Problems Faced by the Farmers in Integrated Plant Nutrient Management (IPNM)

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Abstract

The purpose of this study was to investigate the farmers' problem in using Integrated Plant Nutrient Management (IPNM) and also to explore the relationship between the selected characteristics of the farmers and problems faced by them. The study was conducted at Birol upazilla under Dinajpur district. One hundred (100) farmers were selected randomly as the sample of the study from the population of 475 farmers of the selected upazilla involved in Integrated Soil Fertility and Fertilizer Management Project. Data were collected from the sample farmers by using a pre-tested interview schedule during 25th October to 30th November, 2006. Findings revealed that more than half (51%) of the farmers faced severe problem, while 38% and 11% faced medium and low problem respectively in using IPNM. Education, innovativeness, extension contact, cosmopoliteness and knowledge on IPNM of the farmers were found to have significant negative relationship with their problem faced in using IPNM. However, age, family size, farm size, annual family income and organizational participation of the farmers had no significant relationship with their problems faced in using IPNM.

1. Introduction

Agriculture plays a vital role in achieving self-sufficiency in food production, reducing rural poverty and fostering sustainable economic development of Bangladesh. Population bloom of the world has triggered the necessity to increase production level for feeding the extra mouth. Consequently, technological advancement occurs in one hand and on the other efforts are being made to utilize these technologies. One of these is the use of fertilizer in crop production. The fertility status of Bangladesh soils is declining over time due to cropping and use of higher doses of chemical fertilizers with little or no addition of organic manure. Organic matter in soil carries out many important functions to improve soil conditions for plant growth. It acts as a source of plant nutrients, improves soil structure, increases the cataion exchange capacity of soils, and enables plants to spread their root systems with ease to increase water holding capacity and uptake nutrients easily. Farmers have a tendency to use huge quantity of chemical fertilizers indiscriminately for better production. On the other hand, they also use their cow dung, crop residues as fuel. So the balance in fertility of soil is decreasing day by day. Unfortunately, most of the soils in Bangladesh have less than 1.5% organic matter while a good agricultural soil should contain at least 2.5% organic matter (BARC, 2005). To improve the soil fertility status it

is essential to follow Integrated Plant Nutrient Management (IPNM) such as using Farm Yard Manure (FYM), compost, green manuring crop (*dhaincha*, *soyabean*), etc. in the soil along with fertilizer. Because manure increases the organic matter content in the soil. Sustainable crop production cannot be achieved by using fertilizer alone and similarly, it is not possible to obtain higher crop yield by using manure only. IPNM is a combination of organic manure and chemical fertilizer and an important component of sustainable agricultural intensification, as well as crop, pest, soil and water management. IPNM is a modern system of nutrient management providing balanced and optimum nutrition to the crop. Integrated Soil Fertility and Fertilizer Management Project (SFFP) is being implemented in different areas of Bangladesh. Main target of SFFP is to promote the concept of IPNM. In this concept, the management of plant nutrients from all possible sources (inorganic and organic) in an integrated way is advocated for increased and sustainable yields. But the farmers face many problems to implement IPNM in their crop field. Sometimes they cannot collect the input for preparing manures and compost. On the other hand, use of chemical fertilizer is very easy to use, though it is very costly. Due to problematic condition most of the farmers depend only upon chemical fertilizers. This is high time to reduce the use of chemical fertilizer with increase use of IPNM (Ali, 2008). The above facts indicate

that there is a need to understand the problems faced by the farmers in using IPNM. Therefore, a study was conducted in that direction with the following objectives:

- To determine the extent of problem faced by the farmers in using IPNM,
- To determine and describe some of the selected characteristics of the farmers, and
- To explore the relationship between the selected characteristics of the farmers and the problems faced in using IPNM.

2. Materials and Methods

The study was conducted at Birol upazila under Dinajpur district of Bangladesh. Four hundred seventy five (475) farmers of SFFP were considered as the population of the study. From these 475 farmers, 100 were selected randomly as the sample of the study. Data were collected from the sample farmers with the help of a pre-tested interview schedule during the period from 25th October to 30th November, 2006. Age of the farmers was measured in terms of actual years from his/her date of birth to the time of interview. The education of the farmers was measured in terms of years of successful formal schooling. The family size was measured by the total number of members in the family of a respondent. The farm size of a respondent was measured by the total area of land on which his/her family carried out farming operation. Annual family income was measured by the total earnings of all family members of a respondent from different sources and a score of one (1) was assigned for each thousand taka. Organizational participation of a respondent was measured according to the nature and duration of his/her participation in different organizations. Innovativeness was measured by computing an innovativeness score on the basis of extent of use of eight (8) selected modern agricultural practices with weightage assigned as 5, 4, 3, 2, 1 and 0 to each of the practice for 'adopted within 1 year', 'adopted between 1-2 year, 'adopted between 2-3 years, 'adopted between 3-4 years', 'adopted after 4 years of hearing' and 'not adopted' respectively. Extension contact was measured by giving score against each of 12 selected media with assigning weights as 3, 2, 1 and 0 for 'regularly', 'occasionally', 'rarely' and 'not at all contact' respectively. Cosmopoliteness of a respondent was measured by assigning score against each of seven (7) selected places with weightage as 4, 3, 2, 1 and 0 for 'regularly', 'frequently', 'occasionally', 'rarely' and 'not at all' respectively. Knowledge on IPNM was measured by asking 13 relevant questions with weightage as 1, 2 and 3 according to the nature and difficulty of the question asked. Full score was given for correct answer, partial score was given for partially correct answer and zero (0) for wrong or no answer to a question.

After thorough consultation with the relevant experts and searching internet and relevant available literature, 20 problems were selected related to use of IPNM for the study. For each problem four alternative responses like 'severe', 'moderate', 'low' and 'not at all' problem were asked to the respondents to choose in order to severity of the problem with assigned scores as 3, 2, 1 and 0 respectively. Finally, problem faced in using IPNM was measured by adding all the scores obtained from all the 20 selected problems. Thus, the range of scores of problem faced in using IPNM by the respondents could range from 0 to 60, while 0 indicating no problem and 60 indicating severe problem.

3. Results and Discussion
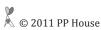
3.1. Selected characteristics of the farmers

Salient features of the selected characteristics of the respondent farmers like possible and observed range, number and percent distribution, mean, standard deviation (SD) and categorization are presented in Table 1. Findings revealed that majority proportion of the respondents were young and middle-aged (80%) with primary and secondary education (81%) and had small to medium family size (88%). Majority of the respondents had small to medium farm size (77%), low to medium annual family income (81%) and low to medium organizational participation (94%). Majority of them had low to medium innovativeness (90%), low to medium extension contact (76%), low to medium cosmopoliteness (82%) and low to medium knowledge on IPNM (91%).

3.2. Problems faced by the farmers in using IPNM

Score for the problems faced by the farmers ranged from 10 to 52 against a possible range of 0 to 60 with an average of 23.35 and standard deviation of 9.05. Findings revealed that more than half (51%) of the farmers faced severe problem in using IPNM compared to 11% and 38% faced low and moderate problem respectively (Table 2). Findings also revealed that most (89%) of the respondent farmers faced medium to high problem in using IPNM due to high cost of manure, lack of printed materials, cow dung/crop residues used as fuel, lack of credit facilities, lack of training facility, absence of demonstration plots, lack of money to prepare manure, etc.

3.3. Relationship between selected characteristics of the farmers and problems faced by them in using IPNM

Correlation analysis indicates that education, innovativeness, extension contact, cosmopoliteness and knowledge on IPNM of the farmers had negative significant relationship with their problems faced in using IPNM. Age, family size, farm size, annual family income and organizational participation of the farmers had no significant relationship with their problem faced in using IPNM (Table 3).

Table 1: Salient features of the selected characteristics of the respondents

Sl. No.	Selected character-istics	Probable range	Observed range	Categories	Farmers		Mean	SD
					No.	%		
1.	Age	-	20-67	Young (20-35)	38	38	40.21	11.54
				Medium (36-50)	42	42		
				Old (>51)	20	20		
2.	Education	-	0-10	Illiterate (0)	11	11	6.22	3.57
				Primary (1-5)	36	36		
				Secondary (6-10)	45	45		
				above secondary (>10)	8	8		
3.	Family size	-	3-10	Small (up to 4)	35	35	5.37	1.71
				Medium (5-7)	53	53		
				Large (above 8)	12	12		
4.	Farm size	-	0.31-1.38	Small (0.3-0.6)	32	32	0.7102	0.2203
				Medium (0.51-0.90)	45	45		
				Large (>0.9 1)	23	23		
5.	Annual income	-	20-88	Low (20-45)	29	29	53.21	17.19
				Medium (45-65)	52	52		
				High (>66)	19	19		
6.	Organizational participation	-	0-15	Low (0-5)	60	60	4.93	3.65
				Medium (6- 10)	34	34		
				High (>11)	6	6		
7.	Innovativeness	0-80	18-50	Low (18-30)	44	44	32.81	8.80
				Medium (31-45)	46	46		
				High (>46)	10	10		
8.	Extension contact	0-36	7-22	Low (7-12)	39	39	14.48	4.18
				Medium (13-18)	37	37		
				High (> 19)	24	24		
9.	Cosmopoliteness	0-28	7-20	Low (7-11)	48	48	12.38	3.52
				Medium (12-16)	34	34		
				High (> 17)	18	18		
10.	Knowledge on manures	0-30	8-22	Low (8-12)	34	34	13.89	3.38
				Medium (13-18)	57	57		
				High (>19)	9	9		

Table 2: Classification of the farmers according to the overall problems faced

Probable range	Observed range	Categories	Farmers		Mean	SD
0-60	10-52	Low problem (up to 22)	11	11	23.35	9.05
		Medium problem (23-37)	38	38		
		High problem (>38)	51	51		

Karim (1996) and Haque (1995) found that education of the respondents had significant negative relationship with their problem faced. Akanda (1993) and Rahman (1995) also found that education, innovativeness and extension contact had significant negative relationship with problem faced. Pramanik (2001) found that cosmopoliteness of the farm youth had significant negative relationship with their crop cultivation problems. It is quite logicfal that innovative, educated and knowledgeable persons having high extension contact and cosmopoliteness can minimize the problems in using any innovation.

4. Conclusion

Education, innovativeness, extension contact, cosmopoliteness

Table 3: Co-efficient of correlation between selected characteristics of the farmers and problems faced by them in using IPNM

Selected Characteristics	r	Table value of r with		
		a	b	c
1. Age	0.135[NS]	0.196	0.257	0.325
2. Education	-0.372**			
3. Family size	0.106[NS]			
4. Farm size	-0.141[NS]			
5. Annual family income	-0.157[NS]			
6. Organizational participation	-0.18[NS]			
7. Innovativeness	-0.371**			
8. Extension contact	-0.273**			
9. Cosmopoliteness	-0.345**			
10. Knowledge on IPNM	-0.203*			

r: Co-efficient of correlation ; [NS]=Not significant; *=Significant at $p<0.05$; **=Significant at $p<0.01$ a: ($p= 0.5$); b: ($p= 0.01$); c: ($p= 0.001$)

and knowledge on IPNM of the farmers had negative significant relationship with their problem faced in using IPNM. Therefore, it may be concluded that farmers' education, knowledge on IPNM may be increased by stabilizing adult learning centers and by providing training on IPNM. Innovativeness, extension contact and cosmopoliteness of the farmers may be increased by awareness campaign, motivational programmes and by increasing contact with them.

5. References

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