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Profile and constraints faced by soil health card holding farmers in utilization of soil health card in Dharashiv district of Maharashtra

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ABSTRACT

The study was conducted to find out the profile of, and the constraints faced by, Soil Health Card (SHC) holding farmers in utilization of the Soil Health Card in Dharashiv district of the Marathwada region of Maharashtra. An ex-post facto research design was followed, and a sample of 120 respondents was drawn through a multistage purposive sampling procedure from six villages of Dharashiv and Tuljapur talukas. Data were collected through a well-structured interview schedule and analyzed using frequency and percentage. The study revealed that majority (63.33%) of the respondents were middle aged, with 63.33 per cent possessing medium farming experience and 44.17 per cent educated up to middle school level. A majority had medium family size (72.50%), small land holdings (44.17%), medium annual income (81.67%) and a fair cropping pattern (50.83%). The highest (38.33%) proportion had high extension contact, while social participation (84.17%) and innovativeness (65.00%) were predominantly medium. The most pressing constraint faced by the respondents in utilization of the soil health card was the difficulty in applying the recommended quantity of fertilizers based on the nutrient status of the soil (97.50%), followed by the long time taken to receive the soil health card after submission of the soil sample (67.50%), the limited number of soil testing laboratories located at distant places (51.66%), doubts regarding the quality and reliability of the information provided (35.83%) and the inability of some farmers to understand the information provided in the card (04.16%). Majority (98.33%) of the respondents suggested that information and training should be provided on the use of the appropriate quantity of fertilizers, followed by establishment of soil testing laboratories at the village level (97.50%), availability of qualified staff in soil testing laboratories (95.83%), organization of training programmes and group discussions (83.33%) and timely provision of the soil health card (63.33%).

Keywords: Soil Health Card, Profile, Constraints, Suggestions, Farmers, Marathwada

1. Introduction

Agriculture continues to occupy a central place in the Indian economy and remains the principal source of livelihood for the majority of the rural population. As per the Economic Survey 2025 [1]–26, agriculture and allied activities account for 46.1 per cent of India's workforce and contribute nearly one-fifth of the national income at current prices, while the agriculture and allied sector's share in total Gross Value Added (GVA) was reported at 18.0 per cent during 2024–25 (Government of India, 2025–26)¹. Despite considerable agricultural potential arising from diverse climatic conditions, fertile soils and abundant natural resources, farmers continue to face several production constraints, among which deterioration of soil fertility due to imbalanced and indiscriminate use of chemical fertilizers has emerged as a serious concern for sustainable agricultural production.

During 2024–25, the total consumption of chemical fertilizers in the country stood at 705.23 lakh metric tonnes, and the national Nitrogen:Phosphorus:Potassium (N:P:K) consumption ratio continued to deviate considerably from the recommended ratio of 4:2:1. In Maharashtra, the N:P:K ratio during the same period was 4.2:2.5:1, indicating a similar imbalance at the state level. With a view to addressing this concern, the Government of India launched the Soil Health Card (SHC) Scheme on 19th February 2015 at Suratgarh, Rajasthan, with the objective of providing every farmer with a card containing information on the nutrient status of his/her soil, together with crop-wise recommendations for the appropriate quantity and type of fertilizers and organic amendments to be applied. As of March 2026, nearly 26 crore Soil Health Cards had been generated through a network of more than 8,300 soil testing laboratories functioning across the country (Department of Agriculture and Farmers Welfare, 2025)².

Although the soil health card is intended to encourage farmers towards soil-test based nutrient management, its effective utilization in the field is often hindered by a range of practical difficulties experienced by the beneficiary farmers, extending from the technical complexity of translating nutrient recommendations into actual fertilizer doses to infrastructural limitations such as the availability and accessibility of soil testing laboratories. Farmers' ability to overcome such constraints, in turn, is closely linked to their personal, social, economic, communicational and psychological characteristics, including age, education, land holding, annual income, extension contact, social participation and innovativeness. A clear understanding of the profile of Soil Health Card holding farmers, together with the constraints experienced by them, is therefore essential for extension functionaries, scientists and policy makers to design target group-specific interventions and to invite constructive suggestions from farmers themselves for improving the effective utilization of the scheme.

2 Objective of study

1. To study the Profile of soil health card holding farmers.
2. To identify the constraints faced by, Soil Health Card holding farmers in Dharashiv district of Maharashtra.

3. Materials and methods

A multistage purposive sampling procedure was adopted for selection of the respondents. Two talukas, namely Dharashiv and Tuljapur, were purposively selected on the basis of the maximum number of Soil Health Card holders. From each selected taluka, three villages were purposively selected on the same basis, viz., Upla Ma., Dakwadi and Waruda from Dharashiv taluka, and Wadgaon Lakh, Khandala and Arali Bk. from Tuljapur taluka. From each of the six selected villages, 20 Soil Health Card holding farmers were selected purposively, constituting a total sample of 120 respondents.

The ex-post facto research design was followed for the study, since the phenomenon under investigation had already occurred and the researcher had no direct control over the independent variables. A structured interview schedule covering all the selected variables was developed, pre-tested on a representative but non-sample group of respondents, suitably modified in the light of the pre-test experience, and finalized for data collection. Data were collected through the personal interview method during May–June by directly contacting each respondent.

On the basis of review of relevant literature, ten characteristics of the respondents, namely age, farming experience, education, family size, land holding, annual income, cropping pattern, extension contact, social participation and innovativeness. In addition, the constraints experienced by the respondents in utilization of the soil health card were identified through close-ended questions, expressed in frequency and percentage, and ranked accordingly. The respondents were classified into low/medium/high categories for each profile variable on the basis of mean and standard deviation of the respective scores. The data so collected were coded, tabulated and analyzed with the help of frequency and percentage.

4. Results and discussion

4.1 Profile of soil health card holding farmers

Table 1. Distribution of the Soil Health Card holding farmers according to their profile

Sr. No.	Category	Respondents (n = 120)	
		Frequency	Percentage
A. Age			
1	Young (Up to 32 years)	20	16.67
2	Middle (33 to 57 years)	76	63.33
3	Old (58 years and above)	24	20.00
B. Farming experience			

Sr. No.	Category	Respondents (n = 120)	
		Frequency	Percentage
1	Low (Up to 8 years)	20	16.67
2	Medium (9 to 36 years)	76	63.33
3	High (37 years and above)	24	20.00
C. Education			
1	Illiterate	03	02.50
2	Can read only	00	00.00
3	Can read and write	00	00.00
4	Primary school (1 st std to 4 th std)	11	09.17
5	Middle school (5 th std to 10 th std)	53	44.17
6	High school (11 th std and 12 th std)	32	26.67
7	Graduation	21	17.50
D. Family size			
1	Small family (Up to 2)	15	12.50
2	Medium family (3 to 6)	87	72.50
3	Big family (7 and above)	18	15.00
E. Land holding			
1	Marginal (Up to 1.00 ha)	32	26.67
2	Small (1.01 to 2.00 ha)	53	44.17
3	Semi-medium (2.01 to 4.00 ha)	21	17.50
4	Medium (4.01 to 10.00 ha)	12	10.00
5	Big (10.01 ha and above)	02	01.67
F. Annual income			
1	Low (Up to Rs. 78,000)	04	03.33
2	Medium (Rs. 78,001 to 4,50,000)	98	81.67
3	High (Rs. 4,50,001 and above)	18	15.00
G. Cropping pattern			
1	Poor (Up to 4)	30	25.00
2	Fair (5 to 8)	61	50.83
3	Good (9 and above)	29	24.17
H. Extension contact			
1	Low (Up to 13)	32	26.67
2	Medium (14 to 17)	42	35.00
3	High (18 and above)	46	38.33
I. Social participation			
1	Low (Up to 1)	00	00.00
2	Medium (2 to 3)	101	84.17
3	High (4 and above)	19	15.83
J. Innovativeness			
1	Low (Up to 25)	11	09.17
2	Medium (26 to 29)	78	65.00
3	High (30 and above)	31	25.83

Table 1 revealed that majority (63.33%) of the respondents belonged to the middle age group (33 to 57 years), possessed medium farming experience (63.33%) and were educated up to middle school level (44.17%). Majority (72.50%) of the respondents belonged to the medium family size category, held small land holdings of 1.01 to 2.00 ha (44.17%), had medium annual income (81.67%) and followed a fair cropping pattern (50.83%). The highest proportion of the respondents (38.33%) had high extension contact, while social participation (84.17%) and innovativeness (65.00%) were predominantly at the medium level.

4.2 Constraints faced by the farmers in utilization of soil health card

Table 2. Constraints faced by the farmers in utilization of Soil Health Card ($N = 120$)

Sr. No.	Constraints	No.	Percentage	Rank
1	The recommended quantity of fertilizers, based on the nutrient status of the soil, is difficult to apply.	117	97.50	I
2	The time taken to receive the soil health card after submitting the soil sample is very long (the card is received only after harvesting of the crop).	81	67.50	II
3	The number of soil testing laboratories are limited, as they are located at distant places.	62	51.66	III
4	There are doubts regarding the quality and reliability of the information provided in the soil health card.	43	35.83	IV
5	Farmers are unable to understand the information provided in the soil health card.	05	04.16	V

The data presented in Table 2 revealed that the major constraint faced by the respondents in the utilization of the soil health card was the difficulty in applying the recommended quantity of fertilizers based on the nutrient status of the soil (97.50%), which ranked I. This was followed by the long time taken to receive the soil health card after submission of the soil sample, the card being received only after harvesting of the crop (67.50%), which ranked II. Further, the limited number of soil testing laboratories located at distant places (51.66%) ranked III, doubts regarding the quality and reliability of the information provided in the soil health card (35.83%) ranked IV, and the inability of farmers to understand the information provided in the soil health card (04.16%) ranked V. Similar findings were reported by Shastri *et al.* (2021)³.

5. Conclusion

The study concluded that majority of the Soil Health Card holding farmers of Dharashiv district were middle aged (63.33%), possessed medium (63.33%) farming experience, were educated up to middle (44.17%) school level and belonged to medium (72.50%) sized families, held small (44.17%) land holdings, had medium (81.67%) annual income and followed a fair (50.83%) cropping pattern, along with high (38.33%) extension contact, medium (84.17%) social participation and medium (65.00%) innovativeness. It was further concluded that the difficulty in translating soil-test-based nutrient recommendations into the actual quantity of fertilizers to be applied (97.50%), and the delay in receiving the soil health card after submission of the soil sample (67.50%), while provision of training on fertilizer dose calculation and establishment of soil testing laboratories at the village level (51.66%), Doubts regarding the quality and reliability of the information provided in the soil health card (35.83%), and the inability of

farmers to understand the information provided in the soil health card (04.16%).

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