



Agricultural Cropping Pattern and Diversification in Part of Ahmednagar District - A Geographical Analysis

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ABSTRACT

Agrarian land use is one of the basic natural resources. It forms the basis for all geographical, environmental, human and commercial activities. Land is an imperative input in agronomic sector, but yield agronomic crops mainly depend upon fertility of land for raising different crops. Cropping pattern is the fundamental component of the agronomic land use. Cropping pattern means the proportion of area under various crops at a point of time (Chavhan 2020; Chavhan & Salunke et.al 2019). The cropping pattern of India progressively modifying since 1950-51 from food grain crops to non-food grain crops. During 1950-51 the share of cereals and pulses in Total cultivated area was 61.10 percent and 15.60 percent, which got reduced to 52.63 percent and 12.86 percent respectively during 2019-20. Whereas the increase was observed in the share of oilseeds 8.19% to 13.79% Sugarcane 1.30% to 2.30%, Fruits and Vegetables 1.70% to 4.75% (Chavhan 2013; Chavhan 2019). The cropping pattern of study region was based on the traditional system of the existence farming without any surplus. But with the advent of New Agricultural Strategy, there has been the complementary relationship between the commercialization and cropping pattern of the study region. The farmers are gradually diversifying to commercial crops for the sake of higher earnings. (Chavhan, 2019/9). The aim of the present paper is to find out the changes in cropping pattern and its diversification in study area. This paper will also give some suggestion for improving the cropping pattern and diversification method to useful for development of the agriculturist and its relation with regional geographical development of selected region of Ahmednagar district of Maharashtra. Mixture of crops in one agricultural land is more profitable to change in unstable economics condition of agriculturist in study area.

1. INTRODUCTION

Agronomy contains growing of crops from the land, animal husbandry, agro forestry. Agriculture has been practiced in India since time immemorial. So the agriculture and cropping pattern are transformation with time and place. The utilization of land depends upon physical factors like landscape, soil, and climate as well as upon human factors such as population density,

duration of crops, land tenancy and technical levels of the people (Chavhan, 2013 & 2020). Cropping pattern means the crop-mix grown in a specific area in an agricultural year. Cropping pattern determines the output mix in a particular region. Cropping pattern refers to adoption of particular type of crops by the farmers in a particular region. It is expressed at macro level, that is, district, taluka or village level. A change in cropping pattern indicates a change in proportion of area under different crops (Chavhan, 2015 & 2019/9).

It has significant bearing on widening the geographical disparities in income distribution. Introduction of new agricultural technologies has influenced the crop-mix which is more noticeable

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in agriculturally developed regions. A dynamic change has been observed in agricultural sector in our country, particularly during post-green revolution period (Chavhan, 2018). The technological progression in crop diversities and other yield increasing features of production influenced the farmers' behavior which has revealed in the changing cropping pattern from agriculture of low value crops to high value crops in maximum of the regions (Chavhan, 2020).

Agrarian production, being biological in nature shows wide disparities across different agro-climatic regions. Soil, rainfall, topography, temperature and infrastructure facilities like irrigation, marketing greatly influence cropping pattern of a province. A study on the changes in land use and cropping pattern at the provincial level will be useful to formulate suitable agricultural policies for the location (Chavhan 2020; Chavhan et.al 2019).

The cropping pattern is a dynamic concept as it fluctuates over space and time. Crops are usually grown in combination in any region. These crops have its relative position in terms crop combination. The distributional pattern of crops in any region is an outcome of majority of certain crops or combination of crops (Meenakshi & Indumathy, 2009; SER 1970-71). The cropping pattern of any region is thoroughly influenced by geo-climatic, socio cultural, economic, historical and political factors (SER, Ahmednagar 2020-21). During the last four decades this has been substantial change in agricultural land use in India. Therefore land use and cropping pattern studies are of specific consequence in view of the speedily rising population and consequential pressure on the existing land. These phenomenal changes are observed more particularly in the cropping pattern and importance is given to various crops from time to time (Prakash, 2020).

The cropping pattern of India progressively modifying since 1950-51 from food grain crops to non- food grain crops. During 1950-51 the share of cereals and pulses in Total cultivated area was 61.10 percent and 15.60 percent, which got reduced to 52.63 percent and 12.86 percent respectively during 2019-20. Whereas the increase was observed in the share of oilseeds 8.19% to 13.79% Sugarcane 1.30% to 2.30%, Fruits and Vegetables 1.70% to 4.75% (Chavhan 2013 &

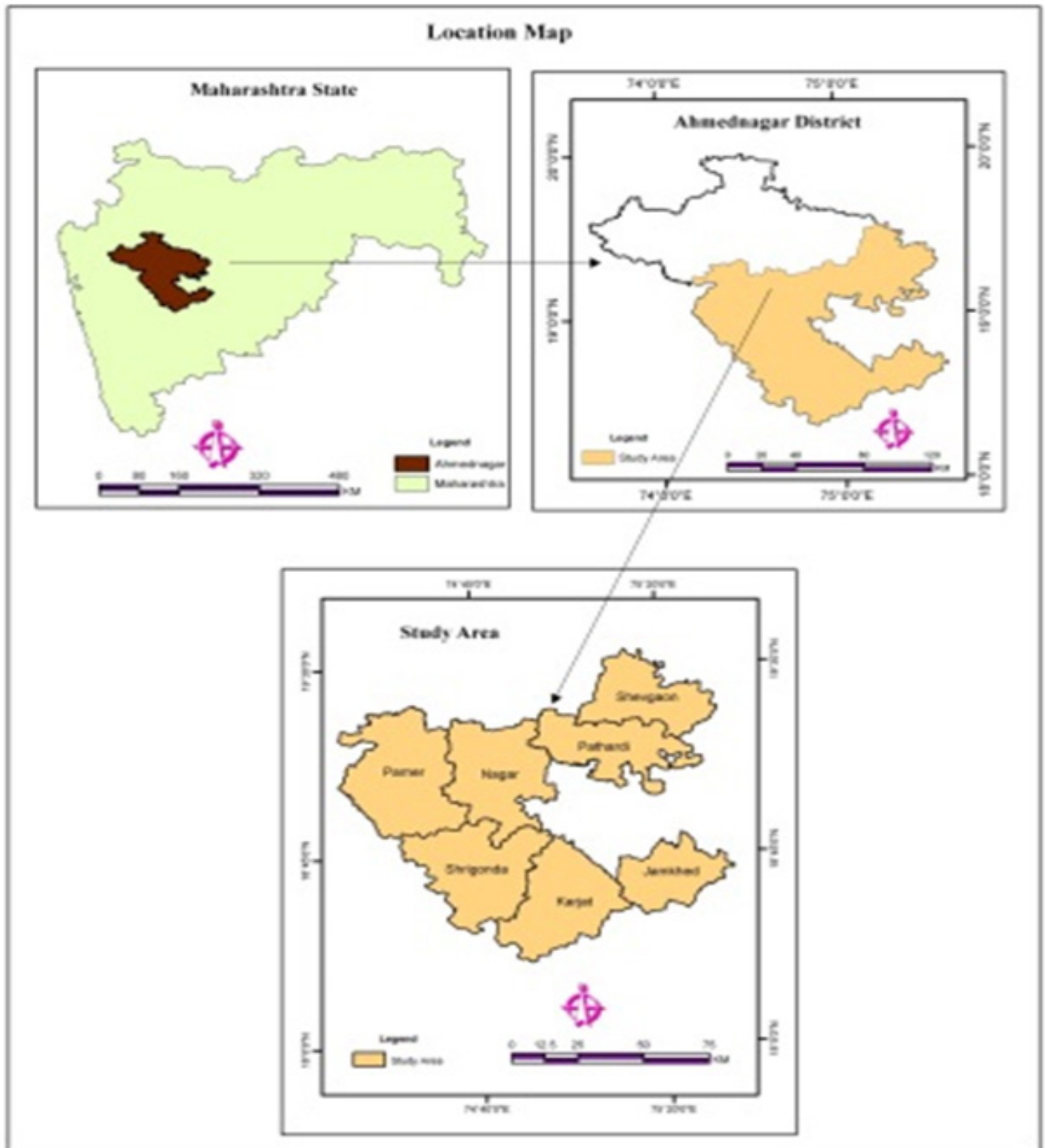
2019). These figures indicate that change occurred in cropping pattern of India in favor of oilseeds, sugarcane, fruits & vegetables in current years. The cropping pattern of Ahmednagar district also transforming since 1973-74 from food grain crops to non- food grain crops (Chavhan, 2014). During 1973-74 the share of food grain and oilseeds in total geographical area of the district was 87.76 percent and 6.86 percent, which got reduced to 86.65 percent and 3.38 percent respectively during 2004-05. Whereas the increase was observed in the share of sugarcane 4.25 percent to 6.48 percent, cotton 0.37 percent to 0.47 percent and fruits and vegetables 0.74 percent to 3.00 percent. Why such change occurs? The decreasing in food grains, oilseeds and increasing in cash crops. This trend clearly indicates that the farmer had decided to take economically profitable crops (Chavhan, 2020).

Review of Literature

A review of past research helps in identifying the conceptual and methodological issues relevant to the present study. This point attempts a brief review of the relevant research literature that has accumulated on the areas related to this study.

Dinesh et al. (2007) studied the crop diversification in Chhattisgarh and observed that the pattern of land use and cropping pattern has changed during pre-reform, reform and post-reform periods. The area under forest had increased in Chhattisgarh plains and Northern hills, while it has decreased in Bastar plateau. Land put to non-agricultural uses and cultivable waste land had increased in Chhattisgarh plains while it has decreased in Northern hill. The permanent pasture in plains and plateau were depleting very fast. On the other hand, paddy area has been continuously increasing in last three decades. The increase was occurred at the expense of coarse cereals and minor millets area. Wheat area was diverted to gram in post rainy season. (Chavhan & Pagare, 2018).

Munish (2007) studied the growth and changes of Indian agriculture since the eighties. The study revealed that agricultural sector was traditionally regarded as having low price responses. Cropping patterns were different in different areas because of economic reasons or technological reasons but the change was slower (Leena & Chavhan, 2021). Subrata (2007) conducted a micro level study on



Map No-1 Location Map

(Ref. Prepared by researcher with the help of Q GIS Software)

economics of cropping pattern changes in relation to credit in West Bengal. The study concluded that the credit availability from both institutional and non-institutional sources had made a significant contribution on the change in cropping pattern. But the impact of credit availability on cropping pattern change had been more significant in the case of smaller size of land holdings. Again, the profitability was also higher in the case of small and marginal farmers. The profit per acre from

non-food grains cultivation was more than that from food grains (Singh, 1976).

Batla (2008) studied the regional dimensions of inter-crop diversification in India and observed that inter-crop area shifted in favor of high yielding crops like wheat, paddy, oilseeds, cotton and sugarcane, up to eighties and towards paddy, sugarcane, fruits- vegetables, fibers, plantations, condiments and spices during the nineties and

early 2000. The area under wheat and paddy had expanded solely at the cost of low yield growth crops like coarse cereals and pulses due to price support and HYV programme. The high value commercial crops have benefited both from area shifts as well as fresh land brought under cultivation (Batla, 2008).

Tingre (2008) made an attempt to study the cropping pattern changes and crop diversification in Akola district of Vidarbha. The study revealed that majority of cereal crops showed negative and low growth rates of area during the study period. Soybean had attained important position in the cropping pattern. The trend of crop diversification and cropping intensity increased significantly (SER, Ahmednagar, 1970-71).

Meenakshi and Indumathy (2009) studied the land utilization and cropping pattern in Tamil Nadu. The study revealed that there was a considerable reduction in the cultivated area and hence output was affected to a great extent. The cropping pattern in the state had a high degree for maladjustment for crops. Roughly 53 per cent of the cultivated area was being used for growing unsuitable crops (Meenakshi & Indumathy, 2009).

The Study Region

The south – East part of the Ahmednagar district is designated as study region. This region is situated in the drought prone region in Western Maharashtra. This study region consists the seven tahsils of the district i.e. Shevgaon, Pathardi, Nagar, Parner, Shrigonda, Karjat and Jamkhed. Physically this region is situated in 18° 20' N. to 19° 30' North Latitude and 74° 10' E. to 75° 43' East Longitude. Basically this area is rural area except Ahmednagar city. Total geographical area is 1326156 hectares to be protected by this region. It is 57.06% of district entire geographical area.

The main source of income is the agriculture. Agriculture is the major economic activity and hence the agricultural resources should be evaluated, hence, one reason for selection this subject (Dinesh, Singh & Koshta, 2007).

Objectives of the Study

The present research work is to study the fluctuations in cropping pattern in the study region, during the study period. These broad

objectives can be fragmented into the following main components.

1. To study the comparative changes in the cropping pattern of study region during 1970 to 2020.
2. To evaluate the crop diversification regions in study region for above period.
3. To analyze the variations in cropping diversification for betterment of farmers.

SOURCES OF DATA

For the present study the tehsil wise land use pattern, data of net sown area for all the major crops for forty years (1970 to 2020) were acquired from socio economic abstracts of the districts of Ahmednagar, Maharashtra State, district gazetteers, season and crop reports, agricultural statistical information regarding agriculture department of Ahmednagar districts, Maharashtra state. Some Published and unpublished reports and records maintained by Zilha Parishads, Irrigation Department etc. The research work is based mainly on secondary sources of data (Chavhan, Salve et.al 2020; Chavhan, 2020; Chavhan, Najan et. al 2020).

METHODOLOGY

This study is mostly based on secondary data. The published sources, namely, Socio-economic Abstract of Ahmednagar District, District Census Handbook, Department of Irrigation, Taluka Land Record Office and many other Government and Semi-government institutes. For the present study data of general cropping pattern was considered for the year 1970-71 and -2020-21 (Chavhan, et.al, 2019). To study the changes in cropping pattern, data of ten major crops were obtained for the interval of every ten years.

After the collection of data it was processed and then systematically tabulated. Percentage and ratios were calculated which were shown by suitable cartographic techniques. The spatial and temporal features of changes in cropping pattern have studied in depth. For demarcation of crop diversification methods have used for seven tahsils in Ahmednagar district. Jasbir Singh's method was applied for showing the diversification of crops (Munish Alagh, 2007).

Jasbir Singh's (1976) formula applying to work out crop diversification for the region is as given below:

Index of Crop Diversification =

Percentage of total cropped area under 'n' crop

Number of 'n' crop

Where, 'n' indicates the crops which are individually occupy five percent or more than five percent of total cropped area.

Lastly, problems of agriculture have been identified and conceivable suggestions were given for appropriate cropping pattern in the study region.

FINDINGS AND DISCUSSION

Table no 1. Shows that the indices or crop diversification for the period of 1970-71 and 2020-21 respectively. There has been remarkable variation in crop diversification during the period under reported. Cropping pattern is instantly noticeable. It presents regional distribution of pattern of crop diversification grouped into three categories.i.e.

- 1). Areas of high diversification;- (below 25 %)
- 2). Areas of Moderate diversification :- (25.01-30 %)
- 3). Areas of low diversification :- (> 30.01 %)

Table No 1: Crop Diversification

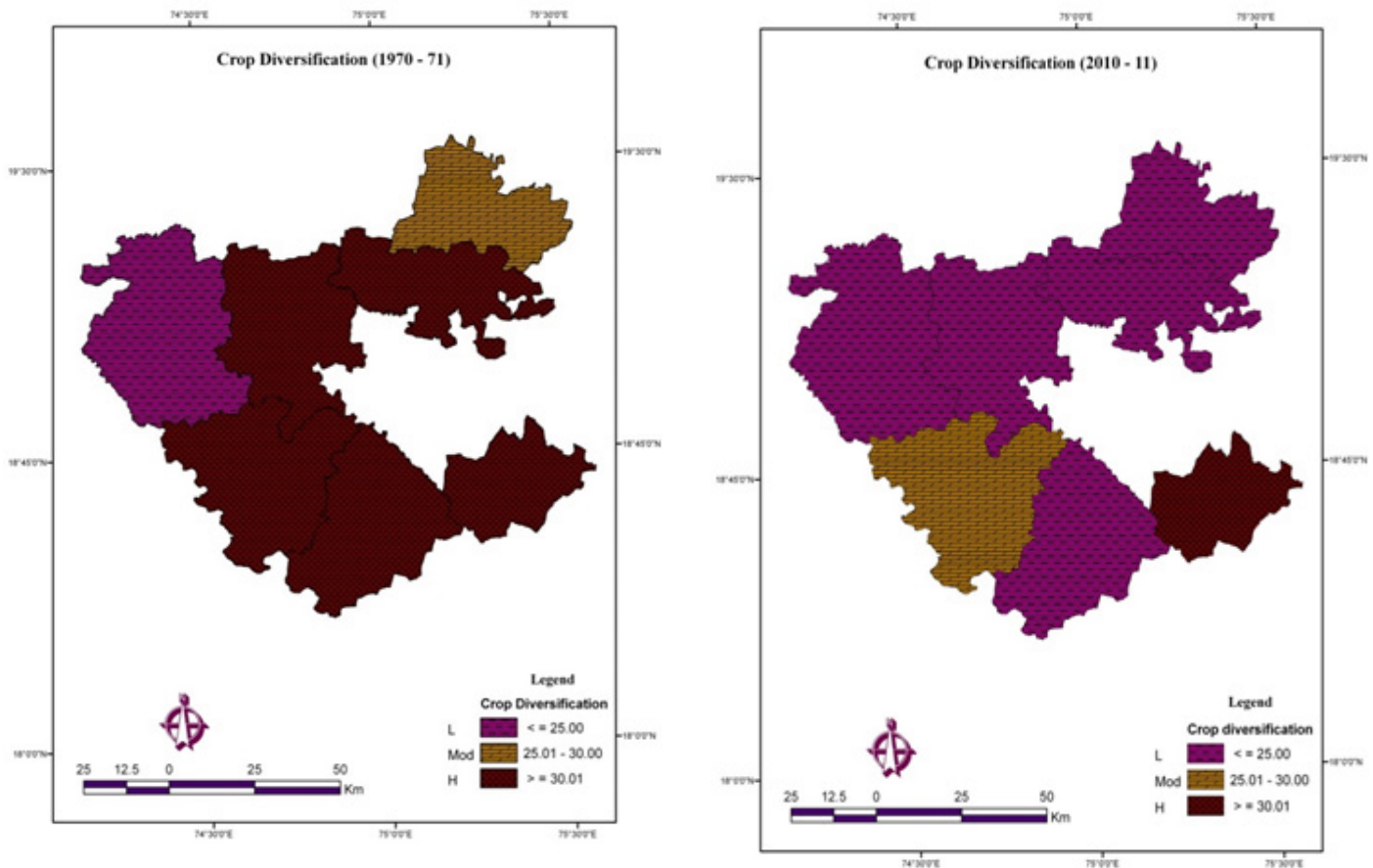
Sr. No	Tahasil	1970-71				2020-21			
		No. of crop	Area in %	Index of diversification	Crops	No.of crop	Area in %	Index of diversification	Crops
1	Shevgaon	03	85.18	28.39	J,B, OS	04	86.73	21.68	J,B,P,Fi
2	Pathardi	03	94.21	31.40	J,B,OS	05	85.94	17.18	W,J,B,P, Fi
3	Nagar	02	89.93	44.96	J , OS	04	95.05	23.76	W,J,B, P
4	Parner	04	96	24	J,B,OS,Fo	04	90.71	22.67	W,J,B, P
5	Shrigonda	02	89.67	48.83	J, OS	03	85.86	28.62	W,J, P
6	Karjat	03	95.58	31.86	J,OS, Fo	05	89.47	17.89	W,J,B,OC, P
7	Jamkhed	03	89.03	29.67	J,B, Fo	04	99.06	23.15	J,B,P Fi

Source: Socio Economic Review and Statistical Abstract of Ahmednagar District 1970-71, District Agricultural Office, Ahmednagar-2020-21 Compiled by Researchers (Chavhan,et.al, 2019; Prakash, 2020).

Table no 2: Crop Diversification Index

Sr. No.	Tahasil	1970-71			2020-21		
		No.of crop	Area in %	Index of diversification	No.of crop	Area in %	Index of diversification
1	Shevgaon	03	85.4	28.46	04	87.33	21.83
2	Pathardi	03	94.19	31.39	05	94.64	18.93
3	Nagar	02	89.9	44.45	04	95.05	23.76
4	Parner	04	95.99	23.99	04	90.71	22.67
5	Shrigonda	02	89.65	44.82	03	85.86	28.62
6	Karjat	03	95.54	31.84	05	89.47	17.89
7	Jamkhed	02	81.25	39.97	03	88.97	29.65

Source : Socio - economic abstract of Ahmednagar district 1970-71 & Agricultural office Ahmednagar.2020-21. (Calculated and completed by researchers) (Chavhan, et.al.2019; Singh 1976).



Map No-2 Crop Diversification 1970-71 & 2020-21
(Completed by researcher with help of Q GIS software)

CONCLUSION

Areas of high diversification were detected in Parner tahasil while the areas of moderate diversification were observed in Shevgaon tahasil. Area of low diversification is observed in Pathardi, Nagar Shrigonda Karjat and Jamkhed tahasils in the study region during the period of 1970-71. (Chavhan, Najan et. al., 2020)

Areas of high diversification were found in Shevgaon, Pathardi, Nagar, Parner and Karjat tehsils however areas of moderate diversification were found in Shrigonda and Jamkhed tehsils. No area of low diversification was observed in the study region during the period of 2010-11.

Low to high areas of crop diversification were noted in Pathardi and Nagar tehsils. Moderate to high change were found in Shevgaon tehsil however low to moderate change were found in Jamkhed and Shrigonda tehsils. No change in crop diversification observed in Parner tehsil during the study period.

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