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Factors Determining the Use of Soil Health Card (SHC) Recommendations in Kurnool District of Andhra Pradesh

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ABSTRACT

The study aimed to assess the factors that determined the adoption of Soil Health Card (SHC) recommendations under the Bhoochetana Project among farmers in Andhra Pradesh in two Mandals viz., Orvakal and Banaganapalli of Kurnool District. In the case of 'period of adoption', out of the 100 respondents studied, 47.0 per cent of them had followed the SHC recommendations all the five years of the implementation of the Bhoochetana project. The other respondents (53.0%) had followed the SHC recommendations for less than five years, and later discontinued. As far as 'years of adoption' was concerned, out of the total five years of adoption period (which is the maximum period), 47 respondents had followed the SHC recommendations for all the five years. This was followed by 9 respondents who had followed for four years, 21 respondents for three years, 14 respondents for two years, and finally 9 respondents for one year. With respect to 'extent of adoption', among adopters of SHC recommendations, cent per cent of the farmers had adopted the SHC recommendations as such without any deviation. As far as the factors that determined the use of SHC recommendations, to improve the soil health was the foremost factor (physical) expressed by 80.0 per cent of the respondents that determined the use of SHC recommendations, followed by good for crops and increasing yields (78.0%) under economic factors, extension functionaries of SDA (66.0%) under organizational factors, interest (61.0%) under psychological factors, past experience (55.0%) under personal factors, profitability (47.0%) under economic factors, and progressive farmer (45.0%) under social factors.

Key words: *Psychological factors, SDA, SHC, Organic matter*

INTRODUCTION

Soil health plays a vital role to ensure agricultural production in a sustainable manner. Non judicial use of fertilisers, low addition of organic matter and non-replacement of depleted micro and secondary nutrients over the years have resulted in nutrient deficiencies in soil. Knowledge level and adoption of Soil Fertility Management practices are relatively less[6].

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Positive effect of Soil Conservation measures provide stimulus to and shapes opinions about adoption of conservation practices that stops the problem[4] and Habtamu[2]. Hence, soil health needs has to be assessed at regular intervals to ensure that the farmers apply the required nutrients while taking advantage of the nutrients already present in the soil. The Soil Health Card carries crop wise recommendations of nutrients / fertilizers required for farms, making it possible for farmers to improve productivity by using appropriate inputs. The Government of Andhra Pradesh initiated the Soil Testing Project, 'Bhoochetana' Project in the year 2010-11 for distributing SHCs in order to encourage judicious application of fertilizers, to increase productivity of crops, and to maintain soil fertility. Adoption of Soil Conservation technologies is considerably influenced by different factors Kibemodetamoaga[3]. Therefore the study was taken up with the objective of assessing pattern of adoption of SHC and the factors determining the use of Soil Health Card recommendations by beneficiary farmers under the Bhoochetana Project in Andhra Pradesh state.

MATERIALS AND METHODS

The study was conducted in the Kurnool district of Andhra Pradesh state during the year 2014-2015. Ex-post Facto research design was employed. 100 beneficiary farmers of the Bhoochetana project were selected as the respondents through Proportionate random sampling technique from Orvakal and Banaganapalli mandals of Kurnool district.

In this study, Pattern of adoption of SHC recommendations was assessed in terms of 'Period of Adoption', 'Years of Adoption' and 'Extent of Adoption'. Period of Adoption is referred to the time period of adoption of the SHC recommendations by a farmer respondent between the year 2010-11 (Year of implementation of Bhoochetana project) and 2014-15 (Study period). Frequency distribution method was followed in order to categorize the respondents based on their time period of adoption.

Years of Adoption is operationalized as the actual years of adoption of SHC recommendations by a respondent which is a derivative of 'period of adoption'. The respondents were classified into different categories based on their frequency distribution.

Extent of adoption of SHC recommendations was operationalized as the degree to which a farmer respondent actually adopted the SHC based recommendations. The Extent of Adoption variable was measured by means of the Adoption Index followed by Godhandapani[1] and Theodore[5], which is given as follows.

Extent of Adoption = (Actual/ Recommended)* 100

The extent of adoption was worked out for each of the SHC recommendations for each farmer respondent. 'Factors that determined use of Soil Health Card (SHC) based recommendations' is operationalized as the reasons expressed by a farmer respondent towards the SHC recommendations in his/her farm. Factors that determined the use of SHC recommendations were categorized into personal, psychological, physical, social, economic and organizational.

List of probable factors influencing the adoption of the SHC based recommendations under each factor were identified and the respondents were asked to indicate their responses for each of the statements on a response pattern of Yes/No with scores of 2 and1 respectively. Summation of the score of all items gave the score of the respondents. Based on the scoring they were given ranks within each factor to know the most contributing factor for SHC adoption.

Findings and Discussion

The results are presented along with the inferences drawn in the light of the objective set forth for the study.

1. Pattern of adoption of SHC recommendations

The results of the analysis of pattern of adoption of SHC recommendations assessed in terms of 'Period of Adoption', 'Years of

Adoption' and 'Extent of Adoption' are presented in tables 1, 2 and 3 respectively.

a. Period of Adoption

The results of the analysis with respect to period of adoption of SHC recommendations are presented in table 1.

Table 1: Distribution of Respondents according to Period of Adoption of SHC recommendations

S. No.	Adoption Period	No. of Adopters (n=100)
1.	2010-11 to 2014-15	47
2.	2010-11 to 2013-14	9
2.	2010-11 to 2012-13	9
3.	2010-11 to 2011-12	6
4.	2011-12 to 2013-14	12
5.	2011-12 to 2012-13	8
6.	2012-2013	3
7.	2013-2014	4
8.	2014-2015	2

Table 1 shows that out of the 100 respondents studied, 47 of them had followed SHC recommendations all the five years. The remaining respondents (53) had followed the SHC recommendations for less than five years.

b. Years of Adoption

For the total five years of adoption period (which is the maximum period), 47 respondents had followed the SHC recommendations for all the five years. This is followed by nine respondents who had followed for four years, 21 respondents for three years, 14 respondents for two years and the rest nine respondents for one year.

The results of analysis of years of adoption of SHC recommendations are furnished in Table 2.

Table 2: Distribution of Respondents according to years of adoption of SHC recommendations

S. No.	Years of Adoption	No. of Adopters (n=100)
3.	5 Years	47
4.	4 Years	9
5.	3 Years	21
6.	2 Years	14
7.	1 Year	9
	Total	**100**

Nearly half of the respondents were observed to have adopted the SHC recommendations for the maximum period of 5 years, which may be as a result of the efforts taken under the Bhoochetana project. Discontinued adopters were to the tune of 53 per cent, who had followed the SHC recommendations for less number of years i.e., 4 and less. This may be due to the reasons such as inadequate follow-up by extension agency, no visible result, complex to adopt the recommendations and less knowledge as expressed by a considerable proportion of the respondents as constraints faced in adoption of SHC recommendations.

c. Extent of Adoption

Among adopters of SHC recommendations, cent per cent of the farmers had adopted the SHC recommendations as such without any deviation. Whereas among non-Adopters of SHC recommendations, an overwhelming

proportion (92.45%) of farmers fell under excess adoption category, and the rest (7.55%) belonged to less adoption category.

The results of the analysis of extent of adoption of SHC recommendations are presented in table 3.

Table 3: Distribution of Respondents according to Extent of Adoption of SHC recommendations

S.No.	Extent of Adoption Categories	Adopters of SHC recommendations (n= 47)		Non-Adopters of SHC recommendations (n= 53)	
		No.	**Per cent**	**No.**	**Per cent**
1.	Less adoption (-)	--	--	4	7.55
2.	Recommended Level of Adoption	47	100.00	--	--
3.	Excess adoption (+)	--	--	49	92.45
	Total	**47**	**100.00**	**53**	**100.00**

It was found that among the 100 respondents surveyed, 47 farmers had adopted the SHC recommendations whereby they were classified as Adopters. This may be due to the reason of high experience in SHM, interest to learn about SHM, value attribution to SHC recommendations, comparative value attribution, and high level of satisfaction on SHC recommendations.

It was observed that majority of the farmers (53) did not follow the SHC recommendations whereas they had followed their own dosages of nutrient application. Among them, it was seen that a vast majority had applied excess quantity of inputs. On enquiry they reasoned that the recommendations are less reliable, exact usage of fertilizer recommendations is difficult, unscientific method of soil sample collection, recommendations not suitable for specific village conditions, expectations of high returns by applying more than recommended doses, and following neighbouring farmers in applying fertilizers.

2. Factors determining the use of Soil Health Card recommendations

It has been observed that for majority of the respondents with respect to Personal factors, 'past experience' (55%) was the main factor followed by 'knowledge factor' (23%) which determined the adoption of SHC recommendations.

In the case of Psychological factors, interest was the major determining factor for nearly two-thirds (61%) of the respondents, followed by 'wisdom' (39%), 'conviction' (29%) and 'scientific orientation' (23%).

As far as Physical factors were concerned, more than three-fourths of the farmers (80%) opined that 'to improve soil health' as the determining factor, followed by 'cattle ownership' (32%) and availability of 'family labour' (11%).

With respect to Social factors 45 percent of the respondents opined that 'progressive farmers' as the reason for adoption of SHC recommendations, followed by 'neighbours / friends' (32%) and 'social recognition' (12%).

In the case of Economic factors, 'increasing yields' and 'good for crops' was the main determining factor for more than three-fourths (78%) of the respondents, followed by 'profitability' (47%) and 'less expensive' (39%).

In Organizational factors, 'extension functionaries of State Department of Agriculture' was the major determining factor for about two-thirds (66%) of the respondents

followed by 'private firms' (40%) and for the rest (15%) was 'input dealers'.

The distribution of respondents according to factors that determined use of SHC recommendations is given in Table 4 and figure 4.

Table 4: Distribution of respondents according to Factors that determined use of SHC recommendations

S. No.	Factors	**Percent** (n=100)
1.	**Personal**	
a.	Past experience	55.00
b.	Knowledge	23.00
2.	**Psychological**	
a.	Wise (Wisdom)	39.00
b.	Interest	61.00
c.	Conviction	29.00
d.	Scientific orientation	23.00
3.	**Physical**	
a.	To improve soil health	80.00
b.	Availability of Family Labour	11.00
c.	Cattle ownership	32.00
4.	**Social**	
a.	Neighbours / Friends	32.00
b.	Progressive Farmer	45.00
c.	Social recognition	12.00
5.	**Economic**	
a.	Good for crops and increasing yields	78.00
b.	Less expensive	39.00
c.	Profitability	47.00
d.	Availability of bank loans	--
d.	Subsidy	--
6	**Organizational**	
a.	Extension functionaries of SDA	66.00
b.	Input dealers	15.00
c.	Private firms	40.00

The top five factors expressed by the respondents that determined use of SHC recommendations were 'to improve soil health', 'good for crops' and 'increasing yields', 'extension functionaries of SDA', 'interest', and 'past experience'. Extension functionaries of SDA had taken sincere efforts to implement the Bhoochetana project and also farmers had medium to high level of contact with extension agency. Interest of the respondents to learn about SHC increased the use of SHC. The fifth major factor was past experience of the respondents. This may be due to the reason that prior to the Bhoochetana project, the SDA was already involved in promoting soil testing among the farmers. Besides these factors, the presence of the Adarsha rythu (Progressive farmer) in the villages and their efforts contributed to increase in usage of SHC.

Correlation of Extent of adoption with profile characteristics of farmers

Scientific Orientation, Perception on Soil Health, Interest to learn about SHM, Satisfaction Index and Follow-up of SHC recommendations had positive and significant relationship with Extent of adoption at 0.05 per cent level of probability and Annual income was significant at 0.01 per cent level of probability. Correlation values of extent of adoption with profile characteristics were given in the table 5.

Table 5: Correlation of profile characteristics of farmers with Extent of Adoption

S. No.	Independent Variables	r value (n=100)
1	Annual Income	0.213*
2	Scientific Orientation	0.437**
3	Perception on Soil Health	0.692**
4	Interest to learn about SHM	0.449**
5	Satisfaction Index	0.082**
6	Follow-up of SHC recommendations	0.609**

****** Significant at 0.01 level of probability

* Significant at 0.05 level of probability

Thus, it is inferred that higher the annual income, scientific orientation, perception on Soil Health, interest to learn about SHM, satisfaction index and follow-up of SHC recommendations, higher will be the extent of adoption of SHC recommendations.

CONCLUSION

In order to extend the benefits of this SHC to the farming community, factors determining it's usage are an important dimension to be considered. Extent of adoption is the function of annual income, scientific orientation, perception on Soil Health, interest to learn about SHM, satisfaction index and follow-up of SHC recommendations. Perceived Increase among the farmers about the factors, 'personal, psychological, physical, social, economic and organizational is the key principle to be focused to improve the use of Soil Health Card (SHC).

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