CONSTRAINTS OF ADOPTING ECOFRIENDLY RICE FARMING PRACTICES

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ABSTRACT

The study was conducted in two villages named Baravita and Ghogarkuti of Baravita Union under Fulbari Upazila of Kurigram District in the year 2005-2006. The main objective of the study was to determine the constraints of adopting eco-friendly rice farming practices. The majority of respondent having young age, primary level of education, large family size, medium farm size, low extension media contact, medium organizational participation, low innovativeness, medium cosmopoliteness, and moderately positive attitude towards IPM practices were high. Lack of extension services for eco-friendly farming practices, lack of government support for eco-friendly farming practices and limited alternatives to pesticides in case of severe infection were major constraints of the farmers on IPM practices. Department of Agricultural Extension (DAE) and Non-Government Organizations (NGOs) should organize regular motivational training programs on the benefit of IPM practices.

Key words: Constraints, eco-friendly, adoption, farming practice

INTRODUCTION

"Green Revolution Technology Packages," farming practices in Bangladesh were traditional and indigenous in nature. The use of agrochemicals was very much limited, insect pest and disease were mostly controlled by traditional methods. An integral input-output relation existed between crop husbandries on the one hand and the livestock husbandry coupled with other forms of vegetation on the other. The essence of farm practices was overwhelmingly dependent on natural or indigenously grown inputs. Mainly local varieties of crops were grown, restoration of the soil fertilities was achieved through use of compost and farm yard manure (FYM) and pests were controlled through indigenous devices based on local wisdom and experience. Population boom of the world tended in many respects to increase production level for feeding added population. For this, technological advancement that has been occurring in one part and in other part all efforts are being made for utilizing those technologies. Bangladesh is a small country having over population, became a perennially food deficit country in the late 1950s, Threats of mass starvation have also been several times since then owing to droughts and severe floods. The grim food situation in the 1960s triggered a search for directly production oriented programs aimed at accelerating agricultural growth through expanding the coverage of irrigation, increasing the use of fertilizer and pesticides and spreading High Yielding Varieties (HYV) of crops. With the help of this HYV seed-fertilizer pesticide technology, the so called "Green Revolution" was introduced in Bangladesh in 1960s (Rahman, 2001).

The environmental problems of developing countries are largely due to over exploitation of lands and now-a-days this is an issue of multidimensional and international. Agriculture and environment has a close relationship and interacts with each other in such a way that the health of agriculture depends on the proper functioning of environmental process and the health of environment depends upon a balanced agriculture (Conway, 1990). A number of undesirable costs of modern agriculture, in terms of loss of' soil fertility, loss of biodiversity, increasing health hazards, environmental pollution and other socio-economic problems have been identified and described by a number of researchers as compiled by Anonymous (1999), Rahman (2001) and Halim and Rahman (2002) .

The research work was under taken with two specific objectives such as to determine the constraints faced by the farmers in adopting eco-friendly farming practices and to determine and describe the following selected characteristics of the farmers: Age, education, family size, farm size, extension media contact, cosmopoliteness, innovativeness, organizational participation and knowledge on eco-friendly farming practices,

METHOLOGY

Locale of the Study

The locale of the study was two villages named Baravita and Ghogarkuti of Baravita Union of Fulbari Upazila under Kurigram District.

Population and sampling
An updated list of all the farmers of the selected two villages Baravita and Ghogarkuti were collected with the help of the SAAO. The number of farm families in Baravita and Ghogarkuti were 290 and 240 respectively. Only heads of these 530 farm families constituted the population. Among these farm families sixty respondents were selected on the basis of random sampling technique.

Selection of Variables
The selected characteristics of the farmers were age, education, knowledge on eco-friendly farming practices, family size, farm size, extension contact cosmopoliteness innovativeness, organizational participation and attitude towards IPM practices. Constraints faced by the farmers in adopting eco-friendly farming practices were the main focus of the study.

The Research Instruments
A structured interview schedule was prepared with consult of advisory committee for collection of relevant necessary information for the study. The interview schedule was pre-tested with 10 farmers selected at simple random method from the study area before collection of data. Finally data were collected from 60 respondents in the study area during 20 December to 20 January 2005-2006.

Data Collection
The researcher himself was collected necessary data with help of interview schedule. At the time of interview each question was asked in an understandable manner. After completion of interview, each statement was checked and verified to make sure that answer to each item had been properly recorded. To get valid and relevant information the researcher made all possible efforts to make them meaningful for the study. Respondents were assured of the confidentiality of the information delivered to the researcher.

Data Processing and Analysis
After completion of field survey data from all the interview schedules were coded compiled, tabulated and analyzed in accordance with the objectives of the study. All the responses in the interview schedule were given numerical coded values. Local units were convened into standard units. Qualitative data were converted to quantitative ones by means of suitable scoring whenever necessary. The responses to the questions in the interview schedules were transferred to a master sheet to facilitate tabulation.

Measurement of farmers' constraints in adopting eco-friendly and sustainable rice farming practices
Constraints faced by the farmers in adopting eco-friendly and sustainable rice farming practices were the main focus of the study. Constraints faced by the farmers in adopting eco-friendly and sustainable rice farming practices was measured on the basis of common problems which the farmers faced in adopting eco-friendly farming practices. Each farmer indicated the extent of hindrance caused by each of the problems by checking any one of the four responses. These were high, moderate, little and not at all and weights were assigned to these responses as 3, 2, 1 and 0 respectively. Constraint Facing Index (CFI) was computed taking selected constraints and by using the following formula:

Constraint Facing Index (CFI) = C_h x 3 + C_m x 2 + C_1 x 1 + C_n x 0

Where,

C_h = Total number of responses indicating high constraint facing
C_m = Total number of responses indicating moderate constraint facing
C_1= Total number of responses indicating little constraint facing
C_n = Total number of responses indicating no constraint facing

Constraint Facing Index (CFI) for any one of the selected constraint could range from 16 to 152 where 16 indicated no constraint facing and 152 indicated highest constraint facing.

RESULTS AND DISCUSSION
Ten characteristics of the respondents were identified for investigation. These were described in the following sub-sections:
Age: Age was measured in terms of actual years at the time of interviewing on the basis of respondents' response. Respondents' age ranged from 22 to 65 years with an average of 35.27. Table 1 indicates that half of respondents were young followed by 30 percent middle and 20 percent old aged respectively.

Education: It is the total number of academic years that a farmer received by getting formal education in the educational institutions. A score of 1 was assigned for each class passed by the farmer, 0 was assigned for no

education and so on. Computed educational scores ranged from 0 to 12 with an average of 4.33. Table 1 indicates that 30.0% farmers had no education and 40% primary, 23.3% secondary and only 6.7% farmers were higher secondary level of education. For eco-friendly and sustainable rice farming practices education helps the farmers to know the technologies by reading booklets, books and other printing materials. Majority of the farmers had Primary level education (40.0%).

Table1. Socio-demographic background of the respondents

Parameters	category	No. of respondent	percentage	Mean	SD
Age	Young	30	50.0		
	Middle	18	30.0	35.28	12.69
	Old	12	20.0		
Education	Illiterate	18	30.0		
	Primary	24	40.0	4.33	3.75
	Secondary	14	23.3		
	Above secondary	4	6.7		
Family size	Small	6	10.0		
	Medium	22	36.7	9.02	
	Large	32	53.3		
Farm size	Marginal	11	18.3		
	Small	12	20.0	1.66	1.43
	Medium	29	48.3		
	Large	8	13.3		
Cosmopoliteness	Low	11	18.3		
	Medium	35	58.3	11.0	4.08
	High	14	23.3		
Organizational participation	Low	12	20		
	Medium	37	61.7	11.18	4.22
	High	11	18.3		
Extension contact	Low	23	43.3		
	Medium	26	38.3	38.95	1.78
	High	11	18.3		
Innovativeness	Low	26	43.3		
	Medium	24	40.0	1.73	.73
	High	10	16.7		

Family size: Family size of a respondent was measured in terms of actual number (all dependents) of members in his family (including himself) during the interview period. Farmers' family members ranged from 5 to 14, the mean being 9.2. Table 1 showed that majority (53.3%) respondents had large family size followed by 36.7% medium family and 10.0% small family respectively.

Farm size: The farm size of the respondents ranged from 0.13 hectare to 3.21 hectares with an average of 1.66 hectares. Table 5 Showed that 48.3% farmer had medium which was followed by small farm (about 20%), large (about 33.3%) and marginal farm (18.3%) respectively.

Extension media contact: Scores obtained from the respondents ranged from 34 to 44; mean score was 38.95. Data furnished in Table 1 indicate that largest portion (43.3%) of respondents were included in low extension contact category compared to 38.3% in medium and only 18.3% in high extension contact category. The results indicate that the farmers did not have adequate contact with extension.

Organizational Participation: The computed scores of the respondents ranged from 0 to 30 the average participation was 11.18. Data in Table 1 indicate that the highest proportion 61.7% of the respondents had medium organizational participation which was followed by low organizational (about 20.0%) and high (18.3%) organizational participation respectively.

Cosmopoliteness: Cosmopoliteness of the respondents indicated whether they visited those places frequently, occasionally, rarely or not at all. Weights assigned to these visits were 4, 3, 2 and 1 respectively. Analysis of data in Table 1 indicates that (58.3) of the respondents had medium level of cosmopoliteness compared to 23.3% high and about 18.3 had low level of cosmopoliteness.

Innovativeness: The average innovativeness scores of the respondents were 1.73 with the standard deviation of 0.73. A wide majority 43.3 percents of the respondents had low innovativeness and 40.0 Percent had medium and 16.7% had high innovativeness scores. As low extension media contact, low level of education and less cosmopoliteness, innovativeness was compared to low.

Knowledge on eco-friendly and sustainable rice farming practices

Knowledge on eco-friendly and sustainable rice farming practices scores of the respondents could range from 16-64 while the observed scores ranged from 37-49 with the average 44.10 and standard deviation of 2.81.

Table 2. Distribution of farmers according to their Knowledge on eco-friendly and sustainable rice farming practices

Categories	Number	Percent	Mean	S. D.
Low level of knowledge	8	13.3		
Medium level of knowledge	44	73.3	44.1	2.81
High level of knowledge	8	13.3		
Total	60	100		

Table 2 Data contained in the table indicate that the highest proportion (73.3 percent) of the farmers had medium knowledge while same 13.3 percent had medium and low level of knowledge on eco-friendly and sustainable rice farming practices.

Attitude towards IPM practice

The attitude scores of the farmers of the study area ranged from 18 to 33, the mean being 23.33 and standard deviation being 3.16 respectively. Based on the observed attitude scores, the respondents were classified into three categories as shown in Table 3.

Table 3. Distribution of the respondents according to their attitude

Categories	Number	Percent	Mean	S. D.
Negative attitude	9	15.0		
Moderately positive attitude	44	73.3	23.33	3.16
Highly positive attitude	7	11.7		
Total	90	100		

Data presented in Table 3 indicate that the highest proportion (73.3%) of the farmers of the study area had moderately positive attitude as compared to 15.0 percent having negative attitude and 11.7 percent highly positive attitude.

Constraints in adopting eco-friendly rice farming practices

The scores of farmer's constraints in adopting eco-friendly rice farming practices of could range from 0to 48 while the observed scores ranged from 24 to 32 with the average 28 and standard deviation of 3.68. Based on farmer's constraints in adopting eco-friendly rice farming practices, respondents were classified into the following three categories as shown in Table 4.

Table 4. Distribution of farmers according to their constraints

Categories	Number	Percent	Mean	S. D.
Low constraints	8	13.30		
Medium constraints	45	75.00	28	3.68
High constraints	7	11.70		
Total	60	100		

Data contained in the above Table indicate that the highest proportion (75 percent) of the farmers had medium constraints while 13.30 percent had low constraints and 11.70 percent had high level of constraints on eco-friendly rice farming practices.

Table 5 Rank order to 16 selected constraints as faced by the farmers in adopting eco-friendly and sustainable rice farming practices

Sl. No.	Constraints	Constraints Facing index (CFI)	Rank order
1	Lack of extension services for eco-friendly farming practices	152	1
2	Lack of government support for eco-friendly farming practices	148	2
3	Limited alternatives to pesticides in case of severe infection	134	3
4	Lack of knowledge on integrated farm management	129	4
5	Non availability of biopesticide	126	5
6	Lack of extension activities about IPM	124	6
7	Lack of technical knowledge on eco-friendly farming practices	120	7
8	Low production due to limited use of fertilizer	105	8
9	Lack of capital and natural resources for integrated farming practices	98	9
10	Need more labour throughout the year	96	10
11	Unavailability of pest resistance variety of rice	93	11
12	Lack of knowledge about IPM	76	12
13	Complexity of understanding and practicing IPM	56	13
14	Lack of consciousness' on sound farming practices	46	14
15	Lack of broadcasting of mass media for the consequences of eco-friendly farming practices	36	15
16	Lack of proper training on eco-friendly farming practices	16	16

Table 5 shows that the most important constraint for the farmers in adopting eco-friendly farming practices was lack of extension services for eco-friendly farming practices (CF1=152), Farmers of Bangladesh are not habituated with eco-friendly and sustainable rice farming practices.

In the view point of socio-economic condition of the country, though government has efforts to support the farmers for adopting eco-friendly and sustainable rice farming practices reality no strong support is visible for helping farmers through providing specific financial and technical support.

In case of severe infestation the limited alternatives to pest control was also a major constraint for the farmers. Maximum crops are susceptible to pests. With hard labor, investment of large money, when a crop stands and severely infested by pests, farmers find no alternative to control pests without use of chemical pesticides. In some cases low infestation may recover through IPM and other eco-friendly techniques.

CONCLUSIONS AND RECOMMENDATION

Findings of the study and the logical interpretations of their meaning in the light of other relevant facts prompted the researcher to draw the following conclusions:

A majority of the farmers in the study area had medium constraints of adopting eco-friendly rice farming practices while only a few of them had low constraints and a lower portion of the respondents having high constraints. Obviously, this finding might be encouraging for present and future programs for developing sustainable agriculture and sound environment.

Findings indicate that farmers having more organizational participation faced low constraints. However, it could be concluded that imparting farmers in organizational activities could increase their knowledge, skills and capabilities to solve their problems.

As an overwhelming majority of the farmers were found facing medium constraints in adopting environmentally friendly farming practices. The Ministry of Agriculture and Environment should launch an educational campaign on the eco-friendly farming practices based on a specific program planning.

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