

Gopal Krishna Gokhale

**Gokhale Institute
of Politics and
Economics**

(Deemed to be University)
Pune - 411 004

AERC Report



**Agro-Economic
Research Centre
(AERC)**

Dynamics and Revival of Fallow Land in Maharashtra

**Sangeeta Shroff
Jayanti Kajale**



February 2018

**Submitted to
Department of Agriculture, Cooperation and Farmers Welfare
Ministry of Agriculture and Farmers Welfare
Government of India**

Dynamics and Revival of Fallow Land in Maharashtra

Sangeeta Shroff

Jayanti Kajale



Agro-Economic Research Centre
Gokhale Institute of Politics and Economics
(Deemed to be University)
Pune-411004

February 2018

Tel: 020-25650287; Fax: 020-25652579
Email: sangeetashroff@hotmail.com, jayantigk@hotmail.com

Foreword

Studies on land use pattern have drawn considerable attention, especially since land is a limited resource. Its proper utilization in an economy which is mainly agricultural therefore merits attention. However, in the recent past, it is observed that “fallow land” as well as “current fallows” is a cause of concern as this share in the land utilization pattern shows a rising trend. The Ministry of Agriculture and Farmers’ Welfare, New Delhi, therefore sponsored a study on “Dynamics and Revival of Fallow Land” in order to study the reasons why farmers keep the land fallow and how this issue could be resolved.

The study was confined to the districts of Ahmednagar and Osmanabad in the state of Maharashtra. Taking across both districts, uncertainty in rainfall emerged as the major reason for farmers leaving their land fallow. Ahmednagar district lies in the rain shadow region and the average rainfall is about 560 mm. By and large Ahmednagar falls in the scarcity zone and agriculture is mainly rainfed. Farmers are also resource poor and do not have access to credit. Also part of the district has land which is mountainous and farmers are unable to use the land for cultivation.

In Osmanabad, a large number of farmers felt reported that their land was water logged and hence could not use it for cultivation. Farmers use fertilizers but due to failure of monsoons, the fertilizer is not absorbed in the soil and hence causes water logging. Failure of monsoons also inhibits ground water from being recharged and having no source of water, the farmers keep the land fallow. Repeated crop failures put the farmer in a debt trap and they have no resources to invest in agriculture.

In view of the above, the main policy issue to be addressed was to promote watershed strategies. The study will be useful to policy makers, academicians and researchers. I thank Prof Sangeeta Shroff and Prof Jayanti Kajale for undertaking the study.

Gokhale Institute of Politics and Economics,
(Deemed to be University Under section 3 of the
UGC Act, 1956),
Pune -411004

Rajas Parchure, Professor and Officiating
Director,
February , 2018

Acknowledgements

The study “Dynamics and Revival of Fallow Land in Maharashtra” was conducted by the Agro-Economic Research Centre of the Gokhale Institute of Politics and Economics, Pune, at the initiative of the Ministry of Agriculture and Farmers’ Welfare, Government of India, New Delhi. We therefore thank Shri P.C. Bodh and Shri Rakesh Kumar for their cooperation at every level in conducting this study. Before, commencing the work, two workshops were held at the Institute of Economic Growth, Delhi, to finalize the research proposal and field survey. I therefore thank Prof Brajesh Jha, Dr. Thiagu and the entire team at IEG for their valuable suggestions. Prof Nilibja Ghosh did a painstaking job of going through the study and making valuable suggestions. We therefore sincerely thank her for her sincere efforts which greatly helped the study to take shape.

We thank Prof Rajas Parchure, Officiating Director, Gokhale Institute of Politics and Economics, Pune, for providing us the opportunity to undertake this study and necessary cooperation. I also thank the Offg. Registrar and Library staff for full support while undertaking this study.

Shri P Lonare, State Agriculture Officer in Ahmednagar district as well as Taluka Agricultural Officers Shri Supekar of Karjat Taluka and Shri Darkunde, V.B. of Shrigonda taluka provided useful data and also helped in field survey. In Osmanabad district, Shri Jamdade (State Agricultural Officer) and Shri G.J. Sherkhane (TAO, Washi) and Shri Deshmukh (TAO, Osmanabad) facilitated field survey and provided all necessary support. The District Statistical Officers also provided data required for the study.

Last but not the least my thanks are to Shri Dete and Shri Anil Memane for data collection and tabulation.

Gokhale Institute of Politics and Economics,
(Deemed to be University Under section 3 of the
UGC Act, 1956),
Pune -411004

Sangeeta Shroff & Jayanti Kajale

February , 2018

Executive Summary

Backdrop:

The Net Sown area which hovers around 140.7 million hectares shows decline in certain years with a corresponding increase in current fallows. This decline in NSA and increase in current fallow may possibly be due to severe drought conditions. Besides rainfall, there may be other factors responsible for farmers to leave their land fallow. However, when farmers leave their land fallow, it is a cause of concern as it may threaten their livelihood and contribute to decline in agricultural production. Land is a limited resource and leaving it fallow can serve as a threat to production of major crop and livelihood of farmers.

The time series data on land use pattern in Maharashtra revealed that out of the geographical area of 30.75 million hectares the share of fallow land other than current fallows as well as current fallow is increasing over the years. While fallow land other than current fallow was 9.98 lakh hectares in 1980-81, it increased by 19 percent in 2014-15. The picture with respect to current fallows is even more alarming. While current fallows were 8.5 lakh hectares in 1980-81, the figure increased by 63 percent in 2014-15. Total fallow land which was 6 percent of geographical area in 1980-81 increased to 8.5 percent of geographical area.

Objectives and Methodology:

It is clear that in Indian agriculture, land has ceased to be a source of growth and technology can be the main driver for increasing agricultural production. However, while there is limited scope to increase Net Sown Area, one way of increasing it, is by bringing fallow land under cultivation. Accordingly, a study has been undertaken to observe the trends in fallow land and main causes why the farmers are leaving this land uncultivated. The study is related to the state of Maharashtra. More specifically, the main objectives of the study are:

1. To observe the trends related to area under fallow land, both current and permanent in the state of Maharashtra;
2. To observe the reasons which compel the farmers to keep the land fallow;
3. To suggest policy implication based on the data analysis.

Osmanabad which had highest share of fallow land in geographical area not only in Marathwada but also in Maharashtra (23.77 percent) was selected for primary survey. The next choice of district was Ahmednagar in Pune division which had 14.31 percent of fallow land as percentage of geographical area. Out of total fallow land in Ahmednagar district, the share of current fallow was 62.03 percent while that of other fallow was 37.97 percent. This high share of current fallow is a cause of concern in Ahmednagar as it is showing an increasing trend over the years. The current fallow which was 87700 hectares in 1994-95 increased 1.6 times in 2004-05 and is presently 151100 hectares. Hence Ahmednagar district was selected.

The talukas selected were those having more or less highest share in total fallow land in each selected district. After selecting the talukas, the next step was to select the villages. Discussion with officials at the taluka headquarters and observing the data on villages where there was concentration of fallow land, two villages from each taluka were selected. Thus in each district 4 villages were selected and the entire primary survey involved 8 villages. From each of the four households, 15 households were selected in such a way that the sum of the current fallow land of the selected village added to atleast 15 hectares. Thus in all 120 households were surveyed.

Findings:

The major findings of the study are:

- The Net Sown Area in Maharashtra which was 58.5 percent of geographical area in 1980-81 increased to around 60 percent in 1989-90 but has been around 56.5 percent since 2001-02.
- Fallow land however did show some increase from 6 percent of geographical area in 1980-81 to 8.4 percent in the post 2000 period.
- During the period 1980-81 to 2014-15, fallow land other than current fallow grew at a rate of 1.96 percent p.a. while the growth rate of current fallow was 5.58 per cent p.a. Hence area under fallow land is showing an increase and is a cause for concern.
- The share of fallow land showed a marked increase in selected districts of Osmanabad and Ahmednagar but was particularly high in Osmanabad. The fallow land which was 7.02 percent of geographical area in TE 1989-91 increased to 13.74 percent in 2013-2015 in Ahmednagar district, i.e increase of 96 percent. The corresponding increase in

Osmanabad was from 7.74 percent to 21.78 percent or increase of 181 percent. Current fallows showed more increase as compared to other fallow.

- It was observed from field survey that the average fallow land among the 120 sample farmers was 3.09 acres. In case of small and marginal farmers the extent of fallow land was about 48 percent of their average land holding size while in case of medium and large it was about 37 percent. This indicates that marginal and small farmers left a larger share of their land as fallow.
- In Osmanabad it was observed that little more than half the area is under foodgrains and average across all size groups was 53.09 percent with 32.16 percent under cereals and 20.93 percent under pulses. Soyabean was an important crop with a share of 23 percent for small and marginal farmers and 21.81 percent across all size groups. In case of cotton the average share across all size groups was 9.69 percent.
- In Ahmednagar, it was observed that cereals constitute more than 80 percent of area and among cereals, the dominant crop was rabijowar with a share of 42.67 percent in total area across all size groups. Fruits and vegetables had a share of 14.29 percent across all size groups.
- The share of soyabean in the overall cropping pattern across all size groups was 9.94 percent while that for cotton was 4.67 percent. Cotton was cultivated in Osmanabad but did not feature in the talukas selected in Ahmednagar.
- Data on indebtedness among farmers in Osmanabad showed that 93.3 percent of farmers had outstanding loan. The amount of loan of large households was twice that of small and marginal households. The data showed that across all size groups, 96.14 percent had taken loan from institutional sources and 87 percent had availed of it for productive purposes.
- In Ahmednagar, it was observed that 45 farmers out of a 60 or 75 percent had outstanding loan. The loan taken by large farmers was the largest amount and was 1.65 times the average of all categories while in case of small and marginal it was 1.5 times the average of all categories. It was relatively smaller in case of semi medium and medium category. The data also reveal that 92.87 percent of farmers overall size categories took loan from institutional sources and 90 percent used it for productive purposes.
- In Osmanabad, it was observed that other than lack of resources such as water or credit, shocks in personal life proved to be an important reason for land to be left

fallow. It is now quite well known that Marathwada area in Maharashtra is experiencing rapid increase in suicides among farmers. Discussion with some farmers in the sample revealed that after the death or illness of the main person who undertook farming decisions, other members were finding it difficult to continue with agriculture. They were not in a position to make any decision and the immediate reaction was to keep the land fallow.

- Uncertainty in rainfall was also an important reason as most farmers do not have access to protective irrigation. Farmers also often do not access to credit and thus are forced to keep the land fallow. Other important reasons is that the land is close to forest area or mountain and not easily accessible to the farmer. Weed infestation and surface run off were also reasons for keeping land fallow.
- Many times farmers have to keep the land fallow for the purpose of crop rotation. Hence this was also an important reason for land to be kept fallow.
- In Ahmednagar district, the highest rating for leaving the land fallow was that the plot was close to the mountain. Hence the topography of the district is such that farmers leave the land fallow. However, lack of access to credit was also rated high as well as water shortage. Farmers also leave land fallow for the purpose of crop rotation.
- Taking across both districts, the highest rating was for uncertainty in rainfall. Ahmednagar district lies in the rain shadow region and the average rainfall is about 560 mm. By and large Ahmednagar falls in the scarcity zone and agriculture is mainly rainfed. Farmers are also resource poor and do not have access to credit. Also part of the district has land which is mountainous and farmers are unable to use the land for cultivation.
- In Osmanabad, the frequency distribution on reasons for farmers leaving their land fallow indicated that maximum number of farmers felt that their land was water logged and hence could not use it for cultivation. Farmers use fertilizers but due to failure of monsoons, the fertilizer is not absorbed in the soil and hence causes water logging. Failure of monsoons also inhibits ground water from being recharged and having no source of water, the farmers keep the land fallow. Repeated crop failures put the farmer in a debt trap and they have no resources to invest in agriculture. Hence 55.77 percent of farmers revealed that lack of access to credit is also a reason for keeping land fallow.

- In Ahmednagar district it was first of all observed that all farmers responded to the two questions which related to lack of assured irrigation and uncertainty in rainfall. The frequency distribution indicated that this was considered to be an important reason for land to be kept fallow. Out of 33 farmers, about half stated that their land was left fallow for crop rotation. Farmers also sometimes do not have access to credit and hence keep land fallow.
- With respect to overall picture, uncertainty in rainfall had the highest number of respondents as being the reason for land to be left fallow. Farmers also left land fallow for the purpose of crop rotation. This however is useful in order to prevent the soil from depleting and maintaining the soil health.
- In order to obtain qualitative data discussions were held with officials which revealed that the main reason for fallow land was less rainfall. In some cases, the land was of very poor quality and hence not suitable for cultivation. However, the village authorities revealed that the land left fallow could be used for grazing cattle. It was also stated that if water is available, it is possible to use the land for soyabean, jowar, bajra, pulses and cotton. However, since there is scarcity of water leading to land being left fallow, the villagers migrate to urban areas to seek some employment. While migration was not common in the past, it was stated that atleast 10 to 15 percent of the population is likely to migrate over the next five years.
- In case of weather, the village officials revealed that not only was there decrease in rainfall, it was also often untimely and delayed. Hence farmers have to delay sowing or in some cases, if sowing took place, the seed did not germinate. This increased cost of cultivation. Untimely rain led to pests and diseases which reduced yield and increased cost of cultivation. Farmers were also faced with shortage of labor which was not easily available. Another major problem faced by farmers was low price which was sometimes not even able to cover their cost of production. Due to poor rainfall, the farmers suffered a yield loss and this was coupled with unfavourable price. Hence farmers earned negative income. If in a certain year, there was good rainfall and bumper production, there was drastic fall in price. If the price of the crop fell below minimum support price, the state agencies were not active in picking up the produce or rejected it on grounds of quality. Hence overall the village officials felt that farming is unremunerative and the socio-economic condition is worsening over the years.

- It was revealed that the land that is fallow can be suitable for horticultural crops. Some horticultural crops such as ber, custard apple (sitaphal), pomegranate, and drought prone horticultural crops can survive well with less water and fallow land can be used for such crops.
- Thus overall it can be observed that poor rainfall and water scarcity is a major reason for land being left fallow. Besides, in some villages, the land is hard and rocky and hence not found suitable for cultivation. Leaving land fallow is thus reducing the potential income of farmers and having negative impact on their socio-economic conditions.

Policy Implications:

- Low rainfall and its uncertainty was an important reason for farmers keeping land fallow. Watershed strategies must therefore be promoted so that fallow land can be cultivated.
- Several farmers reported that they had no access to credit as they were defaulters in payment of loan and hence not entitled to a fresh loan. They were thus forced to leave the land fallow. Micro finance and membership of Self Help Groups can therefore be another source of finance to enable them to meet their credit needs atleast for crop loan and other small purposes.
- Government of Maharashtra implemented and promoted schemes such as EHS linked Horticulture Development to utilize cultivable waste area. Similar schemes should be implemented so that farmers are able to cultivate barren pieces of land/ rocky land/ hilly land left fallow due to lack of expertise in farming.
- Extension machinery of the state government must be strengthened so that farmers get training to cope up with water logged areas, land infested with weeds, soil erosion, etc.

Overall, if farmers are able to cultivate their fallow land, it will help to supplement their incomes and also make optimum use of land which is a scarce resource.

Contents

		Page No.
Forward		i
Acknowledgements		ii
Executive Summary		iii-viii
Contents		ix-x
List of Tables		xi-xii
List of Appendix Tables		xii
List of Graph		xii
Chapter 1: Introduction		1-5
1.1	Introduction	1
1.2	Review of Literature	2
1.3	Relevance of the study	4
1.4	Objectives of the Study	5
1.5	Chapter Scheme	5
Chapter 2: Methodology, Concepts and Definitions		6-18
2.1	Concepts and definitions	6
2.2	Methodology	8
2.3	Study Area	8
2.4	Sampling Framework	9
2.5	Selection of Sample	9
2.5.1	Selection of Districts	9
2.5.2	Selection of Talukas	16
2.5.3	Selection of Villages	17
2.5.4	Selection of Households	18
Chapter 3: Extent of Fallow Land in Maharashtra		19-27
3.1	Land Use Pattern of Maharashtra :	19
3.2	Land Use Pattern in Selected Districts:	22
Chapter 4: Results of Primary Survey		28-62
4.1	Socio-Economic Characteristics	28
4.2	Category wise composition of Income :	29
4.3	Indebtedness among farmers	32
4.4	Details of Irrigation Assets	34
4.5	Cropping Pattern of Sample Farmers	37
4.6	Extent of fallow land among sample farmers	40
4.7	Reasons for farmers leaving land fallow	41
4.7.1	Rating of Reasons for land being left fallow	41
4.7.2	Frequency Distribution of Reasons for land to be left fallow	46

		Page No.
4.8	Perception of Village Authorities on fallow land in the village and its potential use	53
Chapter 5: Conclusion and Policy Implications		59-64
5.1	Backdrop	59
5.2	Major findings	60
5.2.1	Findings from secondary data	60
5.2.2	Findings from Field Survey	60
5.3	Policy Implications	64
References		65
Appendix Tables		66-69
Action Taken Report		70

List of Tables

Table No.	Table Title	Page No.
Table 2.1	Selected Districts and Blocks along with number of farmers sampled	9
Table 2.2	District –Wise Share of Fallow land in Geographical Area, NSA and GCA of Maharashtra	10
Table 2.3	District wise Percentage share in Total (Current and Other Fallow) Fallow land	12-13
Table 2.4	Share of Current and Other Fallow In Each District of Maharashtra	14-15
Table 2.5	Talukawise share (Ahmednagar district) in Geographical area and taluka wise share of fallow land in its Geographical area	16
Table 2.6	Talukawise share (Osmanabad district) in Geographical area and taluka wise share of fallow land in its Geographical area	17
Table 2.7	Selection of sample according to category of farmers	18
Table 3.1(a)	Land use Pattern of Maharashtra (00 hectares)	20
Table 3.1(b)	Land use Pattern of Maharashtra (Percentage to geographical area)	21
Table 3.2	Compound Annual Growth Rate(percent p.a) for different categories of land use in Maharashtra	22
Table 3.3(a)	Land Use Pattern of Sample Districts (00 hectares)	23
Table 3.3(b)	Land Use Pattern of Sample Districts (Percent)	23
Table 3.4	Features of Selected Districts and State over the Period of 1990-91,2000-01, and 2010-11	24
Table 3.5	Cropping Intensity in Selected Districts and Maharashtra	25
Table 3.6	Irrigated Area (Source wise) in Each District of selected State (00 Hectares)	26
Table 3.7	Trends in Rainfall (mm) in Maharashtra	26-27
Table 4.1	Socio-Economic Characteristics	29
Table 4.2a	Category wise Composition of total income of the households Osmanabad(in Rs)	30
Table 4.2b	Category wise Composition of total income of the households Ahmednagar	31
Table 4.2c	Category wise Composition of total income Overall households	32
Table 4.3a	Indebtedness among farmers Osmanabad	33
Table 4.3b	Indebtedness among farmers Ahmednagar	33
Table 4.3c	Indebtedness among Overall farmers	33
Table 4.4a	Details of Irrigation AssetsOsmanabad	34
Table 4.4b	Details of Irrigation Assets Ahmednagar	35
Table 4.4c	Details of Irrigation Assets of Overall farmers	35
Table 4.5a	Information on land used for cultivation Osmanabad	36
Table 4.5b	Information on land used for cultivation Ahmednagar	36
Table 4.5c	Information on land used for cultivation Overall	37

Table No.	Table Title	Page No.
Table 4.6(a)	Cropping Pattern of Sample Farmers Osmanabad (Area hectares)	38
Table 4.6(b)	Cropping Pattern of Sample Farmers Ahmednagar (Area hectares)	39
Table 4.6(c)	Cropping Pattern of Sample Farmers Overall (Area hectares)	40
Table 4.7	The extent of Fallow land of sample farmers	41
Table 4.8(a)	Reasons for land being left fallow [Osmanabad]	43
Table 4.8(b)	Reasons for land being left fallow Ahmednagar	44
Table 4.8(c)	Reasons for land being left fallow Overall	45
Table 4.9(a)	Reasons for land being left fallow ; Frequency Distribution of number of Responses - Osmanabad	47
Table 4.9(b)	Reasons for land being left fallow ; Frequency Distribution of number of Responses Ahmednagar	48
Table 4.9(c)	Reasons for land being left fallow Frequency Distribution of number of Responses Overall	49
Table 4.10(a)	Perception of Village Authorities on Fallow land (Osmanabad)	55-56
Table 4.10(b)	Perception of Village Authorities on Fallow land (Ahmednagar)	57-58

List of Appendix Tables

Appendix No.	Title	Page No.
A.3.1	Percentage of Different Categories of Farm Households (Number) in the selected districts as well as in States during last three decades	66
A 3.2	Selected Block-wise Share of Number of Different Categories of Farm Households in Selected district	66
A 3.3	Cropping Pattern : Area hectares (Secondary Data)	67
A.3.4	Cropping Pattern (Ahmednagar) (Area in hectares)	68
A.3.5	Infrastructure in the district	69
A.3.6	Infrastructure in the district	69

List of Figures

Figure No.		Page No.
Figure 4.1	Reasons for land being left fallow Percentage of Responses which indicated 5 –Most important reason	50
Figure 4.2	Reasons for land being left fallow Percentage of Responses which indicated 5 -Most important reason	51
Figure 4.3	Reasons for land being left fallow Percentage of Responses which indicated 5 -Most important reason	52

Chapter 1

Introduction

1.1 Introduction:

In 1950-51, when the first five year plan was launched in India, the Net Sown Area (NSA) was 118.75 million hectares with barely 18 percent being irrigated. However, over the years, and with each successive plan, there was increase in NSA as well as increase in share of irrigated area. The data (Government of India, Ministry of Agriculture and Farmers Welfare, 2015) reveals that since 1970-71, the NSA has hovered around 141 million hectares with about 47 percent irrigated. With respect to Gross Cropped Area (GCA) which was 131.89 million hectares in 1950-51, there has been a gradual increase over the years and as per 2012-13 data, it is 194.40 million hectares. There has also been gradual increase in gross irrigated area which increased from 22.56 million hectares in 1950-51 to 92.58 million hectares in 2012-13. Thus in 1950-51 while 17.10 percent of GCA was irrigated, the figure for 2012-13 is 47.65 percent. This increase in irrigated area has brought about increase in cropping intensity, from 111.07 to 139.92 in 2012-13. Thus since the planning era, efforts have been made by the Indian economy to increase irrigation and promote technology, which can increase cropping intensity and therefore bring about intensive use of land, which greatly contributes to increase in production. Farmers can cultivate the land in Kharif, Rabi and even Summer which increases their annual income, if they have access to water, technology, etc.

However, looking at the data over the years, it can be observed that the pattern did deviate from normal in certain years such 2002-03 when the NSA declined from 140.73 million hectares in 2001-02 to 131.94 million hectares in 2002-03. It was also observed that area under current fallows increased from 15.34 million hectares to 22.46 million hectares during the corresponding period. This decline in NSA and increase in current fallow may possibly be due to severe drought conditions in 2002-03. Much of the rainfall shortage occurred in the month of July when the distribution of rain in the country was 50 percent below the long term average(<http://link.springer.com/article/10.1007/s00382-006-0208-7>). Besides rainfall, there may be other factors responsible for farmers to leave their land fallow. However, when farmers leave their land fallow, it is a cause of concern as it may threaten their livelihood and contribute to decline in agricultural production. Land is a limited resource and leaving it fallow can serve as a threat to production of major crop and livelihood

of farmers. It is therefore necessary to observe the land use pattern in the country with special reference to fallow land.

1.2 Review of Literature :

There are considerable regional variations in land use because of diversities in land form and also rainfall pattern. It was noted in a report (http://shodhganga.inflibnet.ac.in/bitstream/10603/4325/11/11_chapter%203.pdf) that study of land use is increasing in importance due to increase in population pressure and decreasing land man ratio, increasing demand for food and raw materials and optimum utilization of land. The nature and intensity of land use is closely related to the technology adopted and extension of agricultural land with the help of technology may cause considerable changes in land use. The study based on Sindhudurg district of Maharashtra observed that the district has considerable fallow land as compared to state and national average. Due to topographic soil characteristics and climate, the land in Sindhudurg is left fallow. It was observed that the soil gets washed away due to heavy rains which make cultivation difficult. The fallow land in the district which was 11.68 percent in 1980-85, increased to 17.15 percent in 1995-2000.

Another study (Todkari G.U, 2012) observed the land use pattern in Solapur district from the period 1990-91 to 2004-05. The study observed that the fallow land in Solapur district increased from 1.76 lakh hectares in 1990-91 to 3.56 lakh hectares in 2004-05. The study found that there was an increase in fallow land in Solapur district mainly because it is located in drought prone region and therefore suffers from scarcity of water. Farmers are resource poor and hence are unable to invest in agriculture.

The Gazetteers Department for Wardha (<https://cultural.maharashtra.gov.in/English/gazetteer/WARDHA>) had provided details on land left fallow for several reasons in Wardha district. The most important factors responsible for land being left fallow were poverty and also inadequate availability of water. Hence the study clearly revealed that farmers were not available to cultivate the land due to shortage of water.

A study on dynamics of land use in relation to green revolution in India (<http://www.eolss.net/sample-chapters/c19/E1-05-05-04.pdf>) noted that technology which brought about short duration high yielding varieties provided India with genetic diversity and institutional capacity to produce more. This helped to bring area under barren and uncultivated land, cultivable wasteland, land not available for cultivation and fallow lands under cultivation in order to produce more. Thus it was observed in the study that fallow

lands are useful for increasing area under cultivation which is required for increasing food production especially during food shortage. In another paper (<http://planningcommission.nic.in/reports/sereport/ser/vision2025/agricul.doc>) by I.P. Abrol noted that technology played a major role in increasing productivity in agriculture and exploitation of wastelands and fallow land also helped to transform India from food shortage to one of exportable surplus.

A study (Tripathi & Prasad, 2009) observed the progress, performance and determinants of agricultural development in India since independence. The study observed the land use pattern in India from 1950-51 to 2001-02 in order to understand whether the land is being utilized to its full potential. The study noted that 4.8 percent of reporting area was fallow and 4.8 percent was cultivable waste. The authors also calculated the output elasticities for land, labour and capital which were 0.32, 0.88 and 0.36 respectively. It was therefore noted that a 1 percent increase in land input brings about an increase of 0.32 percent in gross value of agricultural output. Also, the study observed that Indian agriculture is characterized by increasing returns to scale. However, it was indicated that land significantly affected the agricultural output growth during 1950-51 to 1964-65 and then became less significant. In the later period from 1965-66 to 2005-06, land became less significant while labour and capital were more significant in impacting agricultural output growth. This is possibly expected, as land is a limited resource while it is possible to increase other inputs. Therefore since land is limited, leaving land fallow has an adverse impact on production and it must be utilized to its potential.

The Report of the Sub Group on Land Related Issues (Planning Commission, 2007), observed the trends in land use from 1951 to 2002. The Report noted that the Net Sown Area has stabilized around 140 million hectares from 1980 onwards. Any decline in NSA which was observed in 2002-03 was attributed to poor rainfall during the season and accompanied by an increase in fallow land. The report stated that the extent of current fallows is directly dependent on year to year rainfall and in 2002-03 area under canal and well irrigation declined. This further emphasizes the role of rainfall and increasing dependence on groundwater which is making agriculture more vulnerable to weather. This is mainly due to the decline in tank systems, which are the replenishing mechanisms for groundwater.

The National Land Utilization Policy draft report (Department of Land Resources, Ministry of Rural Development, Government of India, July 2013) noted that though India is the seventh largest country in the world, land resource management is becoming very

important. India has over 17 percent of the world's population living on 2.4 percent of the world's geographical cover. The demand for land is competing which is putting pressure on land and thus posing challenges for sustainable development. There is a need for optimal utilization of land resources. In order to improve productivity of land, the government of India initiated a number of centrally sponsored schemes like Integrated Wasteland Development Programme, Drought Prone Area Programme and Desert Development Programme for assisting states to increase productivity of marginalized land. Later in 2009, all these programmes were merged under single integrated scheme called Integrated Watershed Management Programme, covering not only the marginal lands but also area under rain fed agriculture. This merger of schemes took place because irrigated area under green revolution already reached its productivity limits and in order to increase the productivity of rain fed area and marginal land, there was need to improve water resources. This would help to address the issue of food security.

1.3 Relevance of the study:

It can be observed from the review of literature that land is a finite resource and while it served as a major source of growth for Indian agriculture in the past, it has now ceased to be a source of growth. Technology began gaining importance since the advent of the green revolution which since then became largely responsible for increasing agricultural production. However, land resources can be capitalized by bringing in fallow land under cultivation after it is treated. Hence if fallow land along with use of improved technology is brought under cultivation, it will augment production and improve the incomes of rural households. The data on land use reveal that there are years when area under current fallows show increase. For example, as mentioned earlier, while current fallows were 15.34 million hectares in 2001-02, it increased to 22.46 million hectares in 2002-03, i.e an increase of 46 percent. This is indeed a serious problem as 7.12 million hectares of land had been withdrawn from cultivation. During the same period, a sharp fall in foodgrains production was observed from 212.85 million tonnes in 2001-02 to 174.77 million tonnes in 2002-03, i.e decline of 18 percent. The annual growth rate of gross value added declined from 2001-02 to 2002-03 by 5 percent.

Further fallow land which is other than current fallows is around 11 million hectares. This clearly reveals that there is scope to bring in more land under cultivation.

In view of the above, it was found relevant to conduct a study on dynamics and revival of fallow land as this is the main source which can be tapped to bring more land under cultivation.

1.4 Objectives of the Study :

It is clear that in Indian agriculture, land has ceased to be a source of growth and technology can be the main driver for increasing agricultural production. However, while there is limited scope to increase Net Sown Area, one way of increasing it, is by bringing fallow land under cultivation. Accordingly, a study has been undertaken to observe the trends in fallow land and main causes as to why the farmers are leaving this land uncultivated. The study is related to the state of Maharashtra. More specifically, the main objectives of the study are :

1. To observe the trends related to area under fallow land, both current and permanent in the state of Maharashtra;
2. To observe the reasons which compel the farmers to keep the land fallow;
3. To suggest policy implications based on the data analysis.

1.5 Chapter Scheme:

After the introductory chapter, in chapter 2 the methodology of the study and useful concepts are explained. In chapter 3, the land use pattern of the state as well as of sample districts is indicated and also that of the sample districts. Other features related to the agricultural economy of the selected districts which have sizable fallow land as compared to other districts are also indicated. In chapter 4 the main findings of the study based on primary data are discussed. Finally in chapter 5, the main policy implications are addressed.

Chapter 2

Methodology, Concepts and Definitions

2.1 Concepts and definitions:

In a developing economy like India, land is the basic means of subsistence for the majority of population which is mainly rural. Even after seven decades of independence, agriculture continues to be the major source of employment and hence land is the most important factor of production. The importance of land use has increased with increase in population leading to decline in land and man ratio. At the same time there is increase in demand for foodgrains and other raw materials. Therefore, efficient and optimum use of land for accelerated as well as sustainable economic development has always been a major issue to be addressed by policy makers.

In view of the above, it is important to first of all observe the concepts and definitions of the land use classifications as it also indicates the net available land for cultivation which is the base for agriculture. The concepts and definitions are as follows (<http://eands.dacnet.nic.in/LUS-2010-11/Concept.pdf>) :

1. *Geographical Area*: The latest area of the geographical area of the state/Union territories are provided by the office of the Surveyor General of India.
2. *Reporting Area for Land Utilization Statistics*: The Reporting area stands for the area for which data on land use classification is available. In areas where land utilization figures are based on land records, reporting area is the area according to village papers, i.e the papers prepared by the village accountants. In some cases, the village papers may not be maintained in respect of the entire area of the state. For example, village papers may not be prepared for forest area although the magnitude of such area is known. Also, there are tracts in many states for which no village paper exists. In such cases, estimates of classification of area from agriculture census are adopted for complete coverage.
3. *Forest* :This includes all land classified either as forest under any legal enactment, or administered as forest, whether state owned or private and either covered or maintained as potential forest land. The area of crops raised in the forest and grazing lands or areas open for grazing within the forests remain included under the “forest areas”.

4. *Not Available for cultivation* : This land includes (a) *area under non-agricultural uses* which includes land occupied by buildings, roads and railways or under water such as rivers, canals, etc. and any other land put to non-agricultural use; (b) *barren and un-culturable land* which includes all land covered by mountains, deserts, etc. Land which cannot be brought under cultivation except at an exorbitant cost is classified as unculturable whether such land is in isolated blocks or within cultivated holdings.
5. *Permanent Pastures & Other grazing lands*: This includes all grazing land such as permanent pastures, meadows, etc. Village common grazing land is included under this category.
6. *Land Under Miscellaneous Tree crops & groves not included in Net Sown Area* : This includes all cultivable land, which is not included in net sown area but put to some agricultural use. Land under casuarina trees, thatching grass, bamboo bushes and other groves for fuel, etc which are not included under “orchards” are classified under this category.
7. *Culturable Waste Land*: This includes land available for cultivation, whether taken up or not for cultivation, but not cultivated during the last five years or more in succession including the current year for some reason or the other. Such land maybe either fallow or covered with shrubs and jungles and which are not put to any use. They maybe accessible or inaccessible and lie in isolated blocks or within cultivated holdings.
8. *Fallow Lands*: Fallow land is sub divided into two sub types – (a) *Current fallow* which is kept uncultivated during the current agricultural year due to various reasons such as occurrence of drought, regaining soil fertility, lack of availability of capital, etc. Sometimes land is kept fallow so that it may accumulate moisture in dry seasons or to check weeds and plant diseases (b) *Other fallows* refer to all lands which were taken up for cultivation but are temporarily out of cultivation for a period of not less than one year and not more than five years.
9. *Net Sown Area* : This represents net area sown with crops and orchards excluding the area sown more than once. Net Sown Area denotes the extent of the cultivated area actually sown during the agricultural year.
10. *Gross Cropped Area* : This represents the total area sown once and/more than once in a particular year, i.e the area counted as many times as there are sowings in a year. This total area is also known as total cropped area or total area sown.

11. *Area Sown more than once* : This represents the areas on which crops are cultivated more than one during a given agricultural year. This is obtained by deducting Net Sown Area from Gross Cropped Area.

2.2 Methodology:

As mentioned in the previous chapter, the main objective of the study is to study trends in fallow land and the reasons why farmers leave the land fallow. Accordingly, this study is being conducted for Maharashtra state and is based on secondary as well as primary data. The study uses various techniques such as frequency distribution, rating and tabular and graphical presentation for analysis and presentation of the primary and secondary data.

The time series data on land use pattern in Maharashtra reveals that out of the geographical area of 30.75 million hectares the share of fallow land other than current fallows as well as current fallow is increasing over the years. While fallow land other than current fallow was 9.98 lakh hectares in 1980-81, it increased by 19 percent in 2014-15. The picture with respect to current fallows is even more alarming. While current fallows were 8.5 lakh hectares in 1980-81, the figure increased by 63 percent in 2014-15. Total fallow land which was 6 percent of geographical area in 1980-81 increased to 8.5 percent of geographical area. However, the increase is more with respect to NSA as total fallow land which was 10.3 percent of NSA in 1980-81 increased to 15 percent in 2014-15. As mentioned earlier, the increase in land under current fallow is rapid from 8.58 lakh hectares in 1980-81 to 13.99 lakh hectares in 2014-15. In order to observe the characteristics of agriculture and reasons why farmers are leaving the land fallow, two districts namely Ahmednagar and Osmanabad have been selected for primary survey.

2.3 Study Area:

The study on fallow land, as mentioned earlier, relates to the state of Maharashtra. The districts selected are Ahmednagar and Osmanabad. In Ahmednagar, Shrigonda and Karjat are the talukas selected, while in Osmanabad district, the talukas selected are Osmanabad and Washi. In each taluka, two villages have been selected and hence in all 8 villages have been selected. In the following sections, the sampling framework has been discussed.

2.4 Sampling Framework:

After observing the status of fallow land (current and other) in the districts of Maharashtra, the selection of districts and sampling framework is as indicated in Table 2.1.

Table 2.1: Selected Districts and Blocks along with number of farmers sampled

Sr. No.	State	District	Blocks	Village	Number of Households		
1.	Maharashtra	Ahmednagar	Shrigonda	Nimbvi	15		
				Kondegavan	15		
			Karjat	WadgaonTanpure	15		
				Rakshaswadi	15		
		Osmanabad	Osmanabad	Ambejawalga	15		
				Kaudgaon	15		
			Washi	Dhahiphal	15		
				Tandulwadi	15		
		Total Sample Size					120

Source : Field Survey

2.5 : Selection of Sample : In this section, details on selection of sample at each level, i.e from district to household is discussed.

2.5.1: Selection of Districts : The status of the two selected districts namely Ahmednagar and Osmanabad in the state with respect to share of fallow land in geographical area as well as in NSA and GCA is observed and indicated from Table 2.2 to Table 2.4.

Table 2.2 District –Wise Share of Fallow land in Geographical Area, NSA and GCA of Maharashtra 2014-15

District	Geographical Area (00 ha)	Current Fallow (00 ha)	Other Fallow (00 ha)	Total Fallow (00 ha)	Total Fallow as Percent to Geographical Area	Total Fallow as Percent to NSA	Total Fallow as Percent to GCA
Mumbai Sub	380						
Thane	9337	94	190	284	3.04	12.01	11.74
Raigad	6869	144	459	603	8.78	31.99	27.98
Ratnagiri	8164	276	1354	1630	19.97	64.02	61.91
Sindhudurg	5040	144	1022	1166	23.13	83.11	73.33
Konkan Div	29790	658	3025	3683	12.36	44.92	41.86
Nashik	15634	917	281	1198	7.66	13.76	12.13
Dhule	7330	100	100	200	2.73	4.64	3.69
Nandurbar	7050	8	57	65	0.92	2.20	1.77
Jalgaon	11639	95	49	144	1.24	1.70	1.24
Nashik Div	41653	1120	487	1607	3.86	6.57	5.25
Ahmednagar	17020	1511	925	2436	14.31	22.43	16.42
Pune	15620	378	210	588	3.76	6.41	5.04
Solapur	14878	1389	1137	2526	16.98	24.70	21.34
Pune Div	47518	3278	2272	5550	11.68	18.34	14.48
Satara	10580	254	662	916	8.66	16.88	13.55
Sangali	8610	408	579	987	11.46	16.83	13.62
Kolhapur	7765	103	198	301	3.88	6.96	4.75
Kolhapur Div	26955	765	1439	2204	8.18	14.12	10.84
Aurangabad	10077	535	633	1168	11.59	17.14	10.83
Jalna	7726	944	212	1156	14.96	20.20	13.20
Beed	10686	999	519	1518	14.21	20.22	14.66
Aurangabad Div	28489	2478	1364	3842	13.49	19.17	12.86

Continued..

District	Geographical Area (00 ha)	Current Fallow (00 ha)	Other Fallow (00 ha)	Total Fallow (00 ha)	Total Fallow as Percent to Geographical Area	Total Fallow as Percent to NSA	Total Fallow as Percent to GCA
Latur	7157	409	449	858	11.99	16.54	11.68
Osmanabad	7485	1039	740	1779	23.77	38.06	18.71
Nanded	10331	677	184	861	8.33	12.26	10.02
Parbhani	6311	410	288	698	11.06	14.53	8.16
Hingoli	4661	422	145	567	12.16	17.22	9.84
Latur Div	35945	2957	1806	4763	13.25	19.07	11.98
Buldhana	9671	167	251	418	4.32	6.27	4.36
Akola	5429	102	54	156	2.87	3.61	2.29
Wasim	5131	173	88	261	5.09	6.95	4.90
Amravati	12217	328	144	472	3.86	6.28	4.80
Yavatmal	13519	378	258	636	4.70	7.44	6.41
Amravati Div	45967	1148	795	1943	4.23	6.31	4.68
Wardha	6289	636	206	842	13.39	23.16	18.11
Nagpur	9864	195	215	410	4.16	7.42	6.32
Bhandara	3420	40	11	51	1.49	2.87	2.01
Gondia	5859	103	62	165	2.82	9.12	6.91
Chandrapur	10918	136	119	255	2.34	5.56	4.78
Gadchiroli	14916	477	82	559	3.75	32.13	26.12
Nagpur Div	51266	1587	695	2282	4.45	11.97	9.69
Maharashtra State	307583	13991	11883	25874	8.41	14.92	11.12

Source: Commissionerate of Agriculture, Government of Maharashtra

Table 2.3: District wise Percentage share in Total (Current and Other Fallow) Fallow land in 2014-15

District	Current Fallow	Other Fallow	Total
Mumbai Sub	0.00	0.00	0.00
Thane	0.67	1.60	1.10
Raigad	1.03	3.86	2.33
Ratnagiri	1.97	11.39	6.30
Sindhudurg	1.03	8.60	4.51
Konkan Div	4.70	25.46	14.23
Nashik	6.55	2.36	4.63
Dhule	0.71	0.84	0.77
Nandurbar	0.06	0.48	0.25
Jalgaon	0.68	0.41	0.56
Nashik Div	8.01	4.10	6.21
Ahmednagar	10.80	7.78	9.41
Pune	2.70	1.77	2.27
Solapur	9.93	9.57	9.76
Pune Div	23.43	19.12	21.45
Satara	1.82	5.57	3.54
Sangali	2.92	4.87	3.81
Kolhapur	0.74	1.67	1.16
Kolhapur Div	5.47	12.11	8.52
Aurangabad	3.82	5.33	4.51
Jalna	6.75	1.78	4.47
Beed	7.14	4.37	5.87
Auragabad Div	17.71	11.48	14.85
Latur	2.92	3.78	3.32
Osmanabad	7.43	6.23	6.88
Nanded	4.84	1.55	3.33
Parbhani	2.93	2.42	2.70
Hingoli	3.02	1.22	2.19
Latur Div	21.14	15.20	18.41

Continued..

District	Current Fallow	Other Fallow	Total
Buldhana	1.19	2.11	1.62
Akola	0.73	0.45	0.60
Wasim	1.24	0.74	1.01
Amravati	2.34	1.21	1.82
Yavatmal	2.70	2.17	2.46
Amravati Div	8.21	6.69	7.51
Wardha	4.55	1.73	3.25
Nagpur	1.39	1.81	1.58
Bhandara	0.29	0.09	0.20
Gondia	0.74	0.52	0.64
Chandrapur	0.97	1.00	0.99
Gadchiroli	3.41	0.69	2.16
Nagpur Div	11.34	5.85	8.82
Maharashtra Div	100.00	100.00	100.00

Source : calculated from Table 2.1

Table 2.4: Share of Current and Other Fallow In Each District of Maharashtra in 2014-15

District	Current Fallow	Other Fallow	Total
Mumbai Sub	0	0	0
Thane	33.10	66.90	100.00
Raigad	23.88	76.12	100.00
Ratnagiri	16.93	83.07	100.00
Sindhudurg	12.35	87.65	100.00
KonkanDiv	17.87	82.13	100.00
Nashik	76.54	23.46	100.00
Dhule	50.00	50.00	100.00
Nandurbar	12.31	87.69	100.00
Jalgaon	65.97	34.03	100.00
NashikDiv	69.70	30.30	100.00
Ahmednagar	62.03	37.97	100.00
Pune	64.29	35.71	100.00
Solapur	54.99	45.01	100.00
Pune Div	59.06	40.94	100.00
Satara	27.73	72.27	100.00
Sangali	41.34	58.66	100.00
Kolhapur	34.22	65.78	100.00
Kolhapur Div	34.71	65.29	100.00
Aurangabad	45.80	54.20	100.00
Jalna	81.66	18.34	100.00
Beed	65.81	34.19	100.00
AuragabadDiv	64.50	35.50	100.00
Latur	47.67	52.33	100.00
Osmanabad	58.40	41.60	100.00
Nanded	78.63	21.37	100.00
Parbhani	58.74	41.26	100.00
Hingoli	74.43	25.57	100.00
laturDiv	62.08	37.92	100.00

Continued..

District	Current Fallow	Other Fallow	Total
Buldhana	39.95	60.05	100.00
Akola	65.38	34.62	100.00
Wasim	66.28	33.72	100.00
Amravati	69.49	30.51	100.00
Yavatmal	59.43	40.57	100.00
Amravati Div	59.08	40.92	100.00
Wardha	75.53	24.47	100.00
Nagpur	47.56	52.44	100.00
Bhandara	78.43	21.57	100.00
Gondia	62.42	37.58	100.00
Chandrapur	53.33	46.67	100.00
Gadchiroli	85.33	14.67	100.00
Nagpur Div	69.54	30.46	100.00
Maharashtra Div	54.07	45.93	100.00

Source : calculated from Table 2.1

It can be observed from Table 2.2 that total fallow land as a percentage of geographical area was highest in Aurangabad division (13.49 percent) while the share of Latur division was very marginally lower (13.25 percent). Since both divisions belong to Marathwada, it was decided to select only one district from this region, i.e. Osmanabad which had highest share of fallow land in geographical area not only in Marathwada but also in Maharashtra (23.77 percent). Although Konkan region has 12.36 percent of geographical area as total fallow land, districts from this region were not selected due to topography of the region. Major part of the region is covered by hilly terrains with fewer plains. The high rainfall in the region also leads to soil erosion and hence 44.92 percent of Net Sown Area is fallow. The next choice of district was Ahmednagar in Pune division which had 14.31 percent of fallow land as percentage of geographical area. Out of total fallow land in Ahmednagar district, the share of current fallow is 62.03 percent while that of other fallow is 37.97 percent. This high share of current fallow is a cause of concern in Ahmednagar as it is showing an increasing trend over the years. The current fallow which was 87700 hectares in 1994-95 increased 1.6 times in 2004-05 and is presently 151100 hectares. Hence Ahmednagar district was selected.

2.5.2 : Selection of Talukas : In terms of geographical area, Ahmednagar is the largest district of Maharashtra with a share of 5.5 percent. The district comprises of 14 talukas and the share of each taluka in the geographical area of Ahmednagar district is indicated in Table 2.5. The fallow land in each taluka as percentage of its geographical area is also indicated.

Table 2.5: Talukawise share (Ahmednagar district) in Geographical area and taluka wise share of fallow land in its Geographical area

Taluka	Taluka wise % Share of Geographical Area	Total Fallow Land as % to Geographical area of taluka	Fallow land in taluka as % to district total	Fallow land as % to NSA of taluka	Fallow land as % to GCA of taluka
Akola	9.02	1.60	1.85	4.42	4.17
Sangamnar	8.14	9.22	9.62	12.02	10.91
Kopergaon	4.23	14.70	7.98	11.98	10.81
Rahata	4.12	6.54	3.46	6.46	6.39
Shrirampur	3.03	10.41	4.05	7.95	7.75
Nevasa	7.75	3.11	3.09	2.91	2.58
Shevgaon	6.52	1.66	1.38	2.56	2.52
Pathardi	7.06	8.33	7.54	12.13	10.93
A.Nagar	9.01	3.81	4.40	4.58	4.4
Rahuri	6.10	9.20	7.19	16.05	13.8
Parner	11.20	6.48	9.30	7.81	6.47
Shrigonda	9.62	14.20	17.45	25.31	24.55
Karjat	8.94	12.89	14.78	27.03	25.8
Jamkhed	5.25	11.66	7.85	11.85	11.04
District	100.00	7.80	100	10.36	9.51

Source: Land Classification Department of District.

It can be observed from Table 2.5 that Shrigonda and Karjat were among the top three talukas with respect to share of fallow land as percentage of its geographical area. They also had highest share in fallow land of the district. Further fallow land as percentage to NSA and GCA was also highest in these two talukas. Hence, taking this into consideration, the talukas of Shrogonda and Karjat were selected for primary survey from Ahmednagar district.

Osmanabad district comprises of 8 talukas and the share of each taluka in the geographical area of Osmanabaddistrict is indicated in Table 2.6

Table 2.6: Talukawise share (Osmanabad district) in Geographical area and taluka wise share of fallow land in its Geographical area

Taluka	Taluka wise % Share of Geographical Area	Total Fallow Land as % to Geographical area of taluka	Fallow land in taluka as % to district total	Fallow land as % to NSA of taluka	Fallow land as % to GCA of taluka
Paranda	10.82	11.77	8.3	18.64	12.36
Bhoom	11.85	6.45	4.98	7.87	6.73
Washi	9.17	38.45	22.98	66.51	46.49
Kalamb	11.68	12.93	9.85	15.70	9.81
Osmanabad	17.72	20.12	23.30	30.48	19.20
Tuljapur	19.19	14.33	17.92	19.10	14.48
Lohara	7.06	12.46	5.73	16.92	11.21
Umarga	12.51	8.52	6.94	10.02	7.91
District	100	15.35	100	21.50	16.82

Source: Land Classification Department of District.

The fallow land in each taluka as percentage of its geographical area is also indicated. It can be observed that Washi taluka has highest percentage of fallow land to its geographical area (38.45 percent), followed by Osmanabad taluka (20.12 percent). Both these talukas together have 46.28 percent of the fallow land in the district. With respect to fallow land as percentage to NSA, the situation seemed serious in Washi with 66.51 percent of NSA being fallow while in case of Osmanabad the corresponding figure was 30.48 percent. Hence Washi and Osmanabad talukas have been selected for primary survey.

2.5.3: Selection of Villages: After selecting the talukas, the next step was to select the villages. Discussion with officials at the Taluka headquarters and observing the data on villages where there was concentration of fallow land, two villages from each block were selected as indicated in Table 2.1. Thus in each district 4 villages were selected and the entire primary survey involved 8 villages.

2.5.4: Selection of Households: From each of the four households, 15 households were selected in such a way that the sum of the current fallow land of the selected village added to atleast 15 hectares. Thus in all 120 households were surveyed.

Table 2.7: Selection of sample according to category of farmers

District	Farm Category	No.	Percentage
Osmanabad	Small & Marginal	6	10
	Semi Medium	16	26.7
	Medium	27	45
	Large	11	18.3
Total Osmanabad		60	
Ahmednagar	Small & Marginal	2	3.3
	Semi Medium	12	20
	Medium	31	51.7
	Large	15	25
Total Ahmednagar		60	
Overall	Small & Marginal	8	6.7
	Semi Medium	28	23.3
	Medium	58	48.3
	Large	26	21.7
Overall		120	

Source : Field Survey

It can be observed from Table 2.7 that out of the total sample size 48.3 percent were from medium category while 21.7 percent were from large category. This is expected because the extent of fallow land in the medium and large category is more as compared to marginal and small.

With the help of a structured schedule household level data was collected from the sample selected. Moreover, perceptions of village authorities/ knowledgeable and progressive farmers on fallow land were captured through a village schedule as well as focused group discussions in every sample village. The field survey was conducted with a view to understand the causes of fallow land and related issues.

Chapter 3

Extent of Fallow Land in Maharashtra

3.1 Land Use Pattern of Maharashtra:

Studies on land use pattern have drawn considerable attention, especially since land is a limited resource. Its proper utilization in an economy which is mainly agricultural therefore merits attention. The study of land use enables the understanding of the optimum use of land and the areas which are degraded. The comprehensive study of land use ensures better use returns from land to meet future requirements for food, industrial raw materials and for successful planning of agricultural growth, organized urbanization, regional development and thereby to accelerate the process of development in the country (<http://shodhganga.inflibnet.ac.in/bitstream/10603/4325/11/11-chapter%203.pdf>).

In the earlier chapter, we noted that two districts, namely Ahmednagar and Osmanabad have been selected for field survey and more precisely to understand the main reasons which have compelled the farmers to keep their land fallow. However, before going into field level survey, in this chapter we have observed the status of land use pattern in the state and also in the two selected districts.

In Table 3.1, the land use pattern over a period of 35 years is presented. There is a slight decrease in area under forests which was 17.3 percent of geographical area in 1980-81 and is presently 16.9 percent. Land under non-agricultural uses which was 3.4 percent of geographical area has increased to 4.8 percent in 2014-15. The NSA which was 58.5 percent of geographical area in 1980-81 increased to around 60 percent in 1989-90 but has been around 56.5 percent since 2001-02. Culturable waste has hovered around 3 percent and barren and uncultivable land has ranged around 5.6 percent during the entire period. Fallow land however did show some increase from 6 percent of geographical area in 1980-81 to 8.4 percent in the post 2000 period.

Table 3.1 (a): Land use Pattern of Maharashtra (00 hectares)

Years	Geographical area	Forest	Land Under Non Agri. Uses	Barren & uncultivable land	Net Area sown	land under miscellaneous trees crops & groves not included in net area sown	Culturable waste	Fallow lands other than current fallow	Current fallows
1980-81	307583	53291	10479	17373	180080	2120	9923	9981	8580
1981-82	307583	53291	10480	17373	181301	2120	9924	10807	6531
1982-83	307583	53291	10480	17371	177112	2121	9924	16381	5498
1983-84	307583	53367	11184	17263	180386	1947	10337	13411	5720
1984-85	307583	53389	11192	17257	180967	1940	10559	13179	5283
1985-86	307583	53390	11213	17259	182233	1939	10562	11078	6091
1986-87	307583	53498	11524	16791	180038	1958	10439	10574	9091
1987-88	307583	53050	11791	16216	181389	1894	9455	11191	9890
1988-89	307583	52293	11820	16347	182187	2471	10089	11306	9725
1989-90	307583	51259	10921	16138	185629	2965	9839	10901	8811
1990-91	307583	51279	10910	16217	185647	3009	9659	10631	8983
1991-92	307583	51341	11656	16354	178948	2832	9666	11254	14155
1992-93	307583	51447	11866	15906	180203	2874	9479	10941	13064
1993-94	307583	51460	12811	15624	181881	2728	9430	12138	9785
1994-95	307583	51471	13170	15423	180530	2795	9475	13868	9118
1995-96	307583	51480	13486	15435	179800	2921	9596	12478	10724
1996-97	307583	51486	13501	15435	178483	3080	9577	14006	10278
1997-98	307583	51481	13504	15438	177215	3304	9632	14406	10805
1998-99	307583	51497	13520	15440	178408	3275	9586	12861	11318
1999-2000	307583	51355	13603	15440	176621	3650	9586	13500	12150
2000-01	307583	51497	13639	15440	178441	3275	9586	12765	11262
2001-02	307583	51497	13684	15440	172223	3275	9586	13035	17165
2002-03	307583	52140	13799	17195	175794	2468	9029	12004	12547
2003-04	307583	52136	13898	17253	174324	2512	9172	12157	13638
2004-05	307583	52128	13925	17261	174899	2487	9178	12042	13158
2005-06	307583	52122	14069	17198	174733	2488	9137	12041	13271
2006-07	307583	52135	14120	17191	174782	2489	9153	11958	13234
2007-08	307583	52128	14275	17181	174727	2483	9157	11882	13265
2008-09	307583	52131	14333	17178	174222	2481	9178	11882	13723
2009-10	307583	52145	14433	17287	174007	2500	9174	11893	13726
2010-11	307583	52161	14485	17305	174063	2502	9194	11793	13661
2011-12	307583	52109	14505	17280	173856	2504	9192	11916	13783
2012-13	307583	52074	14556	17217	173436	2509	9164	12001	14179
2013-14	307583	52055	14604	17235	173680	2499	9152	11922	14013
2014-15	307583	52008	14824	17267	173445	2488	9187	11884	13990

Source :Commissionerate of Agriculture, Government of Maharashtra, Pune

Table 3.1 (b) : Land use Pattern of Maharashtra (Percentage to geographical area)

Years	Geographical area	Forest	Land Under Non Agri. Uses	Barren & uncultivable land	Net Area sown	land under miscellaneous trees crops & groves not included in net area sown	Culturable waste	Fallow lands other than current fallow	Current fallows	Total fallow
1980-81	100	17.3	3.4	5.6	58.5	0.7	3.2	3.2	2.8	6.0
1981-82	100	17.3	3.4	5.6	58.9	0.7	3.2	3.5	2.1	5.6
1982-83	100	17.3	3.4	5.6	57.6	0.7	3.2	5.3	1.8	7.1
1983-84	100	17.4	3.6	5.6	58.6	0.6	3.4	4.4	1.9	6.3
1984-85	100	17.4	3.6	5.6	58.8	0.6	3.4	4.3	1.7	6.0
1985-86	100	17.4	3.6	5.6	59.2	0.6	3.4	3.6	2.0	5.6
1986-87	100	17.4	3.7	5.5	58.5	0.6	3.4	3.4	3.0	6.4
1987-88	100	17.2	3.8	5.3	59.0	0.6	3.1	3.6	3.2	6.8
1988-89	100	17.0	3.8	5.3	59.2	0.8	3.3	3.7	3.2	6.9
1989-90	100	16.7	3.6	5.2	60.4	1.0	3.2	3.5	2.9	6.4
1990-91	100	16.7	3.5	5.3	60.4	1.0	3.1	3.5	2.9	6.4
1991-92	100	16.7	3.8	5.3	58.2	0.9	3.1	3.7	4.6	8.3
1992-93	100	16.7	3.9	5.2	58.6	0.9	3.1	3.6	4.2	7.8
1993-94	100	16.7	4.2	5.1	59.1	0.9	3.1	3.9	3.2	7.1
1994-95	100	16.7	4.3	5.0	58.7	0.9	3.1	4.5	3.0	7.5
1995-96	100	16.7	4.4	5.0	58.5	0.9	3.1	4.1	3.5	7.6
1996-97	100	16.7	4.4	5.0	58.0	1.0	3.1	4.6	3.3	7.9
1997-98	100	16.7	4.4	5.0	57.6	1.1	3.1	4.7	3.5	8.2
1998-99	100	16.7	4.4	5.0	58.0	1.1	3.1	4.2	3.7	7.9
1999-00	100	16.7	4.4	5.0	57.4	1.2	3.1	4.4	4.0	8.4
2000-01	100	16.7	4.4	5.0	58.0	1.1	3.1	4.2	3.7	7.9
2001-02	100	16.7	4.4	5.0	56.0	1.1	3.1	4.2	5.6	9.8
2002-03	100	17.0	4.5	5.6	57.2	0.8	2.9	3.9	4.1	8.0
2003-04	100	17.0	4.5	5.6	56.7	0.8	3.0	4.0	4.4	8.4
2004-05	100	16.9	4.5	5.6	56.9	0.8	3.0	3.9	4.3	8.2
2005-06	100	16.9	4.6	5.6	56.8	0.8	3.0	3.9	4.3	8.2
2006-07	100	16.9	4.6	5.6	56.8	0.8	3.0	3.9	4.3	8.2
2007-08	100	16.9	4.6	5.6	56.8	0.8	3.0	3.9	4.3	8.2
2008-09	100	16.9	4.7	5.6	56.6	0.8	3.0	3.9	4.5	8.4
2009-10	100	17.0	4.7	5.6	56.6	0.8	3.0	3.9	4.5	8.4
2010-11	100	17.0	4.7	5.6	56.6	0.8	3.0	3.8	4.4	8.2
2011-12	100	16.9	4.7	5.6	56.5	0.8	3.0	3.9	4.5	8.4
2012-13	100	16.9	4.7	5.6	56.4	0.8	3.0	3.9	4.6	8.5
2013-14	100	16.9	4.7	5.6	56.5	0.8	3.0	3.9	4.6	8.7
2014-15	100	16.9	4.8	5.6	56.4	0.8	3.0	3.9	4.5	8.4

Source : calculated from table 3.1 (a)

After observing the land use pattern in Maharashtra, the change over the 35 year period is observed by calculating growth rates. The same is indicated in Table 3.2 .

Table 3.2: Compound Annual Growth Rate(percent p.a) for different categories of land use in Maharashtra

	1980-81 to 1989-90	1990-91 to 1999-2000	2000-01 to 2009-2010	2011-2015	1980-81 to 1999-2000	2000-01 to 2014-2015	1980-81 to 2014-2015
Forest	-0.43	0.02	0.14	-0.03	-0.41	0.11	-0.27
Land Under Non Agri. Uses	0.46	2.48	0.63	0.26	2.94	0.93	3.93
Barren & uncultivable land	-0.82	-0.54	1.26	-0.02	-1.30	1.25	-0.07
Net Area sown	0.34	-0.55	-0.28	-0.04	-0.22	-0.32	-0.42
Other Fallows	0.98	2.69	-0.78	0.09	3.41	-0.79	1.96
land under miscellaneous trees crops & groves not included in net area sown	3.80	2.17	-2.96	-0.06	6.22	-3.01	1.79
Culturable waste	-0.09	-0.08	-0.49	-0.01	-0.38	-0.47	-0.85
Fallow lands other than current fallow	0.98	2.69	-0.78	0.09	3.41	-0.79	1.96
Current fallows	0.30	3.41	2.22	0.26	3.94	2.44	5.58

Source : calculated from Table 3.1 (a)

It can be observed from Table 3.2 that over the entire period considered, area under forest as well as net area sown showed a negative growth rate which is not a very positive signal. An important observation is that fallow land other than current fallow grew at a rate of 1.96 percent p.a. while the growth rate of current fallow was 5.58 per cent p.a. Hence area under fallow land is showing an increase and is a cause for concern.

3.2. Land Use Pattern in Selected Districts:

The importance of land use pattern has already been noted. It has been observed that area under fallow land is showing more increase in certain districts of the state as compared to others. Accordingly we selected Ahmednagar and Osmanabad districts in order to conduct a detailed analysis on the extent and causes of fallow land. In Table 3.3 (a) and Table 3.3 (b) we have indicated the land use pattern of selected districts.

It can be observed that Net Area Sown has declined from 68.50 percent of geographical area in TE 1989-1991 to 62.02 percent in 2013 - 2015. The fall in NSA was more steep in Osmanabad district where NSA declined by 27 percent during the corresponding period. It is also observed from the tables that the percentage change during TE 1989-91 and 2013-15 is positive only for other as well a current fallow land in both the districts. For all other types of land under reported under LUS, percentage change is negative. This is a cause for concern.

Table 3.3(a): Land Use Pattern of Sample Districts: (00 hectares)

Name of the districts	Ahmednagar			Osmanabad		
	TE 1989-91	TE 2013-15	Percent Change	TE 1989 - 1991	TE 2013- 2015	Percent Change
Forest	1717.33	1643.33	-4.31	40.67	44	8.19
Land Under Non Agri. Uses	148.67	155.33	4.48	135.67	206	51.84
Barren & unculturable land	1350.67	1291.33	-4.39	106	69.67	-34.27
Net Area sown	11839.3	10876.7	-8.13	6453	4707	-27.06
land under miscellaneous trees crops & groves not included in net area sown	44.67	36	-19.41	33	20.67	-37.36
Culturable waste	355.33	201.33	-43.34	344	502.33	46.03
Fallow lands Other than Current Fallow	613.33	925.33	50.87	334.33	738.67	120.94
Current fallows	600.33	1483.33	147.09	290.67	1011.67	248.05

Source : Commissionerate of Agriculture, Government of Maharashtra

Table 3.3 (b): Land Use Pattern of Sample Districts :(Percent)

Name of the districts	Ahmednagar			Osmanabad		
	TE 1989-91	TE 2013-15	Percent Change	TE 1989 - 1991	TE 2013- 2015	Percent Change
Forest	9.94	9.37	-5.73	0.5	0.55	10.00
Land Under Non Agri. Uses	0.86	0.89	3.49	1.68	2.56	52.38
Barren & unculturable land	7.82	7.36	-5.88	1.31	0.87	-33.59
Net Area sown	68.5	62.02	-9.46	79.95	58.55	-26.77
land under miscellaneous trees crops & groves not included in net area sown	0.26	0.21	-19.23	0.41	0.26	-36.59
Culturable waste	2.06	1.15	-44.17	4.26	6.25	46.71
Fallow lands Other than Current Fallow	3.55	5.28	48.73	4.14	9.19	121.98
Current fallows	3.47	8.46	143.80	3.6	12.59	249.72

Source : calculated from Table 3.3 (a)

The share of fallow land showed a marked increase in both districts but was particularly high in Osmanabad. The fallow land which was 7.02 percent of geographical area in TE 1989-91 increased to 13.74 percent in 2013- 2015 in Ahmednagar district, i.e increase

of 96 percent. The corresponding increase in Osmanabad was from 7.74 percent to 21.78 percent or increase of 181 percent. Current fallows showed more increase as compared to other fallow.

After observing the land use pattern of selected districts, some important features of the districts are presented. Appendix 3.1 shows the percentage distribution of households as per the farm size classes in selected districts and in Maharashtra in 2000-01 and in 2010-11. It is observed that the share of marginal and small households increased and that of households above 2 hectares declined in Osmanabad over the period. In case of Ahmednagar as well as state as a whole, share of marginal households has increased, that of small households has remained almost the same and share of households with more than 2 hectares has declined. The table shows that the land ownership pattern is dominated by marginal and small farm households. Appendix 3.2 shows the block wise number and share of various categories of farm households in the selected districts in the year 2011-12. It is observed that though marginal and small farms dominate the total number of farm households, area wise the households with more than 2 hectares of land constitute the dominant category of the farm households. More than 44 to 55 percent of the land is owned by 17 to 23 percent of the households in 2 talukas of Ahmednagar respectively. Similarly, more than 60 percent of the land is owned by around 30 percent of the household in each of the two talukas of Osmanabad.

In Table 3.4, the level of urbanization in the districts is indicated.

Table 3.4: Features of Selected Districts and State over the Period of 1990-91, 2000-01, and 2010-11

Districts	Geographical Area (00 hectares)			Urbanization (% of population living in urban areas)		
	1990-91	2000-01	2010-11	1990-91	2000-01	2010-11
Ahmednagar District	17020	17020	17020	20	20	20
Osmanabad District	7485	7485	7485	15.2	15.2	15.69
Maharashtra	307583	307583	307583	38.69	42.43	45.22

Source : Commissionerate of Agriculture, Government of Maharashtra; District Socio-Economic Abstract

It can be observed from table 3.4 that Ahmednagar district has a geographical area of 1.7 million hectares, which is 5.5 percent of geographical area of state, while the share of

Osmanabad is 2.4 percent of state geographical area. Both districts have very low level of urbanization as compared to state. It may however be noted that the high level of urbanization in the state is due to Mumbai which is the commercial capital of the country.

Table 3.5: Cropping Intensity in Selected Districts and Maharashtra

Districts	Net Sown Area as % of Geographical area			Cropping Intensity (%)		
	1990-91	2000-01	2010-11	1990-91	2000-01	2010-11
Ahmednagar District	50.25	73.2	64.55	124.94	112	133.3
Osmanabad District	80	83.36	77.81	123.69	130	188
Maharashtra	60.36	58.01	56.59	117.75	121.15	133.14

Source : Commissionerate of Agriculture, Government of Maharashtra; District Socio-Economic Abstract

It can be observed from Table 3.5 that by and large the cropping intensity has been rather low in selected districts as well as of state. However, in Osmanabad, there was increase in cropping intensity in 2010 to 188 from 130 in 2000-01. In Osmanabad, although the NSA showed a sharp decline of 23 percent from 2000-01 to 2010-11, the cropping intensity increased by 45 percent. Perhaps, farmers are cultivating more in the rabi season.

Appendix 3.3 and 3.4 present secondary data on taluka wise cropping intensity in the selected districts. It is seen that rabijawar was the most important crop cultivated with around 27 percent and 42 percent of the total area in Osmanabad and Ahmednagar districts respectively. Soybean and tur were other important crops in Osmanabad. Bajri was the other important crop in district Ahmednagar. In both the districts, rabi crops constituted around 50 percent or more of the cropping pattern of the sample talukas.

In Table 3.6 the irrigated area in selected districts is indicated. It can be observed that over the decades, there is no major change in irrigated area in the state as well as in the selected districts. Only in Ahmednagar, the irrigated area showed an increase from 2000-01 to 2010-11. Hence agriculture in the state is mainly dependent on monsoons. Further, since tube wells are a major source of irrigation, it is important to ensure that ground water is being recharged

In Table 3.7, the status of rainfall in the state is indicated. Although the average rainfall in the state is 1007 mm, it is not evenly distributed across regions. Though the coastal regions and the ghats receive an annual rainfall of about 2000 mm, major part of the state lies in the rain shadow region of the ghat with an average of 600 to 700 mm of rainfall (<http://www.mahaagri.gov.in>). From this table, it can be observed that in several years, rainfall in the state was below normal. Even, if rainfall is close to average, some regions

suffer from acute drought. In 2013-14, rainfall was 77.97 percent of normal while in 2014-15, it was 64.54 percent of normal.

Table 3.6 : Irrigated Area (Source wise) in Each District of selected State (00 Hectares)

Districts	Tube Wells			Canals and Tanks			Total		
	1990-91	2000-01	2010-11	1990-91	2000-01	2010-11	1990-91	2000-01	2010-11
Ahmednagar District (00ha.)	2267	2578	3544	710	948	1182	2977 (27.85)	3526 (25.26)	4726 (32.3)
Osmanabad District (00 ha.)	799	921	1020	191	202	264	990 (13.38)	1123 (13.80)	1284 (14.26)
Maharashtra (00 ha.)	20594	22845	27578	10101	10117	11819	30695 (14.04)	32962 (15.25)	39397 (17.0)

Source : Agricultural Statistical Information, Maharashtra State, Commissionerate of Agriculture, Pune.

Note : figures in brackets are percentage to GCA

Table 3.7: Trends in Rainfall (mm)in Maharashtra :

Years	Rainfall (mm)	Rainfall as % of Normal Rainfall
1985-86	889.7	73.21
1986-87	979.6	80.61
1987-88	1465.1	120.56
1988-89	1170.1	96.29
1989-90	1373.8	113.05
1990-91	1045.5	89.40
1991-92	1094.9	93.63
1992-93	1242.4	106.24
1993-94	1316.6	108.34
1994-95	1082.5	89.08
1995-96	1153.2	94.90
1996-97	1080.4	88.91
1999-98	1342	114.76
1998-99	1126.2	96.62
1999-00	1051.3	89.89
2000-01	1020.2	87.23
2001-02	994.1	84.99
2002-03	1126.7	93.66
2003-04	1105.2	91.87
2004-05	1463.7	121.67
2005-06	1442.1	119.88
2006-07	1391.1	115.64

Years	Rainfall (mm)	Rainfall as % of Normal Rainfall
2007-08	1146.9	95.34
2008-09	1418.4	117.91
2009-10	1418.4	117.91
2010-11	1292.4	107.43
2011-12	1206.9	103.89
2012-13	1386.5	115.25
2013-14	938	77.97
2014-15	776.4	64.54
2015-16	1223.8	101.73

Source :<http://mahaagri.gov.in/rainfall/index.asp>

Appendices 3.5 to 3.6 indicate various types of infrastructure in the sample districts as well as at the state level. Mainly, it can be seen that in both the districts, 100 percent of the villages are electrified and are linked with road. The data shows that Ahmednagar is better off in terms number of tractors, electrical tube wells, bank offices, APMCs than Osmanabad. This probably could be explained in terms of higher extent of NSA,urbanization and irrigated area (tables 3.4 and 3.5) which is higher in case of the former.

Thus after observing certain characteristics related to the agricultural economy of the state as well as selected districts, an attempt is made in the following chapter to observe the causes of fallow land with the help of field level data.

Chapter 4

Results of Primary Survey

This chapter analyses the primary data collected from the selected households in districts Osmanabad and Ahmednagar. It discusses demographic and socio economic characteristics of the households and examines details of land kept fallow with the households. Data is presented for selected households in both the districts as well as for the overall situation.

4.1 Socio-Economic Characteristics:

Table 4.1 presents demographic characteristics of the sample households. It is observed from the table that for most of the variables, the households in both the districts had depicted similar characteristic features with marginal differences in the variables. The average age of the household head was around 50 years and the average age of education was around 9 years for total households indicating that the education was taken upto secondary level. The highest average education of household members was around 12 years. In case of both the education variables, district Ahmednagar was found to be slightly better than district Osmanabad.

The average size of the households was 5.2 and the number of females in the households was 2.30 for the overall households. The average number of children in the age group of 0-14 was however less than 1 indicating that the families had less than 1 school going children. The average number of girl children in the age group of 0-14 was less than 0.5 as expected. It was 0.37 years in Ahmednagar and was less than that in Osmanabad (0.45) which is relatively an underdeveloped district. The average number of working members was 3.48 in case of Ahmednagar and 3.07 in case of Osmanabad.

The caste composition of the overall farmers showed that in both the districts, majority of the farmers (80 percent) belonged to the other (general) category. However, in Osmanabad, OBCs were the second dominant group (13.33 percent), in Ahmednagar STs occupied the second position (11.67 percent).

Majority of the households (around 94 percent) in both the districts were Hindu by religion. In Osmanabad, the remaining households belonged to Sikh (1.67percent) and Muslim (5 percent) religions. In Ahmednagar, the remaining 5 percent of the households were Buddhists by religion

The table also shows net income of the households and the average asset value. Values of both the variables were higher, almost double in case of district Ahmednagar than district Osmanabad. The average net income as well as the asset value of the overall farmers was more than Rs.2,00,000/-

Table4.1: Socio-Economic Characteristics

	Demographic Characteristics	Osmanabad	Ahmednagar	Average
1	Average Age of household head(Yrs)	50.22	50.57	50.39
2	Average Education of household head (Yrs)	8.96	9.26	9.12
3	Highest average Education of the members in the household (yrs)	11.51	12.77	12.14
4	Average household size	4.8	5.6	5.2
5	Average number of females in the household	2.22	2.38	2.30
6	Average number of children (0-14 years)	0.83	0.87	0.85
7	Average number of girl children (0-14 Years)	0.45	0.37	0.41
8	Average number of working members in the household	3.07	3.48	3.28
9	Caste(% of households)			
	SC	1.67	13.33	7.5
	ST	0	11.67	5.83
	OBC	13.33	0	6.67
	Other	85	75	80.00
	Total	100	100	100
10	Religion (% of households)			
	Hindu	93.33	95	94.17
	Buddhism	0	5	2.50
	Sikh	1.67	0	0.83
	Muslim	5.00	0	2.50
	Total	100	100	100
	Average land size	7.16	8.89	8.02
	Average Net income of the households(Rs)	159933	291917	225925
	Average Asset value (in Rs.)	126140	305673	215907

4.2: Category wise composition of Income:

Tables 2a, 2b and 2c present sourcewise distribution of total annual income for each of the land size category for Osmanabad, Ahmednagar and total farmers. In case of Osmanabad, it was observed that 58 percent of the total farmers derived income from agriculture. The other two important sources of income were livestock (21 percent) and working as agricultural labour (10.54 percent). The share of livestock was very high i.e. 35

percent in case of small and marginal farmers as compared to other categories. It was observed that the share of salaries was highest in case of large farmers. It was thus observed that medium and large farmers had diverse sources of income as compared to the smaller two category farmers.

**Table 4.2(a) : Category wise Composition of total income of the households
Osmanabad(in Rs)**

Sr. no.	Source of income	Small & Marginal	Semi Medium	Medium	Large	Average
1	Agricultural	71667 (54.36)	120938 (67.95)	90370 (62.36)	71364 (38.39)	93167 (58.26)
2	Livestock	46667 (35.4)	37063 (20.82)	30556 (21.09)	31818 (17.11)	34133 (21.34)
3	Nonfarm Enterprise	-	-	370 (0.26)	-	167 (0.1)
4	Agricultural Labor	13500 (10.24)	13750 (7.72)	18889 (13.04)	18182 (9.78)	16850 (10.54)
5	Casual Labor	-	6250 (3.51)	556 (0.38)	10000 (5.38)	3750 (2.34)
6	Hiring out agricultural machinery/Water sale	-	-	444 (0.31)	-	200 (0.13)
7	Rent from leased out land	-	-	-	-	-
8	Rent from House	-	-	-	-	-
9	Interest on deposits or lending to individuals	-	-	-	-	-
10	Salaries	-	-	3704 (2.56)	54545 (29.34)	11667 (7.29)
11	Pensions	-	-	-	-	-
12	Remittances	-	-	-	-	-
13	Income From Other sources(Specify)	-	-	-	-	-
	Total Annual Income	131833 (100)	178000 (100)	144889 (100)	185909 (100)	159933 (100)

Note: Figures in the parenthesis indicate share of sources in the total for the category.

In case of Ahmednagar also, the most important source of income was agriculture for the total farmers. However, the composition of total income was different from that in case of Osmanabad and salary and income from working as agricultural labour were the other two important sources. Whereas in Osmanabad, livestock was an important source, in Ahmednagar, small and marginal farmers derived income (80 percent) mainly from working as agricultural labour and did not have any income from livestock.

The tables show that in absolute terms, all farmer households (except small and marginal households) in Ahmednagar had derived higher level of income than the respective category households in Osmanabad. It was also observed that the medium and large farmers had multiple sources of income as compared to the small and marginal farmers.

Table 4.2(b): Category wise Composition of total income of the households Ahmednagar

Sr.no.	Source of income	Small & Marginal	Semi Medium	Medium	Large	Total Farmers
1	Agricultural	20000 (19.05)	90417 (49.32)	129677 (48.99)	237333 (51.59)	145083 (49.7)
2	Livestock	-	25000 (13.64)	32742 (12.37)	38667 (8.41)	31583 (10.82)
3	Nonfarm Enterprise	-	0 (0)	7742 (2.93)	0 (0)	4000 (1.37)
4	Agricultural Labor	85000 (80.95)	39583 (21.59)	32903 (12.43)	60667 (13.19)	42917 (14.7)
5	Casual Labor	-	-	7097 (2.68)	0 (0)	3667 (1.26)
6	Hiring out agricultural machinery/Water sale	-	-	-	-	-
7	Rent from leased out land	-	-	-	-	-
8	Rent from House (if Any)	-	-	-	-	-
9	Interest on deposits or lending to individuals	-	-	-	-	-
10	Salaries	-	28333 (15.45)	45806 (17.31)	85333 (18.55)	50667 (17.35)
11	Pensions	-	-	8710 (3.29)	38000 (8.26)	14000 (4.8)
12	Remittances	-	-	-	-	-
13	Income From Other sources(Specify)	-	-	-	-	-
	Total Annual Income	105000 (100)	183333 (100)	264677 (100)	460000 (100)	291917 (100)

Note: Figures in the parenthesis indicate share of sources in the total for the category.

In case of overall households also it was observed that agriculture was the most important source of income followed by livestock, agricultural labour and salaries.

Table 4.2(c) : Category wise Composition of total income Overall households

Sr. no.	Source of income	Small & Marginal	Semi Medium	Medium	Large	All Sampled Farmers
1	Agricultural	58750 (46.96)	107857 (59.82)	111379 (53.31)	167115 (48.57)	119125 (52.73)
2	Livestock	35000 (27.97)	31893 (17.69)	31724 (15.19)	35769 (10.4)	32858 (14.54)
3	Nonfarm Enterprise	-	-	4310 (2.06)	-	2083 (0.92)
4	Agricultural Labor	31375 (25.07)	24821 (13.77)	26379 (12.63)	42692 (12.41)	29883 (13.23)
5	Casual Labor	-	3571 (1.98)	4052 (1.94)	4231 (1.23)	3708 (1.64)
6	Hiring out agricultural machinery/Water sale	-	-	207 (0.1)	-	100 (0.04)
7	Rent from leased out land	-	-	-	-	-
8	Rent from House	-	-	-	-	-
9	Interest on deposits or lending to individuals	-	-	-	-	-
10	Salaries	-	12143 (6.74)	26207 (12.54)	72308 (21.02)	31167 (13.8)
11	Pensions	-	-	4655 (2.23)	21923 (6.37)	7000 (3.1)
12	Remittances	-	-	-	-	-
13	Income From Other sources(Specify)	-	-	-	-	-
	Total Annual Income	125125 (100)	180286 (100)	208914 (100)	344038 (100)	225925 (100)

Note: Figures in the parenthesis indicate share of sources in the total for the category.

4.3 Indebtedness among farmers:

Data on indebtedness among farmers in Osmanabad showed that 93.3 percent of farmers had outstanding loan. This can be observed from table 3a. The amount of loan of large households was twice that of small and marginal households. The data showed that across all size groups, 96.14 percent had taken loan from institutional sources and 87 percent had availed of it for productive purposes.

In Ahmednagar, it was observed that 45 farmers out of a 60 or 75 percent had outstanding loan. The loan taken by large farmers was the largest amount and was 1.65 times the average of all categories while in case of small and marginal it was 1.5 times the average of all categories. It was relatively smaller in case of semi medium and medium category. The

data also reveal that 92.87 percent of farmers overall size categories took loan from institutional sources and 90 percent used it for productive purposes.

Table 4.3(a): Indebtedness among farmers in Osmanabad

Farm-Size Categories	Number of total farmers	Number of farmers with outstanding loans (Actual Numbers HH)	Amount Outstanding (Average per HH Nos.)	Share from Institutional source	Share of loan used for Productive purpose
Small & Marginal	6	6 (10.71)	63000	100.00	91
Semi Medium	16	15 (26.79)	155133	100.00	82
Medium	27	24 (42.86)	110108	91.18	86
Large	24	11 (19.64)	127909	98.01	95
All Categories	60	56 (100)	120618	96.14	87

Note: Figures in the parenthesis indicate percentage share of farmers with outstanding loans in the category.

Table 4.3(b): Indebtedness among farmers in Ahmednagar

Farm-Size Categories	Number of total farmers	Number of farmers with outstanding loans (Actual Numbers HH)	Amount Outstanding (Average per HH Nos.)	Share from Institutional source	Share of loan used for Productive purpose
Small & Marginal	2	2 (4.44)	265000	100.00	100
Semi Medium	12	6 (13.33)	93000	89.25	83
Medium	31	22 (48.89)	107591	94.09	92
Large	15	15 (33.33)	284267	91.79	89
All Categories	60	45 (100)	171533	92.87	90

Note: Figures in the parenthesis indicate percentage share of farmers with outstanding loans in the category.

Table 4.3(c): Indebtedness among Overall farmers

Farm-Size Categories	Number of total farmers	Number of farmers with outstanding loans (Actual Numbers HH)	Amount Outstanding (Average per HH Nos.)	Share from Institutional source	Share of loan used for Productive purpose
Small & Marginal	8	8 (7.92)	113500	100.00	93
Semi Medium	28	21 (20.79)	137381	97.92	82
Medium	58	46 (45.54)	108904	92.55	89
Large	26	26 (25.74)	218115	93.33	91
All Categories	120	101 (100)	143303	94.40	88

Note: Figures in the parenthesis indicate percentage share of farmers with outstanding loans in the category.

The overall picture across all size groups, reveals that 84 percent of farmers had outstanding loans and by and large the amount of loan increased with size of holding. About

94 percent of loan was taken from institutional sources and 88 percent was used for productive purposes.

4.4 Details of Irrigation Assets:

Tables 4a to 4c indicate details of status of irrigation in Osmanabad, Ahmednagar and for overall farmers. Table 4a shows that majority of the households in Osmanabad had tube wells/ bore wells. However, only 33 percent had submersibles possibly indicating that a number of wells might not have been in use due to lack of water. More than 60 percent of the households had electric pumps as they are used for lifting water from wells, farm ponds, for drip irrigation etc. Only 11 percent of the households had drip irrigation systems.

On an average the cost of tube/ bore well was around Rs 47000/- per household and that of submersible pump was more than Rs. 60000/- as many households had more than 1 bore/ tube well as well as submersibles. The average cost incurred on well was highest i.e. more than Rs.80000/-. It was found that the farmers did not participate in the rent market for the irrigation assets.

Table4.4(a): Details of Irrigation Assets Osmanabad

Sr. No.	Asset	Number of people with ownership	Average cost per household (Rs)	Number of People Renting	Average Rental Rates (Rs./Acre)
1	Tube well/Bore well	48 (80.00)	47041.67	-	-
2	Diesel Pump	-	-	-	-
3	Electric Pump	37 (61.67)	20486.49	-	-
4	Submersibles	20 (33.33)	60100.00	-	-
5	Drip Irrigation	7 (11.67)	60000.00	-	-
6	Well	3 (5.00)	83333.00	-	-
	All sources		38852.17		

Note: Figures in the parenthesis indicate percentage share in total sample households (60).

Data relating to Ahmednagar shows that the number of households owning irrigation assets was more in each category than in case of Osmanabad (table 4b). 75 percent of the households had tube/ bore wells and more than 50 percent had submersibles. The extent of ownership of drip irrigation system was more in Ahmednagar than in Osmanabad. This revealed awareness and affordability of the system in Ahmednagar. However, the average cost of ownership of all assets was marginally higher in case of Ahmednagar than in Osmanabad.

Data for overall farmers shows that more than 50 percent of the farmers had tube/bore wells and electric pumps (table 4c). Only around 20 percent of the households had drip irrigation systems. The average cost incurred on drip irrigation system and well was higher as compared to the other assets.

Table 4.4(b): Details of Irrigation Assets Ahmednagar

Sr. No.	Asset	Number of farmers with ownership	Average cost per household (Rs)	Number of People Renting	Average Rental Rates (Rs./Acre)
1	Tube well/Bore well	45 (75)	53933.33	-	-
2	Diesel Pump	-	-	-	-
3	Electric Pump	42 (70)	20904.77	-	-
4	Submersibles	31 (51.67)	27870.97	-	-
5	Drip Irrigation	18 (30)	108055.56	-	-
6	Well	15 (25)	143800.00	-	-
	All sources		41894.04		

Note: Figures in the parenthesis indicate percentage share of farmers with ownership the category.

Table 4.4(c): Details of Irrigation Assets of Overall farmers.

Sr. No.	Asset	Number of people with ownership (Absolute)	Average cost per household (Rs)	Number of People Renting	Average Rental Rates (Rs./Acre)
1	Tube well/Bore well	93 (77.5)	50376.34	-	-
2	Diesel Pump	-	-	-	-
3	Electric Pump	79 (65.83)	20708.87	-	-
4	Submersibles	51 (42.5)	40509.80	-	-
5	Drip Irrigation	25 (20.83)	94600.00	-	-
6	Well	18 (15)	133722.22	-	-
	All sources		40578.95		

Note: Figures in the parenthesis indicate percentage share of farmers with ownership the category.

Tables indicate details relating to land used for cultivation. In case of Osmanabad (table 5a), it was observed that the number of plots with farmers increased with the land size category and the overall farmers owned 1.45 plots. The average size of land owned and of operational holding for all farmers was 7.16 acres and 4.54 acres respectively. On an average, the size of fallow land for all the farmers was 2.62 acres. The table also shows that no farmer had leased in land for cultivation more than 50 percent of the land.

In case of Ahmednagar (table 5b), the average size of land owned and of operational holding for all farmers was 8.89 acres and 5.32 acres respectively. On an average, the size of fallow land for all the farmers was 3.71 acres. In Ahmednagar too, no farmer had leased in land for cultivation.

Table4.5(a): Information on land used for cultivation in Osmanabad

	Particulars	Farm-Size Categories				
		Small and Marginal	Semi Medium	Medium	Large	All Sampled Farmers
1	Average no. of plots(Nos.)	1.00	1.13	1.30	2.55	1.45
2	Average Land Owned (Acre)	1.75	3.59	6.50	16.91	7.16
3	Average Land Leased in (Acre)	-	-	-	-	-
4	Average Land Leased Out(Acre)	-	-	-	-	-
5	Average Size of Operational Holding (Acre)	1.00	1.94	4.02	11.55	4.54
6	Average Irrigated Area (Acre)	0.61	1.17	2.04	9.27	2.99
7	Average No. of Plots Fallow(Nos.)	-	-	-	-	-
8	Average area under fallow (Acre)	0.75	1.66	2.48	5.36	2.62
9	Average area under food grains(%)	51	51.55	53.5	53.16	53.09
10	Average area under non-foodgrains cotton, soyabean (%)	38	58.76	37.3	39.22	38.32
11	Average Under fruits And Veg (%)	11	10.31	9.20	7.62	8.59

Note :Fallow refers to total fallow

Table 4.5(b): Information on land used for cultivation in Ahmednagar

	Particulars	Farm-Size Categories				
		Small & Marginal	Semi Medium	Medium	Large	All Sampled Farmers
1	Average no. of plots(Nos.)	1.00	1.25	1.55	2.13	1.62
2	Average Land Owned (Acre)	1.50	3.88	6.83	18.13	8.89
3	Average Land Leased in (Acre)	-	-	-	-	-
4	Average Land Leased Out(Acre)	-	-	-	-	-
5	Average Size of Operational Holding (Acre)	0.50	1.92	4.30	10.78	5.32
6	Average Irrigated Area (Acre)	0.40	1.04	2.95	7.85	3.71
7	Average No. of Plots Fallow(Nos.)	-	-	-	-	-
8	Average area under fallow (Acre)	1.00	1.96	2.53	7.35	3.57
9	Average area under food grains(%)	86	82.3	82.56	83.76	83.08
10	Average area under non food grains cotton, soyabean(%)	2	2.6	2.56	2.51	2.63
11	Average Under fruits and Veg (%)	12	15.10	14.88	13.73	14.29

Note: Fallow refers to total fallow

For the overall farmers (table 5c), the average size of land owned and of operational holding for all farmers was 8.02 acres and 4.93 acres respectively. On an average, the size of fallow land for all the farmers was 3.09 acres.

Table 4.5(c): Information on land used for cultivation :Overall

	Particulars	Farm-Size Categories				
		Small & Marginal	Semi Medium	Medium	Large	All Sampled Farmers
1	Average no. of plots(Nos.)	1.00	1.18	1.43	2.31	1.53
2	Average Land Owned (Acre)	1.69	3.71	6.68	17.62	8.02
3	Average Land Leased in (Acre)	-	-	-	-	-
4	Average Land Leased Out(Acre)	-	-	-	-	-
5	Average Size of Operational Holding (Acre)	0.88	1.93	4.17	11.11	4.93
6	Average Irrigated Area (Acre)	0.56	1.12	2.52	8.45	3.35
7	Average No. of Plots Fallow(Nos.)	-	-	-	-	-
8	Average area under fallow (Acre)	0.81	1.79	2.51	6.51	3.09
9	Average area under food grains%	56.82	64.77	69.8	70.65	69.37
10	Average area under food grains %	31.82	23.31	18.21	18.73	19.27
11	Avg area under fruits &Veg %	11.36	11.92	11.99	10.62	11.36

Note: Fallow refers to total fallow

4.5 Cropping Pattern of Sample Farmers:

The cropping pattern of sample farmers is observed from Table 6 (a) to 6 (c).

In Osmanabad (Table 6 a), it can be observed that little more than half the area is under foodgrains and average across all size groups was 53.09 percent with 32.16 percent under cereals and 20.93 percent under pulses. In case of large farmers, kharif jowar was the dominant cereal crop while in case of other size groups, it was bajra. Among pulses, tur was the major crop with a share of 10.13 percent across all size groups. Soyabean was an important crop with a share of 23 percent for small and marginal farmers and 21.81 percent across all size groups. In case of cotton the average share across all size groups was 9.69 percent.

Table 4.6(a) Cropping Pattern of Sample Farmers in Osmanabad (hectares)

	Small & Marginal		Semi Medium		Medium		Large		Average	
	Area	%	Area	%	Area	%	Area	%	Area	%
KharifJowar	0.06	6.00	0.11	5.67	0.32	7.96	3.39	29.35	0.8	17.62
Bajari	0.17	17.00	0.25	12.89	0.76	18.91	0.23	1.99	0.47	10.35
Rabi Jowari	0.04	4.00	0.15	7.73	0.2	4.98	0.32	2.77	0.19	4.19
Tur	0.1	10.00	0.2	10.31	0.42	10.45	1.14	9.87	0.46	10.13
Udid	0.04	4.00	0.09	4.64	0.18	4.48	0.59	5.11	0.22	4.85
Gram	0.1	10.00	0.2	10.31	0.27	6.72	0.47	4.07	0.27	5.95
Total Cereals	0.27	27	0.51	26.29	1.28	31.85	3.94	34.11	1.46	32.16
Total Pulses	0.24	24	0.49	25.26	0.87	21.65	2.2	19.05	0.95	20.93
Total foodgrain	0.51	51	1.0	51.55	2.15	53.5	6.14	53.16	2.41	53.09
soyabean	0.23	23.00	0.43	22.16	0.92	22.89	2.39	20.69	0.99	21.81
Cotton	0.06	6.00	0.18	9.28	0.28	6.97	1.44	12.47	0.44	9.69
Sugarcane	0.08	8.00	0.13	6.70	0.3	7.46	0.69	5.97	0.3	6.61
Fruits & Veg	0.11	11.00	0.2	10.31	0.37	9.20	0.88	7.62	0.39	8.59
Total	1	100.00	1.94	100.00	4.02	100.00	11.55	100.00	4.54	100.00

Source : Field Survey

In Table 6b, the cropping pattern of sample farmers in Ahmednagar district is indicated. It can be observed that cereals constitute more than 80 percent of area and among cereals, the dominant crop was rabi jowar with a share of 42.67 percent in total area across all size groups. Fruits and vegetables had a share of 14.29 percent across all size groups.

Table 4.6(b) Cropping Pattern of Sample Farmers in Ahmednagar (hectares)

	Small & Marginal		Semi Medium		Medium		Large		Average	
	Area	% Share	Area	% Share	Area	% Share	Area	% Share	Area	% Share
Kharif Jowar	0.02	4.00	0.07	3.65	0.62	14.42	4.02	37.29	1.34	25.19
Bajari	0.1	20.00	0.31	16.15	0.62	14.42	1.34	12.43	0.72	13.53
Rabi Jowar	0.3	60.00	1.17	60.94	2.23	51.86	3.49	32.37	2.27	42.67
Gram	0.01	2.00	0.03	1.56	0.08	1.86	0.18	1.67	0.09	1.69
Total cereals	0.42	84	1.55	80.74	3.47	80.70	8.85	82.09	4.33	81.39
Total Pulses	0.01	2.00	0.03	1.56	0.08	1.86	0.18	1.67	0.09	1.69
Total foodgrains	0.43	86	1.58	82.3	3.55	82.56	9.03	83.76	4.42	83.08
Sugarcan e	0.01	2.00	0.05	2.60	0.11	2.56	0.27	2.50	0.13	2.44
Fruits & Veg	0.06	12.00	0.29	15.10	0.64	14.88	1.48	13.73	0.76	14.29
Total	0.5	100.00	1.92	100.00	4.3	100.00	10.78	100.00	5.32	100.00

Source : Field Survey

Taking into consideration the overall cropping pattern (Table 6 c), it can be observed that cereals constituted 58.62 percent of share while the share of pulses was 10.75 percent (across all size groups) which indicates that foodgrains constituted 69.37 percent of area under all crops. Rabi jowar was the most important cereal crop across all groups. The share of soyabean in the overall cropping pattern across all size groups was 9.94 percent while that for cotton was 4.67 percent. Cotton was cultivated in Osmanabad but did not feature in the talukas selected in Ahmednagar.

Table 4.6(c) Cropping Pattern of Sample Farmers: Overall (Area: hectares)

	Small & Marginal		Semi Medium		Medium		Large		Average	
	Area	Perce nt Share	Area	Perce nt Share	Area	Perce nt Share	Area	Perce nt Share	Area	Perce nt Share
Kharif Jowar	0.05	5.68	0.09	4.66	0.48	11.51	3.76	33.84	1.07	21.70
Bajari	0.15	17.05	0.27	13.99	0.68	16.31	0.87	7.83	0.59	11.97
Rabi Jowari	0.11	12.50	0.59	30.57	1.29	30.94	2.15	19.35	1.23	24.95
Tur	0.08	9.09	0.12	6.22	0.2	4.80	0.51	4.59	0.24	4.87
Udid	0.03	3.41	0.05	2.59	0.09	2.16	0.25	2.25	0.11	2.23
Gram	0.08	9.09	0.13	6.74	0.17	4.08	0.31	2.79	0.18	3.65
Total cereals	0.31	35.23	0.95	49.22	2.45	58.76	6.78	61.02	2.89	58.62
Total Pulses	0.19	21.59	0.3	15.55	0.46	11.08	1.07	9.63	0.53	10.75
Total Foodgrains	0.50	56.82	1.25	64.77	2.91	69.84	7.85	70.65	3.42	69.37
Soyaben	0.18	20.45	0.24	12.44	0.43	10.31	1.01	9.09	0.49	9.94
Cotton	0.04	4.55	0.1	5.18	0.14	3.36	0.63	5.67	0.23	4.67
Sugarcane	0.06	6.82	0.1	5.18	0.2	4.80	0.45	4.05	0.22	4.46
Fruits & Veg	0.1	11.36	0.23	11.92	0.5	11.99	1.18	10.62	0.56	11.36
Total	0.88	100.00	1.93	100.00	4.17	100.00	11.11	100.00	4.93	100.00

Source: Field Survey

4.6 Extent of fallow land among sample farmers:

Land is a limited resource and leaving it fallow obviously has a detrimental impact for the agricultural economy. The extent of land left fallow in the selected talukas was already discussed in chapter 2. Therefore in this section an attempt is made to observe the extent of fallow land with sample farmers. The same is indicated in Table 4.7.

In Osmanabad, it can be observed that the percentage of land left fallow was highest in the semi medium category (46.09 percent) and the average across all sample farmers was 36.55 percent. In case of Ahmednagar, the extent of fallow land was 66.67 percent with small

and marginal farmers and 40.18 percent across all size groups. Taking the overall picture into consideration, it was observed that across all size groups 38.56 percent of land was left fallow.

An attempt was also made to find the proportion of fallow land in each of the social category of farmers. Table 4.7 shows that the proportion of fallow land is higher in case of SC, ST and general category households. It is lowest in case of OBC households in both the districts and at the state level.

Table 4.7: The extent of Fallow land among sample farmers (acres)

Category	Osmanabad		Ahmednagar		Overall	
	Average Current Fallow Land	Share of fallow land to average land holding (%)	Average Current Fallow Land	Share of fallow land to average land holding (%)	Average Current Fallow Land	Share of fallow land to average land holding (%)
Size Class category						
Small & Marginal	0.75	42.86	1.00	66.67	0.81	48.15
Semi Medium	1.66	46.09	1.96	50.54	1.79	48.08
Medium	2.48	38.18	2.53	37.08	2.51	37.58
Large	5.36	31.72	7.35	40.53	6.51	36.95
All Sampled Farmers	2.62	36.55	3.57	40.18	3.09	38.56
Social category						
SC	4.13	50.00	2.09	35.45	2.77	41.43
ST	1.67	38.46	3.57	54.64	3.00	51.06
OBC	2.61	33.33	3.30	42.10	2.83	36.17
General	2.52	37.10	4.01	38.48	3.31	37.98
All Sampled Farmers	2.62	36.55	3.57	40.18	3.09	38.56

Source: Field Survey

4.7 Reasons for farmers leaving land fallow:

In the section of review of literature in chapter 1, some studies had discussed the reasons for leaving the land fallow. An attempt has also been made in this study to observe the reasons for farmers to leave land fallow.

4.7.1 Rating of Reasons for land being left fallow:

In Osmanabad (Table 8 a) it can be observed that other than lack of resources such as water or credit, shocks in personal life proved to be an important reason for land to be left fallow. It is now quite well known that Marathwada area in Maharashtra is experiencing rapid

increase in suicides among farmers. Discussion with some farmers in the sample revealed that after the death or illness of the main person who undertook farming decisions, other members were finding it difficult to continue with agriculture. They were not in a position to make any decision and the immediate reaction was to keep the land fallow.

Uncertainty in rainfall was also an important reason as most farmers do not have access to protective irrigation. Farmers also often do not have access to credit and thus are forced to keep the land fallow. Other important reasons is that the land is close to forest area or mountain and not easily accessible to the farmer. Weed infestation and surface run off were also reasons for keeping land fallow.

Many times farmers have to keep the land fallow for the purpose of crop rotation. Hence this was also an important reason for land to be kept fallow.

Table 4.8 (a): Reasons for land being left fallow [Osmanabad]

Reasons for land being left fallow		Average rating	Standard Deviation of the Ratings
a.	Land is not suitable for cultivation	3.73	1.83
b.	Land set apart for conversion into non-agricultural purposes	3.46	2.03
c.	Not able to recover costs in farming/ Low profit	3.28	1.64
d.	Lack of assured irrigation	4.28	0.85
e.	Moved into other occupations which are more profitable	3.36	1.98
f.	Providing grazing lands for the cattle	3.05	1.83
g.	To Conserve moisture & prepared land for next crops	3.54	2.07
h.	Labor is not available for cultivation	3.30	1.80
i.	High yield volatility in the previous years	2.92	1.64
j.	Lack of assured market for the produce	3.21	1.83
k.	High price volatility in the previous years	3.09	1.84
l.	High production cost/lack of resources	4.03	2.16
m.	Lack of agricultural extension	3.64	2.03
n.	No access to credit	4.23	1.74
o.	Surface runoff	4.05	2.13
p.	Lack of watershed or similar efforts which could recharge ground water	4.24	2.23
q.	Water logging	4.22	2.29
r.	Uncertainty in rainfall	4.39	0.98
s.	Issues related to land entitlement	4.06	2.21
t.	Lack of expertise/experience in cultivation	4.24	2.28
u.	Shocks in personal life (like accident or death of a member)	4.41	2.28
v.	Low fertility of Soil & lack of Interest in cultivate in unfavorable season	3.48	1.93
w.	Lack of plough/tractor/Farm Yard Manure (FYM)	4.11	2.16
x.	Weed infected	4.22	2.21
y.	Close to mountain/forest	4.34	2.27
z.	Left land fallow for crop rotation	4.21	2.27

Source : Field Survey

Note : On a scale of 1 to 5 with 1 being not at all a reason to 5 being one of the major reason the above factors were rated on reasons for leaving land fallow while addressing sample farmers. Accordingly the average rating is calculated.

Table 4.8 (b): Reasons for land being left fallow: Ahmednagar

Reasons for land being left fallow		Average rating	Standard Deviation of the Ratings
a.	Land is not suitable for cultivation	3.11	1.88
b.	Land set apart for conversion into non-agricultural purposes	2.85	1.81
c.	Not able to recover costs in farming/ Low profit	2.81	1.60
d.	Lack of assured irrigation	4.23	0.83
e.	Moved into other occupations which are more profitable	2.82	1.74
f.	Providing grazing lands for the cattle	3.23	1.97
g.	To Conserve moisture & prepared land for next crops	3.25	1.90
h.	Labor is not available for cultivation	2.95	1.75
i.	High yield volatility in the previous years	2.88	1.89
j.	Lack of assured market for the produce	3.00	1.79
k.	High price volatility in the previous years	3.42	1.95
l.	High production cost/lack of resources	4.29	1.99
m.	Lack of agricultural extension	4.00	2.08
n.	No access to credit	4.67	1.38
o.	Surface runoff	3.56	2.09
p.	Lack of watershed or similar efforts which could recharge ground water	4.14	2.09
q.	Water logging	3.97	2.17
r.	Uncertainty in rainfall	4.39	0.75
s.	Issues related to land entitlement	3.81	2.15
t.	Lack of expertise/experience in cultivation	3.97	2.11
u.	Shocks in personal life (like accident or death of a member)	3.97	2.15
v.	Low fertility of Soil & lack of Interest in cultivate in unfavorable season	3.22	1.83
w.	Lack of plough/tractor/Farm Yard Manure (FYM)	4.06	2.21
x.	Weed infected	3.77	2.18
y.	Close to mountain/forest	5.45	1.97
z.	Left land fallow for crop rotation	4.34	2.23

Source: Field Survey

Note : On a scale of 1 to 5 with 1 being not at all a reason to 5 being one of the major reason the above factors were rated on reasons for leaving land fallow while addressing sample farmers. Accordingly the average rating is calculated.

Table 4.8 (c): Reasons for land being left fallow: Overall

Reason for leaving land fallow		Average rating	Standard Deviation of the Ratings
a.	Land is not suitable for cultivation	3.46	1.92
b.	Land set apart for conversion into non-agricultural purposes	3.31	1.93
c.	Not able to recover costs in farming/ Low profit	3.18	1.63
d.	Lack of assured irrigation	4.26	0.84
e.	Moved into other occupations which are more profitable	3.24	1.87
f.	Providing grazing lands for the cattle	3.32	1.89
g.	To Conserve moisture & prepared land for next crops	3.51	1.98
h.	Labor is not available for cultivation	3.25	1.78
i.	High yield volatility in the previous years	3.12	1.77
j.	Lack of assured market for the produce	3.16	1.81
k.	High price volatility in the previous years	3.30	1.89
l.	High production cost/lack of resources	3.91	2.07
m.	Lack of agricultural extension	3.75	2.05
n.	No access to credit	4.28	1.57
o.	Surface runoff	4.01	2.11
p.	Lack of watershed or similar efforts which could recharge ground water	4.14	2.15
q.	Water logging	4.22	2.23
r.	Uncertainty in rainfall	4.35	0.87
s.	Issues related to land entitlement	4.06	2.18
t.	Lack of expertise/experience in cultivation	4.11	2.20
u.	Shocks in personal life (like accident or death of a member)	4.27	2.22
v.	Low fertility of Soil & lack of Interest in cultivate in unfavorable season	3.39	1.87
w.	Lack of plough/tractor/Farm Yard Manure (FYM)	4.14	2.19
x.	Weed infected	4.18	2.19
y.	Close to mountain/forest	4.20	2.13
z.	Left land fallow for crop rotation	4.21	2.24

Source: Field Survey

Note: On a scale of 1 to 5 with 1 being not at all a reason to 5 being one of the major reason the above factors were rated on reasons for leaving land fallow while addressing sample farmers. Accordingly the average rating is calculated.

In Ahmednagar district, the highest rating for leaving the land fallow was that the plot was close to the mountain. Hence here the topography of the district is such that farmers leave the land fallow. However, lack of access to credit was also rated high as well as water shortage. Farmers also leave land fallow for the purpose of crop rotation.

Taking across both districts, the highest rating was for uncertainty in rainfall. Ahmednagar district lies in the rain shadow region and the average rainfall is about 560 mm. In Srigonda, for example, which is one of our sample districts, in 2011 the rainfall was as low

as 326 mm. By and large Ahmednagar falls in the scarcity zone and agriculture is mainly rainfed. Farmers are also resource poor and do not have access to credit. Also part of the district has land which is mountainous and farmers are unable to use the land for cultivation.

In several cases, the land is left uncultivated, because of the decease of one member of the family who undertook major decisions in farming. Other members of the family lack knowledge on how to continue with agricultural operations and thus leave the land fallow.

4.7.2 Frequency Distribution of Reasons for land to be left fallow:

It was also decided to observe the frequency distribution of responses with respect to the degree of importance for each reason. The same is indicated in Table 9 (a) to 9(c) and also presented in graphical form (Graph 4.1 to Graph 4.3). It may be noted here that all farmers in the sample did not respond to the question and the number who provided responses is indicated.

In Osmanabad, it was observed that maximum number of farmers felt that their land was water logged and hence could not use it for cultivation. Farmers use fertilizers but due to failure of monsoons, the fertilizer is not absorbed in the soil and hence causes water logging. Failure of monsoons also inhibits ground water from being recharged and having no source of water, the farmers keep the land fallow. Repeated crop failures put the farmer in a debt trap and they have no resources to invest in agriculture. Hence 55.77 percent of farmers revealed that lack of access to credit is also a reason for keeping land fallow.

In Ahmednagar district (Table 9 b) it is first of all observed that all farmers responded to the two questions which related to lack of assured irrigation and uncertainty in rainfall. The frequency distribution indicated that this was considered to be an important reason for land to be kept fallow. Out of 33 farmers, about half stated that their land was left fallow for crop rotation. Farmers also sometimes do not have access to credit and hence keep land fallow.

With respect to overall picture Table 9 (c), uncertainty in rainfall had the highest number of respondents as being the reason for land to be left fallow. Farmers also left land fallow for the purpose of crop rotation. This however is useful in order to prevent the soil from depleting and maintaining the soil health.

Table 4.9 (a): Reasons for land being left fallow; Frequency Distribution of number of Responses - Osmanabad

		Frequency					Total
		1	2	3	4	5	
a.	Land is not suitable for cultivation	2 (4.08)	7 (14.29)	11 (22.45)	11 (22.45)	18 (36.73)	49 (100)
b.	Land set apart for conversion into non-agricultural purposes	3 (8.11)	11 (29.73)	1 (2.7)	10 (27.03)	12 (32.43)	37 (100)
c.	Not able to recover costs in farming/ Low profit	1 (2)	17 (34)	8 (16)	15 (30)	9 (18)	50 (100)
d.	Lack of assured irrigation	0 (0)	2 (3.33)	9 (15)	19 (31.67)	30 (50)	60 (100)
e.	Moved into other occupations which are more profitable	3 (8.33)	10 (27.78)	5 (13.89)	7 (19.44)	11 (30.56)	36 (100)
f.	Providing grazing lands for the cattle	1 (2.7)	20 (54.05)	1 (2.7)	6 (16.22)	9 (24.32)	37 (100)
g.	To Conserve moisture & prepared land for next crops	2 (5.71)	11 (31.43)	1 (2.86)	8 (22.86)	13 (37.14)	35 (100)
h.	Labor is not available for cultivation	0 (0)	14 (32.56)	13 (30.23)	5 (11.63)	11 (25.58)	43 (100)
i.	High yield volatility in the previous years	0 (0)	18 (46.15)	11 (28.21)	5 (12.82)	5 (12.82)	39 (100)
j.	Lack of assured market for the produce	0 (0)	14 (41.18)	5 (14.71)	9 (26.47)	6 (17.65)	34 (100)
k.	High price volatility in the previous years	1 (2.94)	17 (50)	2 (5.88)	6 (17.65)	8 (23.53)	34 (100)
l.	High production cost/lack of resources	0 (0)	4 (11.76)	6 (17.65)	9 (26.47)	15 (44.12)	34 (100)
m.	Lack of agricultural extension	2 (6.06)	3 (9.09)	10 (30.3)	8 (24.24)	10 (30.3)	33 (100)
n.	No access to credit	0 (0)	6 (11.54)	5 (9.62)	12 (23.08)	29 (55.77)	52 (100)
o.	Surface runoff	1 (2.56)	3 (7.69)	6 (15.38)	12 (30.77)	17 (43.59)	39 (100)
p.	Lack of watershed or similar efforts which could recharge ground water	1 (2.63)	2 (5.26)	6 (15.79)	7 (18.42)	22 (57.89)	38 (100)
q.	Water logging	2 (5.56)	3 (8.33)	2 (5.56)	7 (19.44)	22 (61.11)	36 (100)
r.	Uncertainty in rainfall	0 (0)	1 (1.69)	9 (15.25)	15 (25.42)	34 (57.63)	59 (100)
s.	Issues related to land entitlement	2 (5.71)	3 (8.57)	2 (5.71)	12 (34.29)	16 (45.71)	35 (100)
t.	Lack of expertise/experience in cultivation	1 (3.03)	3 (9.09)	2 (6.06)	8 (24.24)	19 (57.58)	33 (100)
u.	Shocks in personal life (like accident or death of a member)	0 (0)	2 (5.88)	0 (0)	14 (41.18)	18 (52.94)	34 (100)
v.	Low fertility of Soil & lack of Interest in cultivate in unfavorable season	0 (0)	16 (38.1)	2 (4.76)	12 (28.57)	12 (28.57)	42 (100)
w.	Lack of plough/tractor/Farm Yard Manure (FYM)	1 (2.63)	3 (7.89)	4 (10.53)	13 (34.21)	17 (44.74)	38 (100)
x.	Weed infected	0 (0)	3 (8.33)	4 (11.11)	11 (30.56)	18 (50)	36 (100)
y.	Close to mountain/forest	0 (0)	3 (8.57)	1 (2.86)	12 (34.29)	19 (54.29)	35 (100)
z.	Left land fallow for crop rotation	2 (5.88)	2 (5.88)	1 (2.94)	11 (32.35)	18 (52.94)	34 (100)

Source: Field Survey ; Figures in brackets are percentage to total responses

Note: On a scale of 1 to 5 with 1 being not at all a reason to 5 being one of the major reason the frequency of each response to each number on the scale is indicated.

Table 4.9 (b): Reasons for land being left fallow; Frequency Distribution of number of Responses Ahmednagar

	for leaving land fallow	Frequency Distribution					Total
		1	2	3	4	5	
a.	Land is not suitable for cultivation	3 (7.89)	17 (44.74)	0 (0)	9 (23.68)	9 (23.68)	38 (100)
b.	Land set apart for conversion into non-agricultural purposes	0 (0)	15 (50)	2 (6.67)	7 (23.33)	6 (20)	30 (100)
c.	Not able to recover costs in farming/ Low profit	1 (2.27)	14 (31.82)	12 (27.27)	15 (34.09)	2 (4.55)	44 (100)
d.	Lack of assured irrigation	0 (0)	1 (1.67)	12 (20)	19 (31.67)	28 (46.67)	60 (100)
e.	Moved into other occupations which are more profitable	0 (0)	13 (41.94)	5 (16.13)	10 (32.26)	3 (9.68)	31 (100)
f.	Providing grazing lands for the cattle	0 (0)	4 (12.9)	10 (32.26)	10 (32.26)	7 (22.58)	31 (100)
g.	To Conserve moisture & prepared land for next crops	0 (0)	6 (20)	11 (36.67)	6 (20)	7 (23.33)	30 (100)
h.	Labor is not available for cultivation	1 (2.78)	8 (22.22)	13 (36.11)	11 (30.56)	3 (8.33)	36 (100)
i.	High yield volatility in the previous years	0 (0)	9 (31.03)	7 (24.14)	6 (20.69)	7 (24.14)	29 (100)
j.	Lack of assured market for the produce	0 (0)	15 (50)	3 (10)	6 (20)	6 (20)	30 (100)
k.	High price volatility in the previous years	0 (0)	6 (20)	11 (36.67)	4 (13.33)	9 (30)	30 (100)
l.	High production cost/lack of resources	0 (0)	1 (2.86)	13 (37.14)	13 (37.14)	8 (22.86)	35 (100)
m.	Lack of agricultural extension	0 (0)	3 (9.68)	9 (29.03)	8 (25.81)	11 (35.48)	31 (100)
n.	No access to credit	0 (0)	0 (0)	7 (12.73)	23 (41.82)	25 (45.45)	55 (100)
o.	Surface runoff	1 (2.86)	0 (0)	8 (22.86)	16 (45.71)	10 (28.57)	35 (100)
p.	Lack of watershed or similar efforts which could recharge ground water	0 (0)	0 (0)	11 (30.56)	13 (36.11)	12 (33.33)	36 (100)
q.	Water logging	0 (0)	0 (0)	5 (15.15)	16 (48.48)	12 (36.36)	33 (100)
r.	Uncertainty in rainfall	0 (0)	0 (0)	10 (16.67)	21 (35)	29 (48.33)	60 (100)
s.	Issues related to land entitlement	0 (0)	1 (3.33)	9 (30)	7 (23.33)	13 (43.33)	30 (100)
t.	Lack of expertise/experience in cultivation	0 (0)	2 (6.67)	8 (26.67)	9 (30)	11 (36.67)	30 (100)
u.	Shocks in personal life (like accident or death of a member)	0 (0)	0 (0)	9 (30)	9 (30)	12 (40)	30 (100)
v.	Low fertility of Soil & lack of Interest in cultivate in unfavorable season	0 (0)	15 (37.5)	5 (12.5)	13 (32.5)	7 (17.5)	40 (100)
w.	Lack of plough/tractor/Farm Yard Manure (FYM)	0 (0)	1 (3.23)	7 (22.58)	8 (25.81)	15 (48.39)	31 (100)
x.	Weed infected	0 (0)	1 (3.13)	8 (25)	9 (28.13)	14 (43.75)	32 (100)
y.	Close to mountain/forest	0 (0)	3 (6.82)	6 (13.64)	19 (43.18)	16 (36.36)	44 (100)
z.	Left land fallow for crop rotation	0 (0)	2 (6.06)	6 (18.18)	8 (24.24)	17 (51.52)	33 (100)

Source : Field Survey ; Figures in brackets are percentage to total responses

Note: : On a scale of 1 to 5 with 1 being not at all a reason to 5 being one of the major reason the frequency of each response to each number on the scale is indicated.

Table 4.9 (c): Reasons for land being left fallow: Frequency Distribution of number of Responses**Overall**

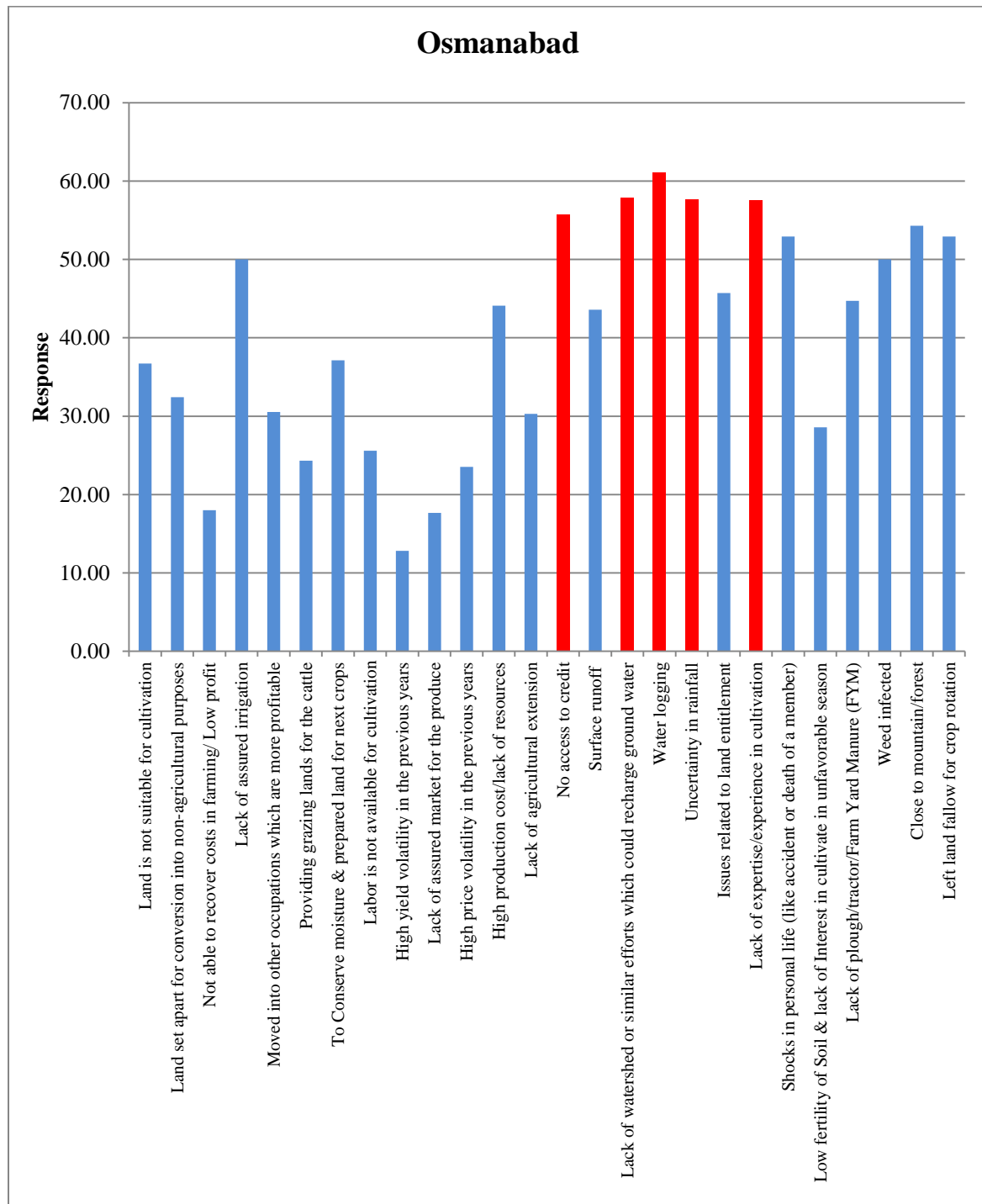
Sr. No	Reason for leaving land fallow	Frequency Distribution					
		1	2	3	4	5	Total
a.	Land is not suitable for cultivation	5 (5.75)	24 (27.59)	11 (12.64)	20 (22.99)	27 (31.03)	87 (100)
b.	Land set apart for conversion into non-agricultural purposes	3 (4.48)	26 (38.81)	3 (4.48)	17 (25.37)	18 (26.87)	67 (100)
c.	Not able to recover costs in farming/ Low profit	2 (2.13)	31 (32.98)	20 (21.28)	30 (31.91)	11 (11.7)	94 (100)
d.	Lack of assured irrigation	0 (0)	3 (2.5)	21 (17.5)	38 (31.67)	58 (48.33)	120 (100)
e.	Moved into other occupations which are more profitable	3 (4.48)	23 (34.33)	10 (14.93)	17 (25.37)	14 (20.9)	67 (100)
f.	Providing grazing lands for the cattle	1 (1.47)	24 (35.29)	11 (16.18)	16 (23.53)	16 (23.53)	68 (100)
g.	To Conserve moisture & prepared land for next crops	2 (3.08)	17 (26.15)	12 (18.46)	14 (21.54)	20 (30.77)	65 (100)
h.	Labor is not available for cultivation	1 (1.27)	22 (27.85)	26 (32.91)	16 (20.25)	14 (17.72)	79 (100)
i.	High yield volatility in the previous years	0 (0)	27 (39.71)	18 (26.47)	11 (16.18)	12 (17.65)	68 (100)
j.	Lack of assured market for the produce	0 (0)	29 (45.31)	8 (12.5)	15 (23.44)	12 (18.75)	64 (100)
k.	High price volatility in the previous years	1 (1.56)	23 (35.94)	13 (20.31)	10 (15.63)	17 (26.56)	64 (100)
l.	High production cost/lack of resources	0 (0)	5 (7.25)	19 (27.54)	22 (31.88)	23 (33.33)	69 (100)
m.	Lack of agricultural extension	2 (3.13)	6 (9.38)	19 (29.69)	16 (25)	21 (32.81)	64 (100)
n.	No access to credit	0 (0)	6 (5.61)	12 (11.21)	35 (32.71)	54 (50.47)	107 (100)
o.	Surface runoff	2 (2.7)	3 (4.05)	14 (18.92)	28 (37.84)	27 (36.49)	74 (100)
p.	Lack of watershed or similar efforts which could recharge ground water	1 (1.35)	2 (2.7)	17 (22.97)	20 (27.03)	34 (45.95)	74 (100)
q.	Water logging	2 (2.9)	3 (4.35)	7 (10.14)	23 (33.33)	34 (49.28)	69 (100)
r.	Uncertainty in rainfall	0 (0)	1 (0.84)	19 (15.97)	36 (30.25)	63 (52.94)	119 (100)
s.	Issues related to land entitlement	2 (3.08)	4 (6.15)	11 (16.92)	19 (29.23)	29 (44.62)	65 (100)
t.	Lack of expertise/experience in cultivation	1 (1.59)	5 (7.94)	10 (15.87)	17 (26.98)	30 (47.62)	63 (100)
u.	Shocks in personal life (like accident or death of a member)	0 (0)	2 (3.13)	9 (14.06)	23 (35.94)	30 (46.88)	64 (100)
v.	Low fertility of Soil & lack of Interest in cultivate in unfavorable season	0 (0)	31 (37.8)	7 (8.54)	25 (30.49)	19 (23.17)	82 (100)
w.	Lack of plough/tractor/Farm Yard Manure (FYM)	1 (1.45)	4 (5.8)	11 (15.94)	21 (30.43)	32 (46.38)	69 (100)
x.	Weed infected	0 (0)	4 (5.88)	12 (17.65)	20 (29.41)	32 (47.06)	68 (100)
y.	Close to mountain/forest	0 (0)	6 (7.59)	7 (8.86)	31 (39.24)	35 (44.3)	79 (100)
z.	Left land fallow for crop rotation	2 (2.99)	4 (5.97)	7 (10.45)	19 (28.36)	35 (52.24)	67 (100)

Source : Field Survey ; Figures in brackets are percentage to total responses

Note: : On a scale of 1 to 5 with 1 being not at all a reason to 5 being one of the major reason, the frequency of each response to each number on the scale is indicated.

Graph 4.1: Reasons for land being left fallow: Percentage of Responses which indicated 5 –Most important reason

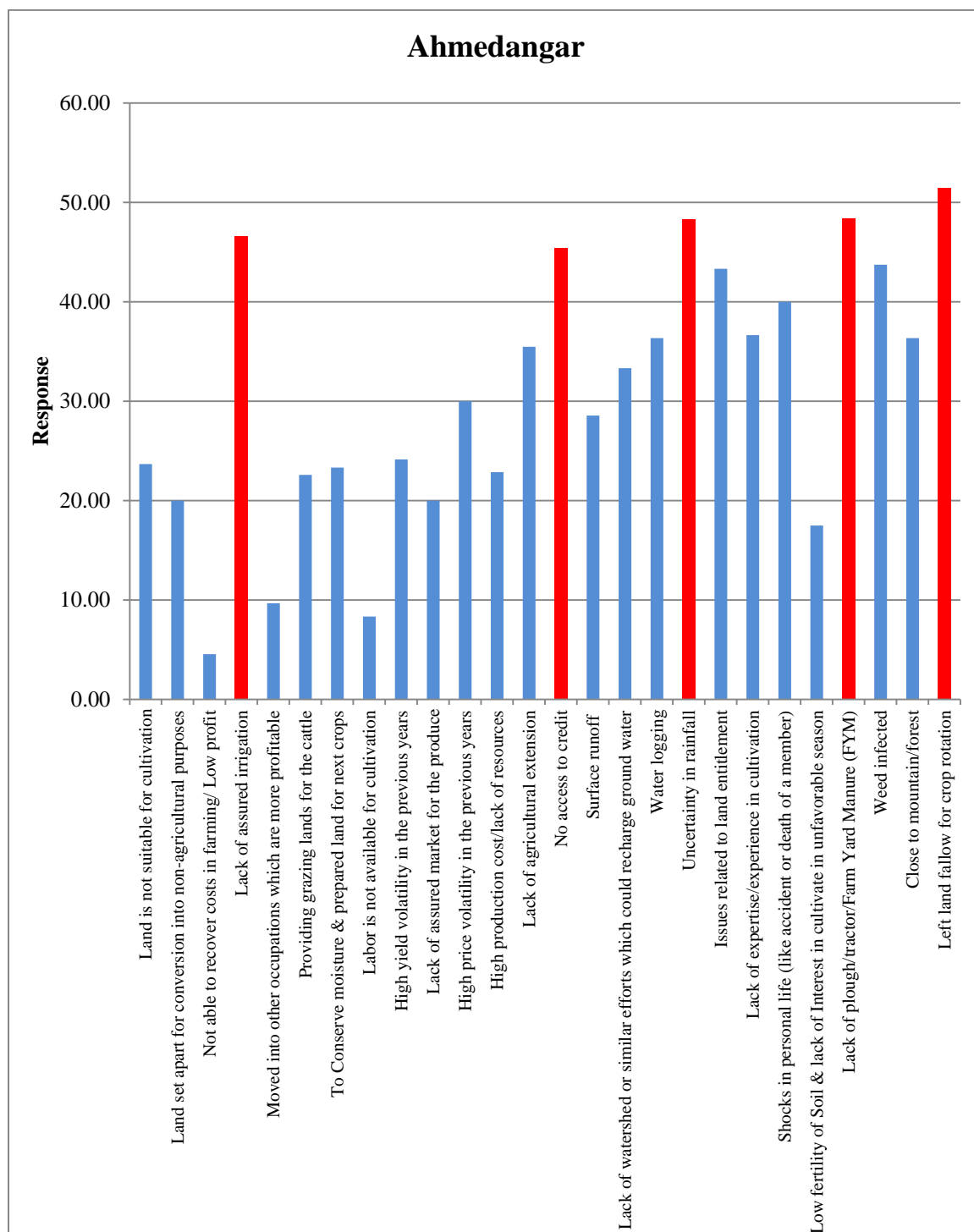
Osmanabad



Source: Field Survey

Graph 4.2: Reasons for land being left fallow : Percentage of Responses which indicated 5 -Most important reason

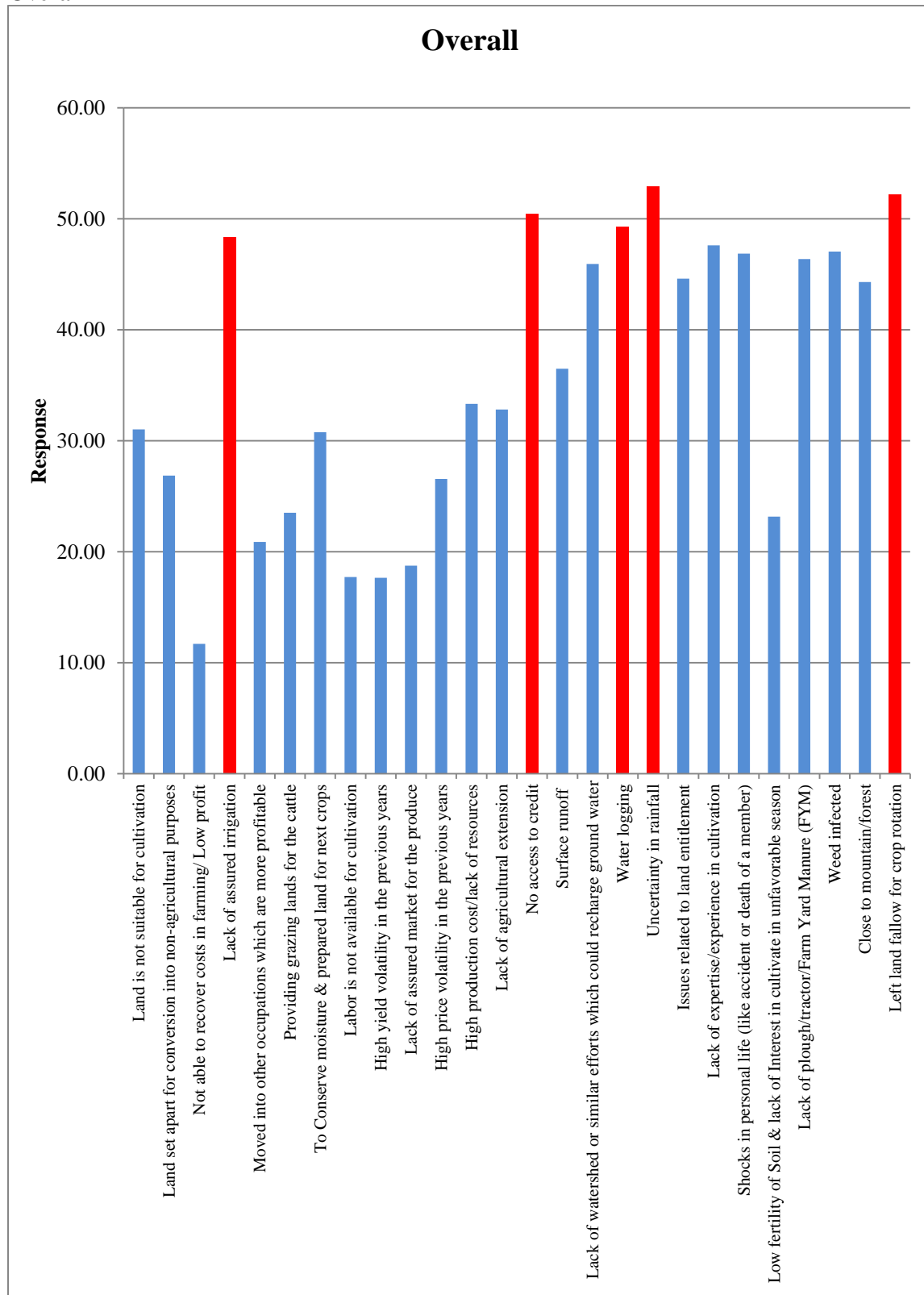
Ahmednagar



Source: Field Survey

Graph 4.3 : Reasons for land being left fallow : Percentage of Responses which indicated 5 -Most important reason

Overall



Source: Field Survey

4.8 Perception of Village Authorities on fallow land in the village and its potential use:

A meeting was held with village officials to get information on approximate acreage of land lying fallow in the village, the causes for not cultivating it and also its potential use. The qualitative data obtained is tabulated in Table 4.10 (a) and 4.10 (b).

In case of the villages in Osmanabad, it was observed that agriculture is the main economic activity and some farmers also practiced dairy. All villages had fallow land which included current fallow, other fallow as well as culturable waste. Discussions with officials revealed that the main reason for fallow land was less rainfall. In some cases, the land was of very poor quality and hence not suitable for cultivation. However, the village authorities revealed that the land left fallow could be used for grazing cattle. It was also stated that if water is available, it is possible to use the land for soyabean, jowar, bajra, pulses and cotton. However, since there is scarcity of water leading to land being left fallow, the villagers migrate to urban areas to seek some employment. While migration was not common in the past, it was stated that at least 10 to 15 percent of the population is likely to migrate over the next five years. In the past, when the land was not left fallow, a wide variety of crops were left fallow like jowar, pulses, oilseeds and horticultural crops. The socio-economic conditions of the village persons were also better 15 years ago. However, in the last decade or so, they have been facing major issues which have adversely affected them. The issues related to weather, availability of labor as well as price and yield of their agricultural produce.

In case of weather, the village officials revealed that not only was there decrease in rainfall, it was also often untimely and delayed. Hence farmers have to delay sowing or in some cases, if sowing took place, the seed did not germinate. This increased cost of cultivation. Untimely rain led to pests and diseases which reduced yield and increased cost of cultivation. Farmers were also faced with shortage of labor which was not easily available. Another major problem faced by farmers was low price which was sometimes not even able to cover their cost of production. Due to poor rainfall, the farmers suffered a yield loss and this was coupled with unfavourable price. Hence farmers earned negative income. If in a certain year, there was good rainfall and bumper production, there was drastic fall in price. If the price of the crop fell below minimum support price, the state agencies were not active in picking up the produce or rejected it on grounds of quality. Hence overall the village officials felt that farming is unremunerative and the socio-economic condition is worsening over the years.

In case of the four selected villages in Ahmednagar district also, current fallow, other fallow as well as culturable waste was observed. In Rakshaswadi village particularly, the land kept fallow was relatively high. The main reason for land being kept fallow, besides lack of water is the nature of the land. The soil is hard and rocky and not found suitable for cultivation.

It was revealed that the land that is fallow can be suitable for horticultural crops. Some horticultural crops such as ber, custard apple (sitaphal), pomegranate, and drought prone horticultural crops can survive well with less water and fallow land can be used for such crops.

There are cases in the village when the rural folk migrate to urban areas and the level of migration is likely to increase in future. The village officials revealed that the condition of the village was economically better 15 years ago and farmers were satisfied with the prices that they received for their produce. However, since last decade or so, they are faced with both falling production as well as falling prices. Hence they make huge losses. By and large they felt that farming was no longer profitable.

Ofcourse, the village officials also revealed that farmers have become more progressive over the years. This is because they have been able to access appropriate extension services from agricultural universities and more progressive farmers. It is because farmers are progressive, that the district has been able to diversify to horticulture crops which are drought resistant.

Thus overall it can be observed that poor rainfall and water scarcity is a major reason for land being left fallow. Besides, in some villages, the land is hard and rocky and hence not found suitable for cultivation. Leaving land fallow is thus reducing the potential income of farmers and having negative impact on their socio-economic conditions.

Table 4.10 (a) Perception of Village Authorities on Fallow land (Osmanabad)

Village Schedule addressed to Village Sarpanch/ Progressive Farmers/ Elders in Village		Osmanabad					
		Taluka-Osmanabad		Taluka-Washi		Taluka-Washi	
1	Question Addressed	Kandgaon	Ambejawaiga	Tandulawadi	Dahiphad		
2	Name of the Village	4500	5600	2300	1050		
3	Approximate population	Agriculture, Dairy	Agriculture, Dairy	Agriculture	Agriculture		
4	Major occupation (s) of the people in the village	30 km Barshi	35 km Barshi	5 km Washi	15 km Washi		
5	Distance to nearest city (Kms/Hours by public transport)	10 km Osmanabad	12 km Osmanabad	5 km Washi	15 km Washi		
6	Pucca road connectivity (Y/N)	Y	Y	Y	No		
7	Sources of irrigation	Well, Borewell	Well, Borewell	Well, Borewell	Well, Borewell		
8	According to you, how much land (local units) is left fallow this year only (current fallow)?	45ha.	80ha.	50ha.	60ha.		
9	According to you, how much land (local units) is left fallow this year and previous years (fallow other than current fallow)?	60ha.	90ha.	40ha.	75ha.		
10	According to you, how much land (local units) is left as culturable waste (fallow for more than 5 years)?	45ha.	70ha.	45ha.	80ha.		
11	No of machinery available in the village	Tractor- 12 : Thresher-1 : pumpset-400 : boarwell-40: handpump-1 : Fodder Cutting Machine-2 : harvester-6: Trolley-6	Tractor- 10 : Thresher-1 : pumpset-600 : boarwell-50: handpump-1 : Fodder Cutting Machine-1 : harvester-5: Trolley-5	Tractor- 10 : Thresher-1 : pumpset-60 : boarwell-40: handpump-0: Fodder Cutting Machine-0 : harvester-0: Trolley-1	Tractor- 3 : Thresher-1 : pumpset-50: boarwell-40: handpump-0: Fodder Cutting Machine-0 : harvester-0: Trolley-1		
12	Wage Rates (for men and women separately)	Men 100	Women 250	Men 100	Women 100	Men 200	Women 150
	1) Agricultural Labor	100	250	100	100	200	150
	2) Casual Labor Within village	100	250	100	100	100	100
	3) Agricultural Labor in nearby village	250	300	250	150	300	200
	4) Casual labor in nearby village	250	200	250	200	300	200
	4) City/Town	250	200	250	225	350	300
13	What are the reasons for which households are leaving their land fallow?	Quality of land is poor and less Rainfall	Less Rainfall	Less Rainfall	Less Rainfall	Less Rainfall	Less Rainfall
	What are the possible uses of fallow land in future?	Cattle Grazing	Cattle Grazing	Horticulture Crop	Sugarcane		
15	What kind of crops can be grown in the current situation on fallow land	Soyaben, Bajara, Jowar	Soyaben, Bajara, Jowar, Tur, Mung	Soyaben, Bajara, Jowar, Tur, Mung	Cotton,Soyaben, Bajara, Jowar, Tur, Mung		
16	Who are the typical households that leave land fallow?	No Typical households	No Typical households	No Typical households	No Typical households		
17	Do NGO/agricultural officer visit your village?	Yes	Yes	Yes	Yes		
18	What is the level of migration in your village? How many people migrate to other rural areas? How many migrate to other urban areas?	migration is low Very few 450	migration is low Very few 1000	migration is low Very few 200	migration is low Very few 150		
19	What was the level of migration in your village five years ago? According to you, will it increase in the next 5 years?	0% 15%	0% 10%	0% 15%	0% 10%		

Village Schedule addressed to Village Sarpanch/ Progressive Farmers/ Elders in Village		Osmanabad			
Question Addressed	Taluka-Osmanabad		Taluka-Washi		
	Yellow Jowar, Hulga, Bajara	Soyabean, Tur, Mosambi, Grapes	Udid, Mung	Sunflower	
20	List of the crops that were produced in lands that are currently fallow but cultivated before?	No Environmental Problem but proposal from MIDC for 2500 Acres	No Problem	Hot Temperature	
21	Do you have any environmental problems in your village? If so, what are they?	Labour Problem, Irrigation Problem	Irrigation Problem	Water percolation is not possible due to Hard rock	
22	Do you have any agricultural problems in your village, if so what are they?	No	No	No	
23	Do you think there are any groups that could particularly benefit from facilitating cultivation in fallow land?	MIDC	No	No	
24	Are there any people whose lands were acquired for non-agricultural purposes by the Government in the past 5-10 years in this village?	Fast Growing	Pulses, Fodder	Pulses, horticultural crops	
25	Do you think the following crops can be cultivated in the land that is fallow now? Which according to you is more suitable? 1. Spices 2. Pulses 3. Fast-growing trees (for wood) 4. Fodder 5. Others (specify)	No	No	No	
26	Has there been migration into the area? Where have these people come from and why? What were the positive effects of migration? What were the negative effects of migration? Has there been any conflict between residents and migrants?	Women SHGs, PACs	PACs, Agricultural Societies	PACs, SHGs, Water Committee	
27	Are there any groups, organisations, associations or cooperatives in the village? What are these? (e.g. women's savings groups, hunters association, etc).	No	No	Water Not Received by canal from shelgaon to dahiphall so there is tension and conflict.	
28	Has there been any conflict or tension over land, water, etc. during the past years in your village? If yes, what was / were the reason(s) for the tension(s)/conflict(s)? How do these disputes get resolved?	No	No	No	
29	What proportion of agricultural land in the village suffers from a) Flood Preparedness b) Alkalinity c) Soil Erosion	Condition was better 15 years ago	Condition was better 15 years ago	Condition was better 15 years ago	
30	Were the socio-economic conditions 15 years ago better or worse than what it is now?	Rainfall has Decreased	Rainfall has Decreased	Rainfall has Decreased	
31	What was the climate like 15 years ago compared to what it is like now?	Accute shortage of water, seeds do not germinate, cost increases. Farming becoming difficult.	Water scarcity, rising costs of inputs, labor shortage. Farming becoming difficult.	Shortage of labor, water scarcity, . Farming becoming difficult	
32	What part of farming nowadays is difficult in the village? Is farming now easier or harder than it was few years ago?	Farming unviable. Regular losses. Yes	Crop failure. If good crop then prices fall. Yes	Rising cost of cultivation, low prices	
33	What are some potential problems you see that might stop doing you from farming?	Decrease in Production	Decrease in Production	Crop failure, poor quality of crop, low prices	
34	Do you think farmers have become more progressive over years?	Yes	Yes	No	
35	How has the agricultural production been in the village over the last 5 years?	Decrease in Production	Decrease in Production	Decrease in Production	

Table 4.10 (b) Perception of Village Authorities on Fallow land (Ahmednagar)

Village Schedule addressed to Village Sarpanch/ Progressive Farmers/ Elders in Village		Ahmednagar					
Question addressed	Taluka- Karjat			Taluka- Shrigonda			
Name of the Village	RakshaswadiBk	Wadgaon	Kondegawan	Nimbavi			
Approximate population	1406	1860	1019	1912			
Major occupation (s) of the people in the village	Agriculture	Agriculture, Dairy	Agriculture	Agriculture			
Distance to market	Karajat 24 km	7 km	35 km Shrigonda	35 km Shrigonda			
Distance to nearest city (Kms/Hours by public transport)	24 km Karajat	7 km Karajat	35 km Shrigonda	25 km Shirur			
Pucca road connectivity (Y/N)	Y	Y	Y	Y			
Sources of irrigation	Pond, Well, Borewell	Pond, Well, Borewell	Well, Borewell	Well, Borewell			
According to you, how much land (local units) is left fallow this year only (current fallow)?	670ha.	135ha.	50ha.	100ha.			
According to you, how much land (local units) is left fallow this year and previous years (fallow other than current fallow)?	520ha.	150ha.	55ha.	100ha.			
According to you, how much land (local units) is left as culturable waste (fallow for more than 5 years)?	520ha.	150ha.	55ha.	125ha.			
No of machinery available in the village	Tractor- 24 ;Thresher-2 ; pumpset-140 ; boarwell-100 ; handpump-3	Tractor- 26 ; Thresher-1 ;pumpset-356 ; boarwell-60 ;handpump-1 ; Fodder Cutting Machine-28	Tractor- 8 ; Thresher-1 ; pumpset-50 ; boarwell-55 ; handpump-0 ; Fodder Cutting Machine-0 ; Well-60 ; Trolley-1	Men	Women	Men	Women
Wage Rates (for men and women separately)	300	150	200	200	150	300	200
1) Agricultural Labor	300	150	250	250	200	300	200
2) Casual Labor Within village	400	300	350	300	200	350	250
3) Agricultural Labor in nearby village	300	250	250	250	200	250	200
4) Casual labor in nearby village	500	300	500	400	350	400	300
City/Town	Irrigation Not Available, Rock Land, Hardness Are Found in in the land						
What are the reasons for which households are leaving their land fallow?	Irrigation Not Available			Less Rainfall			
What are the possible uses of fallow land in future?	Sitaphal, BerPomogranate			Pomogranate			
What kind of crops can be grown in the current situation on fallow land	Lemon, Pomogranate			Wheat,Bajara			
Who are the typical households that leave land fallow?	SC,ST			No Typical			
Do NGO/agricultural officer visit in your village?	No			Yes			
What is the level of migration in your village? How many people migrate to other rural areas? How many migrate to other urban areas?	20%			No			
	5%			100			
	5%			150			
	0%			0%			
	5%			10%			
What was the level of migration in your village five years ago? According to you, will it increase further in the next 5 years?	5%			15%			

Village Schedule addressed to Village Sarpanch/ Progressive Farmers/ Elders in Village		Ahmednagar			
		Taluka- Karjat		Taluka- Shrigonda	
20	Question addressed	Mung, Hulga, Mataki	Jowar	Cotton, Sunflower	Sugarcane
21	List of the crops that were produced in lands that are currently fallow but cultivated before?	No Problem	No Problem	Less Rainfall	Less Rainfall
22	Do you have any environmental problems in your village? If so, what are they?	Market Price is low and irrigation is Less	Market Price is low	Irrigation problem	Irrigation problem
23	Do you have any agricultural problems in your village, if so what are they?	No	No	No	No
24	Do you think there are any groups that could particularly benefit from facilitating cultivation in fallow land?	No	No	No	No
25	Are there any people whose lands were acquired for non-agricultural purposes by the Government in the past 5-10 years in this village?	Pomogranate and Sitaphal	Horticulture Crops	Pulses, Pomogranate, Sugarcane	Pulses, Pomogranate, Sugarcane
26	Do you think the following crops can be cultivated in the land that is fallow now? Which according to you is more suitable? 1. Spices 2. Pulses 3. Fast-growing trees (for wood) 4. Fodder 5. Others (specify)	No	No	No	No
27	Has there been migration into the area? Where have these people come from and why? What were the positive effects of migration? What were the negative effects of migration? Has there been any conflict between residents and migrants?	Women SHGs, PACs	Krushichi Baachat Gat, Women SHGs, PACs	PACs, SHGs	PACs, SHGs
28	Are there any groups, organisations, associations or cooperatives in the village? What are these? (e.g. women's savings groups, hunters association, etc).	No	No	No	No
29	Has there been any conflict or tension over land, water, etc. during the past years in your village? If yes, what was / were the reason(s)/conflict(s)? How do these disputes get resolved?	No	No	No	No
30	What proportion of agricultural land in the village suffers from a) Flood Preparedness b) Alkalinity c) Soil Erosion	15 years ago, farmers could atleast cover cost of production. Now losses are incurred.	It was better 15 years ago	It was better 15 years ago	It was better 15 years ago
31	Were the socio-economic conditions 15 years ago better or worse than what it is now?	Hot Temperature, Climate are Change	Hot Temperature, Rainfall Decreases	Rainfall Decreases	Rainfall Decreases
32	What was the climate like 15 years ago compared to what it is like now?	Easier	Easier	Rainfall Problem	Rainfall Problem and production prices decreases
33	What part of farming nowadays is difficult in the village? Is farming now easier or harder than it was few years ago?	Annual Rainfall is Decreasing	No availability of credit	Water Scarcity	Water Scarcity
34	What are some potential problems you see that might stop doing farming?	Yes	Yes	Yes	Yes
35	Do you think farmers have become more progressive over years?	When Production Increase the Prices fall	Often there is crop failure	Decrease in Production	Decrease in Production
	How has the agricultural production been in the village over the last 5 years?				

Source: Field work

Chapter 5

Conclusion and Policy Implications

5.1 Backdrop:

The Net Sown area which hovers around 140.7 million hectares shows decline in certain years with a corresponding increase in current fallows. This decline in NSA and increase in current fallow may possibly be due to severe drought conditions. Besides rainfall, there may be other factors responsible for farmers to leave their land fallow. However, when farmers leave their land fallow, it is a cause of concern as it may threaten their livelihood and contribute to decline in agricultural production. Land is a limited resource and leaving it fallow can serve as a threat to production of major crop and livelihood of farmers.

The time series data on land use pattern in Maharashtra revealed that out of the geographical area of 30.75 million hectares the share of fallow land other than current fallows as well as current fallow is increasing over the years. While fallow land other than current fallow was 9.98 lakh hectares in 1980-81, it increased by 19 percent in 2014-15. The picture with respect to current fallows is even more alarming. While current fallows were 8.5 lakh hectares in 1980-81, the figure increased by 63 percent in 2014-15. Total fallow land which was 6 percent of geographical area in 1980-81 increased to 8.5 percent of geographical area. However, the increase is more with respect to NSA as total fallow land which was 10.3 percent of NSA in 1980-81 increased to 15 percent in 2014-15. The increase in land under current fallow is rapid from 8.58 lakh hectares in 1980-81 to 13.99 lakh hectares in 2014-15. In order to observe the reasons why farmers are leaving the land fallow, two districts namely Ahmednagar and Osmanabad were selected for primary survey.

The share of fallow land showed a marked increase in both selected districts, but was particularly high in Osmanabad. The fallow land which was 7.02 percent of geographical area in TE 1989-91 increased to 13.74 percent in 2013- 2015 in Ahmednagar district ,i.e increase of 96 percent. The corresponding increase in Osmanabad was from 7.74 percent to 21.78 percent or increase of 181 percent. Current fallows showed more increase as compared to other fallow.

5.2 Major findings :

The study is based on secondary and primary data.

5.2.1 Findings from secondary data :

- The Net Sown Area in Maharashtra which was 58.5 percent of geographical area in 1980-81 increased to around 60 percent in 1989-90 but has been around 56.5 percent since 2001-02.
- Fallow land however did show some increase from 6 percent of geographical area in 1980-81 to 8.4 percent in the post 2000 period.
- During the period 1980-81 to 2014-15, fallow land other than current fallow grew at a rate of 1.96 percent p.a. while the growth rate of current fallow was 5.58 per cent p.a. Hence area under fallow land is showing an increase and is a cause for concern.
- The share of fallow land showed a marked increase in selected districts of Osmanabad and Ahmednagar but was particularly high in Osmanabad. The fallow land which was 7.02 percent of geographical area in TE 1989-91 increased to 13.74 percent in 2013-2015 in Ahmednagar district, i.e. increase of 96 percent. The corresponding increase in Osmanabad was from 7.74 percent to 21.78 percent or increase of 181 percent. Current fallows showed more increase as compared to other fallow.

5.2.2 Findings from Field Survey :

- It was observed from field survey that the average fallow land among the 120 sample farmers was 3.09 acres. In case of small and marginal farmers the extent of fallow land was about 48 percent of their average land holding size while in case of medium and large it was about 37 percent. This indicates that marginal and small farmers left a larger share of their land as fallow.
- In Osmanabad it was observed that little more than half the area is under foodgrains and average across all size groups was 53.09 percent with 32.16 percent under cereals and 20.93 percent under pulses. In case of large farmers, kharif jowar was the dominant cereal crop while in case of other size groups, it was bajra. Among pulses, tur was the major crop with a share of 10.13 percent across all size groups. Soyabean was an important crop with a share of 23 percent for small and marginal farmers and 21.81 percent across all size groups. In case of cotton the average share across all size groups was 9.69 percent.

- In Ahmednagar, it was observed that cereals constitute more than 80 percent of area and among cereals, the dominant crop was rabi jowar with a share of 42.67 percent in total area across all size groups. Fruits and vegetables had a share of 14.29 percent across all size groups.
- Taking into consideration the overall cropping pattern, it can be observed that cereals constituted 58.62 percent of share while the share of pulses was 10.75 percent (across all size groups) which indicates that foodgrains constituted 69.37 percent of area under all crops. Rabi jowar was the most important cereal crop across all groups.
- The share of soyabean in the overall cropping pattern across all size groups was 9.94 percent while that for cotton was 4.67 percent. Cotton was cultivated in Osmanabad but did not feature in the talukas selected in Ahmednagar.
- Data on indebtedness among farmers in Osmanabad showed that 93.3 percent of farmers had outstanding loan. This can be observed from table 3a. The amount of loan of large households was twice that of small and marginal households. The data showed that across all size groups, 96.14 percent had taken loan from institutional sources and 87 percent had availed of it for productive purposes.
- In Ahmednagar, it was observed that 45 farmers out of a 60 or 75 percent had outstanding loan. The loan taken by large farmers was the largest amount and was 1.65 times the average of all categories while in case of small and marginal it was 1.5 times the average of all categories. It was relatively smaller in case of semi medium and medium category. The data also reveal that 92.87 percent of farmers overall size categories took loan from institutional sources and 90 percent used it for productive purposes.
- The overall picture across all size groups, reveals that 84 percent of farmers had outstanding loans and by and large the amount of loan increased with size of holding. About 94 percent of loan was taken from institutional sources and 88 percent was used for productive purposes.
- In Osmanabad, it was observed that other than lack of resources such as water or credit, shocks in personal life proved to be an important reason for land to be left fallow. It is now quite well known that Marathwada area in Maharashtra is experiencing rapid increase in suicides among farmers. Discussion with some farmers in the sample revealed that after the death or illness of the main person who undertook farming decisions, other members were finding it difficult to continue with

agriculture. They were not in a position to make any decision and the immediate reaction was to keep the land fallow.

- Uncertainty in rainfall was also an important reason as most farmers do not have access to protective irrigation. Farmers also often do not access to credit and thus are forced to keep the land fallow. Other important reasons is that the land is close to forest area or mountain and not easily accessible to the farmer. Weed infestation and surface run off were also reasons for keeping land fallow.
- Many times farmers have to keep the land fallow for the purpose of crop rotation. Hence this was also an important reason for land to be kept fallow.
- In Ahmednagar district, the highest rating for leaving the land fallow was that the plot was close to the mountain. Hence the topography of the district is such that farmers leave the land fallow. However, lack of access to credit was also rated high as well as water shortage. Farmers also leave land fallow for the purpose of crop rotation.
- Taking across both districts, the highest rating was for uncertainty in rainfall. Ahmednagar district lies in the rain shadow region and the average rainfall is about 560 mm. In Srigonda, for example, which is one of our sample districts, in 2011 the rainfall was as low as 326 mm. By and large Ahmednagar falls in the scarcity zone and agriculture is mainly rainfed. Farmers are also resource poor and do not have access to credit. Also part of the district has land which is mountainous and farmers are unable to use the land for cultivation.
- In several cases, the land is left uncultivated, because of the decease of one member of the family who undertook major decisions in farming. Other members of the family lack knowledge on how to continue with agricultural operations and thus leave the land fallow.
- In Osmanabad, the frequency distribution on reasons for farmers leaving their land fallow indicated that maximum number of farmers felt that their land was water logged and hence could not use it for cultivation. Farmers use fertilizers but due to failure of monsoons, the fertilizer is not absorbed in the soil and hence causes water logging. Failure of monsoons also inhibits ground water from being recharged and having no source of water, the farmers keep the land fallow. Repeated crop failures put the farmer in a debt trap and they have no resources to invest in agriculture. Hence 55.77 percent of farmers revealed that lack of access to credit is also a reason for keeping land fallow.

- In Ahmednagar district it was first of all observed that all farmers responded to the two questions which related to lack of assured irrigation and uncertainty in rainfall. The frequency distribution indicated that this was considered to be an important reason for land to be kept fallow. Out of 33 farmers, about half stated that their land was left fallow for crop rotation. Farmers also sometimes do not have access to credit and hence keep land fallow.
- With respect to overall picture, uncertainty in rainfall had the highest number of respondents as being the reason for land to be left fallow. Farmers also left land fallow for the purpose of crop rotation. This however is useful in order to prevent the soil from depleting and maintaining the soil health.
- In order to obtain qualitative data discussions were held with officials which revealed that the main reason for fallow land was less rainfall. In some cases, the land was of very poor quality and hence not suitable for cultivation. However, the village authorities revealed that the land left fallow could be used for grazing cattle. It was also stated that if water is available, it is possible to use the land for soyabean, jowar, bajra, pulses and cotton. However, since there is scarcity of water leading to land being left fallow, the villagers migrate to urban areas to seek some employment. While migration was not common in the past, it was stated that atleast 10 to 15 percent of the population is likely to migrate over the next five years.
- In case of weather, the village officials revealed that not only was there decrease in rainfall, it was also often untimely and delayed. Hence farmers have to delay sowing or in some cases, if sowing took place, the seed did not germinate. This increased cost of cultivation. Untimely rain led to pests and diseases which reduced yield and increased cost of cultivation. Farmers were also faced with shortage of labor which was not easily available.
- Another major problem faced by farmers was low price which was sometimes not even able to cover their cost of production. Due to poor rainfall, the farmers suffered a yield loss and this was coupled with unfavourable price. Hence farmers earned negative income. If in a certain year, there was good rainfall and bumper production, there was drastic fall in price. If the price of the crop fell below minimum support price, the state agencies were not active in picking up the produce or rejected it on grounds of quality. Hence overall the village officials felt that farming is unviable and the socio-economic condition is worsening over the years.

- It was revealed that the land that is fallow can be suitable for horticultural crops. Some horticultural crops such as ber, custard apple (sitaphal), pomegranate, and drought prone horticultural crops can survive well with less water and fallow land can be used for such crops.
- Thus overall it can be observed that poor rainfall and water scarcity is a major reason for land being left fallow. Besides, in some villages, the land is hard and rocky and hence not found suitable for cultivation. Leaving land fallow is thus reducing the potential income of farmers and having negative impact on their socio-economic conditions.

5.3 Policy Implications:

The main policy implications that emerge from the study are :

1. Low rainfall and its uncertainty was an important reason for farmers keeping land fallow. Watershed strategies must therefore be promoted so that fallow land can be cultivated.
2. Several farmers reported that they had no access to credit as they were defaulters in payment of loan and hence not entitled to a fresh loan. They were thus forced to leave the land fallow. Micro finance and membership of Self Help Groups can therefore be another source of finance to enable them to meet their credit needs atleast for crop loan and other small purposes.
3. Government of Maharashtra implemented and promoted schemes such as EHS linked Horticulture Development to utilize cultivable waste area. Similar schemes should be implemented so that farmers are able to cultivate barren pieces of land/ rocky land/ hilly land left fallow due to lack of expertise in farming.
4. Extension machinery of the state government must be strengthened so that farmers get training to cope up with water logged areas, land infested with weeds, soil erosion, etc.

Overall, if farmers are able to cultivate their fallow land, it will help to supplement their incomes and also make optimum use of land which is a scarce resource.

References:

1. Abrol, I.P Agriculture in India, Centre for Advancement of Sustainable Agriculture, (Unpublished)
2. Challa O, Ramamurthy V and Venugopalan, Dynamics of Land Use in Relation to Green Revolution in India, Land Use, Land Cover and Soil Sciences-Vol IV.
3. Government of India, Ministry of Agriculture & Farmers Welfare, Directorate of Economics and Statistics, Agricultural Statistics at a glance, 2015.
4. Government of India, Ministry of Rural Development, National Land Utilisation Policy, framework for land use planning & Management (draft), July 2013.
5. Planning Commission, Report of Sub Group on Land Related Issues, January 2007.
6. Tripathi Amarnath & A.R. Prasad, Agricultural Development in India since Independence: A study on Progress, Performance, and Determinants, Journal of Emerging Knowledge on Emerging Markets, Volume 1 Issue 1, November 2009.
7. Todkari, G.U , General Land Use Pattern in Solapur District of Maharashtra : A geographical Analysis, World Research Journal of Geoinformatics, ISSN:2278-7003 & E-ISSN:2278-7011, Volume 1, Issue 1, 2012

Websites:

(<http://link.springer.com/article/10.1007/s00382-006-0208-7>)

(http://shodhganga.inflibnet.ac.in/bitstream/10603/4325/1/11/11_chapter%203.pdf)

(<https://cultural.maharashtra.gov.in/english/gazetteer/WARDHA>)

(<http://www.eolss.net/sample-chapters/c19/E1-05-05-04.pdf>)

(<http://planningcommission.nic.in/reports/sereport/ser/vision2025/agricul.doc>)

(<http://eands.dacnet.nic.in/LUS-2010-11/Concept.pdf>)

Appendix Tables

A.3.1: Percentage of Different Categories of Farm Households (Number) in the selected districts as well as in States during last three decades

	Marginal		Small		>2 ha.		Total	
	2000-01	2010-11	2000-01	2010-11	2000-01	2010-11	2000-01	2010-11
Districts								
Osmanabad	25.4	31.18	34.3	36.46	40.3	32.36	100	100
District Ahmednagar	47.3	52.04	30.9	29.57	21.8	18.39	100	100
State	43.7	48.97	29.7	29.58	26.6	21.45	100	100

Source : Agricultural Census, , Commissionerate of Agriculture, Maharashtra, 2014

A 3.2: Selected Block-wise Share of Number of Different Categories of Farm Households in Selected district

Size of Farm	Ahmednagar		Osmanabad	
	Shrigonda	Karjat	Osmanabad	Washi
No.				
0-1.0	50312 (52.67)	33270 (44.7)	20476 (32.26)	9763 (35.11)
1.1-2.0	28704 (30.05)	23474 (31.54)	23809 (37.51)	8850 (31.83)
Above 2	16504 (17.28)	17679 (23.75)	19185 (30.23)	9194 (33.06)
All	95520 (100)	74423 (100)	63470 (100)	27807 (100)
Area (hectares)				
0-1.0	25824 (21.79)	17545 (15.58)	12469 (10.45)	5264 (9.66)
1.1-2.0	40528 (34.19)	33692 (29.92)	33928 (28.44)	12778 (23.45)
Above 2	52181 (44.02)	61381 (54.5)	72894 (61.11)	36453 (66.89)
All	118533 (100)	112618 (100)	119290 (100)	54494 (100)
AV size (ha)	1.24	1.51	1.88	1.96

Source : Agricultural Census 2010-11, Commissionerate of Agriculture, Maharashtra,

A 3.3: Cropping Pattern: Area hectares (Secondary Data)

	Osmanabad					
	Washitaluka		Osmanabadtaluka		Osmanabad District	
	Area	Percent Share	Area	Percent Share	Area	Percent Share
Rice	200	0.44	600	0.54	7300	1.06
KharifJowar	2100	4.65	7300	6.53	43900	6.37
Bajari	900	1.99	300	0.27	14400	2.09
Other Cereals	0	0.00	300	0.27	2317	0.34
KharifCereals	3200	7.09	8500	7.60	67917	9.86
Mung	650	1.44	1700	1.52	15000	2.18
Udid	2300	5.10	4800	4.29	45100	6.54
KharifPulses	2950	6.54	6500	5.81	60100	8.72
Safflower	122	0.27	2500	2.23	10360	1.50
Soyaben	7800	17.29	32152	28.74	96252	13.97
Oilseeds	7922	17.56	34652	30.97	106612	15.47
Rabi Jowari	5200	11.53	30300	27.08	183612	26.65
Maize	1900	4.21	2200	1.97	25389	3.68
Other Cereals	0	0.00	300	0.27	2317	0.34
Rabi Cereals	7100	15.74	32800	29.32	211318	30.67
Gram	4900	10.86	11000	9.83	60790	8.82
Tur	3900	8.64	13900	12.42	93800	13.61
Other Pulses	100	0.22	500	0.45	3077	0.45
Rabi Pulses	8900	19.73	25400	22.70	157667	22.88
Onion	115	0.25	292	0.26	3201	0.46
Cotton	6800	15.07	600	0.54	22100	3.21
Rabi Other	6915	15.33	892	0.80	25301	3.67
Onion Cotton and Other	13830	30.65	1784	1.59	50602	7.34
Groundnut	150	0.33	300	0.27	3900	0.57
Sunflower	607	1.35	600	0.54	21161	3.07
Rabi Oilseeds	757	1.68	900	0.80	25061	3.64
Chilli	36	0.08	120	0.11	630	0.09
Garlic	4	0.01	12	0.01	185	0.03
Total Spices	40	0.09	132	0.12	815	0.12
Total Veg and Fruit	416	0.92	1208	1.08	8993	1.31
Total	45115	100.00	111876	100.00	689085	100.00

Source: District Socio-Economic Abstract, Osmanabad District, 2014-15

A.3.4: Cropping Pattern (Ahmednagar)(Area in hectares)

	Ahmednagar					
	Shrigonda		Karjat		Ahmednagar	
	Area	Percent Share	Area	Percent Share	Area	Percent Share
Rice	0	0.00	0	0.00	325	0.03
KharifJowar	3328	4.06	2637	3.83	33534	3.01
Bajari	2325	2.84	13382	19.42	249850	22.41
Other Cereals	30	0.04	0	0.00	141	0.01
KharifCereals	5683	6.94	16019	23.25	283850	25.46
Mung	20	0.02	250	0.36	7621	0.68
Udid	0	0.00	22	0.03	2393	0.21
KharifPulses	20	0.02	272	0.39	10014	0.90
Safflower	3	0.00	14	0.02	6464	0.58
Soyaben	5	0.01	35	0.05	44700	4.01
Oilseeds	8	0.01	49	0.07	51164	4.59
Rabi Jowari	65470	79.92	45265	65.69	472143	42.35
Maize	1075	1.31	29	0.04	15023	1.35
Other Cereals	30	0.04	0	0.00	141	0.01
Rabi Cereals	66575	81.27	45294	65.74	487307	43.71
Gram	1335	1.63	1696	2.46	24299	2.18
Tur	307	0.37	390	0.57	9934	0.89
Other Pulses	7	0.01	0	0.00	16214	1.45
Rabi Pulses	1649	2.01	2086	3.03	50447	4.53
Onion	2325	2.84	866	1.26	28958	2.60
Cotton	16	0.02	398	0.58	59949	5.38
Rabi Other	2341	2.86	1264	1.83	88907	7.98
Onion Cotton and Other	4682	5.72	2528	3.67	177814	15.95
Groundnut	125	0.15	120	0.17	5276	0.47
Sunflower	5	0.01	12	0.02	981	0.09
Rabi Oilseeds	130	0.16	132	0.19	6257	0.56
Chilli	280	0.34	230	0.33	1774	0.16
Garlic	5	0.01	32	0.05	826	0.07
Total Spices	285	0.35	262	0.38	2600	0.23
Total Veg and Fruit	2889	3.53	2260	3.28	45292	4.06
Total	81921	100.00	68902	100.00	1114745	100.00

Source : District Socio-Economic Abstract, Ahmednagar, 2015

A.3 .5: Infrastructure in the district

	Tractors	Electrical Tubewell	Bank Offices	
Osmanabad	3000 (2.84%)	48000 (1.92 %)	186 (1.63%)	2012-13
Ahmednagar	15000 (14.20 %)	133000 (3.30)	596 (5.23)	2013-14
Maharashtra	105611*	4026000	11404*	

Note: 1. 2015-16 Economic Survey of Maharashtra

2. Other data collected from socio economic Abstract 2012-13 and 2013-14

3. Figures in the parenthesis show percentage to the state total.

A.3.6 : Infrastructure in the district

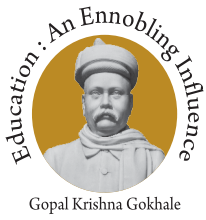
	% of village Electrified	Motorable Road (in Km) (% to state total)	Villages Linked with Road (No. (%))	Agricultural Produce Market Committees (In Nos. (% to state total)	
Osmanabad	100.00	6748 (2.77)	729 (100)	9 (3.05)	2012-13
Ahmednagar	100.00	8248 (3.39)	1584 (100)	14 (4.75)	2013-14
Maharashtra	93.79	243172	40158 (92)	295	2013-14

Source: Socio Economic Abstract Osamanabad 2012-13 and Ahmednagar 2013-14

Action Taken Reports by the Authors

The Comments received by coordinating unit were consolidated for all participating centers. Hence the report was revised on the basis of comments related to our center wherever possible

Sangeeta Shroff and Jayanti Kajale



**Gokhale Institute
of Politics and
Economics**
(Deemed to be University)
Pune - 411 004

846, Shivajinagar, BMCC Road, Deccan Gymkhana, Pune 411 004.

Ph. No. : 020-25650287, 25675008, 25654288, 25654289, 25661369

Fax : 020-25652579

Website : www.gipe.ac.in