Adoption and Impact of Natural Farming Practices in Batticaloa District

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Abstract

The practice of natural farming system significantly reduces the production costs. Currently, natural farming system is practiced by farmers in various parts of Sri Lanka. A substantial number of smallholder farmers from Vaharai region of Batticaloa district engaged in natural farming. A questionnaire survey was carried out among randomly selected farmers practicing natural farming and not practicing natural farming in Vaharai region to compare the farmers' perception on the impact of natural farming practices on soil fertility, soil erosion and labour input. The results revealed that mainly the women-headed families engaged in natural farming system in the study area. The practices like, ploughing, mulching, usage of compost, reduced usages of chemical fertilizer, chemical insecticides and chemical herbicides were highly adopted by farmers practicing natural farming. Moreover, according to farmers' perception, the natural farming practices significantly improved the soil fertility and reduced soil erosion in the region.

Keywords: adoption, compost, farming, soil fertility

Introduction

Natural Farming is an agroecology based diversified farming system which integrates crops and livestock and all functional biodiversity (Rosset and Martinez-Terres, 2012) to reduce costs of production by replacing chemical pesticides and fertilizers with bio-pesticides (eg. Jeevamritham), and adopting mulching and intercropping (Palekar, 2006; Rosset and Martinez-Terres, 2012). As this farming system drastically reduces the production costs, it is increasingly practiced by smallholder farmers located in various parts in Sri Lanka. Vaharai is one of the regions where natural farming is practiced by several smallholder farmers.

Vaharai area is located in Batticaloa district of Eastern Sri Lanka. The farmers, especially the farmers involved in vegetable farming have been practicing natural farming for last seven years (World Vision, 2016). However, the practices adopted by the smallholder farmers engaged in natural farming and its impact have not been studied. The present study was carried out to understand their adoption and the impacts of those practices on natural farming by the farmers in the study area.

Methodology

This study is based on extensive field survey using a structured questionnaire with farmers practicing and not practicing natural farming in Vaharai Divisional Secretariat division of Batticaloa district. A list of farmers who practice natural farming was obtained from World Vision Lanka, an international NGO which is supporting natural farming practices among smallholder farmers in the study area. Subsequently, a sample of 200 farmers were randomly selected from the list of beneficiaries of the World Vision Lanka. Further, 200 farmers not practicing natural farming methods were randomly selected from the study area for the study. A structured questionnaire consisting of questions related to the study was used to collect data from the selected 400

respondents. The collected data were analysed by using SPSS statistical package. Descriptive analysis was used to identify the frequency distribution.

Results and Discussion

Demographic characteristics of the farmers

Table 1. Demographic characteristics of farmer

Characteristics	Percentage of farmers
Gender	
Female	86.7
Male	13.3
Age	
15 – 30 years	19.6
31 – 45 years	36.1
46 – 60 years	34.4
61 – 75 years	9.0
76 – 90 years	0.9
Family size	
1 – 3 members	47.0
4 – 6 members	49.3
7 – 9 members	3.7

Table 1 illustrates the demographic characteristics of the respondents. The results revealed that majority of the respondents are women. Around 70% of the respondents are between the age of 31 – 60 years. Almost equal percentage of farmers (50%) has 1 – 3 (47%) and 4 -6 (49%) members in their family.

Comparison of farmers practicing and not practicing natural farming

A comparison between farmers practicing and not practicing natural farming methods is shown in Table 2. The farmers engaged in naturalfarming method of cultivation know about organic products very well whereas only 60.5% of farmers not practicing natural farming know about it. Further, all the farmers practicing natural farming used organic/natural fertilizers for cultivation. However, only 55% of the farmers not practicing natural farming used organic/natural fertilizers whereas about 41%of them used both organic and inorganic fertilizers for cultivation.

Adoption of natural farming practices

The natural farming was adopted through various practices. The adoption of those practices by the farmers practicing and not practicing natural farming was reported in Table 3.

The Table 3 shows various natural farming practices adopted by natural farming practicing and not practicing farmers. The natural farming methods such as ploughing, mulching, use of IMO, FAA, phosphate, egg shell and compost were highly adopted by almost all the farmers practicing natural farming except ploughing which was adopted by only 59% of the farmers. On the other hand, methods such as use of chemical fertilizer, chemical insecticide and chemical herbicide were highly adopted and practiced farmers not practicing natural farming.

Table 2. Comparison of farmers practicing and not practicing natural farming

Variable	Farmers practicing natural farming (%)	Farmers not practicing natural farming (%)
Known about organic product		
Yes	99.0	60.5
No	1.0	39.5
Prefer to consume organic product		
Yes	100.0	81.5
No	0.0	18.5
Fertilizer usage		
Yes	99.4	61.8
No	0.6	38.2
Type of fertilizer used		
Chemical fertilizer	0.3	4.2
Organic/natural fertilizer	99.7	54.6
Both	0.0	41.2
Purpose of food production		
Consumption	26.9	36.6
Marketing	1.9	2.5
Both	71.2	60.9

Farmers' perception on the impact of natural farming on soil fertility, soil erosion and the use of labour

The farmers' perception on impact of natural farming on soil fertility, soil erosion and use of labour was reported in Table 4.

The farmers' perception was that practicing natural farming methods greatly improves the soil fertility in the study area. Farmers perceive that natural farming methods such as use of natural and organic fertilizers, use of IMO and mulching contributed for the enhancement of soil fertility. Nearly 60% of the farmers adopting natural farming methods perceived that the adoption of natural farming reduced the soil erosion during the occurrence of flooding. Further, farmers in the study area perceived that practice of natural farming slightly increases the labour usage.

Conclusion

A study was carried out in Vaharai region of Batticaloa district to compare the farmers' perception on the impact of natural farming practices on soil fertility, soil erosion and labour input. Both, farmers practicing and not practicing natural farming were used as the sample for the study. The study concludes that, high percentage of woman farmers engaged in natural farming in the study area. The natural farming method of cultivation include multiple practices and all the practices were adopted by the farmers practicing natural farming in the study area. The study further concludes that farmers practicing natural farming perceive that practice of natural farming highly improved the soil fertility, and reduced the soil erosion during flood. Accordingly, measures should be taken to encourage the farmers for the adoption of natural farming methods for sustainable agriculture.

Table 3. Adoption of various natural farming practices

Natural farming practices with response	Farmers practicing natural farming (%)	Farmers not practicing natural farming (%)
Plough		
Yes	58.9	31.5
No	41.1	64.5
Mulch		
Yes	93.2	40.3
No	6.8	59.7
Indigenous Microorganisms (IMO)		
Yes	97.3	8.4
No	2.6	91.6
Fermented Amino Acids (FAA)		
Yes	96.8	8.8
No	3.2	91.2
Phosphate		
Yes	96.1	7.6
No	3.2	92.4
Egg shell		
Yes	96.8	7.6
No	3.2	9.4
Compost		
Yes	99.7	48.3
No	0.3	51.7
Chemical fertilizer		
Yes	31.7	72.7
No	68.3	27.3
Chemical insecticide		
Yes	28.5	72.6
No	71.5	27.3
Chemical herbicide		
Yes	4.5	76.9
No	95.5	23.1

Table 4. The impact of natural farming

Variables	**Farmers practicing natural farming (%)**	**Farmers not practicing natural farming (%)**
Land fertility		
- Much worse	00.0	00.4
- Same	00.0	01.7
- Better	24.9	19.7
- Much better	74.4	31.9
- Don't know	00.7	46.3
Soil erosion during floods		
- Much worse	00.0	00.4
- Worse	00.0	00.8
- Same	04.5	04.2
- Better	34.3	23.9
- Much better	60.8	23.9
- Don't know	00.4	46.8
Labour input		
- Greatly decreased		
- Decreased	17.5	07.6
- Same	21.4	02.2
- Increased	00.6	02.9
- Greatly increased	14.6	09.7
- Don't know		
	32.7	14.3
	13.2	53.3

References

Palekar, S. (2006). Zero budget natural farming: Five layers Palekar's model (Part I). Zero Budget Natural Farming Research, Development and Extension movement, Amaravati, Maharashtra, India.

Ranjitkumar, S., Yashavanth, B. S. and Meena, P. C. (2019). Natural Farming Practices in India: Its adoption and impact on crop yield and farmers' income. Indian Journal of Agricultural Economics. 74(3): 420-432

Rosset, P. M. and Martinez-Torres, M. E. (2012). "Rural social movements and agro ecology: context, theory and process. Ecology and Society, 17(3)

World Vision (2016). Baseline Evaluation. Natural Farming Project.