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Economic Effect of Soil Health Card Scheme on Farmer's Income: A Case Study of Gwalior, Madhya Pradesh

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ABSTRACT

The study was undertaken to assess the economic effect of Soil Health Card Scheme on Income of Farmer's by studying the economics of cultivation of three major *rabi* crops Wheat, Mustard and Chickpea in district Gwalior of Madhya Pradesh State during 2018-19. The samples composed of total 120 farmers of four blocks of district Gwalior. The yield of wheat, mustard and chickpea increased by 23.13 per cent, 20.01 per cent and 36.55 per cent, respectively after adoption of soil test based RDF. Further, higher net returns increased 25.22 per cent in wheat, 8.18 per cent in mustard 20.81 per cent in chickpea after soil test based fertilizer application. The B:C ratio increased from 3.92 to 4.13 in wheat, 3.09 to 3.20 in mustard and 3.34 to 3.57 in chickpea on adoption of soil test based RDF by the farmers. Thus, soil health card scheme was found highly beneficial to the farmers in term of increasing their income. However, there is a need to generate awareness about the benefits of this scheme among the farmers on one hand and strengthening of soil testing services / laboratories on the other hand for a wider adoption of soil test based RDF.

Keywords: Adoption yield, Impact, Net returns, Soil health card

INTRODUCTION

Soil is one of the elements required for farming as it provides nutrients to the plant. Healthy soil contain all the elements for growth and development of crop or the soil deprived from one or more nutrient either reduce the production or degraded quality of crops. Therefore, proportion and quantity of macro and micro nutrients altogether refer to the soil health. As far as agriculture production is concerned, soil health play vital role in ensuring sustainable production with optimizing the utilization of fertilizer and reducing its waste. Most of the farmers are using continuously larger quantities of chemical fertilizers to increase production without knowing the fertility status of the soils of their fields (Srivastava and Pandey, 1999).

Over the past five decades, the practice and use of soil testing has become widely accepted in agribusiness both by farmers and industry. The potential for increased yields and profits has been the obvious motivator for the keen interest in soil testing. Soil test reports will generally provide you with appropriate fertilizer application recommendations for nitrogen, phosphorous, potassium and soil amendments. Soil testing also allows for determining the micronutrient requirements of your crop. If you apply too little fertilizer, your crop yields and returns will be lower. Too much fertilizer will waste time and money and risk environmental damage due to nutrient runoff. Consequently, soil testing provides a farm management tool with a potential benefit to the farmer of increased yields, reduced operating costs and superior environmental risk management. Additional benefits

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include; improved crop maturity and quality, higher tolerance to disease and pest damage, and increased growth.

Regarding this Constant the Soil Health Card (SHC) is a complete evaluation of the quality of soil right from its functional characteristics to water and nutrients content and other biological properties. It contains corrective measures that a farmer should adopt to obtain a better yield. The SHC helps the farmers as the farmers get a well monitored report about the soil and they are guided by the experts to improve soil health. It also helps the farmers to get crop-wise recommendations of nutrients and fertilizers required in each type of soil. This can help in increasing the crop yield. The SHC scheme was launched in February 2015, and by July 2015, more than 34 lakh cards have been issued.

The soil testing is a proven scientific tool to evaluate soil fertility and 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 (Biswas, 2002). Considering all the above facts, the present study has analyzed the impact of soil test technology on yield and economics in cultivation of major *rabi* crops in Madhya Pradesh.

METHODOLOGY

This study was conducted in Gwalior district of Madhya Pradesh in which 120 farmers were selected from all four blocks namely Morar, Ghatiganw, Darbra and Bhitrwar during *rabi* season 2018-19. In total sampled farmers, 60 farmers were done soil test before crop cultivation and remaining 60 farmers were treated as control farmers who did not done soil test before crop cultivation. Thus, from every block 30 farmers were selected from each block who reported on before and after implementation of Soil Health Card scheme. Three major *rabi* crops *viz.*, wheat, mustard and chickpea were cultivated by the selected farmers in all blocks. The analysis of soil was done in soil-testing laboratory of KVK, Gwalior in which analysis of macro-nutrient (N, P, K) and pH but also analyzed micronutrient {Fe, Cu, Mo, Zn, etc} and provides Soil Health Card for recommended for balanced use of fertilizer to cultivators. Thus, Study was conducted to to study the impact of soil test technology on farmers' income.

RESULTS AND DISCUSSION

Table 1 presents' very interesting and remarkable result indicates that adoption of Soil Health Card for application of recommended doses of fertilizer (RDF). The change in yield of selected *rabi* crops viz. wheat, mustard and chickpea was observed before and after getting soil tested in the area under study. The result showed that yield of wheat, mustard and chickpea increased by 23.13 per cent, 20.01 per cent and 36.55 per cent, respectively; due to application of recommended doses of fertilizer (RDF). A similar finding was reported by Sharma and Singhal (2014).

Table 1: Impact of application of recommended doses of fertilizers on crop yield in district Gwalior of Madhya Pradesh (*rabi*-2018-19)

Crop	Average yield quintal/ha		% Change
	Before soil tested	After soil tested	
Wheat	38.61	47.54	23.13
Mustard	14.20	18.32	20.01
Chickpea	14.4	19.80	36.55

The data in Table 2 revealed that most important changes observed after the application of RDF were (i) reduction in application of other inputs like seed, labour, pesticides, etc. (64.38%), (ii) improvement in soil fertility (58.20%), and (iii) increase in crop yield (54.85%). The important changes observed were (i) improvement in crop growth (68.58%) and improvement in grain filling/setting (59.25%) and (ii) the lower incidences of pest and diseases after application of RDF (63.55%) was observed among the least important changes. This finding was conformity with the findings of Chouhan *et al*. (2017).

The adoption ability of any agricultural technology depends upon its cost and return structure. Therefore, an effort was made to know the economics performance of the technology. The impact of soil testing on the economics of cultivation of selected *rabi* crops was

Table 2: Changes reported after application of recommended doses of fertilizers to *rabi* crops in Gwalior district of Madhya Pradesh (% of farmers)

Change	Most Important	Important	Least Important	Total
Increase in crop yield	54.85	12.64	32.51	100
Improvement in crop growth	15.62	68.58	15.8	100
Improvement in Grain filling/setting	12.30	59.25	28.45	100
Lower incidence of pest and diseases	11.95	24.50	63.55	100
Improvement in soil fertility	58.20	15.28	26.52	100
Reduction in application of other inputs like seed, labour, pesticide etc.	64.38	14.63	20.99	100

studied and is presented in Table 3. The result showed that total cost of cultivation of wheat crop increased by 16.87 per cent, from Rs. 22426 to Rs. 26250 ha^{-1}, but net income also increases by 25.22 per cent from Rs. 65751 to Rs. 82336 ha^{-1}. The benefit cost ratio also increased from 3.92 to 4.13 with the application of recommended dose of fertilizer after the farmers got their soil tested. The total cost of cultivation in mustard crop increased 2.8 per cent from Rs.21829 to Rs. 22394 ha^{-1} and net income increased by 8.18 per cent from Rs. 45646 to Rs. 49426 ha^{-1}. The benefit cost ratio increased from 3.09 to 3.20 after the farmer's got their soil tested. In chickpea, the total cost of cultivation increased by 9.94 per cent from Rs17350 to Rs.19075 ha^{-1} and net income increased by 20.81 per cent from Rs. 40638 to Rs. 49097 ha^{-1}. The benefit cost ratio was also increased from 3.34 to 3.57 due to application of recommended dose of fertilizer after soil testing by the farmers. Similar finding reported by Shrivastva *et al.* (2012).

Table 3: Impact of soil testing on economics of cultivation of major *kharif* crop in Madhya Pradesh (Rs./ha)

Variable	Before soil tested	After soil tested	Difference	% Difference
Wheat				
Total Cost	22460	26250	3790	16.87
Grass Income	88211	108586	20375	23.09
Net Income	65751	82336	16585	25.22
B:C Ratio	3.92	4.13	0.21	5.35
Mustard				
Total Cost	21829	22394	565	2.58
Grass Income	67515	71820	4305	6.37
Net Income	45686	49426	3740	8.18
B:C Ratio	3.09	3.20	0.11	3.55
Chickpea				
Total Cost	17350	19075	1725	9.94
Grass Income	57988	68172	10184	17.56
Net Income	40638	49097	8459	20.81
B:C Ratio	3.34	3.57	0.23	6.88

CONCLUSION

It can be concluded that adoption of RDF asper Soil health Card leads to reduction in the application of other inputs like seed, labour, pesticides, etc., improvement in soil fertility and increase in crop yield were observed by the majority of households after the application of RDF. At the same time, they also started adopting the recommended package of practices (RPP) for cultivation of other crops as they got the opportunity to contact officials of the department of agriculture, scientists of SAUs and KVKs and farming facilitators resulting reduction in expenditure on fertilizers and other inputs, thereby cost of cultivation. It could lead to increase in farmers' income. It is suggested that the issued SHCs need to be periodically updated so that the farmers remain aware about the changing fertility status of their land. The awareness generation regarding spraying, fertigation and drilling method of fertilizers application is also needed among the farmers. The advantages of adoption of recommendations of soil testing may be disseminated among the farmers along with strengthening of extension service delivery in the state.

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REFERENCES

Biswas, P.P. (2002). Soil testing at farmers door step, *Fertilizer News,* **47**(10), 21-24.

Chouhan, R.S., Sharma, H.O., Rathi, D. and Niranjan, H.K. (2017). Impact of soil health card scheme on farmers' income –A Case Study of *Kharif* Crops in Madhya Pradesh, *Agricultural Economics Research Review*, **30**, 139-141.

Rajni, Singh, N.P. and Singh, P. (2014). Evaluation of frontline demonstration on the yield and economics analysis of summer moog in Amritsar district of Punjab, *Indian Journal of Extension Education*, **50**(1&2), 86-89.

Sharma, V.K. and Singhal, S.K. (2014). Validation of soil test based fertilizer prescriptions for targeted yield of pearl millet, rice wheat and mustard at farmers field, *Annals of Plant and Soil Research,* **16**(4), 367-371.

Shrivastava, A., Sharma, N.P., Khan, N., Mishra, C.K. and Upadhayay S.K. (2012). impact study of soil testing analysis in Madhya Pradesh. Agro-economic Research Centre For Madhya Pradesh And Chhattisgarh.

Srivastava, Y.C. and Pandey, A.P. (1999). Knowledge and attitude of small and marginal farmers towards soil testing, *Agricultural Extension Review*, **11**(6), 3-6.