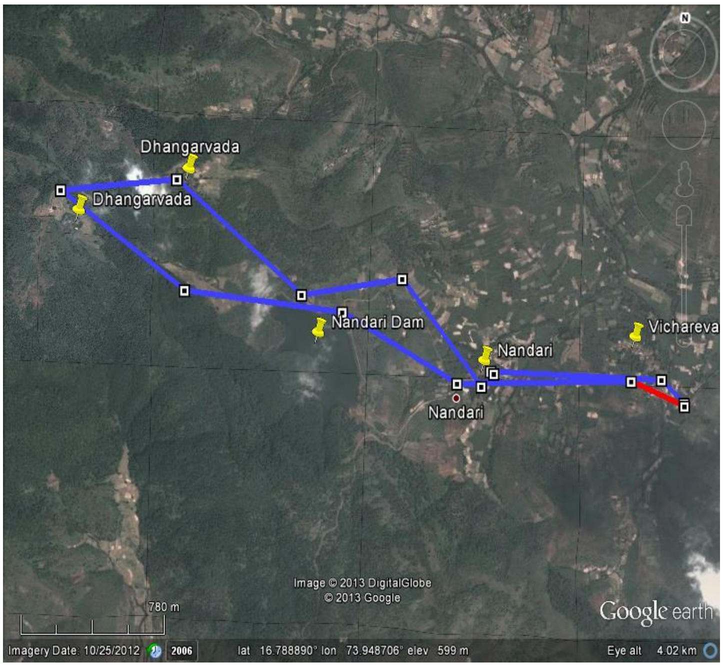
प्रस्तुत शोधनिबंधास आवश्यक दुय्यम स्वरुपाची सांख्यिकी सामग्री कोल्हापूर जिल्हा जनगणना अहवालात १९९१व २००१ च्या माध्यमातून संकुलीत केलेले आहे .२०१३ ची जनगणना व शैक्षणिक स्तर विषयक माहिती प्रश्नावलीच्या माध्यमातून मिळवली आहे. २०१३ ची जनगणना व शैक्षणिक स्तर विषयक माहिती प्रश्नावलीच्या माध्यमातून मिळवली आहे. नांदारी, विचारेवाडी व दोन धनगरवाड्यांचे १००% सर्वेक्षण केले आहे. सदर ग्रामपंचायतीअंतर्गत नांदारी, विचारेवाडी व दोन धनगरवाड्यांच्या आराखडा व भौगोलिक स्थान सदर्भात माहिती GPSच्या माध्यमातून रेखाटलेली आहे .

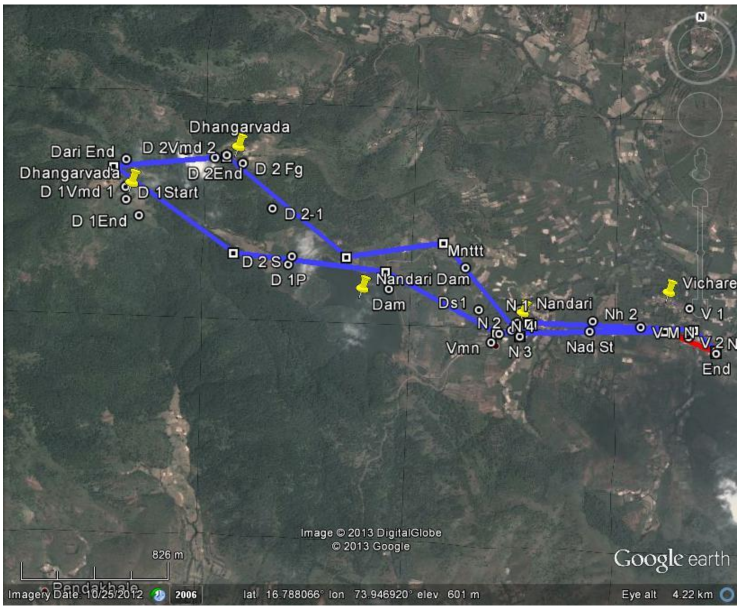
नांदारी गावची भौगोलिक स्थिती :-

नांदारी ग्रामपंचायत ही प्रशासकीय दृष्टया शाहुवाडी पन्हाळा तालुक्याच्या सिमेवर शाहुवाडी तालुक्यामध्ये वसले आहे ग्रामपंचायती अंतर्गत नांदारी गावासह विचारेवाडी व दोन धनगरवाड्यांचा समावेश होतो. भौगोलिक दृष्ट्या नांदारी हे गाव नांदारी पाझर तलावाच्या पायथ्याशी वसलेले आहे. जी.पी.एस च्या माध्यमातून या गावच्या निरपेक्ष स्थानाची मोजणी केली. नांदारी हे गाव १६ ४७ २३६ उत्तर अक्षवृत्त ते ७३ ५७ २७९ पूर्व रखावृत्तावर समुद्रसपाटीपासून ५८५.८२ मीटर उंचीवर वसलेले आहे. ग्रामपंचायतीअंतर्गत विचारेवाडी १६ ४७ १८३ उत्तर अक्षवृत्त ते ७३ ५७ ९३२ पूर्व

रेखावृत्तावर समुद्रसपाटीपासून ५६२ मी उंचीवर वसलेले आहे. धनगरवाडा क्र. १ हे १६ ४७ ५७१ उत्तर अक्षवृत्त ते ७३ ५६ ०४६ पूर्वरेखावृत्त समुद्रसापाटीपासून ७१६.५८ मीटर उंचीवर वसलेले आहे. तसच धनगरवाडा क्र. २ १ हे १६ ४७ ७१२ उत्तर अक्षवृत्त ते ७३ ५६ ०४६ पूर्वरेखावृत्त समुद्रसापाटीपासून ७२६.९४ मीटर उंचीवर वसलेले आहे.

यावरुन अशी कल्पना येते की, विचारेवाडी डोंगररांगांच्या पायथ्याला व धनगरवाडा क्र. २ हा सापेक्षदृष्ट्या उंचीवर घनदाट जंगलामध्ये वसलेला आहे. तसेच धनगरवाडा क्र. १ हा समुद्रसपाटीपासून ७१६.५८ उंचीवर वसलेला आहे.





ग्रामपंचायत नांदारी गावचे लिंगगुणोत्तर व साक्षरतेचा अभ्यास

लिंग गुणोत्तर १९९१-२०१३

तक्ता क्र. १ लिंग गुणोत्तर

वर्ष	गाव	लिंग गुणोत्तर
१९९१	नांदारी ग्रामपंचायत	९७
२००१	नांदारी ग्रामपंचायत	९६
२०१३	नांदारी ग्रामपंचायत	९०
२०१३	नांदारी	८६
२०१३	विचारेवाडी	८८
२०१३	धनगरवाडा क्र. १	१२२
२०१३	धनगरवाडा क्र. २	८८

(टिप :- दर १०० पुरुषामागे)

''लिंग गुणोत्तर दर हजारी पुरुषांमागे असणारे स्त्रियांचे प्रमाण लिंग गुणोत्तर '' भारतामध्ये हे प्रमाण दर हजारी पुरुषामागे मोजतात. परंतु जगातील इतर देशामध्ये हे प्रमाण दर १०० पुरुषामागे मोजले जाते. प्रस्तुत शोधनिबंधामध्ये ग्रामीण भागातील लोकसंख्या १००० किंवा त्यापेक्षा थोड्या आधिक अंतराने असल्याने हे प्रमाण दर १०० पुरुषांमागे मोजले आहे. कोल्हापूर जिल्ह्याचे दर १०० पुरुषांमागे हे प्रमाण २००१ (९५) व २०११ (९६) इतकी होती. अभ्यासक्षेत्रामध्ये १९९१ ला १९९७ ला २००१ ला १९९६ ला २०१३ ला हे प्रमाण ९० इतके असल्याची नोंद झाली. त्यावरुन असे निदशनास येते की, आपल्या क्षेत्रातील नांदारी ग्रामपंचायतीचे लिंग गुणोत्तर हे झपाट्याने कमी होत आहे.

नांदारी ग्रामपंचायतीच्या अंतर्गत केलेल्या सर्वेक्षणातून असे निदशनास आले की, २०१३ ला नांदारी गावचे दर १०० पुरुषामागे स्त्रियांचे प्रमाण ८६, विचारे वाडी ८८, धनगरवाडा क्र.२ ८८ व धनगरवाडा क्र.१ १२२ इतके आढळते. वरील सर्वेक्षणाअंती असा निष्कर्ष काढता येतो की, जिल्ह्याच्या एकूण लिंग गुणोत्तरापेक्षा या ठिकाणी धनगरवाडा क्र. २ वगळता (८८) इतका आहे. म्हणजेच हे स्त्रि-पुरुषांचे प्रमाण जिल्ह्याच्या सरासरीपेक्षा कमी आढळते.

सरासरी साक्षरता १९९१ ते २०१३

तक्ता क्र. २ साक्षरता

वर्ष	गाव	साक्षरता		
		एकूण	पुरुष	स्त्रिया
१९९१	नांदारी ग्रामपंचायत	४५.२७%	५७.८८%	३२.४१%
२००१	नांदारी ग्रामपंचायत	५२.५८%	६९.३०%	३५.८९%
२०१३	नांदारी ग्रामपंचायत	४४.३२%	५२.३८%	३४.९४%
२०१३	नांदारी	४१.८८%	४८.८६%	३४.०४%
२०१३	विचारेवाडी	३६.७९%	४४.७९%	२७.४२%
२०१३	धनगरवाडा क्र. १	५६.७०%	६०.७१%	३०.४३%
२०१३	धनगरवाडा क्र. २	४८.६४%	६५.६२%	३५.७१%

साक्षरता हा सामाजिक विकासातील एक महत्वाचा निर्देशांक म्हणून गणला जातो. देश / राज्य आणि एकूणच तालुका पातळीपर्यंत साक्षरतेमध्ये जनगणना अहवालाच्या आकडेवारीनुसार साक्षरतेमध्ये वाढ होत असल्याचे निदर्शनास येते. कोल्हापर जिल्ह्याची १९९१ ला ७६.९३ टक्के तर २००१ ला ८२.९० टक्के इतकी साक्षरता होती. नांदारी ग्रामपंचायतीची १९९१ ला जनगणना अहवलानुसार एकूण साक्षरता ४५.२७ टक्के २००१ ला ५२.९८ तर २०१३ ला प्रत्यक्ष सर्वेक्षणानुसार ४४.३२ टक्के इतकी साक्षरतेची नोंद झाली आहे यावरुन असा निष्कर्ष काढता येतो की, जनगणना अहवालानुसार १९९१ ते २००१ पर्यंत साक्षरतेच्या प्रमाणामध्ये वाढ होत असल्याचे आढळते. परंतु प्रत्यक्ष सर्वेक्षण केलेल्या अहवालातून मात्र या साक्षरतेच्या प्रमाणामध्ये घट होत असल्याचे निदर्शनास येते.

नांदारी ग्रामपंचायती अंतर्गत प्रत्यक्ष केलेल्या सर्वेक्षणानुसार (२०१३) नांदारी गावची साक्षरता ४१.८८ विचारेवाडी ३६.७९ धनगरवाडा क्र. १ ५६.७०, व धनगरवाडा क्र. २ ४८.६४ टक्के इतकी नोंदविली गेले. यावरुन असे निदर्शनास येते की, जिल्हा / तालुका पातळीवर साक्षरतेमध्ये वाढ होत असली तरी ग्रामीण स्तरावर अजुनही निम्म्यापेक्षा आधिक लोक निरक्षर असल्याचे पाहावयास मिळते.

निष्कर्ष :-

१) अभ्यास क्षेत्राअंतर्गत नांदारी ग्रामपंचायतीचे स्त्री पुरुष प्रमाण हे दिवसेंदिवस कमी होत असल्याचे आढळते. १९९१ मध्ये दर १०० पुरुषामागे हे प्रमाण ९७ तर २०१३ ला हे प्रमाण ९० इतके आढळते.

२) नांदारी ग्रामपंचायती अंतर्गत असणाऱ्या गावामधील नांदारी तसेच विचारेवाडी या दोन गावांची स्त्री पुरुष प्रमाण हे धनगरवाड्यावरील स्त्री पुरुष प्रमाणापेक्षा कमी असल्याचे आढळते. दर १०० पुरुषांमागे विचारेवाडी मध्ये ८८ तर धनगरवाडा क्र. १ मध्ये हे प्रमाण १२२ आढळते.

३) जनगणनना अहवालनुसार १९९१ ते २००१ नांदारी ग्रामपंचायतीच्या साक्षरतेमध्ये वाढ होत असल्याचे निदर्शनास आले. ही साक्षरता १९९१ ला ४५.२७ तर २००१ ला ५२.९८ इतकी होती.

४) प्रत्यक्ष केलेल्या सर्वेक्षणानुसार (२०१३) नांदारी ग्रामपंचायतीची साक्षरता ४४.३२ टक्के इतकी निदर्शनास आली. हीच साक्षरता जनगणना २००१ च्या सर्वेक्षण अहवालानुसार ५२.९८ इतकी होती. म्हणजेच प्रत्यक्ष सर्वेक्षण व जनगणना अहवालानुसार आलेल्या साक्षरतेच्या टक्केवारीमध्ये तफावत असल्याचे आढळते.

समस्या :-

१) नांदारी गावापर्यंत रस्ते वाहतुकीची सोय उपलब्ध असून दोन धनगरवाड्यामध्ये अजुनही जनावरांच्या पायवाटेने ५ कि.मी पर्यंत जंगलातून चालत जावे लागते.

२) कोल्हापूर सारख्या प्रगत जिल्ह्यामध्ये आजही नादारी ग्रामपंचायती अंतर्गत दोन धनगरवाडे विद्युत पुरवठ्यापासून वंचित आहेत.

३) नांदारी ग्रामपंचायती अंतर्गत चार गावामध्ये सातवी पर्यंत शिक्षणाच्या सोई सुविधा उपलब्ध आहेत तसेच धनगरवाड्यामध्ये चौथी पर्यंत शिक्षणाची सोय आहे.

४) नांदारी ग्रामपंचायती अंतर्गत चारही गावामध्ये वैद्यकीय सोई सुविधा उपलब्ध नाहीत.

उपाययोजना :-

१) दोन धनगर वाड्यांमध्ये सौर दिव्यांच्या माध्यमातून विद्यूत पुरवठा उपलब्ध करुन द्यावा.

२) एकाकी असणाऱ्या दोन धनगरवाड्यांना रस्ते जोडण्यासाठी पंतप्रधान ग्रामीण सडक योजने अंतर्गत रस्ते व्हावेत.

३) सातवी पासून पुढे शिकणाऱ्या विद्यार्थ्यांना जवळ असणाऱ्या ठिकाणी जाण्यासाठी वाहतुकीच्या सोई उपलब्ध करुन द्याव्यात. नवीन योजनेअंतर्गत विद्यार्थ्यांना सायकल उपलब्ध करुन द्याव्यात.

४) वैद्यकीय सोई सुविधांसाठी प्राथमिक आरोग्य केंद्राची सुविधा उपलब्ध करुन द्याव्यात.

संदर्भ :-

१) कोल्हापूर जिल्हा जनगणना अहवाल१९९१ ते २००१

२) मानवी भूगोल - डॉ. प्रकाश सावंत.

३) लोकसंख्या भूगोल - के.ए.खतीब

४) मानवी भूगोल - माजिद हुसेन

५) भूगोलाची मुलतत्वे खंड २ - सवदी व कोळेकर

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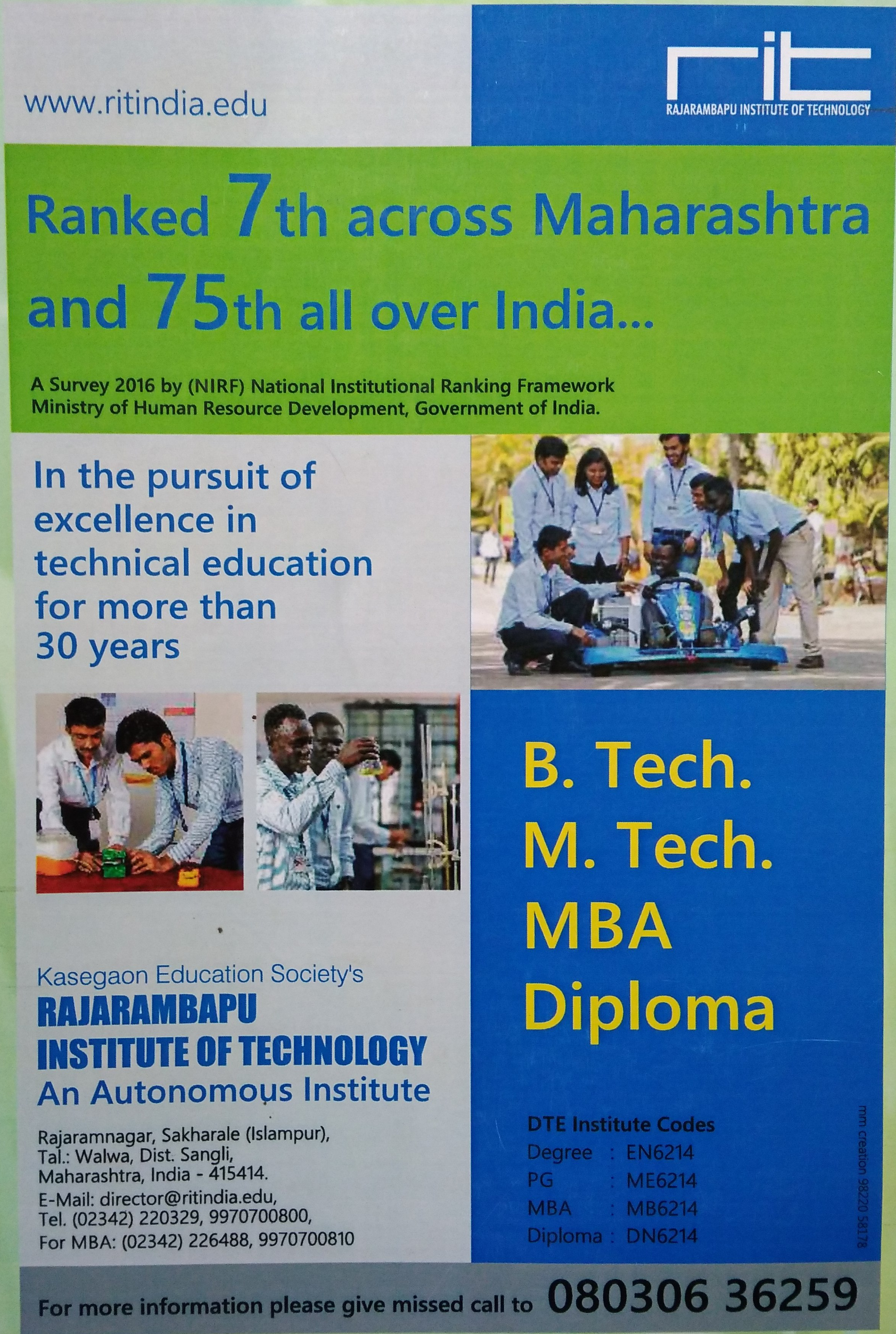

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