Knowledge level of the Farmers towards the Eco Friendly Conservation Practices in TheNilgiris District of Western Ghats

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Abstract
The earth's biodiversity is distributed in specific ecological regions only. India signed International agreements such as the World Heritage Convention attempt to protect and support the biodiversity rich areas. (Conservation International, 2013[1]).The Western Ghats regions is one among the world's most bio rich areas.The Western Ghats farm fields has been losing its fertility, bio diversity, ecological uniqueness due to long uses of chemical fertilizers, commercial farm management practices, chemical pesticides, etc. This is mainly due to the increasing population pressure on land and vegetation. Agro biodiversity occupies a unique place within the biological diversity and is essential to satisfy basic human needs for food and livelihood security. (Pandey, 2004[5]). Adoption of eco friendly conservation helps to improve the agro biodiversity region. Adoption of Eco-friendly conservation practices needs enough knowledge in the adoption process (Hossain et al., 2002[3]). To study the knowledge level of farmers, the Nilgiris district of Tamil Nadu was purposively selected due to the prevalence of wide biodiversity. In order to quantify the knowledge level of farmers,a standardized knowledge test was constructed.

The study revealed that majority of the farmers had medium level of knowledge level towards Eco- Friendly Conservation Practices. Further regression analysis was carried out with the profile of the farmers with the knowledge level of the farmers. Thus,educational status, social participation, innovativeness and leadership abilities were found to have significantly positive contribution to the knowledge level of the farmers in the adoption process. The socio-cultural linkage of the farming community plays significantly negative contribution to the knowledge level of farmers in the adoption process.

Keywords: Knowledge, knowledge test, Eco-friendly conservation practices.

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Introduction

The Western Ghats ecosystem's agricultural land has been losing its fertility, bio diversity, ecological uniqueness due to long uses of chemical fertilizers, chemical pesticides,and commercial farm management practices, etc. This creates new hazardous situation in the entire crop production system and bio diversity loss. (R. J. Daniels. 1996[7]).

The negative effects of green revolutions, chemical fertilizers and chemical pesticides not only contaminate surface water; it also affect the bio diversity and human health. In ecological agriculture, organic, mechanical, biodynamic, physical and cultural practices of agriculture are mainly used for environmental conservation and sustainable farm production. So, It is the correct time to regain the lost ecological status through the start of ecological agriculture in TheNilgiris District of Western Ghats (Conservation International, 2013[1]). Surajbhan (2014[6]) had reported that Site specificity – Adapting strategies for conservation agriculture systems will be highly site specific, yet learning across the sites will be a powerful way in understanding why certain technologies. Derpsch et al. (2011[2]) reported that conservation agriculture stresses the very beneficial impacts of a conservative way of cultivation on the global environment (soil, air, water and biodiversity), compared to traditional agriculture. Surajbhan (2014[6]) had reported that the conservation agriculture based resource conservation technologies (RCTs) also help in integrating crop, livestock, land and water management and environments.

In The Nilgiris district, Government organizations (like State Department of Agriculture, State Department of Forestry, State Department of Agricultural Engineering) and Central Soil and Water Conservation Research Institute (ICAR), The NGOs (Earth Trust, Key Stone Foundation and NAWA), are became very much concerned to promote

the ecological agriculture to control the negative effects of the indiscriminate use of chemical fertilizers and pesticides.Hence, the present study aimed to study the knowledge level and analyze the contribution of knowledge level of farmers towards the adoption of Eco Friendly Conservation Practices.

Methodology

The study was conducted purposefully in The Nilgiris district of Tamil Nadu and data were collected by using the interview schedule during the year 2014. Keeping in the bio diversity conservation, diversified agricultural practices and geographical variations in The Nilgiris district, all four blocks was taken for this study. The samples of 80 farmers were selected from each block. Totally, 320 respondents were selected from the district. The respondents have been selected based on the simple random sampling technique. The farmers interviewed in correspondence with the objective set forth. In order to study the knowledge level of farmers a standardized knowledge test was constructed and used to quantify the knowledge level of farmers towards eco-friendly conservation practices. Further regression analysis was carried out with the profile of the farmers with the knowledge level of the farmers.

Knowledge about the eco-friendly conservation practices

Knowledge is a pre-requisite for adoption of innovation, as this would enable the farmers to completely understand a technology and its relative advantage. To measure the knowledge level of farmers in respect of 10 selected eco friendly conservation practices, a standardized knowledge test was constructed. It was pre-tested with the farmers to assess the applicability and understand ability. After the identification and collection of different items under each item, i.e., total items were administered to Difficulty index and Discrimination index.

Difficulty index (Kerlinger, F.N. 1983[4])

A difficulty index used to measure the degree of difficulty in answering a particular question. For every correct response one score was assigned while no score was assigned to the incorrect answers.

$$\text{Difficulty index of } i^{th} \text{ question} = \frac{\text{Number of correct responses for the } i^{th} \text{ question}}{\text{Total number of respondents}}$$

Accordingly, questions with difficulty index of less than 0.21 and above 0.75 rejected as these represent either too easy or too difficult response.

Discrimination index (Kerlinger, F.N. 1983[4])

The use of this index is the next step in the process of selection of questions for knowledge test. It measures the distinguishing difference of a question between high and low groups.

$$\text{Discrimination index of } i^{th} \text{ question} = \frac{\text{Number of correct responses in high group-Number of correct responses in low group}}{\text{Total number of respondents in criterion group}}$$

Question having discrimination index of above 0.20 were selected.

The test thus prepared consisted of 10 items. Each item was dichotomized into 'correct' and 'incorrect' responses and assigned 2 and 1 score respectively. To find out the variation among the farmers,'t' test was performed. The cumulative frequency of the score was used to classify the respondent's knowledge levels.

Knowledge level of the farmers towards the eco-friendly conservation practices

Mean and standard deviation were calculated and respondents were classified as low, medium, and high based on their overall knowledge level. The distribution of respondents is presented in **Table 1**.

Table 1 Distribution of respondents based on their knowledge level of the eco friendly conservation practices (n=320)

Sl. No.	Knowledge level of the farmers	Number	Per cent
1.	Low	102	31.87
2.	Medium	144	45.00
3.	High	74	23.13
	Total	**320**	**100.00**

It could be observed from the Table 1, that 45.00 per cent of the farmers belonged to medium level of knowledge category followed by low (31.87%) and high (23.13%) level categories respectively. The reason for medium level of knowledge on the eco friendly conservation practices might be due to the fact that majority of them were literates with medium level of scientific orientation and extension agency contact. In order to acquire more knowledge andimprove the ecosystem of the district. The agricultural extension roles are very important in both research and field level extension activities.

Association and contribution of profile of farmers with their knowledge level in eco friendly conservation practices

To study the association and contribution of profile of the farmers' with their knowledge level towards the Eco friendly conservation practices, correlation and multiple regression analyses were carried out. The results are furnished with **Table 2**.

Table 2 Association and contribution of profile characteristics of farmer's knowledge level towards the eco friendly conservation practices

Sl. No.	Profile characteristics	Respondents			
		Correlation r	Regression ('b' value) coefficient	SE of b	't' value
1.	(X1) Age	0.041	0.026	0.077	0.336
2.	(X2) Educational status	0.544**	0.132	0.035	3.738**
3.	(X3) Occupational status	0.315**	-0.013	0.045	-0.282
4.	(X4) Farming experiences	-0.090	-0.017	0.078	-0.221
5.	(X5) Farm size	0.015	-0.016	0.071	-0.228
6.	(X6) Annual income	-0.058	-0.068	0.063	-1.082
7.	(X7) Social participation	0.521**	0.100	0.049	2.055*
8.	(X8) Economic motivation	-0.428**	-0.073	0.064	-1.144
9.	(X9) Risk orientation	0.306**	0.088	0.095	0.922
10.	(X10) Scientific orientation	0.478**	0.079	0.077	1.026
11.	(X11) Information seeking behaviour	0.413**	-0.049	0.089	-0.549
12.	(X12) Training undergone	0.389**	0.057	0.081	0.708
13.	(X13) Progressiveness	0.421**	0.118	0.084	1.406
14.	(X14) Perception on environmental degradation	0.262**	-0.147	0.104	-1.413
15.	(X15) Perception on environmental conservation	0.461**	-0.057	0.076	-0.756
16.	(X16) Innovativeness	0.521**	0.149	0.059	2.506**
17.	(X17) Self reliance	0.467**	-0.084	0.057	-1.473
18.	(X18) Contact with extension agency	0.405**	0.005	0.029	0.178
19.	(X19) Socio cultural linkage	-0.579**	-0.236	0.067	-3.543**
20.	(X20) Leadership abilities	0.512**	0.169	0.078	2.176*

$R^2 = 0.538$ F = 21.565   Constant = 1.506
*P < 0.05- Significant at 5 per cent level; **P < 0.01 Significant at 1 per cent level; NS–Non-significant; NA-Not applicable.

It could be observed from the Table 2 that educational status and innovativeness of farmer had positive and significant relationship with the knowledge level of the farmers towards the eco friendly conservation practices at one per cent level of probability. The variables like's social participation and leadership abilities of farmers had positive and significant relationship with the knowledge level of the farmers towards the eco-friendly conservation practices at five per cent level of probability and socio cultural linkageof farmers had negative significanct relationship to the knowledge level of the farmers.

Further, the findings of regression indicated that all the selected twenty variables acted as a cause to bring 53.80 per cent variation in the knowledge level of the farmers in the eco friendly conservation practices. The prediction equation fitted for adoption of eco friendly conservation practices.

Knowledge level of farmers in eco friendly conservation practices in The Nilgiris district of Western Ghats (Y) = 1.506 + 0.026 (X1) + 0.132 (X2) - 0.013 (X3) - 0.017 (X4) - 0.016 (X5) - 0.068 (X6) + 0.100 (X7) - 0.073 (X8) + 0.088 (X9) - 0.079 (X10) - 0.049 (X11) + 0.057 (X12) + 0.118 (X13) - 0.147 (X14) - 0.057 (X15) + 0.149 (X16) - 0.084 (X17) + 0.005 (X18) - 0.236 (X19) + 0.169 (X20)

This revealed that a unit increase in educational status, social participation, innovativeness, leadership abilities, *ceteris paribus* would result in an increase of 3.738 units, 2.055 units, 2.506 units and 2.176 units in overall knowledge level of eco friendly conservation practices. Also it is revealed that a one unit increase in socio cultural linkage, *ceteris paribus* would result in a decrease of 3.543 units in overall knowledge level of eco-friendly conservation practices.

It could be observed from the Table 2 that among the 20 variables, educational status, social participation, innovativeness and leadership abilities were found to have positively contributed significantly to the knowledge level of the farmers. The variables socio-cultural linkage was found to have negatively contributed to the knowledge level.

Conclusion

The eco-friendly conservation practices supports environmental conservation and sustainable farm production in the biosphere region of The Nilgiris district of Western Ghats. The study revealed that majority of the farmers had medium level of knowledge level towards Eco Friendly Conservation Practices. Further regression analysis was carried out with the profile of the farmers with the knowledge level of the farmers. Thus, educational status, social participation, innovativeness and leadership abilities were found to have significantly positive contribution to the knowledge level of the farmers in the adoption process. The socio-cultural linkage of the farming community plays significantly negative contribution to the knowledge level of farmers in the adoption process. And so, the study suggested that increase in educational status leads to knowledge on eco-friendly conservation practices with increased income. This gives better social participation, leadership abilities and innovativeness. So, to enhance the knowledge level of farmers, suitable cognition based educational and skill based trainings are suggested for further adoption of eco-friendly conservation practices and protect the biodiversity of the Nilgiris Biosphere Reserve region.

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