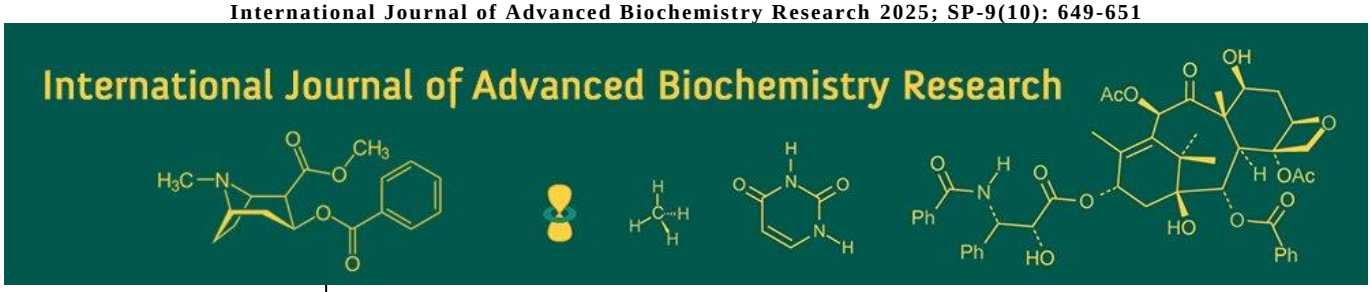

ISSN Print: 2617-4693
ISSN Online: 2617-4707
NAAS Rating (2025): 5.29
IJABR 2025; SP-9(10): 649-651
www.biochemjournal.com
Received: 20-08-2025
Accepted: 25-09-2025

Ramakant V Phad
M.Sc. (Agri.) Scholar, Department of Agricultural Extension Education, College of Agriculture Parbhani, VNMKV Parbhani, Maharashtra, India

Rajesh P Kadam
Head & Professor, Department of Agricultural Extension Education, College of Agriculture Parbhani, VNMKV Parbhani, Maharashtra, India

Sunildutt R Jakkawad
Associate Professor, Department of Agricultural Extension Education, College of Agriculture Parbhani, VNMKV Parbhani, Maharashtra, India

Anuradha S Lad
Assistant Professor, Department of Agricultural Extension Education, College of Agriculture Parbhani, VNMKV Parbhani, Maharashtra, India

Dheeraj T Pathrikar
Assistant Professor, Department of Agricultural Economics, College of Agriculture Parbhani, VNMKV Parbhani, Maharashtra, India

Corresponding Author:
Ramakant V Phad
M.Sc. (Agri.) Scholar, Department of Agricultural Extension Education, College of Agriculture Parbhani, VNMKV Parbhani, Maharashtra, India

Cropping patten followed by farmers of Marathwada region in relation to climate change

Ramakant V Phad, Rajesh P Kadam, Sunildutt R Jakkawad, Anuradha S Lad and Dheeraj T Pathrikar

DOI: https://www.doi.org/10.33545/26174693.2025.v9.i10Sh.5900

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 (62.50%) of the farmers were fair cropping pattern followed by poor cropping pattern (22.50%) and good cropping pattern (15.00%).
It was observed that, the farmers followed sequential cropping pattern like Soybean/Green gram/Black gram-Gram crops (40.00%), Soybean/Cotton-Wheat crops (33.33%), Soybean/Cotton-Jowar crops (10.83%), Soybean-Maize (5.00%), Soybean/Green gram/Black gram-Vegetable crop (2.50%).
It was observed that, farmers were growing cotton (76.67%), soybean (73.33%), red gram (29.17%), green gram, (19.17%), black gram (3.33%) in *kharif* season. In *rabi* season crops were growing gram (45.83%), wheat (33.33%), maize (5.00%), jowar (10.83%), chilli (0.83%), brinjal (0.83%), tomato (0.83%). Farmers were growing in summer season groundnut (20.83%), onion (2.50%), watermelon (2.50%). Annual crops were growing turmeric (19.17%), sugarcane (10.83%). The farmers were growing perennial crops lemon (1.67%), mango (0.83%), guava (0.83%), banana (0.83%).

Keywords: Cropping pattern, climate change, sequential cropping pattern, Marathwada region

1. Introduction
Cropping pattern refers to the portion of land under cultivation of different crops at different points of time. This indicates the time arrangement of crops in particular land area or field. Cropping pattern represents a key factor in determining the level of agricultural production.
The Marathwada region, located in the central part of Maharashtra, comprises eight districts: Chhatrapati Sambhajinagar 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. The consequences of climate change manifested through erratic rainfall, prolonged dry spells, rising temperature, and extreme weather events are profoundly altering agricultural systems across various regions. Among them, the Marathwada region in Maharashtra is one of the most climate-sensitive areas, frequently plagued by droughts and water scarcity, making it a compelling case for studying the intersection between agriculture and climate change.
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 cropping pattern in response to climate change is critical for multiple reasons.

First, cropping patterns serve as an indicator of how farmers adapt to environmental stressors. Second, they reveal the sustainability or lack off current agricultural practices. Third, they provide insight into the effectiveness of existing government interventions and the gaps therein. By analysing cropping pattern trends over the years and it is possible to derive meaningful conclusions about the adaptive capacity of farmers and the resilience of the agricultural system in Marathwada.

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 villages total 120 farmers was selected for study. There was one dependent variable namely "Cropping pattern" and ten independent variables.

To measurement of the dependent 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.

3. Results and Discussions

3.1 Cropping Pattern

It refers to the crops grown by the respondents in kharif, rabi, summer, annual and perennial crops the observation on this aspect are presented and discussed in this part.

The data pertaining cropping pattern followed by farmers have been tabulated and presented in Table 1.

Table 1: Distribution of the farmers according to their cropping pattern

N=120

Sr. No.	Category	Frequency	Percentage
1	Poor (Up to 3)	27	22.50
2	Fair (3 to 9)	75	62.50
3	Good (Above 9)	18	15.00
Total		120	100.00

The data in the table 1 revealed that, majority (62.50%) of the farmers were fair cropping pattern followed by poor cropping pattern (22.50%) and good cropping pattern (15.00%).

The data lead to conclude that the farmers were growing mixed cropping pattern of which some annual and perennial. Such crops require specialized and advanced tools and implements. In this context, it was presumed that the number and type of crops grown may increase the production of farm.

The findings are similar with the findings of Kale (2016) [3], Mergewar (2017) [4].

3.2 Sequential cropping pattern followed by farmers

The data pertaining Sequential cropping pattern followed by farmers have been tabulated and presented in Table 2.

Table 2: Distribution of Sequential cropping pattern followed by the farmers

N=120

Sr. No.	Cropping Pattern	Respondents	
		Frequency	Percentage
1	Soybean/Green gram/Black gram-Gram crops	55	40.00
2	Soybean/Cotton-Wheat crops	40	33.33
3	Soybean/Cotton-Jowar crops	13	10.83
4	Soybean-Maize crop	06	5.00
5	Soybean/Green gram/Black gram	03	2.50

It was observed that from table 2 that, the farmers followed cropping pattern like Soybean/Green gram/Black gram-Gram crops (40.00%), Soybean/Cotton-Wheat crops (33.33%), Soybean/Cotton-Jowar crops (10.83%), Soybean-Maize (5.00%), Soybean/Green gram/Black gram-Vegatables (2.50%).

3.3 Season wise crops grown by farmers on their farm.

The information regarding the farmers growing *kharif*, *rabi*, summer, annual and perennial crops on their farm. The data pertaining crop wise distribution of farmers have been tabulated and presented in Table 3.

Table 3: Distribution of the farmers according to crop wise.

N=120

Sr. No.	Crops	Frequency	Percentage
A	**Kharif**		
1	Soybean	88	73.33
2	Cotton	92	76.67
3	Red gram	35	29.17
4	Green gram	23	19.17
5	Black gram	4	3.33
B	**Rabi**		
1	Gram	55	45.83
2	Wheat	40	33.33
3	Maize	06	5.00
4	Jowar	13	10.83
5	Chilli	1	0.83
6	Brinjal	1	0.83
7	Tomato	1	0.83
C	**Zaid**		
1	Onion	3	2.50
2	Groundnut	25	20.83
3	Watermelon	3	2.50
D	**Annual**		
1	Turmeric	23	19.17
2	Sugarcane	13	10.83
E	**Perennial**		
1	Lemon	2	1.67
2	Mango	1	0.83
3	Gauva	1	0.83
4	Banana	1	0.83

It was seen from Table 3 that, majority of farmers from Marathwada region were growing cotton (76.67%), soybean (73.33%), red gram (29.17%), green gram, (19.17%), black gram (3.33%) in *kharif* season.

In *rabi* season, the farmers of Marathwada region were found growing various crops namely, gram (45.83%), wheat (33.33%), maize (5.00%), jowar (10.83%), chilli (0.83%), brinjal (0.83%), tomato (0.83%).

The farmers from Marathwada region were growing in summer season groundnut (20.83%), onion (2.50%), watermelon (2.50%).

In annual season farmers of Marathwada region were growing turmeric (19.17%), sugarcane (10.83%).

Among the perennial crops farmers were growing lemon (1.67%), mango (0.83%), guava (0.83%), banana (0.83%) in the Marathwada region in relation to climate change.

It can be concluded from the investigation results that the cropping pattern of farmers of Marathwada region in relation to climate change was quite diversified. This could be attributed to the market demand, easy access to market, availability of inputs, technology and advice regarding the cultivation of crops.

4. Conclusions

The present study highlights the cropping pattern followed by farmers of Marathwada region. The findings revealed that majority of farmers were fair cropping pattern followed by poor cropping pattern and good cropping pattern. Promote diversified cropping system that ensures income stability. Encouraging the farmers to cultivate a mix of cereals, pulses, oilseeds and horticultural crops can buffer against climate risks while enhancing food availability. Aware the farmers regarding newly developed technologies and newly developed drought resistant varieties by arranging campaign programmes at village level.

References

1. Bhosle GB, Kadam RP, Deshmukh PR, Jakkawad SR. Building resilience: farmers' challenges and solutions to climate change in Marathwada. Int J Agric Ext Soc Dev. 2024;7(12):551-555.
2. Gandhi RD. A study on the cropping pattern followed and input use by farmers in Konkan region [MSc thesis]. Dapoli (MS): Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth; 1993.
3. Kale N. Cropping pattern followed by awardee farmers of Konkan region [MSc thesis]. Dapoli (MS): Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth; 2016.
4. Mergewar A. Cropping pattern followed by awardee farmers in Marathwada region [MSc thesis]. Parbhani (MS): Vasantrao Naik Marathwada Krishi Vidyapeeth; 2017.
5. Sunilkumar BR, Krishna DK. Impact of Climate Variability on Crop Production in Marathwada Region of Maharashtra. International Journal of Advances in Agricultural Science and Technology. 2019 Mar 20;6(3):9-19.