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Study on knowledge and adoption of soil health card based fertilizer application in Khandwa district (M.P.)

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Abstract

The present study was conducted in Khandwa district of Madhya Pradesh during the year 2016-2017. During the study 10 villages of the block were selected, where 05 respondents from each village and total of 50 respondents were selected randomly from the entire block. The data were collected through personal interview method with the help of pre-structured scheduled designed questionnaire with the objective of finding out the knowledge and adoption level of soil health card based fertilizer application in Khandwa district of Madhya Pradesh. The study revealed that, the knowledge level of the farmers were high (66.00%) followed by medium (18.00%) and lowest (16.00%), whereas the adoption level of the farmers were high (74.00%) followed by medium (22.00%) and lowest (04.00%).

Keywords: Socio-economic profile, knowledge, adoption and soil health card (SHC)

Introduction

Soil health plays an important role to ensure sustainable agricultural production. To Popularizing Soil Test based Fertilizer application, soil health card (SHC) is an essential step. SHC is a tool to help the farmer to monitor and improve soil health based on recommendations and enables the farmer to use the soil and crop specific fertilizers. It provides a qualitative assessment of soil health and reclamation measures to the problematic soil. To protect soil health and for sustainable agriculture, the Government of India launched SHC scheme in February, 2015. A SHC is meant to give each farmer soil nutrient status of his holding and advise him on the dosage of fertilizers and micronutrient and also the needed soil amendments that he should apply to maintain soil health in the long run. The scheme is considered as a holistic measure for soil health and farm economy. A SHC carries crop wise recommendation of nutrients and fertilizer required for the individual farms to help farmers to improve productivity through judicious use of inputs. In this programme, technical guidelines are given on how to collect the soil samples and where to test it. To optimize the integrated use of manures and fertilizers and to reduce cost of cultivation it is necessary to test the soil and issue Soil Health Cards to farmers, with the ultimate objective of achieving fertile soils and healthy crops. Awareness on SHC by conducting meeting/trainings/exhibitions and demonstration at village level based on the importance of SHC a study was conducted to find out the knowledge and adoption level of SHC based fertilizer application in Khandwa District with following specific objectives.

- To study the socio-economic profile of the farmers.
- To study the knowledge of farmers regarding application of SHC.
- To study the awareness level of farmers regarding utility of SHC.
- To extent the adoption of SHC based fertilizer recommendation by the farmers.

Methodology

The study was conducted in Khandwa District of Madhya Pradesh. Khandwa district have total seven blocks. Amongst the seven blocks Khandwa block was selected because of all the Soil Health Card has been completed/distributed by KVK/Agriculture department to the farmers. During the present study, 10 villages were selected among the 96 villages of Khandwa block based on simple random sampling. Based on proportionate random sampling method, 50 respondents were selected from the 10 villages that formed the sample of the study.

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The information were collected by individual contact with the respondent / farmers, discussion on importance and content of soil health card and motivate to farmers for applying fertilizes on of soil test value basis. The interview schedule has prepared by keeping in view the objectives of the study and

the collected data have classification, tabulation, analyzing, interpretation and drawing meaningful conclusion. The below mentioned dependent variables were finally selected for detailed investigation in the present study.

S. No	Variables	Measurement procedure
A.	Independent Variables	
1.	Age	Chronological age
2.	Gender	Male/ female
3.	Caste	Modified G. Trivedi Scale (1963)
4.	Education	Modified G. Trivedi Scale (1963)
5.	Occupation	Modified G. Trivedi Scale (1963)
7.	Monthly income	Modified G. Trivedi Scale (1963)
8.	Size of Family	Family type possessed by the respondents
9.	Type of House	House type possessed by the respondents
10.	Land	Irrigated/ Unirrigated/ Fallow
11.	Size of Land Holding	Land possessed by the respondents in hectares
12.	Source of Irrigation	Schedule prepared
13.	Major Crops	Schedule prepared
14.	Availability of Agri. Implements	Schedule prepared
15.	Source of Communication available	Schedule prepared
16.	Availability of Resource	Schedule prepared
17.	Knowledge Level	Schedule prepared
B.	Dependent variables	
1.	Adoption Gap	Index was developed

Results and discussion

Socio-economic profile of the farmers

Results showed that, the old age (above 46 yrs.) respondents were 40.0% followed by middle aged (26-45yrs) 32.0% and the least number was observed in case of young age group (less than 25 yrs.) is 28.00% (Table 1). It was also observed the, 94.00% of the respondents were male whereas 6.00% were female. The distribution of the respondents on the basis of their caste showed that, 42.00% of the respondents were OBC, 32.00% general and 26.00% of the respondents were ST/SC. The distribution of the respondents on the basis of education were 44.00% intermediate, 28.00% undergraduate, 14.00% were postgraduate and 14% illiterate. It was also observed that, the distribution of the respondents on the basis of occupation, the majority of the respondents 90.00% was having agriculture, followed by business 8.00% and 2.00% were in service category. The majority of the total respondents 48.00% were having monthly income Rs 3,001-5,000 followed by 38.00% having monthly income more than Rs. 5,001 and 14.00% of the respondents having income even less than Rs 3,000. It was also revealed, majority of the respondents 60.00% were having medium family size, which was followed by large 26.00% and only 8.00% of the respondents to small family. During the study, data indicates that, 62.00% of the farmers live in pacca house, 30.00% in mixed and 8.00% in kachcha house. The results also revealed

that, 72.00% of the respondents having irrigated land followed by 28.00% unirrigated land. It was also revealed that, 50.00% of the farmers having small land holding, 26.00% medium size of land holding. 14.00% have marginal and 10.00% were having large size of holding. The data of the present study showed that, 26.00% farmers having runnel, 24.00% having tube well, 20.00% having canal, 20.00% having well and only 2.00% were having tank. On the basis of major crops, 86.00% farmers growing soybean, 78.00% wheat, 42.00% maize, 38.00% green gram, 34.00% black gram and 26.00% were growing other crops. On the basis of farm implements, 58.00% farmers having other agriculture farm implements like sickle, harrow etc. 24.00% having weeder, 14.00% having rotator, 14.00% tractor, 14% cultivator, 10.00% were having plough, 8.00% having tractor trolley and only 4.00% were having thresher. During the study, it was also seen, 84.00% farmers use television as source of communication followed by 82.00% mobile, 58.00% radio, 8.00% newspaper, 6.00% telephone, 4.00% computer and 4.00% were using magazine or newspapers. On the basis of resource availability 76.00% farmers having toilet, 58.00% LPG, 56.00% animal shed, 28.00% biogas, 24.00% vermi compost pit and only 2.00% were having soak pit (Table 1). These findings are also similar with the findings of Jaiswal and Singh (2018) [2] and Patel and Chauhan (2012) [6].

Table 1: Distribution of the respondents according to their Socio-Economic Profile.

S. No.	Particulars	Category	Frequency	Percentage (%)	Rank
1.	Age (years)	Young age (<=25 yrs)	14	28.00	III
		Middle age (26-45 yrs)	16	32.00	II
		Old age(>=46)	20	40.00	I
2.	Gender	Male	47	94.00	I
		Female	03	06.00	II
3.	Caste	General	16	32.00	II
		OBC	21	42.00	I
		SC/ ST	13	26.00	III
4.	Education	Illiterate	07	14.00	III
		Intermediate	22	44.00	I

		Under Graduate	14	28.00	II
		Post Graduate	07	14.00	III
5.	Occupation	Agriculture	45	90.00	I
		Service	01	02.00	III
		Business	04	08.00	II
		Other	00	00.00	-
6.	Monthly Income (Rs.)	Below 3,000	07	14.00	III
		3,001 - 5,000	24	48.00	I
		5,001 & above	19	38.00	II
7.	Family Size	Small (<= 5)	07	14.00	III
		Medium (5 - 10)	30	60.00	I
		Large (> 10)	13	26.00	II
8.	Type of House	Kachcha	04	08.00	III
		Pacca	31	62.00	I
		Mixed	15	30.00	II
9.	Land	Irrigated	36	72.00	I
		Unirrigated	14	28.00	II
		Fallow	00	00.00	-
10.	Land Holding Size (ha.)	Marginal farmers	07	14.00	III
		Small farmers	25	50.00	I
		Medium farmers	13	26.00	II
		Large farmers	05	10.00	IV
11.	Source of Irrigation	Canal	14	20.00	III
		Tube well	12	24.00	II
		Well	10	20.00	III
		Tank	01	02.00	IV
		Runnel	13	26.00	I
12.	Major Crops	Soybean	43	86.00	I
		Maize	21	42.00	IV
		Black gram	17	34.00	VI
		Green gram	19	38.00	V
		Wheat	39	78.00	III
		Chickpea	41	82.00	II
		Other	13	26.00	VII
13.	Availability of Agri. Implements	Rotavator	07	14.00	III
		Thresher	02	04.00	VI
		Harrow	00	00.00	-
		Plough	05	10.00	IV
		Tractor	07	14.00	III
		Weeder	12	24.00	II
		Cultivator	07	14.00	III
		Grader	02	04.00	VI
		Tractor Trolley	04	08.00	V
		Raised Bed Planter	02	04.00	VI
		Others	29	58.00	I
14.	Source of Communication available	Mobile	41	82.00	II
		Radio	29	58.00	III
		TV	42	84.00	I
		Computer	02	04.00	VI
		Telephone	03	06.00	V
		Newspaper	04	08.00	IV
		Magazine	02	04.00	VI
15.	Availability of Resource	Biogas	14	28.00	IV
		Vermi compost	12	24.00	V
		Animal Shed	28	56.00	III
		Toilet	38	76.00	I
		Soak Pit	01	02.00	VI
		LPG gas	29	58.00	II

Knowledge level of farmers

It was observed from the study that, knowledge level of the farmers for soil health card based fertilizer application were high (66.00%) followed by medium (18.00%) and low (16.00%) in Khandwa block of Madhya Pradesh (Table 2). The findings are supported by Bhatt *et al.*, 2010 [4] findings stated that farmers knowledge of technology made contribution to its

adoption. They found the technology satisfactory and important with respect to lower the input cost, benefit of soil testing and use of soil health card in their farming operation. Chowdary *et al.*, (2016) [1] also found that more than two-thirds (67 per cent) of the respondents had high level of satisfaction on SHC recommendations. These findings are similar with the results found by Yadav *et al.*, (2005) [7],

Pagaria (2011) [5], Patel and Chauhan (2012) [6] and Naruka *et al.*, (2018) [3].

Table 2: Distribution of the respondents according to their knowledge level

S. No	Category (Score)	Frequency (no.)	Percentage (%)	Rank
01	Low (<=5)	8	16.00	III
02	Medium (5.1-10)	9	18.00	II
03	High (>=10.1)	33	66.00	I
Total		50	100.00	

Adoption level of farmers

It was observed from the study that, adoption level of the farmers for soil health card based fertilizer application were high (74.00%) followed by medium (22.00%) and low (04.00%) in Khandwa block of Madhya Pradesh (Table 3). These findings are in conformity with the findings of Patel and Chauhan (2012) [6] and Naruka *et al.*, (2018) [3].

Table 3: Distribution of the respondents according to their adoption level.

S. No	Category (Score)	Frequency (no.)	Percentage (%)	Rank
01	Low (<=5)	02	04.00	III
02	Medium (5.1-10)	11	22.00	II
03	High (>=10.1)	37	74.00	I
Total		50	100.00	

Awareness level of farmers

It was observed from the study that, awareness level of the farmers for soil health card based fertilizer application were high (54.00%) followed by medium (38.00%) and low (08.00) in Khandwa block of Madhya Pradesh (Table 4). These findings are in conformity with the findings of Patel and Chauhan (2012) [6] and Naruka *et al.*, (2018) [3]. To ensure the importance of the technology state government has always given their advisement in time interval to enhance balance and efficient use of fertilizers based on soil testing and soil health cards.

Table 4: Distribution of respondents according to awareness about SHC.

S. No.	Awareness Level (Score)	Frequency (No)	Percentage (%)	Rank
1.	Low (<=5)	04	08.00	III
2.	Medium (5.1-10)	19	38.00	II
3.	High (>=10)	27	54.00	I
Total		50	100.00	

It was observed from the study that, awareness about utility of SHC was 79.17% positive response, whereas 20.83% having negative response in Khandwa block of Madhya Pradesh (Table 5).

Table 5: Distribution of respondents according to their awareness about utility of SHC

S. No.	Response	Frequency (No)	Percentage (%)	Rank
1.	Yes	39	78.00	I
2.	No	11	22.00	II
Total		50	100.00	

Conclusion

It was concluded from the study, the adoption by the farmers of the relevance of technologies i.e. SHC was not only affected by the basic characteristics of the farmers but also by the level of knowledge. The study revealed that education,

land type, land holding, communication source, Irrigation source, major crops, availability of agricultural implements and awareness level of respondents regarding utility have relationship with adoption of SHC, whereas variable age, gender, caste, monthly income, family size, and occupation were not found to have any relationship with the adoption regarding SHC.

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