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Farmers' Attitude towards Sustainable Agriculture

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Abstract

The study was undertaken to determine farmers' attitude towards sustainable agriculture and to explore the relationships between thirteen selected characteristics of the farmers and their attitude towards sustainable agriculture. The study was conducted in three unions of Muktagacha upazila under Mymensingh district, namely Mancon, Boragram and Kashimpur. One hundred farmers were randomly selected as the sample of the study from a population of 630 farmers. Data were collected from the farmers using personal interview schedule during the 10 March to 9 April 2004. Descriptive statistics and Pearson's Product Moment Correlation are used to analyze data. Equal proportion of farmers (39%) having moderately favorable and highly favorable attitude towards sustainable agriculture. On the other hand, 4% and 18% farmers had highly unfavorable and moderately unfavorable attitude towards sustainable agriculture respectively. Farmers level of education, farm size, annual family income, training exposure, knowledge of environment friendly farming, experience of environment friendly farming practice and innovativeness had positive and significant relationship with their attitude towards sustainable agriculture. On the other hand, age, family size, farming experience, extension media exposure, cosmopoliteness and organizational participation did not show significant relationship with the same regard. The major problems confronted by the farmers in practicing sustainable agriculture were: lack of insects/ diseases resistance varieties of crops, lack of training facilities related to sustainable agriculture, lack of knowledge about environment friendly production technology of crops, and lack of knowledge about IPM.

Keywords: *Farmers, attitude, sustainable agriculture*

Introduction

Different modern agricultural technologies like modern varieties (MVs), pesticides, fertilizers, improved farm machineries *etc* are responsible for achieving higher yield of the crop. Besides, their contribution to meet the demand of the growing population, these practices are also criticised for being the factors of environment degradation. Population boom of the world triggered the people to increase production level for feeding the extra mouth. As a result, technological advancement has been taking

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place on one hand and efforts made for utilizing those technologies are playing as agent of pollution on the other. One of those is use of agrochemicals in agriculture. In Bangladesh, it is also considered that agro-chemicals are major polluters of agricultural or farm environment. Due to intensification of agricultural production, the fertilizer sale by production during the last two decades has increased. Consumption of the fertilizers had been increased dramatically during 1980-81 to 1997-98 (Black, 1999) in Bangladesh. On the other hand, the types of pesticides being used in Bangladesh are insecticides, fungicides, herbicides and rodenticides. Total pesticide consumption in Bangladesh during 1985 to 1995 (BBS, 1998) showed an increasing trend.

Therefore, these large scale use of agro-chemicals like pesticides, fertilizers, by the farmers for a long period as well as non-judicious use have been damaging our natural resources such as land, fishes, beneficial insects, water and soil microbes *etc*. Soils of Bangladesh has lost its fertility to a great extent due to over use of chemical fertilizers as well as the soil organic matter status reduced to 0.5% and acidity of the land has also increased (Anonymous, 1994). Chemical fertilizers also contribute to global warming by emitting Nitrous oxide, one of the green house gases in the atmosphere. Most of the emissions of Nitrogen oxide are from biotic sources with nitrogen fertilizer application accounting for one-fifth (Anonymous, 1992).

Sustainability of agriculture can be achieved through increased use of alternative environment friendly practices by our farmers. Thus, success of any motivational programmes depends on development of proper perception of our farmers regarding sustainable agriculture. Before launching any programme in that respect we have to have idea about how our farmers perceive these alternative agricultural practices. We should also have an idea about the extent of success of different development initiatives undertaken in the context of sustainable agriculture in terms of farmers 'attitude development.

The sustainability of food and agriculture was regarded as an issue of unparallel importance. This is because agriculture is central to human well being, because it is fundamental to environmental issues and because it is in crisis (Allen, 1993). Extension workers change their present practices and peruse the farmers to adopt alternative agricultural practice like sustainable agriculture. No available research has been reported in our country regarding farmers' attitude towards sustainable agriculture. Thus the present study has been undertaken with the following objectives:

- To determine the attitude of farmers' towards sustainable agriculture
- To find out the relationship between the attitude of the farmers and their selected characteristics
- To ascertain problem confrontation of the farmers in practicing sustainable agriculture

Methodology

The study was conducted in four villages of three unions namely Nimuria, Adpakhia, Suhila, Binod Bari under Muktagacha Upazila of Mymensingh district. The rationale behind selection of this Upazila is that it is one of the project area of LIFE-NOPEST phase II project of CARE-Bangladesh. The physical, social and cultural heritage of the people of this area are similar in many cases with other areas of the project. Muktagacha Upazila is mostly facilitated by Kacha, semipucca roads and a few pucca roads. Muktagacha Upazila is one of the leading project area which is located in Mymensingh district. Six hundred thirty (630) were the population of the study, among them 100 farmers (16% of the total population) were selected as the sample of the study by using simple random sampling.

In order to collect relevant information for the study, a structured interview schedule was prepared carefully keeping the objectives of the study in mind. The schedule contained both open and closed form of questions with a test constructed for measuring farmers' knowledge of environment friendly farming and a scale to reflect farmers' attitude towards sustainable agriculture. The attitude scale was developed following the Likert (1932) method of summated ratings. Eleven positive and eleven negative statements were carefully constructed to develop the scale. The positive and negative statements were arranged randomly throughout the scale to facilitate the respondents' real response to be revealed. A respondent was asked to indicate his opinion about each of the statements along with a five point scaling as "strongly agree" "agree' "no opinion" " disagree" and "strongly disagree" and corresponding scores were 5, 4, 3, 2 and 1 respectively. The attitude score could range from 22 to 110 where 22 indicate highly unfavorable attitude and 110 indicate highly favorable attitude. Data were collected during March 10 to April 09, 2004 through face to face interview by using structured interview schedule. Pearson's Product Moment Correlation Co-efficient (r) was computed for testing the relationship between the concerned variables.

Findings and Discussion

Farmers' attitude towards sustainable agriculture

The attitude score of the respondents ranged from 60 to110 against the possible range of 22 to 110, with an average score of 94.08 and standard deviation of 10.26. The distribution of the farmers according to their attitude scores has been presented in Table 1.

Table 1. Distribution of the respondents based on attitude towards sustainable agriculture

Categories with score values	Number	Percent	Mean	SD
Highly unfavorable(up to 72)	4	4	94.08	10.26
Moderately unfavorable and neutral (73-85)	18	18		
Moderately favorable(86-98)	39	39		
Highly favorable(above 98)	39	39		

Total	100	100

Data revealed that overall situation in respect to farmers' attitude towards sustainable agriculture was favorable in the study area. Near about fourth-fifth of the respondents (78%) had moderately favorable to highly favorable attitude towards sustainable agriculture while it is interesting to note that there was equal proportion of farmers (39%) having moderately favorable and highly favorable attitude towards sustainable agriculture. On the other hand, 4% and 18% farmers had highly unfavorable and moderately unfavorable attitude towards sustainable agriculture respectively. The respondent of the study area had moderate to highly favorable attitude towards sustainable agriculture because of providing training facilities, group discussion, information related to production by the LIFE-NOPEST phase II project of CARE-Bangladesh in the same area.

Selected characteristics of the respondents

A detailed explanations of the respondent's characteristics are not important for the present study, only summarized version of the same have been presented in the Table 2.

Table 2. Salient features of the selected characteristics of the respondents (N = 100)

Characteristics	Unit of measurement	Range of scoring		Mean	Standard deviation
		Possible score	Observed score		
Age	Years	-	18-80	39.41	12.64
Level of education	Years of schooling	0-16	0-14	5.09	4.54
Family size	Number	-	2-12	6.11	1.96
Farm size	Hectares	-	0.018-2.611	0.664	0.474
Annual family income	Taka	-	17300-213750	62300.95	40088.83
Training exposure	Days	-	0-260	16.74	28.98
Knowledge of environment friendly farming	Score	0-16	4-16	12.66	2.68
Farming experience	Years	-	5-70	28.89	12.89
Experience of environment friendly farming practice	Years	-	0-7	1.78	1.66
Extension media exposure	Scale score	0-45	3-36	22.27	8.18
Cosmopoliteness	Scale score	0-21	4-21	13.59	4.40
Innovativeness	Scale score	0-50	7-50	25.49	8.03
Organizational participation	Scale score	-	0-52	12.54	10.89

Relationship between dependent and independent variables

The purpose of this section is to explore the relationship of the selected characteristics of the farmers with their attitude towards sustainable agriculture. Results of the test of correlation co-efficient between the selected characteristics and attitude are shown in the Table 3.

Table 3. Relationship between independent and dependent variables

Selected characteristics	'r' values with 98 df
Age	-0.179
Level of education	0.223*
Family size	-0.034
Farm size	0.211*
Annual family income	0.268**
Training exposure	0.266**
Knowledge of environment friendly farming	0.245*
Farming experience	-0.177
Experience of environment friendly farming practice	0.256**
Extension media exposure	0.050
Cosmopoliteness	0.024
Innovativeness	0.328**
Organizational participation	0.140

** Significant at 0.05 level of probability*
*** Significant at 0.01 level of probability*

The Table 3 showed that farmers' level of education, farm size, annual family income, training exposure, knowledge of environment friendly farming, experience of environment friendly farming practice and innovativeness had positive and significant relationship with their attitude towards sustainable agriculture. On the other hand, age, family size, farming experience, extension media contact, cosmopoliteness and organizational participation had no relationship with the same regard. Education and training both are key factors for influencing the farmers' attitude towards sustainable agriculture due to increase the knowledge regarding the same.

Problem confrontation in practicing sustainable agriculture

As many as 14 problems regarding different techniques of sustainable agriculture have been identified and selected in problems conformation scale. Farmers were asked to give their response as 'not at all', 'low', 'medium', and 'high' and the scores assigned to these responses were 3, 2, 1 and 0 respectively.

The problems were ranked on the basis of value of Problem Confrontation Index (PCI) as calculated by using the following formula:

$PCI = P_n \times 0 + P_l \times 1 + P_m \times 2 + P_h \times 3$

Where, PCI= Problem Confrontation Index
P_n= Frequency of the farmers having not at all problem
P_l= Frequency of the farmers having low problem
P_m= Frequency of the farmers having medium problem
P_h= Frequency of the farmers having high problem

Table 4 indicate that "lack of insects / disease resistance varieties of crops" ranked first of farmers regarding sustainable agriculture.

Cultivation of disease resistant varieties requires less amount of insecticides, weedicides, fungicides, etc. resulting the cost of production. However, there are few disease and insect resistant varieties developed in our country with the limited available scientific facilities. On the other hand, different varieties released or developed were not adapted with existing climatic condition in our country and seeds of these crops remain beyond the reach of average farmers. "Lack of agricultural credit' ranked 2nd for all formers. To get high yield necessary inputs related to production like seed, fertilizer, pesticide, modern agricultural machineries are required. Majority of the farmers confronted a great difficulty in that respect, as they do not have enough deposits for all the year round. Therefore, they have to need to take credit from different sources. They claim that personnel of the credit sources (especially government banks) make delay and favour rich farmers while disbursing government credit.

Table 4. Rank order of the problem items for all farmers

Items	Extent of opinion				PCI	Rank
	High	Medium	Low	Not at all		
Lack of knowledge about IPM	41	43	14	2	223	5
Lack of knowledge about soil fertility management	26	59	14	1	210	8
Lack of knowledge about environment friendly production technology of different crops	53	35	12	0	241	4
Lack of knowledge about advantage of tree plantation	7	18	46	29	103	13
Lack of marketing facility of agricultural commodities	49	20	17	14	204	9
Lack of necessary training facility related to sustainable agriculture	62	29	8	1	252	3
Less extension contact by BS of DAE regarding sustainable agriculture	33	31	27	9	188	10
Lack of organic manure	28	13	16	43	126	12
Lack of knowledge of preparation of compost and Farmer yard Manure (FYM)	40	41	13	6	215	7
Lack of appropriate knowledge about balanced doses of fertilizers /pesticides	45	32	17	6	216	6
Lack of coordination and consciousness among farmers regarding sustainable agriculture	17	31	26	25	139	11
Lack of insects/ disease resistance varieties of crops	89	8	2	1	285	1
Adverse weather condition	1	7	12	80	29	14
Lack of agricultural credit when necessary	82	5	8	5	264	2

"Lack of necessary training facilities related to sustainable agriculture" ranked 3rd of the farmers for the same. As a complex process, sustainable agriculture necessitates adequate training facilities for improving skill and increasing knowledge to ensure its proper implementation at farmers' level. It requires knowledge on cultivation procedure, appropriate pesticides and fertilizer application, management, harvesting and irrigation practices of different crops. Farmers do not get necessary training facilities as and when required. Again, farmers' need may not be given due importance in selection of training subject. There may also remain indiscrimination in selecting farmers for training. That is why, necessary training facilities regarding sustainable agriculture can be an important way to change the attitude towards sustainable agriculture among the respondents. It should be noted that farmers' lack of knowledge about environment friendly production technology of different crops, lack of knowledge about IPM, lack of knowledge regarding balanced doses of fertilizer etc. were subsequently ranked at the later order.

Conclusion

The findings revealed that respondents of the study area had satisfactory level of attitude towards sustainable agriculture. This was so observed because of the development efforts taken by both GOs and NGOs specially CARE-Bangladesh's activities. Thus, it would be easier for a development organization to take specific programme to ensure sustainability of the agriculture in study area. It can be concluded that activities of CARE-Bangladesh like training, demonstration, field day, group meetings, other persuasive activities and overall technical and financial support might have contributed in favor attitude of farmers towards sustainable agriculture. The main problems confronted by the farmers in practicing sustainable agriculture were: lack of insects/ diseases resistance varieties of crops, lack of training facility related to sustainable agriculture, lack of knowledge about environment friendly production technology of crops, and lack of knowledge about IPM. It can also be concluded that any intervention regarding sustainable agriculture can minimize the difference between what our farmers are doing and what they should do in this context of environmental issues by changing their attitude. Regular training should be arranged on different alternative crop production practices. These would help the farmers to gain required knowledge of environment friendly practices. Farmers should be motivated to adopt different environment friendly farming practices. The experience of environment friendly farming would change the farmers attitude towards sustainable agriculture.

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