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Relational Analysis of Farmers Profile with Adoption of Soil and Water Conservation Practices

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Abstract
The present study was conducted in Tuljapur, Dharashiv and Lohara tehsils of Dharashiv district from Marathwada region of Maharashtra State in 2024-2025. Four villages from each tehsil were selected randomly. Total twelve villages were selected for research study. Ten farmers were selected from each village and hence 120 farmers were selected for the study. Ex-post-facto research design was used for the study. As regard with independent variable age and sources of information had negative and significant relationship with adoption of soil and water conservation practices. Whereas education, annual income, land holding, soil type, topography of land, cropping pattern, irrigation status, training received, social participation and knowledge had positive and highly significant relationship with adoption of soil and water conservation practices and occupation had non significant relationship with adoption of soil and water conservation practices.

Keywords: Farmers, Adoption, Soil, Water, Conservation.

Introduction

Soil and water are two essential natural resources that form the backbone of agricultural production and rural livelihoods. In India, where nearly 60% of the population depends on agriculture for income and food security, the degradation of these resources poses a serious threat to sustainable development and food security (Lal, 2001). This concern is particularly evident in the Marathwada region of Maharashtra, which falls under the rainfed semi-arid agro-climatic zone and is highly vulnerable to droughts, erratic monsoons, and land degradation (Deshpande & Narayanamoorthy, 2001).

The Marathwada region has long suffered from poor water availability and soil erosion due to deforestation, overgrazing, unscientific cultivation practices, and overexploitation of groundwater. These issues have led to soil fertility depletion, increased runoff, reduced groundwater recharge, and overall decline in land productivity. As a result, agricultural output in this region is unstable and often

inadequate, contributing to agrarian distress and migration from rural areas (Gadgil & Guha, 1995; Samra et al., 2002).

To address these issues, soil and water conservation (SWC) practices have been promoted as key strategies for sustainable agriculture in the region. These include contour bunding, compartment bunding, farm ponds, loose boulder structures, check dams, and watershed development activities, all aimed at reducing soil erosion, improving rainwater harvesting, and enhancing in-situ moisture conservation (Wani et al., 2003). When properly implemented, these practices have shown significant benefits in terms of improved soil health, crop productivity, and water availability.

In recognition of the urgent need to conserve natural resources, several government schemes have been introduced, notably the Watershed Development Programme (WDP), the Pradhan Mantri Krishi Sinchayee Yojana (PMKSY), and Jalyukt Shivar Abhiyan (JSA). These initiatives aim to create decentralized water storage structures and promote holistic land and water management through community participation. For example, Jalyukt Shivar, launched in 2015, focused on making villages drought-free by implementing micro water conservation structures, particularly in drought-prone areas like Marathwada (Government of Maharashtra, 2017).

However, despite policy efforts and technical support, the adoption of SWC practices among farmers in Marathwada remains inconsistent. Studies have shown that the decision to adopt such practices is influenced by multiple factors including landholding size, education, income level, access to institutional support, and availability of information (Palanisami et al., 2011; WOCAT, 2007). Therefore, it is essential to understand the relational analysis of the farmers profile with adoption of soil and water conservation practices.

This research aims to evaluate the relational analysis of the farmers profile with adoption of soil and water conservation practices.

Materials and Methods

The present study was carried out in randomly selected Dharashiv district from the Marathwada region of Maharashtra State. The Dharashiv district consist of eight tehsils namely Dharashiv, Tuljapur, Umarga, Kalamb, Paranda, Bhum, Lohara and Washi. Out of these three tehsils namely Tuljapur, Lohara and Dharashiv were selected randomly. From each selected tehsil four villages were selected randomly. Thus twelve villages from three tehsils were selected for this study. From each of the selected village ten farmers were selected randomly. Thus a total 120 farmers were selected as respondent for the present study. This selection was done by using simple random sampling method. Data were collected by personally interviewing the farmers with the help of pretested and structured interview schedule. The collected data was organized, tabulated and analyzed with the help of statistical tools like frequency, mean, percentage, standard deviation, correlation of coefficient (r) and multiple regression.

Results

It was observed from the Table 2 that, nearly two third(62.50%) of farmers were from middle age, more than one third (35.83%) of farmers had education level up to secondary school, nearly half (48.33%) of the farmers had agriculture main source occupation, nearly three fourth (74.17%) of farmers had medium annual income, majority (61.67%) of the farmers belongs marginal to small land holding category, approximately two third (65.83%) of farmers had black type of soil, while more than three

fourth (81.67%) of the farmers had plane topography of land. More than half (56.67%) of the farmers had fair cropping pattern, more than half (58.33%) of the farmers have medium level of irrigation status. Majority (95.83%) of the farmers does not received any training about soil and water conservation practices, while more than half (60.00%) of farmers having medium social participation, nearly two third (64.17%) of farmers having medium sources of information, approximately three fourth (74.17%) of farmers having medium level of knowledge. And also it was observed that, majority (87.19%) of the farmers were having low to medium level of overall adoption about soil and water conservation practices.

Table 2: Distribution of farmers according to their Profile

Sr. No.	Category	Farmers (N = 120)	
		Frequency	Percentage (%)
1.1 Age			
1.	Young (Up to 35)	22	18.33
2.	Middle (36 to 59)	75	62.50
3.	Old (60 and above)	23	19.17
1.2 Education			
1.	Illiterate	5	04.17
2.	Primary School (1^{st} to 4^{th})	9	07.50
3.	Secondary School (5^{th} to 10^{th})	43	35.83
4.	Higher Secondary School (11^{th} to 12^{th})	36	30.00
5.	Graduation	26	21.67
6.	Post-Graduation	1	00.83
1.3 Occupation			
1.	Agriculture	58	48.33
2.	Agriculture + Labor	33	27.50
3.	Agriculture + Allied	20	16.37
4.	Agriculture + Business	6	05.00
5.	Agriculture + Services	3	02.50
1.4 Annual income			
1.	Low (Up to 75292 Rs.)	16	13.33
2.	Medium (75293 Rs. to 360675 Rs.)	89	74.17
3.	High (360676 Rs. and above)	15	12.50
1.5 Land holding			
1.	Marginal (up to 1.00 ha)	27	22.50
2.	Small (1.01 to 2.00 ha)	47	39.17

3.	Semi medium (2.01 to 4.00 ha)	20	16.67
4.	Medium (4.01 to 10.00 ha)	12	10.00
5.	Large (10.01 and above ha)	14	11.66
1.6 Soil type			
1.	Black soil	79	65.83
2.	Red soil	38	31.67
3.	Laterite soil	3	02.50
4.	Other	0	00.00
1.7 Topography of land			
1.	Leveled land	98	81.67
2.	Undulating land	22	18.33
1.8 Cropping pattern			
1	Poor (Up to 7)	40	33.33
2	Fair (8 to 9)	68	56.67
3	Good (10 and above)	12	10.00
1.9 Irrigation status			
1	Low (Up to 5)	38	31.67
2	Medium (6 to 11)	70	58.33
3	High (12 and above)	12	10.00
1.10 Training received			
1	Yes	5	04.17
2	No	115	95.83
1.11 Social participation			
1	Low (Up to 19)	24	20.00
2	Medium (20 to 33)	72	60.00
3	High (34 and above)	24	20.00
1.12 Sources of participation			
1.	Low (Up to 39)	20	16.66
2.	Medium (40 to 55)	74	64.17
3.	High (56 and above)	23	19.17
1.13 Knowledge			
1.	Low (Up to 76)	26	21.67
2.	Medium (77 to 100)	89	74.17
3.	High (101 and above)	5	04.16
2. Adoption			
1.	Low (Up to 29)	24	20.00
2.	Medium (30 to 34)	83	69.17
3.	High (35 and above)	13	10.83

Table 3: Correlation coefficient between profile of farmers and adoption

Sl. No.	Independent Variable	Correlation coefficient ('r')
1	Age	-0.2091*
2	Education	0.3165**
3	Occupation	-0.0128^{NS}
4	Annual income	0.4879**
5	Land holding	0.5029**
6	Soil type	0.2814**
7	Topography of land	0.3304**
8	Cropping pattern	0.3734**
9	Irrigation status	0.4249**
10	Training received	0.3100**
11	Social participation	0.4016**
12	Sources of information	-0.2333*
13	Knowledge	0.4618**

** Significant at 0.01 per cent level.
* Significant at 0.05 per cent level.

It is concluded from table 3 that, the results of correlation coefficient showed that independent variable age and sources of information had negative and significant relationship with adoption of soil and water conservation practices. Whereas education, annual income, land holding, soil type, topography of land, cropping pattern, irrigation status, training received, social participation and knowledge had positive and highly significant relationship with adoption of soil and water conservation practices and occupation had non significant relationship with adoption of soil and water conservation practices.

Conclusions

As regards with the profile of the farmers it was observed that, nearly two third of farmers were from middle age, more than one third of farmers had education level up to secondary school, nearly half of the farmers had agriculture main source occupation, nearly three fourth of farmers had medium annual income, majority of the farmers belongs marginal to small land holding category, approximately two third of farmers had black type of soil, while more than three fourth of the farmers had plane topography of land. More than half of the farmers had fair cropping pattern, more than half of the farmers have medium level of irrigation status. Majority of the farmers does not received any training about soil and water conservation practices, while more than half of farmers having medium social participation, nearly two third of farmers having medium sources of information, approximately three fourth of farmers having medium level of knowledge. And also it was concluded that, majority of farmers had low to medium level of adoption of soil and water conservation practices. And education, annual income, land holding, soil type, topography of land, cropping pattern, irrigation status, training received, social participation and knowledge influence with adoption of soil and water conservation practices.

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