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A perceived impact of climate change on profile characteristics of paddy farmers

Pimpalkar RD, Ahire MC and More AG

Ph.D. Research Scholar, MPKV, Rahuri, Maharashtra, India

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Corresponding Author: Pimpalkar RD

Abstract

The study was conducted in Chandrapur and Bhandara districts of Vidarbha region in Maharashtra state. Chandrapur and Bhandara districts are considered as progressive agricultural belt in Vidarbha region. For the present study random sampling method was used. From each tehsil four villages were selected. Thus, from Sindewahi tehsil of Chandrapur district four villages were selected and from Sakoli tehsil of Bhandara district four villages were selected. In this study 8 villages were covered. For the present study from each selected village 45 paddy farmers were selected randomly; i.e. total 180 respondents were selected from each district. Thus total 360 respondents were selected for the study. The research design ex post facto were used.

The result revealed that majority of the paddy farmers i.e. 58.61 per cent were in 'middle age group' (36 to 55 years); nearly paddy farmers i.e. 37.23 per cent had completed their higher secondary education, majority of paddy farmers i.e., 68.61 per cent had medium-sized families, 73.05 per cent of the paddy farmers had a medium annual income, 68.89 per cent had a medium level of farming experience, 56.38 per cent of the paddy farmers had a medium level of extension contact, 82.23 per cent had medium area under paddy cultivation, 76.67 per cent, used the transplanting method of paddy sowing, majority of paddy farmers i.e. 51.67 per cent were in the moderately vulnerable group, majority of the paddy farmers i.e. 77.77 per cent know about Pradhan Mantri Fasal Bima Yojana. The collected data were processed through primary and secondary tables and statistically analysed. The Karl Pearson's correlation coefficient method was computed to find out the relationship between the selected independent and dependent variables.

Keywords: Perception, paddy farmers, paddy, climate change

Introduction

Climate change is one of the biggest challenges the present world is facing today. The effects of global climate change are many folds and there is a need to create awareness and its impact on various sectors of economy. Agriculture and Climate are mutually dependent. There is a need to understand the influence of climate change on agricultural sector both at Global and as well as at regional level, especially from the point of view of providing food to vulnerable section of the population. Changing climatic conditions can have the big effect on our life and our environment. In fact, it is the greatest environmental threat faced by the planet earth. The climate has changed and the major environmental problem in both crop and livestock production is recurrent droughts, hailstorms, floods, and pest incidence.

Paddy (*Oryza sativa*) is belonging to family Poaceae. Edible starchy cereal grain and the grass plant by which it is produced. Roughly one-half of the world population, including virtually all of East and Southeast Asia, is wholly dependent upon paddy as a staple food; 95 percent of the world's paddy crop is eaten by humans. Paddy is cooked by boiling, or it can be ground into a flour. It is eaten alone and in a great variety of soups, side dishes, and main dishes in Asian, Middle Eastern, and many other cuisines. Other products in which paddy is used are breakfast cereals, noodles, and such alcoholic beverages as Japanese sake. The

cultivated paddy plant is an annual grass and grows to about 1.2 meters (4 feet) in height. The leaves are long and flattened and are borne on hollow stems. The fibrous root system is often broad and spreading. The panicle, or inflorescence (flower cluster), is made up of spikelet bearing flowers that produce the fruit, or grain. Varieties differ greatly in the length, shape, and weight of the panicle and the overall productivity of a given plant.

Objective

To study the profile characteristics of paddy farmers.

Methodology

The important paddy growing region in Maharashtra is Bhandara, Gondia, Chandrapur and Gadchiroli and part of Nagpur district in Vidarbha. Vidarbha cover 7.36 lakh hectare area and 11.92 lakh metric tonnes production under paddy. The Chandrapur and Bhandara districts were selected for this study since they are the progressive agriculture belt in Vidarbha. For the present study random sampling method was used. From each tehsil four villages were selected. Thus, from Sindewahi tehsil of Chandrapur district four villages were selected and from Sakoli tehsil of Bhandara district four villages were selected. In this study 8 villages were covered. For the present study from each selected village 45 paddy farmers were selected randomly; i.e. total 180 respondents were selected from each district.

Thus total 360 respondents were selected for the study.

The perception scale was designed for the present study. The data were collected with the help of well-constructed and pretested interview schedule. The independent variables namely Age, education, family size, annual income, farming experience, extension contacts, area under paddy cultivation, paddy sowing method, climatic vulnerability, access to crop insurance. The perception as a dependent variable has been selected for this study. The collected data were processed through primary and secondary tables and statistical methods and testes such as frequency, percentage, mean, standard deviation, Karl Pearson's correlation coefficient method was used for the analysis of the data ex-post facto research design was used in this research.

Results and Discussion

Table 1: Distribution of paddy farmers according to their profile characteristics.

Sr.	Profile	Frequency	Per cent
1.	Age		
1	Young (Upto35 years)	80	22.23
2	Middle (36 to 55 years)	211	58.61
3	Old (56 and above years)	69	19.16
2.	Education		
1	Illiterate (No education)	32	8.89
2	Primary (1st to 4th)	46	12.78
3	Secondary (8th to 10th)	123	34.16
4	Higher secondary (11th & 12th)	134	37.23
5	Graduation and above	25	6.94
3.	Family size		
1	Small (Up to 4)	50	13.89
2	Medium(5 to 6)	267	68.61
3	Large (7 and above)	43	17.50
4.	Annual income		
1	Low (Up to ₹1,00,000/-)	21	05.83
2	Medium (₹1,00,001 to ₹2,00,000/-)	263	73.05
3	High (₹2,00,001/- and above)	76	21.12
5.	Farming experience		
1	Low (Up to 8)	72	20.00
2	Medium (9 to 16)	203	56.38
3	High (Above 17)	85	23.62
6.	Extension contacts		
1	Low(Up to₹ 403355)	48	13.33
2	Medium(₹ 403356 to 747828 ₹)	264	73.34
3	High(₹ 747829&above)	48	13.33
7.	Area under paddy cultivation		
1	Small (Up to 0.7)	05	01.38
2	Medium (0.8 to 3.9)	296	82.23
3	Large (4.0 and above)	59	16.39
8.	Paddy sowing methods		
1	Broadcasting	74	20.56
2	Transplanting	250	76.67
3	System of Rice Intensification	36	2.77
9.	Climatic Vulnerability		
1	Highly vulnerable (Up to 0.42)	76	21.11
2	Moderately vulnerable (0.43 to 0.65)	186	51.67
3	Less vulnerable (Above 0.66)	98	27.22
10.	Access to crop insurance		
1	Low (Up to 12)	266	73.89
2	Medium (13 to 24)	85	23.61
3	High (25 and above)	09	2.50

1. Age

Age is said to be influence an individual's thinking, attitude, and sense of their role in society. A significant consideration is how the age of paddy farmers influences their perceptions towards climate change and the coping mechanisms they employ. Table 4.1 shows that most of the paddy farmers i.e. 58.61 per cent were in 'middle age group' (36 to 55 years) followed by 'young age' 22.23 per cent (up to 35 years) and 'old age' 19.16 per cent (56 and above years) respectively. The present findings are like the findings of Dahiwale (2020) ^[4], Chandangiriwar (2020) ^[2], Gupta (2021) ^[10], Janbandhu (2021) ^[12], Adhav (2023) ^[1], Pathak (2024) ^[16], Thapa (2024) ^[22], and Ghadge (2024) ^[7].

2. Education

It was evident from Table 4.2 that 37.23 per cent respondents had completed their higher secondary education, 34.16 per cent had completed their secondary education, 12.78 per cent had completed their primary education, 8.89 per cent respondent were illiterate and only 6.94 per cent respondents had completed their education up to graduation and above. According to the data, most paddy farmers had completed their higher secondary and secondary education, with only a few numbers having completed their education through graduation and above.

The findings on paddy farmers' education levels are consistent with previous research by Gupta (2017) ^[9], Shanobhoga (2020) ^[21], Gupta (2021) ^[10], Ramteke (2021) ^[18], Ghadge (2024) ^[7], Pathak (2024) ^[16], Thapa (2024) ^[22].

3. Family size

The data show that most paddy farmers (68.61%) had medium-sized families, followed by 17.50 per cent with large family size and 13.89 per cent with small family size respectively. This distribution is consistent with the largest age group of paddy farmers, with the majority (68.61%) falling between the ages of 36 and 55.

The results are in line to those of Chandrasekar (2017) ^[3], Gopi *et al.*, (2017) ^[8], Karangami (2017) ^[14], Kalamkar (2022) ^[13], Adhav (2023) ^[1].

4. Annual income

Nearly three-quarters of all paddy farmers, or 73.05 per cent, had a medium annual income, followed by a high 21.12 per cent and a low 14.33 per cent annual income. Most respondents had a medium area of paddy farming, which could be the most likely explanation for this. It implies that those with medium incomes have a greater influence on perception and should take necessary actions against climate change.

The results shown above are consistent with those of Karangami (2017) ^[14], Chandangiriwar (2021) ^[2], Ramteke (2021) ^[18], and Adhav (2023) ^[1].

5. Farming experience

It is estimated as the total number of years a paddy farmer has been involved in farming. In terms of paddy farmers experience in farming practice, it was found that almost two-thirds of respondents i.e. 68.89 per cent, had a medium level of farming experience, followed by 17.78 and 13.33 per cent of paddy farmers who had a low and high level of farming experience, respectively. Most paddy farmers had

medium level of farming experience.

The results of Karangami (2017)^[14], Sangeetha *et al.*, (2023)^[20], Akula *et al.*, (2023), and Adhav (2023)^[1] corroborate the present study's conclusions.

6. Extension contacts

More than half of the paddy farmers, 56.38 per cent, had a medium level of extension contact, while the remaining 23.62 and 20.00 per cent had high and low levels of extension contact, respectively.

The current results are comparable to those of Karangami (2017)^[14], Chandangiriwar (2020)^[2], Mahesh *et al.*, (2020)^[15], Sangeetha *et al.*, (2023)^[20], and Dixit *et al.*, (2024)^[5].

7. Area under paddy cultivation

It is the number of hectares of land under paddy cultivation that a paddy farmer holds and cultivates. Majority of the paddy farmers i.e. 82.23 per cent had medium area under paddy cultivation followed by 16.39 and 01.38 per cent had large and small area under paddy cultivation respectively.

The outcomes were identical to Chandangiriwar (2020)^[2], Dahiwal (2020)^[4], Janbandhu (2021)^[12] and Adhav (2023)^[1].

8. Paddy sowing methods

Paddy sowing methods are the methods used by paddy farmers to plant their crops. Table 4.9 shows that nearly three-quarters of paddy farmers, or 76.67 per cent, used the transplanting method of paddy sowing, followed by 20.56 per cent used broadcasting method of paddy sowing, and 2.77 per cent used the System of Rice Intensification method of paddy sowing.

The outcomes are in line with those of Karangami (2017)^[14], Kumar *et al.*, (2022) and Dubey *et al.*, (2023)^[6].

9. Climatic vulnerability

More than half of the paddy farmers (51.67%) were in the moderately vulnerable group, followed by around 27.22 per cent in the less vulnerable group, and only 21.11 per cent in the highly vulnerable group. This result is most likely due to a medium degree of farming expertise and extension contact.

These findings are in line with Raghuvanshi *et al.*, (2018)^[17] and Yaminileela *et al.*, (2024)^[23].

10. Access to crop insurance

It is revealed from the Table 4.24 that 100.00 per cent paddy farmers agreed to the statement that if they were offered crop insurance, they will go for it while, 83.33 per cent paddy farmers were aware about crop insurance scheme. About 81.95 per cent paddy farmers have been insured crop during last year whereas, 81.95 per cent paddy farmers know about crop insurance scheme of Rs. 1/- has been started by Government of Maharashtra. Majority of the paddy farmers i.e. 77.77 per cent know about Pradhan Mantri Fasal Bima Yojana whereas, 64.45 per cent of paddy farmers have heard about Weather Based Crop Insurance Scheme (WBCIS). 63.34 per cent of the paddy farmers know about agents of crop insurance, while 44.17 per cent of paddy farmers knows that the reasons for crop failure that he will be compensated for and 35.84 per cent of paddy farmers knows that insurance scheme also provides

coverage of post-harvest losses.

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