

EFFECTIVENESS OF INFORMATION SOURCES ON FARMER'S ADOPTION OF RECOMMENDED TECHNOLOGIES IN PADDY FARMING

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ABSTRACT

Farmers use many information sources and channels for obtaining agricultural information on improved agronomic practices. The rate of adoption of any technology depends on extension strategies. This study investigated the preferential agricultural information sources and channels of farmers for obtaining information on the recommended agronomic practices on paddy farming in Trincomalee district.

The study has found that the own experience and the fellow farmers were the most utilized sources of agricultural information related to improved agronomic practices on paddy cultivation. Agricultural extension officers and input dealers especially were the second most preferred sources. All the sample farmers applied double the recommended level of fertilisers and 90% of the farmers used pesticides above recommended level. About sixty one percent of the respondents adopted the manual harvesting methods even though the combine harvester was introduced. Method of crop establishment and farming experience were found to be low and negatively associated with information sources. Further, the decreased profit margin in farming, poor marketing facilities, lack of information sources, poor extension services and insecure ground situations were some of the problems faced by farmers. The results showed that present information sources and extension communication activities were not significantly related to farmer's awareness for improving agronomic practices on paddy cultivation.

Key words : Farmers, Agricultural Information

INTRODUCTION

Agriculture plays a major role in the Sri Lankan economy. The share of the Agriculture sector in Gross Domestic Product (GDP) declined further from 17.9% in 2004 to 11.9% in 2007 (Central Bank Report, 2008). Agriculture sector is a major contributing sector of the economy and a major sector for employment in the rural area. Over 90% of the population of Sri Lanka depends on rice as staple food (Department of Census and Statistics, 2005). Rice production has doubled since 1976, mainly due to the adoption of new improved varieties, fertilizer application and improved cultivation practices (Arnon, 2002).

Trincomalee district is one of the important areas which mainly depends on agriculture and specially paddy farming. In order to obtain an optimum yield in rice production good agronomic practices play a major role. However, these practices are mostly done in traditional manner which leads to lower yield because the rate of adoption of any technology depends on extension strategies. This study focuses on the key issues related

to the impact of information sources on adoption of recommended technologies in paddy farming as well as to highlight the current and potential problems that would hinder the improvement of agronomic practices in Trincomalee district. The specific objectives of the study were to analyze the recommended technologies adopted by paddy farmers, to explore the trend of usage of information sources by farmers, to identify the constraints faced by the paddy farmers and to propose suitable solutions in order to improve the adoption of innovations.

METHODOLOGY

Data collection

Both primary and secondary data were used in this study. Primary data were collected from paddy farmers of Trincomalee district, through pre-tested, structured questionnaires. The questionnaires were first pre-tested by personal interviews in two DS divisions and then the format was adjusted to enable the easy recording of responses from the farmers. Secondary data were collected from reports of Central Bank (2007),

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Census and Statistical (2005), Ministry of Agriculture, and from relevant Departments and Academics in Trincomalee district.

Description of the study area, sampling and method of analysis

Trincomalee district located in the Eastern Province of Sri Lanka and covers the land area of 2630.8 Km² and paddy is cultivated in an area of 45,680Ha (District Planning Secretariat, 2007). The survey was carried out in selected 5 DS divisions where comparably higher extent of paddy is cultivated namely Kanthalai, Thampalakamam, Muthur, Morawewa, and Kuchchaveli. For the survey, Agricultural Instructor (AI) ranges were selected as first elementary units and then Grama Niladari (GN) Divisions were randomly selected. Ten farmers were selected randomly in each GN division; altogether 50 farmers were selected in each DS division. Stratified random sampling method was used, for primary data collection. Data were analysed for estimating frequencies and descriptive statistics. The cross tabulations were done to obtain relationship among variables.

RESULTS AND DISCUSSION

Socio-Economic characteristics of respondents

The average age of the sample farmers was 42.8 years, with the range of 30 to 64 years. The average family size of sample farmers was 5.53 and with range of 3 to 11. In schooling majority of the farmers (80.8%) were up to 10 years, 12% of the farmers till G. C. E. (O/L) and 5.6% of the farmers upto G. C. E. (A/L) and the balance had undergone higher study. The average farming experience was 15.9 years and 90.3% of the respondents were full time farmers. Majority of farming families were earning more than Rs. 1500.00 (poverty line) as monthly income. The average farm size of the sample farmers was 7.44 acres and it varied from 0.5 to 35 acres. It was observed that the majority of females (81.7%) participated in the paddy farming practices directly or indirectly.

Varietal selection

In paddy cultivation, it was observed that about 98.3% of sample farmers were planting the recommended varieties (BG -94-1, BG-352 and Samba) about which information was obtained from the Extension officers and Agrarian Services Centre or fellow farmers whilst only 1.7% of farmers were planting local or traditional varieties (Pachchaiperumal, Murungakayan). Extension officer being easily accessible to the farmers might have

been contacted regularly by farmers in the area. The other information sources such as mass communication and group activities like field days, farmer tour, and agricultural exhibition were negligible. Training programmes were not generally used to improve farmer knowledge in variety cultivated.

Field visit of extension officer

Only 0.8% of the farmers reported that there were weekly visits by the extension officers and 68.4% of farmers reported monthly visits by the extension officers. And rest of the farmers reported that there were no visits by extension officers.

Type and quantity of fertilizers used

All the sample farmers used inorganic fertilizers and on an average 74% of sample farmers used V1 mixture as basal fertilizer and the rest of 26% of sample farmers did not use V1 mixture or any fertilizer as basal because they think their paddy lands were productive. 56% of farmers depended on their own experiences for the use of fertilizer, 23% of them received information from fellow farmers and the rest of the 21% of farmers received information from agrochemicals dealers and extension officers. All the sample farmers applied double the recommended level of fertilizers. The recommended level of urea, Triple Super Phosphate and Muriate of Potash were 90 Kg/Ha, 25 Kg/Ha, and 25 Kg/Ha respectively for Trincomalee District. (Department of Agriculture, 2001). About 70% of farmers depended on their own experiences for deciding the quantity of fertilizer applied, 22% of them received information from fellow farmers and the rest 8% of farmers received information from agrochemical dealers and extension officers.

Pesticide usage

All the farmers used different types of pesticides. It was also found that own experience was the major information source to pest control followed by fellow farmers, agrochemical dealers and extension officers as information sources. About 98% of respondents used agrochemicals and the rest of them used cultural and manual methods, to control the pests and diseases. Response of pesticide usage in different D. S. divisions were presented in table 1.

Selection of weedicide

The most popular chemicals used to control weeds were Roundup and Nomine, i. e., for an acre on an average 300ml of Roundup and 75.5ml of Nomine were used. The other weedicides used were Weedol, Come

on, Paraquate, Rounder, MCPA 40 and MCPA 60. Own experience, fellow farmers and agrochemicals dealers were the major information sources for selection and rate of application. Method of weeding was found to be negatively associated with information sources.

farmers. It was also found that own experience, extension officers, input dealers and fellow farmers were accorded first, second, third and fourth ranks respectively for getting information about the harvesting methods.

Table 1: Response on pesticide usage of farmers

Pesticides	Percentage of farmers using pesticides				
	Kanthalai	Thampalakamam	Muthur	Morawewa	Kuchchaveli
Weedicides	100.0	96.0	96.0	100.0	100.0
Fungicides	74.0	68.0	47.0	60.0	54.0
Insecticides	98.0	96.0	95.0	96.0	96.0

(Total percentage exceeds 100 due to multiple responses)

Selection of fungicides

Mainly two types of fungicides, namely Topsin and Dithalbin were used by farmers. The average application rates were 318.4 and 298.34 g/ac respectively. But, the rate of application of both Topsin and Dithalbin were above the recommended level because they thought higher rate of application would give quick and effective control of diseases. It was also found that own experience was the major information source for selection and rate of application.

Selection of insecticides

In Trincomalee district several types of insecticides were used for controlling insects in paddy cultivation. They were Admire, Selicron, Desis, Calcron, Mecthoate, Carbofuran, and Marshall. However Admire, Mecthoate and Marshall were mostly used in the study area. Admire was applied above the recommended level and Marshall was below the recommended level in all DS divisions. It was also found that own experience was the major information source to insect pest control, followed by fellow farmers, agrochemical dealers and extension officers.

Harvesting operations

Manual harvesting of rice, which is still relatively common, especially in tropical areas, is being increasingly replaced by mechanical harvesting with combine-harvesters. But in the study area it was observed that about 61.1% of the sample farmers adopted the manual harvesting methods and the rest 38.9% of farmer used combine harvester where information about the combine harvester was obtained from the extension officers, input dealers and fellow

Relationship between information sources and method of crop establishment

Method of crop establishment was found to be negatively associated with information sources. It was found that hundred percent of the respondents depended on their own experience for the crop establishment.

Relationship between information sources and pest and disease identification

Pest and disease identification was positively related to the information sources (See Table 2) in which own experience was the major information sources of pest and disease identification and neighbors and extension officers were accorded second and third ranks respectively.

Relationship between information sources and product disposal

It was found that product disposal that is marketing or sale of paddy or home use of paddy or using for seed purpose was positively related to information sources. (See Table 2) Here own experience, fellow farmers and input dealers were accorded first, second and third ranks respectively. It was found that in the study area 77.4% of farmers disposed their product for sale, home use and seed purposes, 18.1% of them used only for sale and 4.5% of farmers used only for seed purpose.

Correlation between agronomic practices of paddy farming

Among the agronomic practices selection of seed was positively and significantly related to harvesting method ($r = +0.192$ and $p < 0.05$) but negatively and significantly related to the threshing method ($r = -0.206$ and $p < 0.01$). Method of crop establishment was negatively and significantly related to water

management ($r = -0.264$ and $p < 0.01$) and pest and disease identification ($r = -0.216$ and $p < 0.05$).

Farming experience was positively and significantly associated with fertilizer used ($r = +0.258$ and $p < 0.05$) and pest and disease identification ($r = +0.265$ and $p < 0.01$).

Pest and disease identification was positively and significantly related to farming experience and water management ($r = +0.265, 0.356$ respectively and $p < 0.01$) and method of weeding ($r = +0.233$ and $p < 0.05$). Harvesting methods showed positive and significant relationship with pest and disease identification and water management ($r = +0.345, 0.239$ respectively and $p < 0.01$), and selection of seed ($r = +0.192$ and $p < 0.05$). Pest and disease control was negatively and significantly related to water management

($r = -0.426$ and $p < 0.01$). Threshing methods showed positive and significant relation to water management and method of weeding ($r = +0.240, +0.384$ and $p < 0.01$). It was also found that there was a positive and non significant correlation selection of seeds and pest and disease control ($r = 0.038$ and $p < 0.01$)

Product disposal showed positive and significant association with water management, methods of weeding, harvesting methods, and threshing methods ($r = +0.473, +0.383, +0.219, +0.384$ respectively and $p < 0.01$) but there was negative and significant correlation with pest and disease control methods ($r = +0.295$ and $p < 0.01$).

The problems faced by the farmers in paddy cultivation

The sample farmers faced many problems in their cultivation. Among the problems indicated, about 36% of the sample farmers reported decreasing profit margin from farming and it was the prominent problem; 23% of farmers reported that the pests and diseases were their main problem, 16% reported the bad weather, 11% indicated that due to the poor extension services they faced many problems in their cultivation and 14% mentioned some other problems like lack of agricultural labors due to the insecure ground situation prevailing in the Trincomalee district, poor quality seeds, lack of preferred variety and non availability on time are some of the problems related to seed paddy

CONCLUSIONS

Agricultural technology is changing fast from conventional to modern scientific methods and techniques. There is a tremendous gap between knowledge generation and knowledge utilization by

the farmers. Adoption of improved farm practices by the farmers varies from one farmer to another. Individuals tend to use different communication sources and channels for obtaining improved farm or agronomic practices in paddy cultivation. The choice and use of different information sources and channels of agricultural information rest on the credibility of the information sources or channels. The awareness among the farmers regarding the use of highly skilled agronomic practices to various activities was not developed over the years. Due to this the farmers have many difficulties to perform the right actions on different crop management practices. This study investigated the impact of information sources on the adoption of recommended technologies in paddy farming areas in Trincomalee District.

The study indicates that all the farmers used different types of pesticides to control pests and gained information about the agrochemicals from their own experience, fellow farmers and agrochemicals dealers and that paddy cultivation in Trincomalee district was characterized by the farmers of an average age of 42.8 years, their education level of 8.27 years of schooling, and with 15.9 years of farming experience.

The adoption of improved agronomic practices varied in sample DS divisions. It was noted that comparatively high percentage of adoption of improved agronomic practices was in Kanthalai DS division. This was mainly due to the location of a large farm of Department of Agriculture in Kanthalai and proximity of Kanthalai to the main suppliers of agricultural inputs in the Trincomalee district. But, when we consider the whole Trincomalee district the majority of farmers however had medium level knowledge of improved agronomic practices and the adoption.

As the input dealers or agrochemical dealers are giving more attention to marketing and input coordination activities, and less attention to improved agronomic practices, the problem of delay in technical knowledge transfer and the domination of farmers by dealers arise. Regarding the information on agronomic practices in paddy farming 68% of the farmers depended on their own experiences, 24% of them received from their fellow farmers and 6% of them received information from extension officers and only a small proportion (around 2%) of farmers received information from Agricultural inputs dealers, News paper, Radio, T.V, and Posters. These results clearly showed that the present information sources and extension communication activities were not significantly related to farmer's

Table 2: Correlation matrix of 15 selected variables (total sample)

Variable	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14	X15
X1=Method of land preparation	x														
X2=Selection of seed	.052	x													
X3=Variety cultivated	.000	0.001	x												
X4=Duration Of variety	.000	-.113	.124	x											
X5=Method of Crop Establishment	-.052	.023	.000	-.143	x										
X6=farming experience	.000	-.054	-.039	-.067	-.007	x									
X7=Water management	-.106	-.089	.000	0.136	-.264**	.024	x								
X8=Method of weeding	-.147	-.079	.000	.150*	.079	.039	.344**	x							
X9=fertilizer use	-.001	.069	.011	.069	.087	.258*	.175	.322**	x						
X10=Pest and disease identification	.059	.000	.000	.053	-.216*	.265**	.356**	.233*	-.212	x					
X11=Pest and disease control	.079	.038	.000	-.106	-.038	.206	-.424**	-.114	-.034	-.088	x				
X12=Harvesting method	-.077	.192*	.000	.019	-.113	-.058	.239**	.104	-.032	.345**	-.157*	x			
X13=Threshing method	-.015	-.206**	.000	-.092	-.113	.147	.240**	.384**	.021	.044	-.182*	.076	x		
X14=Product disposal	.037	-.079	.000	-.002	.079	.083	.473**	.383**	.081	.141	-.295**	.219**	.384**	x	
X15=information sources	.081	.005	.001	.008	-.005	-.047	0.008	-.039	.012	0.001	0.019	.080	.083	.009	x

knowledge in improved agronomic practices on paddy cultivation in Trincomalee district. Instead farmer's own experience and experience of fellow farmers were significantly related to their knowledge level of agronomic practices of paddy cultivation.

Although radio, television and news paper were the most preferred impersonal channels as perceived by the respondents, they said that there were no any fruitful agricultural programs related to improved agronomic practices or new technology in the mass media. So, it is suggested to arrange media forum groups (radio and television) to discuss the contents of radio/television agricultural programmes which would enable effective transfer on new technologies. It is also suggested that the government or Ministry of Agriculture should consider filling of existing vacant post of agricultural extension officers for the well being of farmers in the area and also it is recommended to establish a well-equipped agriculture information centre in the premises of local Agrarian Service Centre

(ASC) which should be equipped with radio, television, farm news papers and agriculture leaflets in order to provide necessary information to farmers in the area. Therefore, in order to achieve high yield levels it is important to change farmers' perception. This would help to increase their knowledge and adoption of innovations and finally the paddy yield.

REFERENCES

Arnon, I. (2002). *Modernizing of Agriculture in Developing Countries. John Wiley and Sons, New York, USA.* pp. 14-43.

Central Bank of Sri Lanka. (2007). *Annual Report, Colombo.3: 70-71.*

Central Bank of Sri Lanka. (2008). *Annual Report, Colombo.3: 30-35.*

Department of Agriculture (2001). *Administrative Report, Peradeniya, Sri Lanka.* pp. 35- 51

Department of Census and Statistics. (2005). *Paddy Cultivation Sheet. Ministry of Finance and Planning. Colombo, Sri Lanka.* pp. 75-86.