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# Socioeconomic and psychological of small and marginal farmers in Marathwada

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**Abstract**

The Marathwada region of Maharashtra state is a semi-arid agroecosystem where farmers frequently face droughts and are predominantly dependent on agriculture as their primary source of livelihood. Within Marathwada, the districts of Parbhani and Hingoli are among the most vulnerable to climate variability. The farmers from this region are heavily reliant on the monsoon and experience erratic rainfall and depleting groundwater. Agriculture here is dominated by small and marginal farmers cultivating crops like soybean, cotton, sorghum and pulses under rainfed conditions. Recognising the need to understand the socioeconomic and psychological profile of these farmers as a foundation for strengthening their climate resilience, the present study was undertaken in these two districts. A total of 120 respondents were selected through a multistage random sampling method. The data was collected using a structured and pretested interview schedule under ex post facto research design. Variables studied include age, education, size of landholding, farming experience, annual income, occupation, source of irrigation, social participation, extension contact, source of information, mass media exposure, economic motivation, innovativeness, risk orientation, and institutional support. Analysis revealed that most respondents belonged to the middle-aged group, had primary or middle school education, and depended primarily on agriculture for their livelihood. The majority were marginal landholders with medium levels of farming experience and annual income, and their cultivation was largely dependent on wells or rainfed sources. Social participation, contact with extension agencies, access to information, mass media exposure, and key psychological traits such as innovativeness and risk-taking ability were generally at medium levels. Institutional support was found to be moderate. These findings indicate that farmers in Parbhani and Hingoli face both resource and knowledge constraints but are moderately open to adopting technological and institutional interventions. The study concludes that improving information systems, institutions, and promoting capacity-building initiatives customized to local needs are critical to improving the resilience and productivity of farmers in drought-prone Marathwada.

**Keywords:** Socioeconomic profile, psychological profile, climate vulnerability, climate resilience, technology adoption

## Introduction

Maharashtra is one of India's most agriculturally significant states, with diverse agro-climatic zones ranging from the humid Konkan coast to the semi-arid plateau of Vidarbha and Marathwada. Agriculture in the state is heavily dependent on monsoon rainfall, as a large portion of cultivated land is under rainfed conditions. Among its regions, Marathwada occupies a central position both geographically and in agricultural production, yet it remains highly vulnerable to climatic fluctuations. The region comprises eight districts, Aurangabad, Jalna, Parbhani, Hingoli, Beed, Latur, Osmanabad, and Nanded, and lies in the rain shadow area of the Western Ghats, making it prone to frequent droughts. Annual rainfall is low and erratic, averaging between 600–800 mm, with high variability in distribution. (Adhav *et al*. 2021) [1].

The agricultural economy of Marathwada is dominated by small and marginal farmers, many of whom depend on a single cropping season, primarily cultivating soybean, cotton, sorghum, and pulses under rainfed conditions. Recurrent droughts, coupled with depleting groundwater resources and poor irrigation infrastructure, exacerbate the vulnerability of farming households. In particular, Parbhani and Hingoli districts represent typical examples of this vulnerability, where agriculture is the primary livelihood but is constrained by water scarcity, low crop diversification, and limited access to agricultural technology.

Understanding the socioeconomic and psychological profile of farmers in such vulnerable regions is essential, as these factors influence decision-making, technology adoption, and

coping strategies. Previous research highlights the role of farmers' education, farming experience, landholding size, and access to resources in shaping their adaptive capacity to climate risks. Psychological attributes, such as risk orientation, innovativeness, and scientific orientation (Anseera, 2018, Banu, 2024) [4, 5] also determine the willingness to adopt improved agricultural practices.

The present study focuses on assessing the socioeconomic and psychological profile of farmers in Parbhani and Hingoli districts of Marathwada. This study aims to provide a comprehensive understanding of their demographic, economic, and psychological characteristics, which can inform the design of context-specific interventions to enhance resilience in drought-prone areas. This research builds on existing studies, showing that understanding the specific needs and challenges of farmers is key to effective agricultural planning, especially in the face of climate change.

## Materials and Methods

The study was conducted in the Marathwada region of Maharashtra, India. This region is a major agricultural area where a significant portion of the population relies on agriculture for their livelihood. Marathwada is highly susceptible to climate variability, including frequent droughts, erratic rainfall, and extreme temperatures, which severely impact agricultural practices. Based on recent vulnerability assessments, several districts in this region, including Beed, Jalna, Aurangabad, Hingoli, Parbhani, and Nanded, are classified as highly vulnerable due to their reliance on rainfed farming and high exposure to climate-related risks. Latur and Osmanabad are considered moderately vulnerable. (Adhav *et al*. 2021) [1]. Based on the vulnerability assessment by Adhav *et al*. (2021) [1], ten highly climate-vulnerable districts were identified in Maharashtra. From these, Parbhani and Hingoli districts were selected randomly for the present study. Both districts are situated in the drought-prone Marathwada region and primarily depend on rainfed agriculture. Out of nine tehsils of Parbhani district, two tehsils were selected randomly, *viz*. Parbhani and Manwath, and out of the five tehsils in Hingoli district, two tehsils were selected randomly, *viz*. Sengaon and Hingoli tehsils. From each selected tehsil, 3 villages were selected randomly. Therefore, a total of 12 villages were selected for the present study. From each selected village, 10 soybean farmers having small and marginal landholdings as respondents were randomly selected. Thus, a total of 120 farmers were considered for the present study. This selection was done by using a simple random sampling method called the $n^{th}$ sampling method.

An interview schedule was developed to collect the necessary data. The schedule was based on previous research. The interview schedule covered two parameters: socio-economic and psychological profiles of the farmers. Extension contact was measured by using the procedure followed by Nirban (2004) [14] with slight modifications, Scale created by Supe (2007) [17] was used to measure economic motivation, forced choice method of self-rating scale developed by Moulik (1965) [12] with slight modification was administered for quantification of the degree of farmers self-evaluation with regard to their innovativeness, Risk orientation scale of Supe (2007) [17] was used in this study. Data collection was carried out through direct interviews with the respondents using structured interview schedules. Descriptive statistical analysis was performed using Microsoft Excel.

## Results and Discussion

### A. Socioeconomic variables of small and marginal farmers

**Table 1:** Distribution of small and marginal farmers according to their socioeconomic variables

| S. No. | Characteristics | Frequency | Percentage |
|---|---|---|---|
| **1.** | **Age** | | |
| i. | Young (Up to 27.59) | 13 | 10.83 |
| ii. | Middle (27.59 to 54.08) | 82 | 69.34 |
| iii. | Old (Above 54.09) | 25 | 20.83 |
| **2.** | **Education** | | |
| i. | Illiterate | 28 | 23.33 |
| ii. | Can read and write | 33 | 27.50 |
| iii. | Primary education | 39 | 32.50 |
| iv. | High school | 17 | 14.17 |
| v. | Higher secondary | 3 | 02.50 |
| **3.** | **Faming Experience** | | |
| i. | Low (Up to 7.21) | 13 | 10.83 |
| ii. | Medium (7.22 to 30.98) | 82 | 69.34 |
| iii. | High (Above 31) | 25 | 20.83 |
| **4.** | **Source of Irrigation** | | |
| i. | Rainfed | 57 | 47.50 |
| ii. | Well | 56 | 46.67 |
| iii. | Tube Well/ Bore Well | 14 | 11.67 |
| iv. | Farm pond/Tank | - | - |
| v. | Canal | 22 | 18.33 |
| vi. | Sprinkler/drip | 7 | 05.83 |
| **5.** | **Occupation** | | |
| i. | Agriculture | 79 | 65.83 |
| ii. | Labour & agriculture | 11 | 09.17 |
| iii. | Subsidary &agriculture | 18 | 15.00 |
| iv. | Employed & agriculture | 12 | 10.00 |
| **6.** | **Size of Landholding** | | |
| i. | Marginal (Up to 1 ha) | 25 | 20.83 |
| ii. | Small (1-2ha) | 95 | 79.17 |
| **7.** | **Annual income** | | |
| i. | Low (Up to ₹ 67,110.18) | 01 | 00.83 |
| ii. | Medium (₹ 67110.19 to ₹ 176639.82) | 103 | 85.84 |
| iii. | High (Above ₹ 1,76,639.83) | 16 | 13.33 |
| **8.** | **Social Participation** | | |
| i. | Low (Up to 1.22) | 35 | 29.17 |
| ii. | Medium (1.23 to 2.23) | 84 | 70.00 |
| iii. | High (Above 2.23) | 01 | 00.83 |
| **9.** | **Extension Contact** | | |
| i. | Low (Up to 6.4) | 27 | 22.50 |
| ii. | Medium (6.5 to 10.7) | 74 | 61.67 |
| iii. | High (Above 10.8) | 19 | 15.83 |
| **10.** | **Source of Information** | | |
| i. | Low (Up to 17.13) | 14 | 11.67 |
| ii. | Medium (17.13 to 22.72) | 80 | 66.67 |
| iii. | High (Above 22.73) | 26 | 21.67 |
| **11.** | **Mass Media Exposure** | | |
| i. | Low (Up to 2.67) | 28 | 23.23 |
| ii. | Medium (2.68 to 6.73) | 69 | 57.50 |
| iii. | High (Above 6.74) | 23 | 19.17 |
| **12.** | **Institutional Support** | | |
| i. | Low (Up to 7.50) | 34 | 28.33 |
| ii. | Medium (7.51 to 10.64) | 49 | 40.84 |
| iii. | High (Above 10.65) | 37 | 30.83 |

**1. Age of farmers**

It was observed that most respondents (69.34%) belonged to the middle-aged group (27.59–54.08 years), followed by 20.83 per cent in the old age category and 10.83 per cent in the young age group. The mean age was 40.83 years, indicating that the majority were in their productive years, combining experience with physical capability. This distribution is consistent with Hiremath (2007) [7], who found middle-aged farmers more likely to adopt improved agricultural practices.

**2. Education status of farmers**

It is clear from the study that educational levels were generally low. About 32.50 per cent had primary education, 27.50 per cent could read and write without formal schooling, and 23.33per cent were illiterate. Only 14.17 per cent had completed high school, and 2.50 per cent had completed higher secondary. Low educational attainment, as also observed by Anseera (2018) [4] and Banu (2024) [5], can limit access to technical information and affect technology adoption.

**3. Farming experience**

It was found that a majority of the respondents (69.34%) had medium farming experience (7.22–30.98 years), 20.83per cent had high, and 10.83 per cent had low experience. Farmers with medium to high experience are generally more aware of climate variability and adaptive measures. Similar results were reported by Bhong (2019) [6].

**4. Source of irrigation**

It was observed that rainfall was the main source for 47.50 per cent of respondents, closely followed by well irrigation (46.67%). Canals served 18.33 per cent. tube wells/bore wells 11.67 per cent, and sprinkler/drip systems only 5.83 per cent. None used farm ponds or tanks, as all of the farmers belonged to small or marginal category, and often cannot afford high construction costs, insufficient lands and limited access to credit. The dependence on rainfall underscores the irrigation vulnerability which aligns with Sarita (2019) [16].

**5. Occupation**

The present study shows that agriculture was the sole occupation for 65.83 per cent of farmers. Others combined it with subsidiary work (15.00%), employment (10.00%), or labour (9.17%). Heavy reliance on farming increases susceptibility to climatic shocks, a trend also reported by Verma (2017) [18] and Sarita (2020) [16].

**6. Size of landholding**

The respondents for this study were only small and marginal farmers. The data collected on landholding size shows that small (20.83%) and marginal farmers (79.17%), which reflects the land fragmentation and subsistence nature of agriculture in the study region. The distribution across different landholding categories highlights the dominance of smaller farm sizes, which may limit their capacity to invest in advanced agricultural technologies. The findings closely align with those of Verma (2017) [18] and Islam *et al*. (2019) [9].

**7. Annual income**

It was observed that most respondents (85.84%) had medium annual incomes (₹67,110.19–₹1,76,639.82), 13.33 per cent had high, and only 0.83 per cent had low incomes. This moderate income level can sustain basic needs but may restrict investment in costly innovations. A similar pattern is reported by Masudkar (2017) [11] and Mahesh (2022) [10].

**8. Social Participation**

The study found that social participation was medium for 70.00 per cent of respondents, low for 29.17 per cent, and high for just 0.83 per cent. This reflects limited community engagement, restricting collective access to resources. It aligns with Mundhe(2019) [13] and Bhong (2019) [6].

**9. Extension Contact**

It is observed that extension contact was medium for 61.67 per cent, low for 22.50 per cent, and high for 15.83 per cent of farmers. While occasional interactions with extension services exist, more frequent engagement is needed to enhance technology dissemination. The findings closely align with those of Alam *et al* (2016) [3] and Islam *et al*. (2019) [9].

**10. Source of information**

The study found that access to information sources was medium for 66.67 per cent, high for 21.67 per cent, and low for 11.67 per cent of respondents. Moderate contact with extension agents, fellow farmers, and local media can influence adoption levels, which aligns with the findings of Pise *et al*. (2018) [15] and Anseera (2018) [4].

**11. Mass Media Exposure**

It is clear from the study that mass media exposure was medium for 57.50 per cent, low for 23.23 per cent, and high for 19.17 per cent. Increased access to mobile phones has boosted connectivity, though print and digital media remain less accessible. It aligns with the findings of Pise *et al*. (2018) [15] and Mahesh (2022) [10].

**12. Institutional support**

It was observed that institutional support was medium for 40.84 per cent, high for 30.83 per cent, and low for 28.33 per cent. Moderate access to credit, insurance, and advisories points to the need for stronger institutional linkages which is similar to the findings of Sarita (2019) [16] and Bhong (2019) [6].

### B. Psychological variables of small and marginal farmers

**Table 2:** Distribution of small and marginal farmers according to their Psycological variables

| S. No. | Characteristics | Frequency | Percentage |
|---|---|---|---|
| **1.** | **Economic Motivation** | | |
| i. | Low (Up to 17.09) | 30 | 25.00 |
| ii. | Medium (17.10 to 20.14) | 76 | 63.33 |
| iii. | High (Above 20.15) | 14 | 11.67 |
| **2.** | **Innovativeness** | | |
| i. | Low (Up to 17.30) | 36 | 30.00 |
| ii. | Medium (17.31 to 21.25) | 63 | 52.50 |
| iii. | High (Above 21.26) | 21 | 17.50 |
| **3.** | **Risk Orientation** | | |
| i. | Low (Up to 7.21) | 13 | 10.83 |
| ii. | Medium (7.22 to 30.98) | 82 | 69.34 |
| iii. | High (Above 23) | 03 | 02.50 |

#### 1. Economic Motivation
It was observed that economic motivation was medium for 63.33 per cent, low for 25.00 per cent, and high for 11.67 per cent. Moderate aspirations suggest farmers seek to improve income but are constrained by resources and risk aversion. Similar findings were reported by Ahire & Kapse (2017) [2] and Pise *et al*. (2018) [15].

#### 2. Innovativeness
It was found that innovativeness was medium for 52.50 per cent, low for 30.00 per cent, and high for 17.50 per cent. This moderate tendency to try new practices may result from cautious investment behaviour and limited exposure to innovations. It closely aligns with findings of Anseera (2018) [4] and Mahesh (2022) [10].

#### 3. Risk Orientation
It was clear from the study that risk orientation was medium for 82.50 per cent, low for 15.00 per cent, and high for only 2.50 per cent. Moderate risk tolerance reflects the climate vulnerability and economic fragility of small and marginal farmers. Similar results were reported by Ahire & Kapse (2017) [2] and Sarita (2019) [16].

### Conclusion
The study assessed the socio-economic and psychological profile of small and marginal farmers in Parbhani and Hingoli districts of drought-prone Marathwada region of Maharashtra. Results indicate that the majority of the respondents were middle-aged, had primary or middle school education, and possessed medium levels of farming experience, annual income, social participation, extension contact, information access, mass media exposure, economic motivation, innovativeness, and risk orientation. Agriculture was the main occupation, with heavy dependence on rainfed and well irrigation, and holdings predominantly in the marginal category. Institutional support was moderate, with partial access to credit, insurance, and advisory services.

These findings highlight that resource limitations, low educational attainment, and inadequate irrigation infrastructure probably constrain adoption capacity. Enhancing extension services, strengthening institutional support, improving access to irrigation, and implementing capacity-building programmes are essential to improve resilience and productivity in these vulnerable areas. Establishing a relationship between these factors and adoption would further strengthen our findings.

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