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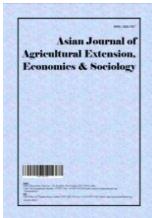
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## **Outcome of Awareness Programmes on Adoption of Soil Test for Fertilizer Management in Tiruchirappalli District of Tamil Nadu**

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### **Authors' contributions**

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

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### **ABSTRACT**

Soil testing is a chemical process by virtue of which requirement of nutrients for plant can be analyzed so as to sustain the soil fertility. The basic objective of the soil testing is to provide a service to farmers to better and more economic use of fertilizers and better soil management practices for increasing agricultural production in their farm. The present study was conducted to explore the outcome of awareness programmes on adoption of soil testing conducted by Krishi Vigyan Kendra (KVK), Tiruchirappalli and its recommendations by the farmers from 2012-2017 in Tiruchirappalli district of Tamil Nadu. Primary data was collected in relation to awareness programmes conducted and number of soil samples analysed in laboratory to look at the farmers adopted soil testing and its recommendations. The data revealed that under the awareness programmes conducted by the KVK were 52, 46, 47, 48 and 45 and during 2012-13, 2013-14, 2014-15, 2015-16 and 2016-17. Adoption of soils testing were 220, 190, 535, 603 and 695, farmers benefitted were 120, 105, 300, 393 and 411 and villages covered were 32, 25, 25, 115, 108 during 2012-13, 2013-14, 2014-15, 2015-16 and 2016-17 respectively. A critical examination reveals that

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the trend in adoption of soil testing was increased in all the years. In the study it was found that awareness programmes on soil test and fertilizer management has the positive influence in adoption of soil test and fertilizer management and it was concluded that the technology transformation tools like training, demonstration, group meeting, exhibition, farmers day, awareness campaign, and social media like News paper, Tele vision and radio programmes etc., are effective to enhance the farmer's knowledge, skill and attitude.

**Keywords:** Extension programmes; awareness; adoption; soil testing; farmers.

## 1. INTRODUCTION

The progress and prosperity of a nation to a very great extend depends on how its agriculture sector is advanced and modernized. The goal of extension is to ensure that increased agricultural productivity is achieved by stimulating farmers to use modern and scientific production technologies developed through research and to facilitate farmers' acceptance of innovative practices from research which should lead to increased output, productivity and income. The objective of any extension system is to be effective in communicating information that helps people in decision-making [1]. It is recognized as the main link between the farmers and research and crucial in communicating improved practices needed in agricultural development [2]. Research and extension should be closely linked in order to contribute appreciable and sustainable increase in food production. Abiola et al. (2014) stated that improved agricultural extension management system is recognized as a central mechanism to achieving increased food productivity through technology transfer.

Organizing awareness programme such as training, exhibition, campaign etc., for famers are the most important activities of KVK. Awareness programmes are vital and essential to induce motivation, create confidence and increase the efficiency of farmers. It is a process by which desire, ideas, positive attitude, knowledge and skill are inculcated and reinforced. It is an integral part of any development activity [3]. Agricultural extension is often viewed as comprising public, private and semi-public systems that make up a multi-institutional, multi-sectoral pluralistic system [4].

Agricultural producers use information technologies such as precision soil testing to acquire a comprehensive understanding of soil variability and crop nutrient requirements. Soil testing is a gateway technology to the adoption of other precision-agriculture technologies [5], which is why disseminating information about

advances in soil-testing strategies and how they are used is important. Soil Health plays a vital role to ensure agricultural production in a sustainable manner. Deteriorating soil health in Indian agriculture has become a cause of concern, which has led to sub-optimal utilization of farm resources. Particularly, imbalanced use of fertilizers, low addition of issues affecting agricultural productivity [6].

Agriculture is the backbone of Indian economy. Progress of India is very much dependent on the development of agriculture. The increased agricultural production depends upon number of factor of which soil fertility plays an important role. Soil fertility is identified by the nutrient status of the soil. Soil testing is known as a precise management method for determining and assessing soil fertility that enables farmers to assess nutrient status and the impact of management and identify what changes are needed each year [7]. The promotion of land, soil and water conservation measures has been a wide spread development to tackle degradation and improve productivity. As a result, state and central governments have launched various campaigns on soil, land and water conservation measures. The objective of this study was to recognize the outcome of extension activities played by KVK on adoption of soil and water testing and fertilizers management.

## 2. MATERIALS AND METHODS

Krishi Vigyan Kendra, Sirugamani, Tiruchirappalli district, Tamil Nadu was the second KVK established in India during 1977 with the financial assistance of Indian council of Agricultural Research, New Delhi under the control of Tamil Nadu Agricultural University, Coimbatore, TN. Soil and water testing laboratory was established during 2005 to improve soil health and fertility through soil, water testing. Attempts were also made to strengthen and revamp soil testing laboratories through the purchase of advanced soil testing

instruments to analyse micro nutrients content of soil under world soil health day programmes. Various extension programmes viz, farmers training, demonstration, exhibition, campaign, farmers day etc., were organized to farmers to encourage soil testing periodically and apply fertilizers based on Decision Supporting System for Integrated Fertilizer Recommendation software developed by TNAU. ICAR-KVK, Sirugamani, Tiruchirappalli district Tamil Nadu has conducted several awareness programmes under different situations between 2012-2017 to disseminate the message at large. This was intended to ensure a balanced supply of nutrients for maintaining soil health and improving crop productivity. Extension programmes and soil samples analysed in this laboratory were recorded periodically, computed and analysed to explore its effect on farmers adoption. The dependent variable of the study were: Number of awareness programme conducted, pattern of adoption of soil testing and

the factors that determined the adoption of soil testing.

### 3. RESULTS AND DISCUSSION

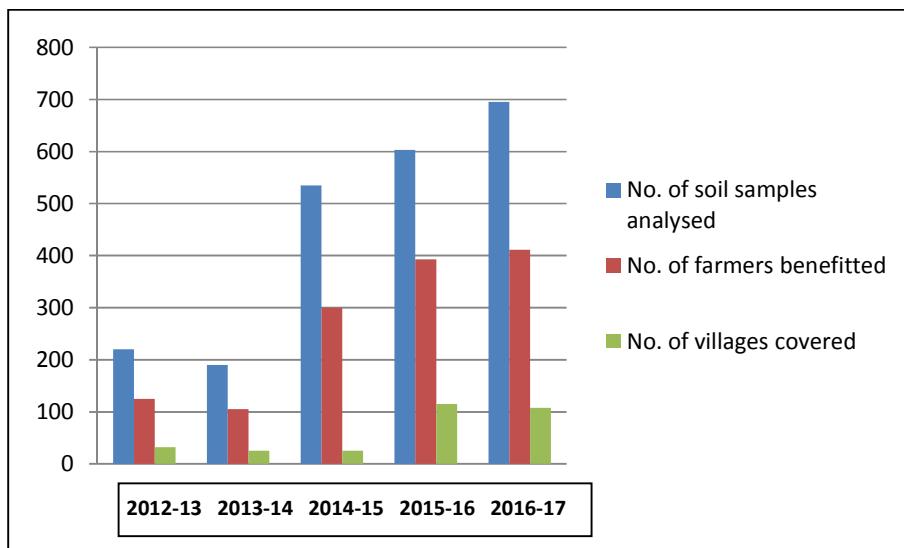
The awareness programmes such as training, demonstration, group meeting, exhibition, farmers day, awareness campaign, and social media like News paper, Tele Vision and All India radio programmes were conducted by KVK (2012-13 to 2016-17) was presented in Table 1. The data revealed that under the awareness programmes conducted by the KVK were 52, 46, 47, 48 and 45 during 2012-13, 2013-14, 2014-15, 2015-16 and 2016-2017 respectively. The results indicated that the farmers had high understanding about soil test recommendations. The reasons for high extent of adoption of soils testing is KVK scientists focused the farmers by conducting series of awareness programmes for the benefit of farming community, which facilitated high extent of adoption of soil testing.

Table 1. Details on extension activity conducted

S. no.	Name of the extension activity conducted	Year					Total
		2012-13	2013-14	2014-15	2015-16	2006-17	
1.	On campus training	2	4	1	2	2	11
2.	Off campus training	13	2	3	3	3	24
	Farmers						
3.	On campus rural youth	1	1	1	1	1	5
4.	Extension officials	1	7	1	1	4	14
5.	Vocational training	1	1	1	1	1	5
6.	Farmer group meeting	12	7	10	15	9	53
7.	Demonstration	2	2	5	2	-	11
8.	Exhibition	4	2	5	3	4	18
9.	Farmers day	7	7	2	4	3	23
10.	Campaign	1	3	4	1	3	12
11.	World soil day	-	-	1	1	1	3
12.	TV programmes	1	2	1	1	1	6
13.	Radio Programmes	1	2	1	2	2	8
14.	Published in dailies	2	2	4	5	4	17
15.	Booklet/article	4	4	7	6	7	28
	Total	52	46	47	48	45	238

Table 2. Extension activities vs adoption of soil testing

S. no.	Year	No. extension activity conducted	No. of soil analysed	No. of farmers benefitted	No. of villages covered	% increased
1.	2012-13	52	220	120	32	-
2.	2013-14	46	190	105	25	-16
3.	2014-15	27	535	300	25	59
4.	2015-16	48	603	393	115	64
5.	2006-17	45	695	411	108	68
	Total	218	2243	1329	305	



**Fig. 1. Number of farmers adopted soil and fertilizers recommendations (2012-2017)**

The finding of present study is in accordance with the findings reported by Yadav and Rraman [8].

The data on adoption of soils testing was presented in Table 2. The farmers benefitted were 120, 105, 300, 393 and 411 and villages covered were 32,25,25,115,108 during 2012-13, 2013-14, 2014-15, 2015-16 and 2016-17 respectively. Analysis of soil samples were 220,190,535,603 and 695 during 2012-13, 2013-14, 2014-15, 2015-16 and 2016-17 respectively. A critical examination reveals that the trend in adoption of soil testing was increased in all the years. Wide publicity given through electronic and print media, publishing booklets, using local cable net work which helped the farmers for high extent of adoption in soils testing and soil test based fertilizer management [8]. Kale and Wankhade [9], expressed the same views that adoption of soil test were also influenced by the education, extension contact, motivation, innovativeness and understanding on soil test recommendations. Diraj [3] reported that training is vital and essential to induce motivation, create confidence and increase the efficiency of farmer. It is a process by which desire, ideas, positive attitude, knowledge and skill are inculcated and reinforced. It is an integral part of any developmental activity.

Fig. 1. shows that the incremental changes in adoption of soil testing from 2012-2017. This might be due to the KVK intervention on the specific technology for farmers adoption. Morwal

and Pagaria [10] reported that the gain in knowledge depends on various factors like easiness of technologies, educational background of the participating farmers, extension approaches handled in technology transfer, farmers' attitude, ability of extension personnel, teaching and learning situation etc. Likewise the extent of adoption of a particular technology relies mainly on easiness and usefulness of the technology besides the socioeconomic status, access to the technological inputs etc. From the data it was evident that the farmers realized the importance of soil testing and adoption of soil test based fertilizer recommendation in agriculture. Similar trend was mentioned by Alagukannan and Velmurugan [11]. Hanchinal, et al. [12] found the similar results on training, exhibition and publication through local dailies play an important role in confidence building and clearing misconceptions about knowledge on IPR.

#### 4. CONCLUSION

On the basis of the above findings, it can be concluded that the technology transformation plays fundamental role in gain in knowledge, skill and attitude of farmers. The investigation has revealed that KVK intervention in conducting several awareness programmes such as training, demonstration, group meeting, exhibition, farmers day, awareness campaign, and social media like News paper, TV and radio programmes related to soil testing helped them in overall knowledge and adoption of soil testing

and fertilizer management in crop production. Increasing trend in adoption of soil testing and fertilizer management was seen among the farmers. This could be due to the multiplicity of the transfer of technology mechanisms followed by the KVK scientists in the operational areas especially for the benefit of farmers. Adoption of improved technologies to improve soil health and fertilizer management and calls for conduct of such awareness programmes under the transfer of technology by KVKs or extension centers.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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