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Assessment of Farmers Perception on the Application of Chemical Fertilizers and Organic Manures in Chuadanga Region

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Abstract

The study was conducted in January to March 2012 of two villages of Alamdanga upazila under Chuadanga district to observe the knowledge of farmers about using the chemical fertilizers and organic manure and also to determine the awareness of the farmers towards the use of the chemical fertilizers and the use of organic manure. In order to conduct this research, a questionnaire survey was carried out and interview was taken total 100 farmers. This paper describes some findings that around 19% of the farmers had highly favorable attitude while 66% had moderately favorable attitude and 15% had slightly favorable attitude towards the use of chemical fertilizers and organic manure. Moreover by this research it is suggested that the education and annual income can change the attitude of farmers in the field of crop cultivation.

Key words: Chemical fertilizers, Farmers, Knowledge, Organic manures

Introduction

Bangladesh is one of the most densely populated countries of the world. To meet the food grain requirement for a growing population with limited land resources, we are increasing pressure on land. To maintain nutrient balance it is necessary to understand the land types, soil nutrient status, and nutrient demand of individual crops and residual effects of fertilizer nutrients. Determination of fertilizer, crops and cropping patterns are very important for sustainable crop production and it should be included in the new national fertilizer recommendation guide. The farmers use chemical fertilizers as a supplemental source of nutrients but they do not apply in balanced proportion (BARC, 2005). Moreover, organic matter content in Bangladesh soils is very low (<1.5%) and is being gradually depleted. Neither the chemical fertilizer nor organic manure alone can help achieve sustainable crop production. Even with balanced use of only chemical fertilizer, high yield level could not be maintained over the years because of deterioration in soil physical and biological environments (Islam *et al.*, 2011). In the recent years, intensive crop cultivation using high yielding varieties of crop with imbalanced fertilization has led to scarce soil nutrients to support plant growth and production. The use of chemical fertilizers mainly NPKS increasing steadily but they are not applied in balanced proportion. Moreover, emerging deficiency of micronutrients like Zn, B, Mn, and Mo has been reported some parts of the country particularly northwestern region. The organic matter content of Bangladesh soils in continuously decreases (Bokhtiar *et al.*, 2005). The addition of organic materials to soil through FYM, compost and organic residues has been reduced considerably because a major portion of these organic residues (cow dung & crop residue) is used up as fuel by the rural people. Keeping all these above facts in mind the present study was undertaken with the following objectives: 1. To evaluate the knowledge of farmers about using the chemical fertilizers and organic manure. 2. To explore the awareness of farmers about using the chemical fertilizers and organic manure.

Materials and Methods

The study was conducted in two villages namely Puraton Panchlia and Maniknagar Panchlia of Alamdanga Upazila under Chuadanga district. The Area was selected for time and resources availability, well communication facilities to carry out the research study in this area. The total numbers of farmers of the research villages were the population of the study. Puraton panchlia consisted of 310 households and Maniknagar panchlia consisted of 230 households. Out of 310 heads of Puraton panchlia village, 50 were selected randomly (16% of the population). Similarly out of 230 heads of Maniknagar panchlia village 50 were selected randomly (22% of the population). Thus, Out of 540 small farmers of two villages, total of 100 farmers constituted the sample for this study. A reserve list of 10 farmers was prepared keeping view to use these farmers if the farmers included in the sample were not available during collection of data. Data were collected through direct interview using of questionnaire. The interview schedule was prepared in Bangla for easy understanding and for the collection of data. The total number of farmers and the number of sample drawn were presented in Table-1.

Table-1. Distribution of the sample farmers in the selected village with sample drawn

Name of village	Total number of	Number of sample	Number of reserve
Puraton panchlia	310	50	05
Maniknagar panchlia	230	50	05
Total	540	100	10

Results and Discussion

The following characteristics such as age, education, farm size, annual income and knowledge of using chemical fertilizer and organic manure were used as indicator.

Age

The age of the farmers ranged from 25 to 78 years, the average being 45.75 with standard deviation of 13.27. Based on their age, the farmers were classified into three categories, namely young (25-35 years), middle age (36-50 years) and old (above 50 years). Analyzing of data revealed that the 52 % fell in the middle age category while 25% fell in the young age categories and 23% fell in the old age categories. By creating proper consciousness about the effect of chemical fertilizer and organic manure among the middle aged group followed by younger and old aged group, it may help to use chemical fertilizer and organic manure judiciously, that will contribute to maintain ecological balance and pollution free environment. In the study area majority of the respondents was from young to middle aged farmers, the development as well as extension agencies can pay a clear attention to the lion section of the farmers who were perceptive and productive for the use of chemical fertilizer and organic manure. According to psychologist these categories of people had more physical and mental abilities. Generally younger farmers tend to have broader outlook due to contact with mass media and become more aware about the recent innovations (Islam, 2001).

Education

The education scores of the farmers ranged from 0 to 13. The average was 3.81 with sd of 1.59. On the basis of their educational scores, the farmers were classified into five categories (Table 2), namely illiterate (0), can sign only (0.5) primary (1-5), secondary (6-10) and upper secondary level (above 10)

Table 2. Distribution of the farmers according to their education

Categories	Farmers (N 100)		Measurement	Mean	Standard deviation
	Number	Percent			
Illiterate (0)	0	0	Year of schooling	3.81	1.59
Can sign only (0.5)	23	23			
Primary level (1-5)	30	30			
Secondary level (6-10)	39	39			
Upper secondary level (above 10)	8	8			
Total	100	100			

Table 2 indicate that 39% fell in the secondary level category while 30% of the farmers fell in the primary level category, 23% of the farmers fell in can sign only, 10% of the farmers had upper secondary qualification and there is no single one illiterate. Education increases the power of observation, analysis, integration, understanding, decision making and adjustment to new situation of an individual. Educated farmers may get useful information through reading leaflets, booklets, books and other printed materials. Moreover, they posses desire for new and newer information related to their farming operations. Education broadens the power of understanding and develops the abilities of analyzing facts and situations in order to take correct decision.

Farm Size

The farm size of the farmers varied from 0.05 to 4.26 hectares. The average farm size was 1.39 hectare with a *SD* of 1.08. The farmers were classified into four categories (table3) based on their farm size namely landless (0.05-0.13 ha), small farm (0.14-1.0 ha), medium farm (1.0-3.0 ha) and large farm (above 3.0). The respondents had given information for their farm size in local unit of measurement; it was converted to hectare and was considered as the farm size score of a respondent. Table 3 reveal that 59 % farmers fell in the medium farm category while 34 % fell in the small farm category, 4 % fell in the large farm category and only 3 % fell in the landless category.

Table- 3. Distribution of the farmers according to their farm size

Categories	Farmers (N 100)		Measurement	Mean	Standard deviation
	Number	Percent			
Land less (0.05-0.13 ha)	3	3	Hectare	1.39	1.08
Small (0.014-1.0 ha)	34	34			
Medium (1.0-3.0 ha)	59	59			
Large (above 3 ha)	4	4			
Total	100	100			

Annual income

Annual income of the respondents ranged from Tk. 20 thousand to 200 thousand. On the basis of their family annual income the farmers were categories (Table-4) into three classes namely low, medium and high income group

Table- 4. Distribution of the farmers according to their annual income

Categories	Farmers (N 100)		Measurement	Mean	Standard deviation
	Number	Percent			
Low (20-50 thousand)	26	26	Rated Score	72.65	31.10
Medium (51-100 thousand)	51	51			
High (above 100 thousand)	23	23			
Total	100	100			

The average income of the respondents was 72.65 thousand taka with a standard deviation of 31.10 thousand taka. Table 4 indicates that 51% fell into medium income group, 26% low income group and 23% farmer's high income group. The respondents of the study area were not engaged only in agriculture but also many of them had other income sources such as service, business and other farm economic activities. High income farmers are generally respected persons in the society. This may be helpful to make them aware about use of chemical fertilizer and organic manure.

Knowledge on chemical fertilizers and organic manure

Attitude scores of the farmers varied from 1 to 8. The mean being 5.84 with *sd* of 2.58 (Table6).

Table 6. Distribution of the farmers according to their knowledge on chemical fertilizers and organic manure

Categories	Farmers (N 100)		Measurement	Mean	Standard deviation
	Number	Percent			
Low (1-5)	24	24	Score	5.84	2.58
Medium (6-8)	62	62			
High (above 8)	14	14			
Total	100	100			

Table 6. indicates that 62% medium knowledge categories while 24% fill into low knowledge categories and only 14% of the respondents fell in the high knowledge categories. . Better knowledge in the use of fertilizer and organic manure is helpful to make the individual aware of their environment. This finding is supported by Iqbal (2004).

Attitude of the farmers towards the use of chemical fertilizers and organic manure

Attitude scores of the farmers varied from 1 to 18. The mean being 11.86 with sd of 3.68 (Table 7). It is evident that from the Table7 that only 19% possessed highly favorable attitude while an overwhelming majority 66 percent respondent possessed moderately favorable attitude and 15 percent of the respondents possessed slightly favorable attitude towards the use of chemical fertilizer and organic manure. To maintain ecological balance of environment, favorable attitude on the environmental issue of the farmer is necessary (Mahiuddin, 2004).

Table 7. Distribution of the farmers according to their attitude towards the use of chemical fertilizer and organic manure

Categories	Farmers (N 100)		Measurement	Mean	Standard deviation
	Number	Percent			
Slightly favorable attitude (6-10)	15	15	Score	11.86	3.68
Moderate favorable attitude (11-15)	66	66			
Highly favorable attitude (16-18)	19	19			
Total	100	100			

Use of chemical fertilizer and organic manure by the farmer

Balanced fertilization ensures high productivity in accordance with nutrient demand by individual crops and for individual nutrient elements without causing harm to the environment.

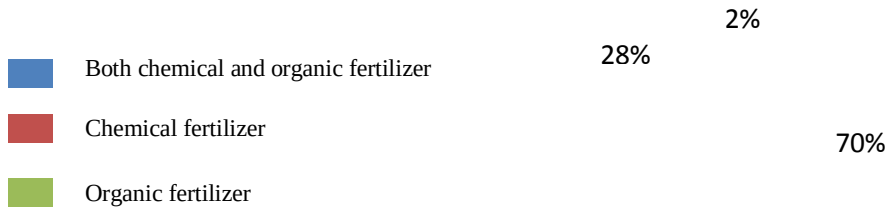

Fig. 1. Distribution of farmers according to their use of chemical and organic manure

Figure 1 showed that in the study area majority of the farmers (70%) used both chemical fertilizer and organic manures while 28% used only chemical fertilizer and 2% percent used only organic manure for their land cultivation. Fertilizer plays a crucial role in yield increase and is responsible for about 50 percent of the total production (BARC, 2005).

Conclusions

In order to sustain agricultural production, it is important to maintain soil physical and chemical properties by using organic and inorganic fertilizers in the best possible way. Chemical fertilizer and organic manure use has increased day by day, but not sufficiently to compensate for the demand. Beside this a large portion of organic manure used as fuel which leads to decreasing organic content of the soil. So to maintain the nutrient balance, it is necessary to use chemical fertilizer and organic manure in crop cultivation.

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