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Study on constraints faced by the farmers in utilizing the soil health card and suggestions to overcome these constraints in Odisha

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ABSTRACT

Soil testing is seen to be a helpful technique for recommending fertilizer for different crops and cropping sequences, as well as for problem soil reclamation. For this, Department of Agriculture & Co-operation under the Ministry of Agriculture and Farmers' Welfare, Government of India initiated Soil Health Card scheme in February 2015. The present study was conducted in four blocks namely Baranga, Salepur, Tangi-choudwar, Cuttack sadar of Cuttack district of Odisha state during the year 2024 to analyze farmers constraints in utilizing soil health card and suggestions to overcome. *Ex-post facto* research design was used for the study. Data was collected using a standardized and pre-tested interview schedule. Unawareness of soil sample collection for different crops, time gap between the soil sample taken and issue of SHC is high, the SHC recommendations are far from the actual field condition, the follow up activities by extension agency is inadequate were being the major constraints experienced by farmers. Important suggestions offered by the farmers for the effective usage of soil health cards are: SHC should be issued prior to crop season, arrangements from government is required for collecting soil samples from every farmers land, mobile soil testing laboratory for on spot delivery of soil health cards, farmer should be trained to take soil sample of his own soil, increasing the number of soil testing laboratories in the district.

Key words: *Constraints, Farmers and Soil health card.*

Soils are the resources that support and sustain a huge diversity of life forms on earth with its diverse physical, chemical and biological properties. The health of these dynamic resources is a measure of a complex set of physical, chemical and biological interactions that support healthy plant growth. Soil health is an integrative property that reflects the capacity of soil to respond to agricultural intervention. Fertilizer usage being the key component of the food grain production cycle, contributed to about 50 per cent of increased food-grains production in the world (Hedge and Sudhakarbabu, 2004 and Tanwar and Biswas, 2005).

Kibblewhite et al. (2008) reported that a healthy agricultural soil is one that is capable of supporting the production of food and fibre to a level, and with a quality, sufficient to meet human requirements, and to continue to sustain those functions that are essential to maintain the quality of life for humans and the conservation of biodiversity. Unhealthy soils that do not contain enough nutrients to support crop growth need more input, use input inefficiently, give less productivity per unit of input and its productivity potential gets weakened with time (Katyal et al., 2016). The majority of farmers use chemical fertilizers in their fields in order to increase their crops' yields without understanding the soil composition and fertility status in their fields (Chowdary et al., 2017). Srivastava and Pandey (1999) reported that based on research studies most of the farmers are continuously using excess of chemical fertilizers so as to get more output without even knowing the fertility status of their soils in field.

The Department of Agriculture and Cooperation's research states that India's current NPK consumption ratio is 7.7:3.1:1(2021-22) as opposed to the desired ratio of 4:2:1. The ratio became even more twisted in the most recent 2022 kharif season changing to 12.8:5.1:1. In Rainfed areas of India, widespread secondary and micronutrient deficiencies have caused a decline in soil health, which is the root cause of low fertilizer response and crop yields. Through the administration of adequate

secondary and micronutrients depending on soil test results, the trend of declining soil health can be reversed. The only essential and practical method for calculating the quantity of soil nutrients is soil testing.

In order to emphasize the significance of site-specific integrated nutrient management, the Ministry of Agriculture, government of India, introduced the soil health card programme in February 2015. The soil health card is a simple report card that lists the physical, chemical, and nutrient qualities of the soil on a specific form based on a chemical analysis of soil samples. The soil health cards include crop-specific recommendations for fertilizers and micronutrients as well as the necessary soil amendments that must be applied on the farm for long-term soil health maintenance. Soil Health Card is an important component of the SHM with an aim to issue soil health cards to all farmers of the country in every three years (GoI, 2016).

It contains the status of soil considering 12 parameters N, P, K, S, Zn, Fe, Cu, Mn, Bo and PH, EC, OC. Farmers will receive a SHC (Soil health card) once every three years, and it will describe the condition of the soil on their field during that time period. The state government collects soil sample twice a year when there are no standing crops or after the harvest of the Kharif and Rabi crops. The primary goal of adopting the soil health plan was to identify the soil condition and then provide farmers with information on how to enhance it. The objective of the soil health card scheme is to promote balanced use of fertilizer, which is essential to stabilize crop yield and increase the income of the farmers in the country. Soil health card scheme has been highly beneficial to the farmers in terms of increasing their income.

Understanding how farmers perceive and utilize these cards is crucial in tailoring outreach and education efforts, ensuring that the information is effectively disseminated and utilized at the grassroots level. The study also aims to document the constraints face by the farmers in the usage of soil health card which helpful to concerned authorities to tackle the problems and make the scheme farmer friendly. Keeping this in view, the present investigation was designed with the following objectives.

Objectives

To study the constraints faced by the farmers in utilizing soil health card.

To identify the suggestions to accelerate application of soil health card recommendations.

MATERIAL AND METHOD

The study was conducted in Cuttack district of Odisha in 2024. Cuttack district is consisted of total number of 14 blocks. Out of which 4 blocks (Baranga, Salepur, Tangi-choudwar, Cuttack sadar) were selected based on having soil health card users. From each block, 4 villages were selected (total 16 villages) with the help of simple random sampling. After the selection of villages, a village wise list of the farmer having soil health card was prepared and 10 farmers from each village were selected using simple random sampling. Thus, a total of 160 respondents were selected for study. An *Ex-post facto* research design was followed in the study.
The device used for collecting data of farmers was structured interview schedule. Keeping in view of the specific objectives of the study, a well-structured interview schedule was developed. The respondents were personally interviewed by the investigator, which helped in getting first-hand information and gave an opportunity to observe them personally. Based on the review of literature and interaction with farmers during pretesting various constraints and suggestions were identified and included in the final schedule and the farmers were asked to rank the identified constraints and suggestions in the order of their preference. Garrett's ranking technique was used to identify and rank the constraints and suggestions.

RESULTS AND DISCUSSION

Constraints faced by the farmers in utilizing soil health card

A bird's eye view at the table 1 depicts that the major constraints expressed by the farmers were 'unawareness of soil sample collection for different crops' (rank I), 'time gap between the soil sample taken and issue of SHC is high' (rank II), 'the SHC recommendations are far from the actual field condition' (rank III), 'the follow up activities by extension agency is inadequate' (rank IV), 'illiteracy of farmers to read the content in SHC' (rank V), 'lack of training to interpret results of soil health card' (rank VI), 'high cost of recommended inputs' (rank VII), 'fertilizers were applied as per SHC, reduction in yield was observed' (rank VIII).

Table 1. Constraints faced by the farmers in utilizing soil health card

S. No.	Constraints	Garette score	Rank
1	Illiteracy of farmers to read the content in SHC.	44.28125	V
2	High cost of recommended inputs.	37.2875	VII
3	Fertilizers were applied as per SHC, reduction in yield was observed.	33.5375	VIII
4	The SHC recommendations are far from the actual field condition.	56.48125	III
5	Time gap between the soil sample taken and issue of SHC is high.	63.2812	II
6	The follow up activities by extension agency is inadequate.	46.9625	IV
7	Unawareness of soil sample collection for different crops.	71.80625	I
8	Lack of training to interpret results of soil health card.	42.44375	VI

Suggestions to accelerate application of soil health card recommendations

The foremost suggestions included 'SHC should be issued prior to crop season' (rank I), 'arrangements from government is required for collecting soil samples from every farmers land' (rank II), 'mobile soil testing laboratory for on spot delivery of soil health cards' (rank III), 'farmer should be trained to take soil sample of his own soil' (rank IV), 'increasing the number of soil testing laboratories in the district' (rank V), 'proper and timely agriculture extension services' (rank VI), 'making availability of recommended inputs in the market' (rank VII).

Table 2. Suggestions to accelerate application of soil health card recommendations

S. No.	Suggestions	Garette score	Rank
1	SHC should be issued prior to crop season.	69.98125	I
2	Making availability of recommended inputs in the market.	31.175	VII
3	Arrangements from government is required for collecting soil samples from every farmers land.	64.5875	II
4	Increasing the number of soil testing laboratories in the district.	41.18125	V
5	Mobile soil testing laboratory for on spot delivery of soil health cards.	55.73125	III
6	Proper and timely agriculture extension services.	36.90625	VI
7	Farmer should be trained to take soil sample of his own soil.	47.4375	IV

CONCLUSION

Major constraints faced by the beneficiary farmers in utilization of soil health card were unawareness of soil sample collection, the time between taking soil samples and issuing cards is far too long, this will help government to conduct more number of training programmes and meeting to increase the awareness among the farmers. This data will be helpful for the extension agents and line departments to conduct method demonstrations to make them learn about the collection of soil sample. More no. of soil testing laboratories should be built in each district to provide cards to the farmers at a faster pace before each crop season.

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