



Farmers' Challenges in Adopting Soil Health Card Recommendations in Saharsa, Bihar

Deepak Kumar Patel¹, Avinash Kumar² and Shripati Dwivedi^{2*}

¹Assistant Professor-cum-Junior Scientist, Bihar Agricultural University, Sabour-813210, Bihar, India

²Ph.D. Research Scholar, Dr. Rajendra Prasad Central Agricultural University, Pusa Samastipur-848125, Bihar, India

*Correspondence author email id: shripati3165@gmail.com

ARTICLE INFO

Keywords: Awareness, Constraints, Suggestion, Soil health card, Recommendation

<http://doi.org/10.48165/IJEE.2023.59431>

Conflict of Interest: None

Research ethics statement(s):

Informed consent of the participants

ABSTRACT

The study was aimed to identify the constraints associated with the adoption of soil health cards recommended by Mandan Bharti Agriculture College (MBAC), Agwanpur in Sattarkataiya block, Saharsa district, Bihar during 2017-2021. Two villages named Barahsher and Puroshottampur Purikh were selected based on the maximum card holders. 100 respondents from each village with Soil Health Card (SHC) were selected. A pretested and well-structured interview schedule was used to collect data, tabulate, and analyze the results. Major constraints faced by farmers were inadequate follow-up by extension agency (71%); soil samples not taken from each farmer's field (59%), not getting SHC reports in time (57%), and not using of the recommended dose of fertilizers as per SHC recommendation (49%). While major suggestions that came out to tackle the mentioned constraints were that SHC should be issued prior to crop season (70%), Soil sampling laboratory should be established at Block level with highly qualified staff (61%), farmers should be trained to take soil samples (63%), and soil sampling should be based on hands-on training of farmers (59%).

INTRODUCTION

A healthy soil provides a sufficient amount of macronutrients and micronutrients to the crop and determines its yield. A healthy soil should contain adequate and proportional macronutrients and micronutrients (Patel, 2013). The health of the soil is important for producing healthy crops, which nourish people and animals (FAO, 2015). As part of soil health, four key functions should be maintained: carbon transformation, nutrient cycles, soil structure, and control of pests and diseases (Kibblewhite et al., 2008). A quality and healthy soil does play a significant role in the production of food, the resilience of the environment, and the sustainability of ecosystems (Stevens, 2018). 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). In order to achieve sustainable agriculture, it is imperative to adopt sustainable

soil fertility management (SFM) practices (Chowdary et al., 2018). According to the survey conducted by Kumar et al., (2021), it was revealed that the knowledge level and adoption of SFM are relatively much lower among farmers, i.e., the adoption rate is eight percent of farmers are aware of it. To resolve all these problems, it is necessary to adopt sustainable soil fertility management practices based on soil tests (Saha et al., 2016). There are always reported constraints in adoption of technologies and several researchers tried to study constraints in different settings (kumar et al., 2010; Kumar & Nain, 2012; Gupta et al., 2013; Das et al., 2014; Slathia et al., 2015; Gireesh et al., 2019; Kobba et al., 2020). Taking all these factors into account, the government of India has launched a national flagship program namely the soil health card scheme (SHC). The aim of the SHC scheme is to do soil tests on each and every farm, and to formulate micro-level maps of soil fertility at the farm level (Singh et al., 2020). Most of the nutrients are reflected in the soil health card (SHC), which represents the state

Received 14-07-2023; Accepted 04-09-2023

The copyright: The Indian Society of Extension Education (<https://www.iseeiari.org/>) vide registration number L-129744/2023

of soil health. As a key objective of the System, one of its main objective is to assess the current status of soil health to determine changes in soil health that are affected by land management to improve its efficiency, a website has been developed called Soil Health Card, which allows you to register soil samples, record soil test results, and generate a Soil Health Card along with fertilizer recommendations after registering soil samples on this site (MoA & FW, Govt. of India, 2018). The attitude of farmers towards this scheme was positive for some variables. Farmers faced numbers of constraints while adopting the scheme (Ghate et al., 2020). Extension personnel's should plan organising capacity building along with demonstrations on soil sampling to utilization of soil health card recommendations by the farmers (Rani et al., 2022). Several researches has empirically proved that balanced use of organic and inorganic nutrients resulted in improved soil physio-chemical and biological status of the soil which in turn makes the soil healthier and productive on sustainable basis (Singh et al., 2023).

METHODOLOGY

This study was conducted at Mandan Bharti Agriculture College (2017-21), Agwanpur Saharsa. On the basis of data of maximum soil health card issued by MBAC, Agwanpur, a block named *Sattarkataiya* was selected for the study. Further, on the basis of maximum density of card holders, two villages named *Barahsher* and *Puroshottampur Purikh* were selected from

Sattarkataiya Block to identify respondents as per the comprehensive list of soil health card holders in Mandan Bharti Agriculture College, Agwanpur, Saharsa. Hundred respondents from each village were selected randomly making a sum total of 200 Soil Health Card Holders. The data were collected through pre-tested interview schedule (questionnaire), tabulated and analyzed in the light of the objectives to draw the result and conclusion in terms of percentage and frequency. The constraints faced by the farmers for soil health card recommendation with more focus on cereals cultivation were identified, documented and ranked.

RESULTS AND DISCUSSION

There are many significant constraints perceived by the farmers in the study area and they can be viewed in table 1 as a representation of the concerns raised by the respondents were inadequate follow-up of extension agency (71.0%), soil sample not taken from each farmer's field (59%) followed by not getting SHC reports in time (57.0%), not using of recommended dose of fertilizers as per SHC recommendation (49%), no productivity of results (46%), No awareness of SHC Scheme (37%) among farmers, complexity of recommendations on the SHC (31.0%), lack of knowledge about soil health card (23.0%), non-scientific method of collecting soil samples (17%), less benefit (13.0%), receiving of soil health card after crop showing/planting (11.0%), Inability to report any problem (9.0%), and non-availability of final recommendation of fertilizers in *kattha* (4.0%).

Table 1. Constraints faced by respondents in the adoption of SHC recommendations

S.No	Constraints	Percentage	Rank
1.	Inadequate follow-up by extension agency	71.00	I
2.	Soil sample not taken from each farmer's field	59.00	II
3.	Not getting SHC reports in time	57.00	III
4.	Farmers generally do not use recommended dose of fertilizers as per SHC recommendation	49.00	IV
5.	No productivity of results	46.00	V
6.	No awareness of SHC Scheme	37.00	VI
7.	Problem in understanding / complexity of recommendations on the SHC	31.00	VII
8.	Lack of knowledge about soil health card	23.00	VIII
9.	Non-scientific method of collecting soil samples	17.00	IX
10.	Less benefit	13.00	X
11.	Receiving of soil health card after crop sowing/planting	11.00	XI
12.	Inability to report any problem	9.00	XII
13.	Not being Recommendation of fertilizers in local unit of land (<i>Kattha</i>)	4.00	XIII

Table 2. Suggestions as per analysis of view of farmers to tackle constraints while adoption of soil health card programme

S.No.	Suggestions offered by the farmers to overcome constraints	Percentage	Rank
1.	SHC should be issued prior to crop season	70	I
2.	There is a need for farmers to be trained to take soil samples from their soil	63	II
3.	Soil testing laboratory to be established at the block level with highly qualified staff to support it	61	III
4.	Soil sampling procedure should be done in presence of farmer	59	IV
5.	Internet facility should be provided at village level	57	V
6.	Reports should be distributed in time	56	VI
7.	The soil sample should be collected regularly and from every farmer's land so that the soil can be tested	51	VII
8.	Farmers should use recommended dose of fertilizer for betterment.	47	VIII
9.	Needs to be increased awareness about the Soil Health Card Scheme, as well as providing proper information regarding the importance / reading / and usage of the Soil Health Card.	43	XI
10.	No suggestion	14	X

We analyzed the views of the respondents and drew up a list of suggestions based on their responses. In order to rank the suggestions of farmers according to their importance, the percentages were expressed in the Table 2. It was suggested that Soil Health Card should be issued prior to crop season (70%), there is a need for farmers to be trained to take soil samples from their soil (63%). It is recommended that a soil testing laboratory to be established at the block level with highly qualified staff to support it (61%), hands on sampling techniques should be promoted (59%), Internet facility should be provided at village level (57%), reports should be distributed in time (56%), The soil sample should be collected regularly and from every farmer's land so that the soil can be tested (51%), farmers should use recommended dose of fertilizer for betterment (47%), there needs to be increased awareness about the Soil Health Card Scheme, as well as providing proper information regarding the importance / reading / and usage of the Soil Health Card (43%). However, no suggestion came out from 14% farmers.

CONCLUSION

There were many challenges faced by farmers in Saharsa district, Bihar, when implementing the recommendations on the soil health cards. Although the government and stakeholders have made significant efforts to improve soil health management, there are still significant barriers. Farmers in Saharsa faced many challenges due to their lack of knowledge and awareness about soil health management. These recommendations are discouraged by farmers because they are not aware of their long-term benefits. Many farmers do not fully understand the information contained in the soil health cards due to a lack of awareness. Extension workers should promote soil health knowledge as a way to strengthen agricultural education and attitudes. Agricultural Extension Officers and KVK specialists should visit villages to encourage farmers to adopt cultivation-friendly practices.

REFERENCES

- Chowdary, R. K., Theodore, R. K., Anandaraja, N., & Santhi, R. (2017). Factors determining the use of soil health card (SHC) recommendations in Kurnool District of Andhra Pradesh. *International Journal of Pure & Applied Bioscience*, 5(6), 1689-1694.
- Chowdary, R., Babu, G. P., & Theodore, R. K. (2018). Soil health card adoption behaviour of farmers in Andhra Pradesh State of India. *International Journal of Current Microbiology and Applied Science*, 7(Special Issue), 4028-4035.
- Das, L., Nain, M. S., Singh, R., & Burman, R. R. (2014). Constraints in marketing of fruits as perceived by the fruit growers and NERAMAC in Assam. *Journal of Community Mobilization and Sustainable Development*, 9(2), 114-117.
- Ghate, D. N., & Kamble, R. K. (2020). Soil health card scheme evaluation in Chandrapur District, Central India. *Ethiopian Journal of Environmental Studies & Management*, 13(1).
- Gireesh, S., Kumbhare, N. V., Nain, M. S., Kumar, P., & Gurung, B. (2019). Yield gap and constraints in production of major pulses in Madhya Pradesh and Maharashtra. *Indian Journal of Agricultural Research*, 53(1), 104-107.
- Healthy Soil for Healthy life, FAO report. (2015) <https://www.fao.org/soils-2015/news/news-detail/en/c/277682/#:~:text=It%20is%20estimated%20that%2095,turn%20nourish%20people%20and%20animals.>
- Kibblewhite, M. G., Ritz, K., & Swift, M. J. (2008). Soil health in agricultural systems. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 363(1492), 685-701.
- Kobba, F., Nain, M. S., Singh, R., Mishra J. R., & Shitu, G. A. (2020). Entrepreneurial profile and constraint analysis of farm and non-farm sectors entrepreneurial training programmes in *krishi vigyan kendra* and rural development & self-employment training institute. *Indian Journal of Extension Education*, 56(3), 17-26.
- Kumar, A., Singh, S., Singh, D. K., Yadav, R. N., Singh, L. B., Malik, S., & Shahi, U. P. (2021). To study the socio-economic profile of soil health card scheme beneficiaries. *Progressive Agriculture*, 21(2), 211-215
- Kumar, P., & Nain, M. S. (2012). Technology use pattern and constraint analysis of farmers in Jammu district of Jammu and Kashmir state of India. *Journal of Community Mobilization and Sustainable Development*, 7(2), 165-170.
- Kumar, P., Peshin, R., Nain, M. S., & Manhas, J. S. (2010). Constraints in pulses cultivation as perceived by the farmers. *Rajasthan Journal of Extension Education*, 17&18, 33-36.
- Patel, N. G. (2013). Attitude of the farmers towards soil health card programme, M.Sc. Thesis, Anand: Anand Agricultural University, India.
- Rani, A. L., Ganesamoorthi, S., Shivalinge Gowda, N. S., Sathish, A., & Kumar, T. L. (2022). A study on farmers' attitude towards soil health card in Rangareddy District, Telangana State, India. *International Journal of Environment and Climate Change*, 12(11), 1686-1697.
- Saha, B., Basak, N., Saha, S., Singh, P. K., Hazra, G. C., & Mandal, B. (2016). Soil health card. *Indian Farming*, 66(4), 2-4.
- Singh, B. P., Kumar, V., Chander, M., Reddy, M. B., Shruti, Singh, M., Suman, R. S., & Yadav, V. (2023). Impact of soil health card scheme on soil fertility and crop production among the adopted farmers. *Indian Journal of Extension Education*, 59(1), 122-126.
- Singh, S. K., Kumar, R., & Kushwah, R. S. (2020). Economic effect of soil health card scheme on farmer's income: A case study of Gwalior, Madhya Pradesh.
- Slathia, P. S., Pal, N., & Nain, M. S. (2015). Socio economic empowerment of rural women through rural tourism projects in Jammu region of J&K state. *Indian Journal of Extension Education*, 51(3&4), 40-43.
- Soil Health Card, national portal of India, MoA&FW, Government of India. (2018) <https://www.india.gov.in/spotlight/soil-health-card#tab=tab-1>
- Stevens, A. W., & Food Policy. (2018), <https://doi.org/10.1016/j.foodpol.2018.08.005>.