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Awareness and performance of soil health card scheme in central India

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ABSTRACT

The present work has been comprise of 30 soil tested farmers/beneficiaries and 30 control farmers of 2 villages, 2 blocks and 2 districts (Sehore and Jabalpur) of Madhya Pradesh. The present infrastructure of soil testing facility is found to be insufficient in different districts of Madhya Pradesh. There is an urgent need to increase quantity as quality of soil sample testing. It will be appreciable if each lab may adopt at least one nearby village from where sample may be collected by the laboratory staff and recommendations are also communicated over directly by the laboratory staff to the farmers and to follow the outcome of the SHC scheme. Presently, the labs are literally cut off from the field and work in isolation of the whole SHC scheme. There is an urgent need to make the SHC available to the farmers in their finger tips with the help of information technology through internet and mobile.

***Keyword*:** Performance, soil health card scheme

The Soil Health Card (SHC) scheme was launched in February 2015, in the first phase, the target was to distribute 84 lakh cards. But till July 2015, 34 lakh cards have been issued. This is a flagship programme for the agricultural sector of the country. Among all the states in India, it is Andhra Pradesh which has taken the lead in distribution of the Soil Health Cards to farmers. Two other states, Tamil Nadu and Punjab have collected the maximum amount of soil samples for testing during the kharif season. Other States which are taking the lead are Uttar Pradesh, Punjab, Chhattisgarh, Telangana, Odisha and Madhya Pradesh. The SHC Scheme is an initiative by Prime Minister for the welfare of farmers. Under the scheme, SHC is useful to farmers which contain details about what kind of soil is there in the farmers' land along with crops they can grow in their land to get maximum profits and corrective measures the farmers can take to improve the yield. Anonymous (2017)

In order to make the SHC scheme more successful, the government of India, along with the Department of Agriculture and Farmers Welfare of India, has launched a SHC agriculture portal. In fact two other agri-portals have been recently launched–Fertiliser Quality Control System and Participatory Guarantee System portal. The farmers need to register at the web portal www.soilhealth.dac.gov.in along with the details of the soil samples and test lab reports. Once registered, the farmer can keep a track of the test results by soil testing labs, fertilizer and nutrients recommendations, SHC generation and MIS module for monitoring progress. The basic objective behind the launch of the web portal is to create a single national database on soil health which can be used in the future for research and planning both by farmers and soil experts. Right now the portal is in English. Very soon, it content will be available in regional languages too. This scheme is being implemented in all the districts of the Madhya Pradesh through 103 soil testing labs (30 under State Department, 26 under Madhya Pradesh State Agriculture Marketing Board and 47 under Agricultural Universities) running under the control of State Agriculture Department.

The soil testing is proven scientific tools to evaluate soil fertility for recommending balanced nutrition to crops. However, the soil testing programme in India has failed to create the desirable impact on the farming community due to extremely poor coverage and delay in timely dissemination of fertilizers recommendation to farmers. While creation of required infrastructural facilities involves huge burden on Government exchequer, application of space age technology has given ample scope to improve the analyzing capacity as well as dissemination ability of the soil testing laboratories. This, coupled with professional management through proper linkages can bring radical changes in the soil testing service in the country to the extent of farmers' satisfaction. Biswas (2002)

There is an ample scope to improve the analyzing capacity as well as dissemination ability of soil testing laboratories. If this, couple with professional management through proper linkages, can bring radical changes in soil testing services in the state to the extent of farmers' satisfaction. The results of the research undertaken made it clear that adoption of recommendation of soil testing reduced the cost of production and increased returns over cost of cultivation of crops. This fact may be popularized amongst the farmers so that they can take benefit of soil testing analysis. Sufficient field staff with trained personal should be kept at village level and method as well as result demonstrations of these recommendations may be

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taken up in farmers' field for its wide adoption. (Sharma *et al.,* 2015)

It is clear that very little work has been done so far in this particular aspect. However, these laboratories were found to work from a long period of time. Soil testing is a proven scientific tool to evaluate soil fertility and plays an important role in crop production and nutrient management. (Reid, 2006) The soil testing programme in India has failed to create the desirable impact on the farming community due to extremely poor coverage and delay in timely dissemination of fertilizers recommendation to farmers (Biswas, 2002) and very few farmers were found to be tested their soil for adoption of recommended dose of fertilizer in their farms. (Sharma *et al.,* 2005)

How far, SHC scheme is beneficial scheme for farmers? As there are so many illiterate farmers in India and they do not know, which types of crops they should grow to get maximum yield. Basically, they do not know the quality and the type of their soil. They might know by experience what crops grow and what crops fail. But they don't know what they can do to improve the condition of their soil.

Considering all these facts in mind the present work has been formulated to study the awareness and performance of SHC scheme among the farmers in the study area.

MATERIALS AND METHODS

The study confined to two districts (Jabalpur & Sehore) of Madhya Pradesh, in which the SHC Scheme was implemented since its inception year 2015-16 and running successfully in the State. A block in each selected district was further selected purposively for the study from where maximum number of soil sample has been collected by soil testing laboratories. A village in each block was selected on the basis of same criteria and 15 soil tested farmers from each selected village were selected randomly for detailed study. An equal number of control farmers were selected from the same selected villages from where SHC beneficiaries were interviewed. Thus, the study comprise of 30 soil tested farmers/ beneficiaries and 30 control farmers of 2 villages, 2 blocks and 2 districts of Madhya Pradesh.

RESULTS AND DISCUSSION

The awareness on soil testing, sources of information about soil testing, training programs attended on application of chemical fertilizers, sources of soil sample collection, constraints encountered while implementation of the SHC scheme, suggestions for improvement of SHC scheme, were presented in the study.

Awareness on soil testing

The knowledge/awareness about all these parameters *viz*. awareness with regards to INM, experience of reduction in consumption of chemical fertilizers due to INM, imbalanced application of fertilizers and its effects, knowledge about ongoing programmes on Soil Health Mission, Soil Health Cards and grid system under SHC scheme were found to be more in case of soil tested farmers as compared to control farmers (Table 1).

At overall level the majority of the HHs reported that they are aware about SHC scheme (63.30%) and have knowledge about ongoing programmes on Soil Health Mission (47.50%). They were also aware on imbalanced application of fertilizers and its effects (45.00%) and know about INM (25%). The experience about the reduction in consumption of chemical fertilizers due to INM was reported by only 15 per cent of HHs. Further, it was also noticed that the awareness on grid system under SHC scheme was found to be negligible amongst the control (3.30%) as well as soil test farmers (3.97%).

Sources of information about soil testing

The major source of information amongst the HHs was found to be Agriculture Department (46.30%). The 10.10, 10.00, 6.70, 6.70 and 2.30 per cent of HH also got information on soil testing from neighbour, KVKs, Private companies, SAUs and friends respectively. (Fig. 1)

Training programs attended

Training Programs Attended on application of chemical fertilizers were also observed from the sample HHs and presented in table 2.

It is observed from the data that the training programs on application of chemical fertilizers was found to be attended by more number of soil tested farmers (43%) as compared to control farmers (18%). The duration of attended training programme was also more in case of soil tested farmers (2 days) as compared to control farmer (1 day). (Table 2)

These training programme were found to be on judicious use/application of chemical fertilizers on the right crop at the right time in approved doses and as per approved methods such as broadcasting, top dressing, foliar application, placement and localized placement was attended by the farmers in the area under study. Government is promoting and recommending soil test based balanced and integrated nutrient management through conjunctive use of both inorganic and organic sources of plant nutrient management to sustain good soil health and higher crop productivity under soil health

Table 1: Awareness on soil testing among sampling households (% of farmers)

Particulars	Control farmers	Soil tested farmers	Overall
Households know about INM	23.30	26.70	25.00
Households experienced of reduction in consumption of chemical fertilizers due to INM	13.30	16.70	15.00
Households awareness on imbalanced application of fertilizers and its effects	20.00	70.00	45.00
Households knowledge about ongoing programmes on Soil Health Mission	30.00	65.00	47.50
Households aware of Soil Health Cards	33.30	93.30	63.30
Households awareness on grid system under SHC scheme	3.30	3.97	3.64

Table 2: Training programs attended on application of chemical fertilizers

Particulars	Control farmers	Soil tested farmers
% of farmers attended	18.00	43.00
Average number of days	1.00	2.00

Table 3: Constraints faced by the farmers in utilization of SHC (% of farmers)

Reasons	Soil tested farmers
Recommended fertilizers not available in adequate quantity in the local market	63
High price of fertilizers	79
Lack of capital to purchase fertilizers	34
Lack of technical advice on method and time of fertilizers application	53
Difficult to calculate the required quantity of fertilizers as per SHC	87
SHC not available in time	23
Lack of knowledge about method of collecting ideal soil sample	56
Soil testing laboratories are located far away	45
Soil testing not required for my field as crop yield is good	19
Recommendation of SHC is not creditable	47
Lack of training	74
Lack of knowledge regarding advantages of SHC	35

management (SHM) component of National Mission for Sustainable Agriculture (NMSA).

Sources of soil sample collection

The majority of farmers were found to collect their soil sample by themselves (83%). Only 11, 5 and 1 per cent were found to collect their soil samples with the help of the farmer facilitator, scientists of SAUs, and KVKs respectively. (Fig. 2)

Constraints encountered in utilization of the SHC Scheme

The major problems reported by the majority of soil tested farmers were found to be difficulty in calculating the required quantity of fertilizers as per SHC (87%) followed by high price of fertilizers (79%), lack of training (74%), recommended fertilizers not available in adequate quantity in the local market (63%), lack of knowledge about method of collecting ideal soil sample (56%), lack of technical advice on method and time of fertilizers application (53%), lack of capital to purchase fertilizers (34%), recommendation of SHC is not creditable (47%), soil testing laboratories are located far away (45%), lack of knowledge regarding advantages of SHC (35%) SHC not available on time (23%) and soil testing not required for my field as crop yield is good (19%). (Table 3)

Suggestions for improvement of SHC scheme

Ensured and timely availability of SHC on mobile/ internet (85%), SHC should be in local and regional language (83%), more training programme should be organized regarding procedure of collection of representative soil sample (81%), ensured availability

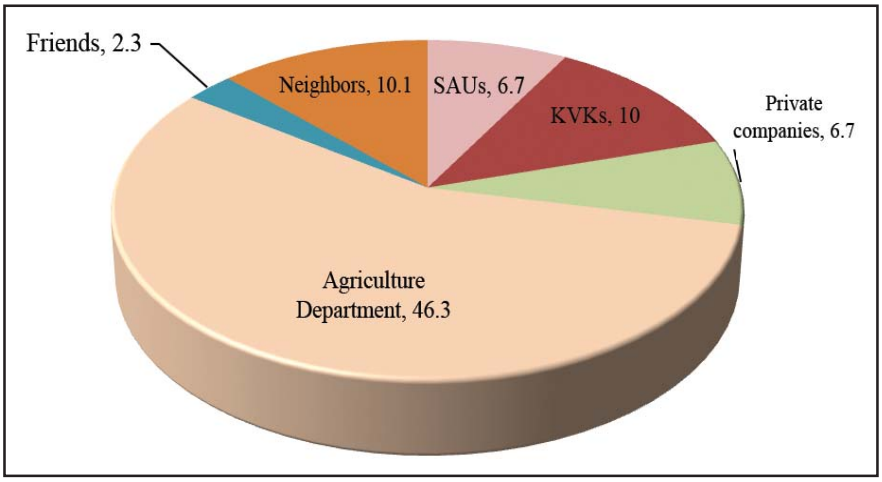

Fig. 1: Sources of information about soil testing (% of farmers)

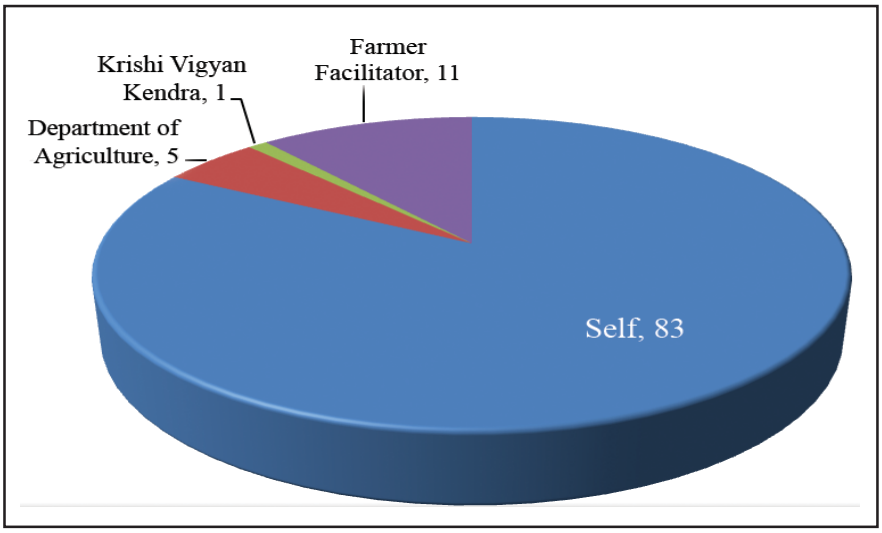

Fig. 2: Sources of soil sample collection (% of Soil tested farmers)

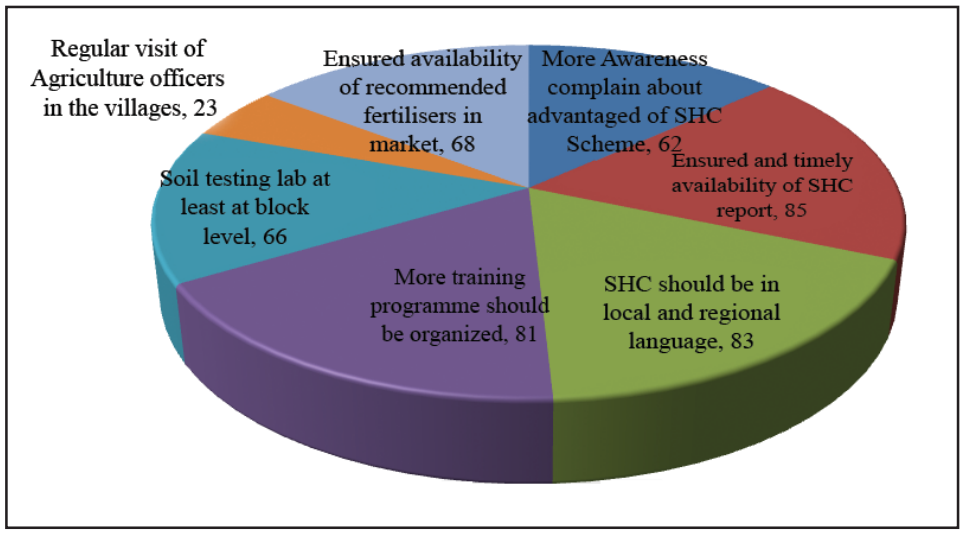

Fig. 3: Major suggestions for improving SHC scheme (% of Soil tested farmers)

of recommended fertilisers in the market (68%), ensured soil testing lab at least at block level to increase the assess at farmers door step to promotion of soil testing (66%), more awareness complain about advantaged of SHC scheme (62%) and rural Agriculture Extension Officer should visit the village at least twice in a week so that farmer will be able to get proper/timely advice for his problems (23%) where the major suggestions given by the sample HHs for improving SHC scheme in the area under study. (Fig. 3)

Therefore it can be concluded from these results that the 63.30 per cent were found to be aware to SHC scheme and 25.0 per cent have knowledge of INM due to wider campaign put in place by the State government. Only 15 per of HHs experienced that use of INM curtailed fertilizer consumption. Only 3 (control) – 4 (soil tested) per cent of HHs were found to be aware about grid system under the scheme. The Department of Farmers' welfare and Agriculture Development was found to be most important source of information of SHC scheme among the HHs. Only 18 (control) to 43 (soil tested) HHs were found to attend training programme on application of fertilizers for 1-2 days only. Only some of sample HHs used to adpot RDF, FYM and bio-fertilizers after obtaining SHC. They were not able to use RDF due to difficulty in calculating the required quantity of fertilizers as per SHC, high price of fertilizers, lack of training etc. The majority of sample HHs suggested that they will be able to adopt RDF only by ensuring timely availability of SHC on their mobile/internet and recommended fertilisers in the local market.

Hence, the present infrastructure of soil testing facility is found to be insufficient in different districts of Madhya Pradesh. There is an urgent need to increase quantity as quality of soil sample testing. The Department of Agriculture ensures an effective and live linkage between the field and the laboratory. It will be appreciable if each lab may adopt at least one nearby village from where sample may be collected by the laboratory staff and recommendations are also communicated / handed over directly by the laboratory staff to the farmers and to follow the outcome of the SHC scheme. Each lab can take up one village as a mission to see the utility of the SHC scheme by itself and find out shortcomings so that the whole SHC scheme can be improved on the basis of such direct observation / study. Presently, the labs are literally cut off from the field and work in isolation of the whole SHC scheme. There is an urgent need to make the SHC available to the farmers in their finger tips with the help of information technology through internet and mobile. At the same time they should be made aware about these facilities so that it can be access it at any time anywhere, where ever it is required then only the purpose of soil testing can be fulfilled in a right way.

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