



A STUDY ON ADOPTION OF ECO-FRIENDLY TECHNOLOGIES AND CONSTRAINTS

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Abstract

Eco-friendly practices are simple, low cost, pollution free techniques and operations that are socially and economically accepted. There is an urgent need to develop farming techniques which are sustainable from environmental, production and socio economic point of view. The means to guarantee sufficient food production in the next decades and beyond is critical because modern agricultural production throughout the world does not appear to be sustainable in the long term. The agricultural community is thus setting its hopes on sustainable agriculture, which will maintain the cycles of input- output and ecosystem balance. A Study was conducted in Salem district to find out the adoption of eco-friendly technologies and its relationship with the profile of the respondents and the constraints in the adoption of eco-friendly technologies. The study reveals that 47.50 per cent were found to possess medium level of adoption and 32.50 per cent were found to possess low level of adoption. The education reveals appositively significant relationship with adoption. The study also reveals that farming experience showed a positive and highly significant relationship with the adoption of the respondents on eco-friendly technologies. Lack of knowledge to identify the bio-agents was the foremost personal constraints expressed by majority of the farmers.

Key words : Eco-friendly technologies, Farming techniques, ecosystem.

Introduction

Eco-friendly practices are simple, low cost, pollution free techniques and operations that are socially and economically accepted. There is an urgent need to develop farming techniques which are sustainable from environmental, production and socio economic point of view. The means to guarantee sufficient food production in the next decades and beyond is critical because modern agricultural production throughout the world does not appear to be sustainable in the long term. The agricultural community is thus setting its hopes on sustainable agriculture, which will maintain the cycles of input- output and ecosystem balance. While sustainable agriculture has become the umbrella under which many of the alternative farming systems fall, it is important to note that sustainable agriculture is really a long term goal, not a specific set of farming practices.

Green revolution in our country, while ushering the much needed self-sufficiency in food production also

paved way for intensive use of chemicals. At present the concern for environment is increasing and both scientists and farmers are searching for eco-friendly agricultural technologies. The eco-friendly agricultural technologies are recommended by extension workers and practiced by farmers.

Materials and Methods

The study was carried out in salem district. There are nine taluks in Salem district viz; Salem, Omalur, Mettur, Edapadi, Sankagiri, Attur, Vazhapadi, Gangavali, and Yercaud. There are eighty seven revenue villages in Omalur block. From the eighty seven revenue villages ten revenue villages viz., Omalur, Muthunayakanpatti, Sikkampatty, Karuppur, Pannapatti, Tharamangalam, Kadayampatti, Tholsampatti, Periyeripatti, Konagapadi were selected. The lists of farmers in the selected villages were obtained from village extension workers concerned. The respondents were selected by random sampling. The required numbers of respondents (120) were selected

from ten revenue villages. The data were collected from 120 farmers. To find out the adoption of ecofriendly technologies a well structured interview schedule was used for the data collection. The ecofriendly technologies recommended were chosen to test the knowledge and its relationship with the profile of the respondents. The data were collected from the selected farmers through personal interview method. To assess the adoption, a score of two was given for adoption and one for adoption.

Results and Discussion

Overall adoption of eco-friendly technologies

The overall adoption of respondents on eco-friendly technologies was assessed and the findings are given in Table1.

It shows that 47.50 per cent of the respondents had medium level of adoption. The respondents under low and higher levels of adoption category were 32.50 per cent and 20.00 per cent respectively. The reason for the respondents under medium level of adoption may be due to the effect of training programme conducted by state department of agriculture which might have motivated the respondents to adopt the recommended eco-friendly technologies in paddy.

Table 1: Distribution of respondents according to their overall adoption of eco-friendly technologies in paddy.

S.No	Category	Number of respondents	Per cent
1	Low	39	32.50
2	Medium	57	47.50
3	High	24	20.00
	Total	120	100.00

Practicewise adoption of eco-friendly technologies

Nineteen practices were selected for assessing the adoption. The results regarding the adoption of eco-friendly technologies are furnished in (Table 2).

Agronomic practice

The table 2 reveals that adoption level of the nursery technologies were very high, as it is evident from the table. Keeping the seeds in wet gunny bags to facilitate sprouting was practiced by 85.00 percent of the respondents.

Nutrient Management

A vast majority of the respondents (93.33 per cent) applied FYM in the correct doses in their nurseries. One fourth of the respondents (30.00 per cent) practiced *Azospirillum* seed treatment. Majority of the respondents stated that FYM being locally available, good source of nutrient and have good water holding capacity were the

important reasons influencing the adoption of FYM.

Transplanting

About 83.33 per cent of the respondents transplant the seedlings in the right age. The probable reason might be good knowledge and experience of the respondents towards transplanting.

Biofertilizers

About 51.66 per cent of the had adopted the *Azospirillum* seedling dip method. *Azospirillum* broadcast was adopted by 63.33 per cent of the respondents. The bio-fertilizers are eco-friendly, environmentally safe and low cost. This may be the probable reason for adoption of bio-fertilizer technologies.

Organic manure

A vast majority (93.33 per cent) of the respondents adopted the quantity of the FYM to be applied in the main field while 75.00 per cent of the respondents had applied the correct quantity of green manure in the field. This might be due to fact that the respondents were cautious about soil and environmental health.

Water management

The proper irrigation management was adopted by 88.34 per cent of the respondents.

Weed management

Most of the respondents had adopted the weed management technologies. Usage of clean seeds was adopted by 91.66 per cent of the respondents. Summer ploughing was adopted by 79.16 per cent of the respondents. Proper composting was adopted by 70.00 per cent of the respondents. This might be due to the fact that most of the respondents were literate and they know the advantage of summer ploughing and usage of clean seeds so that weed infestation can be controlled.

Pest control

Majority of the respondents (79.16 per cent) practiced trimming and plastering of the bunds. Neem use both as an oil spray kernel extract was adopted by 50.00 per cent and 35.83per cent respectively. This is in line with the findings of Vijayalan (2001). The light trap was adopted by only 10.00 per cent of the respondents.

Rodent control

Among the rodent control technologies bird perches were adopted by75.00 per cent of the respondents. The easiness of its use and no expense may be the reason for higher rate of adoption. The use of bottle in the field was adopted by only 12.50 per cent of the respondents. This is in line with the findings of Guna (2003).

Table 2: Distribution of the respondents according to their practice wise adoption level of eco-friendly technologies in paddy.

S.No	Eco-friendly technologies	Number	Per cent
Agronomic practices			
1	Keeping water in wet gunny bags in darkness for 24 hours to facilitate sprouting	102	85.00
Nutrient management			
2	<i>Azospirillum</i> seed treatment	36	30.00
3	Application of FYM/compost	112	93.33
Transplanting			
4	Transplanting seedling at the right age	100	83.33
Bio-fertilizers			
5	Seedling dip with azospirillum/5 pockets (200g each) per hectare	62	51.66
6	<i>Azospirillum</i> broadcast/10 pockets (200g each) per hectare	76	63.33
Organic manure			
7	Application of FYM/Compost 12.5 tonnes per hectare	112	93.33
8	Application of green manure 6.25 tonnes per hectare	90	75.00
Water management			
9	Maintaining 1.5-2.5cm water depending on seedling height	106	88.34
Weed management			
10	Usage of clean seeds	110	91.66
11	Proper composting	84	70.00
12	Summer ploughing	95	79.16
Pest and disease management			
13	Trimming and plastering of field bunds	95	79.16
14	Neem oil spray at 3 per cent	60	50.00
15	Neem kernel extract at 5 per cent	43	35.83
16	Light traps	12	10.00
Rodent management			
17	T-shaped bird perches	90	75.00
18	Use of bottle in field	15	12.50
Harvest			
19	Harvesting at 80 per cent grain maturity stage	110	91.66

Harvest

Harvesting at 80 per cent grain maturity as adopted by 91.66 per cent of the respondents.

The relationship of the characteristics of the respondents with their extent of adoption are given in (Table 3).

It could be observed from the table 2 that out of the thirteen independent variables three variables namely educational status, farming experience, and extension agency contact were found to be significant at 1 per cent level of probability. The variable scientific orientation were positively significant at 5 per cent level of probability. The correlation values of the remaining variable were found to be non-significant. The positive and highly significant relationship of education with adoption needs no explanation because it is a proven fact that education enables the people to adopt the eco-friendly technologies.

Farming experience showed a positive and highly significant relationship with adoption of the respondents. As the farming experience increases their experience made them to know the eco-friendly technologies.

Extension agency contact was found to have positive and highly significant relationship with the adoption.

Constraints experienced by respondents in adoption of recommended eco-friendly technologies in paddy

This section deals with the constraints as experienced by the paddy farmers for their non-adoption of eco-friendly technologies in paddy cultivation.

In accordance with the objectives, the constraints experienced by the respondents of various locations are presented under five heads namely, (a) physical constraints, (b) communication constraints, (c) personal constraints, (d) socio-economic constraints, (e) technological constraints, The results are presented in

Table 3: The relationship of the characteristics of the respondents with their extent of adoption.

Variables	Independent Variables	Correlation Coefficient
X1	Age	-0.023NS
X2	Educational status	0.193*
X3	Occupational status	0.004NS
X4	Farm size	0.016NS
X5	Farming experience	0.201*
X6	Annual income	-0.093NS
X7	Social participation	-0.097NS
X8	Extension agency contact	0.219*
X9	Mass media exposure	0.011NS
X10	Risk orientation	-0.234NS
X11	Scientific orientation	0.265**
X12	Economic motivation	0.036NS
X13	Innovativeness	-0.022NS

** Significant at 1 per cent

*Significant at 5 per cent level

NS-Non-significant

table 4.

Physical constraints

Regarding the physical constraints, labour scarcity (85.00 per cent) was the primary constraint expressed by most of the respondents and ranked first followed by non availability of inputs (82.00per cent), planning about the purchase and application of inputs (75.00 per cent) and poor quality of inputs (72.00 per cent) and lack of advanced.

Agriculture labourers being seasonal, there is a shortage of labour during peak season. The migration of the labour from agriculture to other occupations and to other sectors has also contributed the labour problem. Hence, majority of the respondents have ranked it as the most serious constraints.

Communication constraints

Lack of training (90.00 per cent) was the most seriously felt communication constraints expressed by majority of respondents followed by inability to attend training programmes (88.00 %), lack of information from

Table 4: Constraints experienced by the respondents in adoption of recommended eco-friendly technologies. (n=120)

S.No.	Constraints	Per cent	Rank
I	Physical constraints		
1.	Labour scarcity	85	I
2.	Non-availability of inputs	82	II
3.	Poor quality of inputs	75	III
4.	Lack of advanced planning about the purchaes and application	72	IV
II	Communication constraints		
1.	Lack of training	90	I
2.	Inability to attend training programmes	88	II
3.	Lack of information from change agent	85	III
4.	Weak extension service	80	IV
5.	Details given by change agent could not be understood	45	V
III	Personal constraints		
1.	Lack of knowledge to identify bio-agents	90	1
2.	Not convinced with the practice	85	II
3.	Lack of knowledge to identify pest & diseases	78	III
4.	Difficulty in using organic manure	69	IV
IV.	Socio-economic constrains		
1.	Lack of credit facilities	93	I
2.	High cost of labour	90	II
3.	High rate of interest	87	III
4.	High cost of inputs	83	IV
V.	Technological constrains		
1.	Lack of technical guidance	81	I
2.	Difficulty in using botanical pesticide	64	III
3.	Difficulty in maintaining traps	45	VI

change agent (85.00 per cent), weak extension service 80.00 per cent and details given by change agents could not be understood (45.00 %).

Lack of training was the most important physical constraints. Trainings to community purely eco-friendly paddy cultivation was limited. This finding is in line with the finding of Ganapathisankaran (1997).

Only few training were conducted by state department of agriculture in the village itself, majority of the programmes were held at distance places and also involvement in field operations due to lack of labour, coincidence of training with peak seasons etc., would have made it difficult for majority of the respondents to attend the training programmes.

Lack of information from change agent was the another most communication constraints. Majority of the respondents expressed that they did not come across any extension worker from the government development department. Some of the paddy cultivators had occasions to meet the extension personnel of agricultural department their office rarely. Lack of adequate staff and their occasional visits to the villages would have made the respondents to report this as one of the major constraints.

Conclusion

Most of the farmers (47.50 per cent) belonged to medium level of adoption followed by low (32.50 per cent) and high adoption (20.00 per cent). The effective utilization of mass media like radio television newspaper and farm magazine is extent there for creating wider dissemination of the eco-friendly agricultural practices. The findings on adoption of the farmers would help the extension system to formulate strategies for the adoption of eco-friendly technologies.

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