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Impact of soil testing analysis in Madhya Pradesh

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Abstract

Looking to the importance of soil testing analysis in famers' field this particular study has been conducted to evaluate the adequacy, usefulness effectiveness and contribution in returns in farmer's field. The primary data were collected from the 100 respondents through pre tested interview schedule by personal investigation from two locations i.e. Sagor and Dhar districts of Madhya Pradesh for the year 2010-11. It is observed from the study that out of 100 respondents who have submitted soil samples to soil testing labs for its analysis only 71 received soil testing report. Out of these 71 only 49 respondents adopted the recommendations of soil heath card and applied nutrients in crops for improvement in yield levels. The per hectare expenditure on seed, fertilizer and plant protection measures of adopted farmers increased for all the crops after adopting recommendation of soil testing analysis. The per hectare expenditure on labour was also found to increased in all the crops (wheat, gram, potato) except soybean. The cost of cultivation (Rs. /ha) and cost of production (Rs. /q) of all the crops reduced drastically, while benefit cost ratio was found to be increased after adoption of soil testing recommendation. The lack of knowledge about soil testing technology (70%), non-availability of soil testing report in time , less cooperation from the officers of agriculture department (46%) and complicated method of soil testing sample were found to be main constraints in adoption of soil testing recommendations as reported by majority of respondents in the area under study. It was also observed during the investigation that 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 taken up in farmers' field for its wide adoption.

Keywords: Impact, soil testing, analysis

Soil testing till today has been used mainly to formulate precise recommendations for the major nutrients i.e. Nitrogen, Phosphorus and Potassium fertilization of crops in different soils and to recommend appropriate doses of amendments for salt-affected and acidic soils. Micronutrients, comprising Zinc, Copper, Iron, Manganese, Boron and Chlorine, though required by plants in much smaller amounts, yet are as essential for them as the major nutrients. Despite that, little attention has been paid to employ the soil testing for assessing the micronutrient status of soils and determining soils requirement for micronutrient fertilizers for growing crops. With an objective to extent the advisory service to the farmers of the state regarding the nutrient problems of soils and crops and suggest appropriate remedial measures for efficient correction of the same. Jawaharlal Nehru Agriculture University Jabalpur and the Department of Agriculture Madhya Pradesh Bhopal have established soil testing laboratories for nutrient. Some private laboratories are also available in the state. Farmers are advised to make the best use of this service rendered by these laboratories.

Success or failure of soil testing programmes largely depends on providing correct information to farmers, ability of the programme to provide service to a large group of farmers in a particular area, proper analysis and interpretation of results and recommendations that when followed are profitable for the farmer. Then only will this service be effectively utilized to improve local agricultural production Time and quality consciousness in the service

is a real challenge for the analysts in the new millennium. This compels laboratory to adopt rapid, reliable, time saving procedures and methods to meet future requirements. The farmer's confidence in the programme can be established only by demonstrating that it actually provides a means of improving his profit. Looking to the importance of the soil testing in farmers' field this study had been conducted as the review of various studies reported that the recommendations of soil testing laboratories are useful for increasing the levels of output but the majority of the farmers have not been interested in this due to lack of knowledge about soil testing facilities, testing of soils is incredible, laboratories are situated far away, and non availability of soil testing report etc.

Objectives

The present study was planned to focus the impact assessment of soil testing analysis in Sagar and Dhar districts of Madhya Pradesh with the following specific objectives:

- To assess the soil testing infrastructure available across different agro-climatic regions / districts of Madhya Pradesh.
- To determine the growth of sample target, and achieved by soil testing laboratory.
- To identify the gaps in sample target, and achieved by Sagar and Dhar soil testing laboratories and recommendation adopted by the farmers.
- To evaluate the cost effectiveness of the soil testing analysis.
- To identify constraints in adoption soil testing technology and suggest ways and means for proper utilization of these soil testing laboratories.

Materials & methods

In Madhya Pradesh total numbers of laboratories are 70, out of which Soil Testing laboratories of Sagar & Dhar (MP) have been selected purposively for the study. The soil testing laboratory of Sagar district covers farmers of Sagar and Damoh districts and Soil testing laboratory situated at Dhar covers Dhar district. The laboratory working under the direct control of the Joint Director Soil Testing, Department of Agriculture Madhya Pradesh, and Sub Divisional Agriculture Office, Senior Agriculture Development Officer. The Rural Agriculture Extension Officer (RAEO) helps in the collection of soil sample at field level and sends these samples to soil testing laboratory. The soil testing reports are also provided to RAEOs for its distribution among the recipient farmers.

Both primary and secondary data collected for the study. The primary data were recorded on general information of farmers who tested there soil and adopted the recommendation of soil testing report, land use and cropping pattern, incremental cost and return obtained before and after adopting recommendation of soil testing, constraints in adoption of soil testing recommendation. The secondary data were collected on infrastructure facility available in different agro climatic region in Madhya Pradesh, sample collected, analyzed and reported during the year 2001-02 to 2010-2011 by the soil testing laboratory. Year 2001-02 and 2010-2011 were treated as base and current year respectively for analyzing of secondary data. The survey method was used for collection of the relevant data from selected cultivators by using pre-tested interview schedule. The investigators briefly explained about the objectives of the study to each respondent and assured them that the supplied information will be used only for research purpose. The secondary data were also collected by personal visit in the office of Director of Agriculture and Joint Director of Agriculture, Soil Testing, Vindhyachal Bhavan, Bhopal and also from the published and unpublished record of Soil Testing laboratories of Dhar and Sagar districts.

A list of all the farmers who tested their soil sample in the year 2008- 09 has been collected from the respective soil testing laboratory and 50 farmers from each laboratory have been selected for the study. Thus, the total number of respondents were 100, (50 each from Sagar and Dhar districts) of Madhya Pradesh.

To assess the impact of soil testing analysis before and after technique has been followed and the years 2008-09 and 2009-10 were treated as before and after year respectively. The collected primary data pertain to the agriculture year 2010-11. While, the required secondary data are pertain to year from 2001-02 to 2010-11. The analysis of the collected data was done on the basis of stated objectives. The growth of sample targeted and achieved and absolute change analyzed with the help of secondary data. In this triennium average ending year 2003-04 was treated as base and triennium average ending 2010-11 was treated as Current year. The data were classified into two groups, i.e. before and after adoption of soil testing technology by the respondents.

Results & discussion

The available soil testing structure, gap in sample target and achievements, incremental returns received after analyzing of soil sample are considered for in-depth study.

Soil testing infrastructure in the state

The soil testing facilities available across the state has been given in the Table 1. The table reveled that there were 70 soil testing labs exist in the state under different agro-climatic regions. The numbers of labs were found maximum in Malwa Plateau (13) followed by Kymore Plateau and Satpura Hills (11) and Vindhya Plateau (10). The other agro climatic zone also had more then one soil testing labs.

Fig. 1. Agro-climatic zone wise Soil testing Infrastructure in Madhya Pradesh

The coverage or catchments of per lab was 0.63 lakh farmers and 0.47 lakh hectares land or cultivable land. The maximum farmers covered by labs was found in Central Narmada Valley (1.15 lakh) followed by Vindhya Plateau (1.06 lakh) Chhattisgarh Plains (0.70 lakh) and Kymore Plateau and Satpura Hills (0.67 lakh).

As for as coverage of area under each lab is concerned labs situated in Chhattisgarh plain (Bhalaghat district) covered 0.72 lakh hectare, followed by Central Narmada Valley (0.65 lakh hectare), Northern Hills of Chhattisgarh (0.60 lakh hectare) and Kymore Plateau and Satpura Hills (0.51 lakh hectares). Other labs also covered a significant area and provide service to needy farmers. (Table 1) It is also observed from the data that labs situated in Satpura Plateau (0.34 lakh hectares) covered the lowest area, which is appreciable in terms of availability of infrastructure facilities.

On an average 0.50 lakh ha area and 0.66 lakh farmers are being covered under a lab in the state indicating an urgent need to establish more and more soil testing lab not only to reduce the pressure on exiting labs but also to improve the access and incrasing the rate of adoption thereby reducing the transportation cost for benefit of the farming community in particular and increasing the fertility of soil.

Table 1. Soil Testing Infrastructure in Madhya Pradesh (2010 - 11)

Agro climatic zones	Districts (No.)	Soil testing labs (No.)	No. of farmers (lakh)	Net area sown (lakh/ha)	Lab available per lakh farmers	Lab available per lakh hectare
Chhattisgarh plains	1	2	2.88	2.75	0.70	0.72
Northern Hill of CG	6	5	8.12	8.34	0.62	0.60
Kymore Plateau & Satpura Hills	7	11	16.37	21.55	0.67	0.51
Central Narmada Valley	2	4	3.47	6.10	1.15	0.65
Vindhya Plateau	6	10	9.42	24.38	1.06	0.41
Gird Region	7	9	13.50	17.85	0.67	0.50
Bundelkhand	3	4	10.89	8.84	0.37	0.45
Satpura Hills	2	3	5.64	8.70	0.53	0.34
Malwa Plateau	9	13	23.37	31.14	0.56	0.42
Nimar Plains	5	7	11.80	14.46	0.59	0.48
Jhabua Hills	2	2	5.10	4.00	0.39	0.50
Total	50	70	110.56	148.11	0.66	0.51

Gap in sample target and achievement

The gap in soil sample targeted and achieved has been presented in Table 2. The gaps between target and achievement were recorded to be 19.95 & 21.18 per cent during the current year (2011) and 63.47 & 41.41 per cent during the base year (2004) in Sagar and Dhar districts respectively. The target of 10000 sample remain unchaged during the base and current year in Sagor districts , while ib case of Dahar the target was found to be reduce from 15000 (2004) to 11000 (2011).

Target and achievement of samples

The target of soil samples were found to be stagnant to 15000 with the growth of -3.55% per year during the period under study. It is also noted that the target were decreased by -496.97 soil samples per year in Dhar district of Madhya Pradesh, while, the achievement were found to be increased from 9811 (2001-02) to 13581 (2010-11) with a rate of 24.25 soil samples and growth of 0.25% per year. The gap between target and achievement ranges from - 9.46% (2010-11) to -51.71% (2008-09) and could

Table 2. Gap in Sample Targeted and Achievement, Sagar District of MP

Particular		Sagar	Dhar	Total
A) The base year (TE 2004)	Target	10000	15000	25000
	Achieved	3653	8785	12438
	Gap	6347	6215	12562
		(63.47)	(41.43)	(50.25)
B) The current year (TE 2011)	Target	10000	11000	21000
	Achieved	8005	8670	16675
	Gap	1995	2330	4325
		(19.95)	(21.18)	(20.60)
Change over base year	Target	0	-4,000	-4000
	Achieved	4352	-115	4237
		(119.13)	(-1.31)	(34.06)

Figures in parenthesis show percentages to total

Table 3. Growth and Gap of Sample Targeted and Achieved in Dhar District of MP

Year	Target	Achievement	Gap	% gap
2001 - 02	15000	9811	-5189	-34.59
2002 - 03	15000	7269	-7731	-51.54
2003 - 04	15000	9274	-5726	-38.17
2004 - 05	15000	11411	-3589	-23.93
2005 - 06	15000	12355	-2645	-17.63
2006 - 07	20000	10014	-9986	-49.93
2007 - 08	12000	9500	-2500	-20.83
2008 - 09	12000	5795	-6205	-51.71
2009 - 10	6000	6632	632	10.53
2010 - 11	15000	13581	-1419	-9.46
Mean	14000	9564	-4436	-
Standard Deviation	3559.03	2489.04	3153.13	-
Coefficient of Variance (%)	0.25	0.26	0.71	-
Regression Coefficient	-496.97	24.25	-521.22	-
Growth (%)	-3.55	0.25	-11.75	-

Table 4. Growth and Gap of Sample Targeted and Achieved in Sagar District of MP

Year	Target	Achievement	Gap	% gap
2001 - 02	10000	2197	-7803	78.03
2002 - 03	10000	3215	-6785	67.85
2003 - 04	10000	5548	-4452	44.52
2004 - 05	10000	5312	-4688	46.88
2005 - 06	10000	6310	-3690	36.90
2006 - 07	10000	7072	-2928	29.28
2007 - 08	10000	6778	-3222	32.22
2008 - 09	10000	7019	-2981	29.81
2009 - 10	10000	7381	-2619	26.19
2010 - 11	10000	9615	-385	3.85
Mean	10000	6045	-3955	-
Standard Deviation	0.00	2127.62	2127.62	-
Coefficient of Variance (%)	0.00	0.35	0.54	-
Regression Coefficient	0.00	657.21	-657.21	-
Growth (%)	0.00	10.87	-16.62	-

Table 5. Incremental cost after adoption of soil testing recommendation by the farmers in different crops (Rs/ha)

Particulars	Soybean		Wheat		Gram		Potato	
	Before	After	Before	After	Before	After	Before	After
Seed & seed treatment	3667.95	3667.95	2107.00	2563.93	2881.67	2680.96	41990.00	41990.00
		(0.00)		(21.69)		(-6.97)		(0.00)
Manures & fertilizer	2229.59	1577.84	1557.15	3384.79	401.00	315.00	618.74	1920.43
		(-29.23)		(117.37)		(-21.45)		(210.38)
Plant Protection	0.00	489.88	0.00	0.00	422.00	1321.00	0.00	0.00
		(∞)		(0.00)		(213.03)		(0.00)
Weedicides	0.00	494.00	331.10	496.65	0.00	0.00	0.00	0.00
		(∞)		(50.00)		(0.00)		(0.00)
Labour	6064.55	6898.48	7826.36	7917.41	6380.83	6833.67	10127.00	10744.50
		(5.53)		(1.16)		(7.10)		(6.10)
Interest on working capital	464.94	337.27	393.70	478.30	335.86	371.34	1756.10	1820.01
		(-27.46)		(21.49)		(10.56)		(3.64)
Depreciation	1344.25	1344.25	1382.20	1382.20	278.28	278.28	423.59	423.59
		(0.00)		(0.00)		(0.00)		(0.00)
Total Variable cost	13771.28	14309.67	13597.51	16223.28	10699.64	11800.25	54915.43	56898.53
		(3.91)		(19.31)		(10.29)		(3.61)
Total Fixed Cost	8010.81	10357.50	8323.80	9672.40	4791.43	6703.91	14898.34	16684.92
		(2.29)		(16.20)		(39.91)		(11.99)
Total Cost of Cultivation	21782.09	24667.17	21921.31	25895.68	15491.07	18504.16	69813.77	73583.45
		(-28.18)		(18.10)		(19.45)		(5.40)
Cost of Production (Rs/q)	1430.21	1248.39	567.30	551.90	1253.76	1069.66	565.29	425.58
		(-12.72)		(-2.71)		(-14.68)		(-24.71)

Figures in parenthesis show percentages difference to before

not even full fill in any year during the period under study (Table 3).

The target of soil sample to be tested remain the same in each year during the period under study but achivement were found to be increased from 2197 (2001-02) to 9615 (2010-11) by the rate of 657.21 sample and growth of 10.87% per annum along with gaps of -3.85 (2010-11) to -78.03 (2001-02) per cent during the period under study in sagor distruct of MP (Table 4).

Incremental cost & return after adoption of soil testing recommendation

Impact of soil testing analysis has been done by analysis cost and return incurred in before and after the adoption of soil testing recommendation. Although, there were no significant difference found in different locations. Hence there pooled analysis has been taken into consideration for all the crops. In which farmers adopted the recommendation of soil testing considering the rate prevailing in the year 2010-2011.

The cost of cultivation (Rs./ha) of all the crops i.e wheat (18.10%), gram (19.45%) and potato (5.40%) except soybean (-28.18%) were found to increased, while the cost of production (Rs./q) of all the crops were found to decreased from -2.71per cent (wheat) to - 24.71 per cent (potato) after adoption of soil testing analysis report by the cultivators. The per hectare expenditure on fertilizer of increased for wheat (117.37%) and potato (210.38%) was found to be increased, whereas the for soybean (-29.23%) and gram (-21.45%) was found to be decreased after adoption of soil testing report (Table 5).

In sum the per hectare expenditure on seed, fertilizer and plant protection measures of adopted farmers increased for all crops after adopting soil testing analysis recommendation. The per hectare expenditure on labour was also found increased in all crops. The cost of cultivation and cost of production of all the crops reduced

Table 6. Incremental return after adoption of soil testing recommendation by the farmers in different crops (Rs/ha)

Particulars	Soybean		Wheat		Gram		Potato	
	Before	After	Before	After	Before	After	Before	After
Yield physical unit (q/ha)								
Main product	15.23	19.76	38.61	46.88	12.35	17.29	123.50	172.90
		(29.74)		(21.42)		(40.00)		(40.00)
By product	22.84	27.78	19.30	22.44	7.41	10.37	0.00	0.00
		(21.63)		(16.27)		(39.95)		(0.00)
Gross return (Rs/ha)								
Main product	44171.83	57304.00	46343.29	53860.57	27170	38038	86450.00	121030
		(29.73)		(16.22)		(40.00)		(40.00)
By product	2284.75	2778.75)	1930.97	2244.19	592.80	829.92	0	0
		(21.62)		(16.22)		(40.00)		(0.00)
Gross returns	46456.58	60082.75	48274.26	56104.76	27762.80	38867.92	86450.00	121030
		(29.20)		(16.22)		(40.00)		(40.00)
Net income (Rs/ha)								
At variable cost	32685.30	45773.08	34676.69	39881.50	17062	27067	31534.57	64131
		(40.04)		(15.01)		(58.63)		(103.37)
At total cost	24685.30	35415.58	26352.85	30209.12	12271.40	20363.16	16636.23	47446.56
		(43.53)		(14.63)		(65.94)		(185.20)
Cost - Benefit ratio								
At variable cost	3.37	4.19	3.55	3.46	2.59	3.29	1.51	2.13
		(40.04)		(-2.59)		(26.94)		(35.12)
At total cost	2.17	2.43	2.20	2.17	1.79	2.10	1.24	1.64
		(43.53)		(-1.62)		(17.20)		(32.83)

Figures in parenthesis show percentages difference to before

drastically after adaption of recommendation of soil testing.

The gross return, net return at variable cost and net return at total cost related to all the crops were found to be increased 16.22 per cent (Wheat) to 40.00 per cent (gram & potato), 15.01 per cent (Wheat) to 103.37 per cent (potato) and 14.63 per cent (wheat) to 185.20 per cent (potato) after adoption of soil testing analysis. The cost benefit ratio at variable as well as total cost was also found to be increased for all the crops expect wheat (Table 6).

Constraints in adoption of soil testing technology

The constraints reported by the sample cultivators in adoption of soil testing technology are presented in Table 7. It is observed from the data that lack of knowledge about soil testing facility among cultivators (70%) was found the main constraint in adoption of soil testing technology followed by non availability of soil testing reports in time to cultivator (62%), less cooperation from Agriculture Officers/Staff of Agriculture Department (46%), complicated method of taking soil sampling (30%), technology totally different from farming practices (26%), lack of training about soil testing technology (22%), high cost of adoption of recommended practices (20%,) difficulty in adoption of recommendations (20%), incredibility of soil testing report (12%) and situation of soil testing labs not with the reach of cultivators (12%), were the other main constraints reported by farmers during the course of investigation.

Table 7. Constraints in adopting of soil testing technology

Constraints	Respondents (%)
Lack of knowledge about testing facility	70
Non availability of soil testing report in time	62
Less cooperation from Agriculture Officers/staff	46
Complicated methods of Soil Sampling	30
Technology is far different from farming practices	26
Lack of Training for testing	22
High cost of recommendation	20
Difficulty in adoption of recommendation	20
Soil testing is incredible	12
Lab situated far away from the village	12

Conclusion

The following conclusion are made from the above results

The present infrastructure of soil testing facility is found to be insufficient in different agro climatic regions of Madhya Pradesh. Whatever infrastructure is available is not functioning properly hence, coverage of target/ achievement needs to be increased by employing skill and trained staff in these labs. This is needs to be increased quantity as quality of soil sample testing.

There is an ample scope to improve the analyzing capacity as well as dissemination ability of the soil testing laboratories. If this, coupled with professional management through proper linkages, can bring radical changes in the soil testing service in the state to extent the farmers' satisfaction.

The Department of Agriculture ensures an effective and live linkage between the field and the laboratory. It is to 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 programme. Each lab can take up one village as a mission to see the utility of the programme by itself and find out shortcomings so that the whole programme 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 programme.

Soil analysis and fertilizer recommendation is only a part of the soil testing service. To a good measure, the efficiency of the service depends upon the care and efforts put forth by extension workers and the farmers in collection and dispatch of the samples to the laboratories and obtaining reports timely. Its effectiveness also depends upon the proper follow up in conveying the recommendations to the farmers, including the actual use of fertilizer according to the recommendations. The role of extension service, soil chemists and the agronomists in the field is important. The service is suffering both from technological aspect and due to inadequate and untrained manpower. Weakness of the programme in its various aspects as discussed above needs improvement.

If the fertilizer industry will venture to produce and promote the products on the basis of requirement of specific soil nutrient deficiency, the industry will have to get into the soil testing programme in a big way and generate such information as a measure of good supplement to soil testing programme basically being run by the Government. The fertilizer industry may adopt at

least one district in a State and ensure and monitor that the fertilizer in the adopted district is used on the basis of plant nutrient deficiency as determined through accurate soil testing.

The awareness about soil testing facility, its need and importance is at the farmers' level hence, awareness building must be taken up by extension activities. As the adoption of recommendations of soil testing reduces cost of production of crops and increases returns. This fact may be popularized among the farmers' so that they can be benefited. Sufficient field staff with trained personal should be kept at village level and method as well as result demonstrations of these technologies may be taken up at the village level which popularized the impact of these technologies in front of the cultivators.

मृदा परीक्षण के विश्लेषण के महत्व को देखते हुए यह अध्ययन किसान के खेत में मृदा परीक्षण से होने वाले लाभ की पर्याप्तता, उसकी उपयोगिता प्रभावशीलता और योगदान का मूल्यांकन करने के लिए किया गया है । इसके लिए प्राथमिक आंकडे व्याक्तिगत साक्षात्कार अनुसूची के माध्यम से वर्ष 2010–11 के लिए मध्य प्रदेश के सागर और धार जिलों के 100 कृषकों से एकत्रित किए गए । इन कृषकों से मृदा परीक्षण के पूर्व तथा पश्चात् की जानकारी एकत्र की गयी । अध्ययन से यह ज्ञात हुआ कि जिन कृषकों ने विश्लेषण के लिए मृदा परीक्षण प्रयोगशालाओं को मिट्टी के नमूने प्रस्तुत किये थे, उनमें से केवल 71 प्रतिशत कृषकों को मृदा परीक्षण रिपोर्ट प्राप्त हुई । इन 71 में से केवल 49 कृषकों द्वारा मृदा स्वास्थ्य कार्ड की सिफारिशों को अपनाया गया और उपज के स्तर में सुधार कर फसलों में पोषक तत्वों का उपयोग किया । मृदा परीक्षण के विश्लेषण की सिफारिश को अपनाने के बाद सभी फसलों के लिए बीज, उर्वरक और पौध संरक्षण के उपयों में प्रति हेक्टेयर खर्च में वृद्धि पायी गयी । श्रम पर प्रति हेक्टेयर व्यय भी सोयाबीन को छोड़कर सभी फसलों (गेहुँ, चना, आलू) में अधिक पाया गया । मृदा परीक्षण की सिफारिश अपनाने के बाद सभी फसलों में काश्तकारी की लागत (रू/हेक्टेयर) और उत्पादन की लागत (रू/क्विंटल) काफी कम हई जबकि उत्पादन लागत अनुपात बढ़ा पाया गया । अध्ययन के तहत अधिकार कृषकों में मृदा परीक्षण तकनीक के बारे में ज्ञान की कमी (70%), समय में मृदा परीक्षण रिपोर्ट की अनुपलब्धता (62%), कृषि विभाग के अधिकारियों से भी कम सहयोग (46%), और मिट्टी परीक्षण नमूने की जटिल विधि (30%), मृदा परीक्षण सिफारिशों के अपनाने में मुख्य बाधाओं के रूप में बताया । इस शोध के परिणामों से यह स्पष्ट है कि मृदा परीक्षण की सिफारिश से उत्पादन की लागत के साथ काश्त की लागत कम होती है एवं अधिक आय प्राप्त होता है इस तथ्य को किसानों के बीच लोकप्रिय बनाया जा सकता है ताकि वे मिट्टी परीक्षण के बिश्लेषण का लाभ ले सकते है साथ ही इन सिफारिशों के परिणाम प्रदर्शनों को प्रशिक्षित व्यक्तिगण के साथ पर्याप्त फील्ड स्टाफ को गाँव स्तर तक विधि के रूप में अच्छी तरह से पहुचाना चाहिए ताकि किसान इसे और अधिक मात्रा में अपना सकें । जाँच के दौरान यह भी पाया कि मृदा परीक्षण प्रयोगशालाओं की विश्लेषण क्षमता के साथ-साथ प्रचार-प्रसार की क्षमता में सुधार करने की पर्याप्त आवश्यकता है साथ ही उचित संयोजन के माध्यम से किसानों की संतुष्टि के लिए व्यावसायिक प्रबंधन के साथ राज्य में मृदा परीक्षण में क्रांतिकारी परिवर्तन लाया जा सकता है ।

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