An Impact Analysis of Eco-friendly Agricultural Practices in Paddy

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Introduction

During the last four decades, spectacular progress has been achieved in agricultural production in the country. As compared with 51 million tonnes of food grain production in 1950-51, India achieved food grain production of 211.17 million tonnes during 2001-02, making it not only self sufficient in food production but also in a buffer stock of over 30 million tonnes. This achievement was because of high intensity cropping and cultivation of high yielding varieties that were highly input responsive. Farmers used chemicals and synthetic pesticides, fertilizers and growth promoters above the level of the recommended dose with a motive to get higher yields. In this process the soil, water and environment got polluted besides degradation of natural resources.

Paddy is the principal food crop and ranks second in the consumption of pesticides in Tamil Nadu. In order to protect the environment, the State Department of Agriculture had started advocating eco-friendly agricultural practices in paddy cultivation. In addition to government efforts, a number of non-governmental organizations (NGOs) are also making intensive efforts to promote adoption of eco friendly agricultural practices. Among the several NGOs in Tamil Nadu, Agricultural Man Ecology Foundation (AMEF) is a Netherlands based NGO which has made efforts to advocate and popularize eco-friendly agricultural practices. It has a network with other NGOs all over Tamil Nadu and has rendered technical and financial support to them for the promotion of eco-friendly agricultural practices.

Keeping this in view, a study was conducted to assess the impact of eco friendly agricultural practices among the paddy farmers who have been trained by the AMEF network NGOs.

Methodology

Pudukottai district in Tamil Nadu state was selected purposively since a number of AMEF network NGOs were involved in the promotion of ecofriendly agricultural practices in the district. Among the NGOs, two NGOs namely Biosphere and Manushi

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were selected randomly. A total of 120 paddy farmers trained under these NGOs were selected randomly and constituted the respondents.

For this study, expost facto research design was followed. A well-structured interview schedule was used to collect data on impact of ecofriendly agricultural practices. To make the study exhaustive the impact was studied under two heads namely direct and indirect impact. Under direct impact yield, income and cost of cultivation were studied. Under indirect impact the sub items like personal impact, social impact, economic impact and environmental impact were studied. Thus a set of 16 statements were selected and a score of three, two and one was given for the responses of 'increase', 'decrease' and 'no change' respectively. Percentage analysis was done to find out the number of respondents who were coming under the above categories.

Results and Discussion

The results of percentage analysis on impact of eco friendly agricultural practices are presented in Tables 1 and 2.

Direct Impact

The results of percentage analysis on direct impact of eco-friendly agricultural practices are presented in Table 1.

Table 1. Distribution of Trained Farmers according to Direct Impact of Eco-Friendly Agricultural Practices

(N=120)

Sl. No.	Impact	Increased		Decreased		No change	
		No	Per cent	No	Per cent	No	Per cent
I	**Direct impact**						
1.	Yield	39	32.50	31	25.83	50	41.67
2.	Income	35	29.16	32	26.67	53	44.17
3.	Cost of cultivation	17	14.17	80	66.66	23	19.17

It was quite interesting to note that, two fifths (41.67 percent) of the trained paddy farmers reported no change in yield level due to adoption of eco-friendly agricultural practices. The farmers in the study area were in the transition stage from chemical agriculture to eco-friendly agriculture. In this process, they observed initial stagnation in yield before it got stabilized which might be the reason for no change in yield.

With regard to income level, more than two-fifths (44.17 per cent) of the farmers expressed no change in the income level. In chemical agriculture cost of cultivation is higher due to internal inputs like chemicals, fertilizers and pesticides. This consequently results in

high yield, whereas in eco-friendly agriculture due to the application of locally available inputs the cost of cultivation is low. The yield is also comparatively less until it is sustained. Hence in the initial stage there might not be much variation in the income level.

Decreased cost of cultivation was expressed by two-thirds (66.66 per cent) of the trained farmers because the practices involved were cost effective and involved making use of locally available farmyard manure, green manure, green leaf manure / compost, biofertilizers and herbal repellents. This would have reduced the cost of cultivation to some extent.

Indirect Impact

The results of percentage analysis on indirect impact of eco-friendly agricultural practices are presented in Table 2.

Table 2. Distribution of Trained Farmers according to Indirect Impact of Eco- Friendly Agricultural Practices

(N=120)

Sl. No	Indirect Impact	Increased		Decreased		No change	
		No.	Percent	No.	Percent	No.	Percent
A.	**Personal impact**						
	Confidence in eco friendly cultivation	82	68.33	14	11.67	24	20.00
	Opportunity to know about development activities	76	63.33	5	4.17	39	32.50
	Exposure to media sources	68	56.67	17	14.17	35	29.16
	Consultation by fellow farmers	63	52.50	20	16.67	37	30.83
	Health condition	52	48.33	24	20.00	44	36.67
	Decision making power	76	63.33	12	10.00	32	26.67
	Social impact						
	Participation in social organizations	93	77.50	9	7.50	18	15.00
	Economic impact						
	Investment in savings	47	39.17	13	10.83	60	50.00
	Purchase of agricultural implements	36	30.00	17	14.17	67	55.83
	Purchase of milch animals	25	20.83	0	0	95	79.17
	Environmental impact						
	Soil fertility	109	90.83	0	0	11	9.17
	Improvement in environmental condition	104	86.67	0	0	16	13.33
	Beneficial insects	112	93.33	0	0	8	6.67

Increased confidence was noticed with more than two-third (68.33 per cent) of the paddy farmers. The slow but visible impacts of using eco-friendly agricultural practices in paddy cultivation probably were the reason.

Two-third (63.33 per cent) of the paddy farmers expressed that it had increased opportunity to know about the development activities. The NGOs in the study area formed farmers associations in the name of Vikas Vahini Voluntary Club (VVV) for promoting eco-friendly agriculture. The club facilitated the farmers to share information like developmental activities, with each other.

The NGOs in the study area screened film shows and video lessons on eco-friendly practices which might be the reason for 56.67 per cent of the farmers having increased exposure to media sources.

Participation in trainings, FFS, demonstration etc., by the trained paddy farmers made them resource persons in the village with other farmers seeking advisory services. This might be the reason for increased level of consultation (52.50 per cent) by fellow farmers.

About half (48.33 per cent) of the trained paddy farmers expressed that, quality rice, chemical free food and keeping quality are the advantages in eco-friendly agricultural practices which contributed to improved health condition of the farmers.. Increase in self confidence might be the reason for increasing decision making power by 63.33 per cent of the paddy farmers.

Regarding the social impact, involvement in farmers association and self help groups organized by NGOs paved the way for increased participation (77.50 per cent) in social organizations.

With respect to economic impact, they were at the initial stage, hence less impact was observed regarding their investment in savings, purchase of agricultural implements and purchase of milch animals.

Regarding the environmental impact due to the adoption of eco-friendly agricultural practices, improved soil fertility was reported by more than 90 per cent of the farmers, based on their own observations on seed and quality parameters of soil.

The farmers experienced the effect of eco-friendly practices in their own field by seeing the loosening of soil, increased quality of water, existence of earth worms and beneficial insects. This resulted in increased positive response from 86.67 per cent of the trained paddy farmers about the improvement in environmental condition.

As a result of eco-friendly agricultural practices like summer ploughing, FYM/ compost, Vermi composting, biopesticdes, biocontrol agents, the number of beneficial insects increased. A majority of the trained paddy farmers (93.33 per cent) reported the increased level of beneficial insects.

Conclusion

The overall observation on the impact of eco-friendly agriculture practices among trained paddy farmers showed that there was not much change in yield and income at the initial stage, but slightly reduced the cost of cultivation. It increased their confidence, opportunity to know development activities, improved exposure to media sources and consultation by fellow farmers, health condition, decision making power and participation in social organizations. It also created significant impact on increased soil fertility, improvement in environmental condition and beneficial insects.

Since the farmers in the study area have been practicing eco-friendly practices for the past three to four years only through the effort of NGOs through Farmers Field School, Self Help Group, V V V club etc., these results were seen. However, in future, the yield will be sustained if eco-friendly practices are followed continuously and also through the involvement and effort of government, private sector and NGOs.

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