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## The profile of farmers of Marathwada region in relation to climate change

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### Abstract

The study was conducted find out the relationship between the profile of farmers and cropping pattern followed by the farmers of Marathwada region in relation to climate change. Total 120 respondent farmers were selected from 12 villages of four tehsils of two districts. Data were collected by using a well-structured interview schedule. Ex post facto research design was used for the study. Data were analysed by using frequency, percentage, mean, Pearson's coefficient of correlation and standard deviation.

As regard with the profile of farmer it was observed that, majority of them farmers were belonged to nuclear family (60.83%), majority educated up to higher secondary schools (44.17%), majority of (54.17%) farmers having semi medium land holding, majority of (66.67%) farmers medium category of farming experience, majority of (65.00%) farmers medium level of annual income, majority of (70.83%) farmers medium category of irrigation potential, majority of (51.62%) farmer medium category of social participation, majority of (63.33%) farmer medium category of extension contact, majority of (67.50%) farmers medium category of economic motivation.

**Keywords:** Cropping pattern, farmer, climate change, sequential cropping pattern

### 1. Introduction

The Marathwada region, located in the central part of Maharashtra, comprises eight districts: Chhatrapati Sambhajnagar, Jalna, Beed, Parbhani, Hingoli, Nanded, Dharashiv, and Latur. Geographically, it lies in the rain shadow zone of the Western Ghats, making it naturally semi-arid with limited water resources. The region is heavily, reliant on agriculture with traditional and modern crops with focus on rainfed agriculture. Historically, the region's agricultural practices have revolved around rainfed farming, and cropping patterns were adapted to the region's agro-climatic conditions. However, over the past few decades, due to climatic variability, increasing instances of drought, and economic pressures, there has been a significant shift in the cropping pattern. Farmers are increasingly moving away from traditional crops such as millets and pulses toward more water-intensive and high-risk cash crops like cotton and sugarcane. These changes, although driven by market incentives, have resulted in heightened vulnerability to climatic stress and resource depletion.

Understanding the changing cropping pattern in response to climate change is critical for multiple reasons. Cropping patterns serve as an indicator of how farmers adapt to environmental stressors, it reveals the sustainability or lack off current agricultural practices, provide insight into the effectiveness of existing government interventions and the gaps therein. By analysing cropping pattern and it is possible to derive meaningful conclusions about the adaptive capacity of farmers and the resilience of the agricultural system in Marathwada region.

### 2. Materials and Methods

Ex-post facto research design was used to conduct the investigation. The study was conducted in two districts of Marathwada region of Maharashtra state i.e. Hingoli and Parbhani districts. Two tehsils were selected from each district. From Hingoli district Basmat and Aundha tehsils selected and from Parbhani district Jintur and Parbhani tehsils were selected. Three villages were selected from each tehsils selected.

Ten farmers selected was selected form each village's total 120 farmers was selected for study. There was one dependent variable namely "Cropping pattern" and ten independent variables family type, education, land holding, irrigation potential, farming experience, annual income, social participation, extension contact, risk orientation and economic motivation.

To measurement of the dependent and independent variables, appropriate scientific tools were used in the study. The data was collected from the respondents through interview schedule by personal interview technique. They were analysed by using

frequency, percentage, mean, standard deviation and pearson's coefficient of correlation.

### 3. Results and Discussions

#### The profile of farmers

The profile of selected respondent farmers of Marathwada region were studied into different categories based on their selected profile socio-personal, socio-economic, communicational, psychological variables and were presented in the following tables and interpreted through frequencies, percentages, mean and standard deviation.

**Table 1: The Profile of Farmers of Marathwada Region**

Sr. No.	Category	Frequency	Percentage
<b>A. Family type</b>			
1	Nuclear	73	60.83
2	Joint	47	39.17
<b>B. Education</b>			
1	Illiterate	2	1.67
2	Can read only	3	2.50
3	Can read and write	6	5.00
4	Primary school (Up to 4 <sup>th</sup> std)	22	18.83
5	Middle school (5 <sup>th</sup> std to 10 <sup>th</sup> std)	26	21.67
6	Higher secondary (11 <sup>th</sup> std and 12 <sup>th</sup> std)	53	44.17
7	Graduate	8	6.67
<b>C. Land Holding</b>			
1	Marginal (Up to 1.00 ha)	16	13.33
2	Small (1.01 to 2.00 ha)	19	15.83
3	Semi medium (2.01 to 4.00 ha)	65	54.17
4	Medium (4.01 to 10.00 ha)	20	16.67
5	Large (10.01 ha and above)	1	0.83
<b>D. Farming Experience</b>			
1	Low (Up to 11)	24	20.00
2	Medium (12 to 24)	80	66.67
3	High (Above 24)	16	13.33
<b>E. Annual Income</b>			
1	Low (Up to 104851)	19	15.83
2	Medium (104852 to 355732)	78	65.00
3	High (Above 355732)	23	19.17
<b>F. Irrigation Potential</b>			
1	Low (Up to 23)	28	20.00
2	Medium (24 to 83)	81	70.83
3	High (Above 83)	11	9.17
<b>G. Social Participation</b>			
1	Low (Up to 4)	37	30.83
2	Medium (5 to 9)	62	51.67
3	High (Above 9)	21	17.50
<b>H. Extension Contact</b>			
1	Low (Up to 5)	21	17.50
2	Medium (6 to 11)	76	63.33
3	High (Above 11)	23	19.17
<b>I. Risk Orientation</b>			
1	Low (Up to 19)	25	20.83
2	Medium (20 to 23)	81	67.50
3	High (Above 23)	14	11.67
<b>J. Economic Motivation</b>			
1	Low (6 to 12)	25	20.83
2	Medium (13 to 25)	75	62.50
3	High (Above 25)	20	16.67

#### Family Type

The data in the table 1 revealed that, 60.83 per cent respondent farmers had nuclear family and 39.17 per cent respondent farmers had joint family.

The findings are similar with the findings of Shrivastava (2018) [15], Keer (2020) [7] and Ankita (2023) [1].

#### Education

The data in the table 1 revealed that, majority (44.17%) of the respondent farmers were educated up to higher education followed by middle school (21.67%) and education up to primary school education (18.83%). Respondent farmers were graduate (6.67%), read and write (5.00%), read only (2.50%)

and illiterate (1.67%). The findings are similar with the findings of Kale (2016) <sup>[6]</sup>, Mergewar (2017) <sup>[9]</sup> and Sanodiya *et al.* (2021) <sup>[13]</sup>, Bhosle *et al.* (2024) <sup>[4]</sup>.

### Land holding

The data from table 1 revealed that, 54.17 per cent of respondent farmers were having 2.01 to 4.00 ha of land and belonged to small medium land holding category while, 16.67 per cent of the respondent farmers were having land 4.01 to 10.00 ha and belonged to medium category. 15.83 per cent of the respondent farmers had 1.01 to 2.00 ha of land and belonged to small category and 13.33 per cent of respondent farmers had up to 1.00 ha of land and belonged to marginal category and 0.83 per cent of respondent farmers had 10.01 and above 10.01 ha belonged to large land holding category.

The findings are similar with the findings of Singh (2015) <sup>[16]</sup>, Chouhan (2017) <sup>[5]</sup> and Sanodiya *et al.* (2021) <sup>[13]</sup>.

### Farming Experience

- The data in table 1 revealed that, about 66.67 per cent of the respondent farmers were from medium categories of farming experience. Followed by 20.00 per cent of the respondent farmers had low farming experience and 13.33 per cent of the respondent farmers had high farming experience.
- The findings of the study are in line with Kale (2016) <sup>[6]</sup>, Chouhan (2017) <sup>[5]</sup>, Mergewar (2017) <sup>[9]</sup>, Bhong (2019) <sup>[3]</sup>, Kudale (2019) <sup>[8]</sup>, Mundhe (2019) <sup>[10]</sup> and Sanodiya *et al.* (2019) <sup>[13]</sup>, Bhosle *et al.* (2024) <sup>[4]</sup>.

### Annual Income

- The data in table 1 revealed that, majority (65.00%) of respondent farmers had medium annual income between Rs. 104852 to 355732, while 19.77 per cent had the high annual income above Rs. 355732. About 15.83 per cent had low income up to Rs.104851.
- The findings of the study are in line with findings of Kale (2016) <sup>[6]</sup>, Chouhan (2017) <sup>[5]</sup>, Mergewar (2017) <sup>[9]</sup>, Bhong (2019) <sup>[3]</sup>, Keer (2019) <sup>[7]</sup>, Kudale (2019) <sup>[8]</sup> and Mundhe (2019) <sup>[10]</sup>, Bhosle *et al.* (2024) <sup>[4]</sup>.

### Irrigation Potential

The data in table 1 revealed that, about 70.83 per cent of the respondent farmers were from medium categories of irrigation potential. Followed by 20.00 per cent of the respondent farmers had low irrigation potential and 9.17 per cent of the respondent farmers had high irrigation potential.

The findings are similar with the findings of Shankara (2010) <sup>[14]</sup> and Preethi (2012) <sup>[12]</sup>.

### Social Participation

- It was observed from table 1 that, 51.67 per cent of the farmers had medium social participation followed by 30.83 per cent and 17.50 per cent of the farmers had low and high social participation respectively.
- The findings are similar with the findings of Chouhan (2017) <sup>[5]</sup>, Bhong (2019) <sup>[3]</sup>, Kudale (2019) <sup>[8]</sup>, Mundhe (2019) <sup>[10]</sup> and Keer (2020) <sup>[7]</sup>.

### Extension contact

- It was observed from table 1 that, 63.33 per cent of the farmers had medium extension contact followed by 17.50 per cent and 19.17 per cent of the farmers had low and high

extension contact respectively.

- The findings are supported by the results of Chouhan (2017) <sup>[5]</sup>, Bhong (2019) <sup>[3]</sup>, Kudale (2019) <sup>[8]</sup>, Mundhe (2019) <sup>[10]</sup>.

### Risk orientation

- The data in table 1 revealed that, about 67.50 per cent of the farmers had medium category of risk orientation category followed by 20.83 per cent and 11.67 per cent of the farmers had low category of risk orientation category and high category of risk orientation respectively.
- The findings are similar with the findings of Vasanthi (2017), Bhong (2019) <sup>[3]</sup>, Kudale (2019) <sup>[8]</sup>, Mundhe (2019) <sup>[10]</sup>.

### Economic Motivation

- The data in table 1 revealed that, about 62.50 per cent of the farmers had medium economic motivation followed by 20.83 per cent and 16.67 per cent of the farmers had low and high economic motivation respectively.
- The findings are similar with the findings of Patidar (2015) <sup>[11]</sup>, Singh (2015) <sup>[16]</sup>, Chouhan (2015) <sup>[5]</sup>, Bagadi (2018) <sup>[2]</sup>, Sanodiya *et al.* (2019) <sup>[13]</sup>, Bhosle *et al.* (2024) <sup>[4]</sup>.

### 4. Conclusion

The present study highlights the profile of farmers of Marathwada region. The findings revealed that majority of farmers belonged to nuclear family type, possess semi- medium category of land holding, medium annual income, medium irrigation potential, medium social participation, medium category of extension contact, medium category of risk orientation, medium category of economic motivation. Improve the farmers annual income, irrigation potential and social participation, extension contact, risk orientation, economic motivation by the spread the awareness among the farmers.

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