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Skill Development of Potato Farmers of Shibganj Upazila Under Bogura District: A Case of Trainings Provided for Farmers

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ABSTRACT

The study was carried out to determine and describe the training need of the potato farmers and to explore the relationships between the selected characteristics of the potato farmers and their training need. The village, namely Tatulgara under Buriganj union of Shibganj upazila under Bogura district was the locale of the study. Eighty potato farmers (out of total of 535) were randomly selected as a sample of the study. Data were collected from the sample potato farmers by using a pre-tested interview schedule through personal interview method during August to September, 2018. Training need of the potato farmers was the focus variable and selected eleven characteristics of the potato farmers constituted the explanatory variables of the study. Pearson's product moment correlation coefficient (r) was computed to explore the relationship between the selected characteristics of the potato farmers and their training need. Among the potato farmers, all of them had medium to high training need while 33.75% of them had high, 63.75% had medium and 2.5% of them had low training need. Results shows that potato farmers need high training on six aspects, these are: ways of potato disease control, preventive measure of disease control, proper identification of the disease of potato plant, proper dose of the pesticide application in the potato field, proper dose of the insecticide application in the potato field, and method of potato pest control. The household size and experience of potato cultivation had significant positive relationships with their training need. Level of education, communication exposure, social mobility and knowledge on potato cultivation had significant negative relationships with their training need. The concerned GOs such as Department of Agricultural Extension (DAE), and NGOs should arrange need based training programs for the potato farmers to increase potato production with desired quality.

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Introduction

Potato (*Solanum tuberosum* L.) is a cash crop of Bangladesh which grows in winter season. It is used as an alternative to rice or wheat in many countries but mainly as a vegetable in Bangladesh (Hussain, 1995). It contributes alone as much as 65% of the total annual vegetable production of Bangladesh (BBS, 2015). Potato is the world's leading vegetable crop along with the cheapest source of carbohydrates, and it furnishes appreciable amounts of vitamins as well as some minerals. Growth and yield of potato are affected by different factors, and among those, organic and inorganic manures play the most important role. Maximum yield studies, performed in small experimental plots under ideal conditions, show that yield of potato tubers can reach even up to 100 ton/ha. The land under potato production in Bangladesh has increased during the last decades, but the yield per unit area remained more or less static. During 2014-2015, nearly 8.9 million tons of potatoes were produced from 925 thousand hectares of land (BBS, 2015). According to an estimate by Bhuiyan (2002), net cultivable land would decrease from 8.42 million ha in 2000 to 7.89 million ha in 2025 and population would increase from 127.22 million in 2000 to 168.96 million in 2025. The per capita net cultivable land would reduce from 0.066 ha in 2000 to 0.047 ha in 2025 (Bhuiyan, 2002). The population has doubled in the last 30 years despite a decline in the annual population growth rate from 2.26 in 1961 to 1.47 in 2004. Potato is a staple food in some developed countries and which accounts for 37% of the total production in the world (FAO, 2005 and CIP, 2005).

There are a large number of farmers all over the country whose are directly involved in potato production, but the potato farmers have lacking of knowledge in potato production, post-harvest handling and marketing. The major problems are created by the farmers due to the lacking of technical knowledge, proper fertilizer application, credit facilities and disease resistant varieties. The concerned Government Organizations and Non-Government Organizations have addressed the problems and trying to resolve these problems through training, development of disease resistant varieties, adoption of new technologies and arranging credit facilities. So, it is needed to improve skills of the potato farmers through providing training, because training is the useful way of improving anyone's skills. Thus, the study was conducted to determine and describe the training need of the potato farmers regarding different aspects of potato cultivation, post-harvest handling and marketing, and to explore the relationship between the selected characteristics of the potato farmers and their training need. The selected characteristics were age, level of education, household size, farm size, amount of land under potato cultivation, annual income, experience of potato cultivation, communication exposure, social mobility, credit received, and knowledge on potato cultivation.

Methodology

The study was conducted in a village named Tatulgara under Burigonj union of Shibganj upazila of Bogura district. Bogura is the northern district of Bangladesh in Rajshahi division which is intensively covered by potato cultivation. For this reason, Bogura district was

selected purposively for this study. Shibganj upazila and Buriganj union were also selected purposively consulting with Upazila Agriculture Officer; those areas are intensively covered by huge potato cultivation. Tatulgara village was selected purposively out of 37 villages of Buriganj union due to convenient communication facilities and large number of potato cultivation.

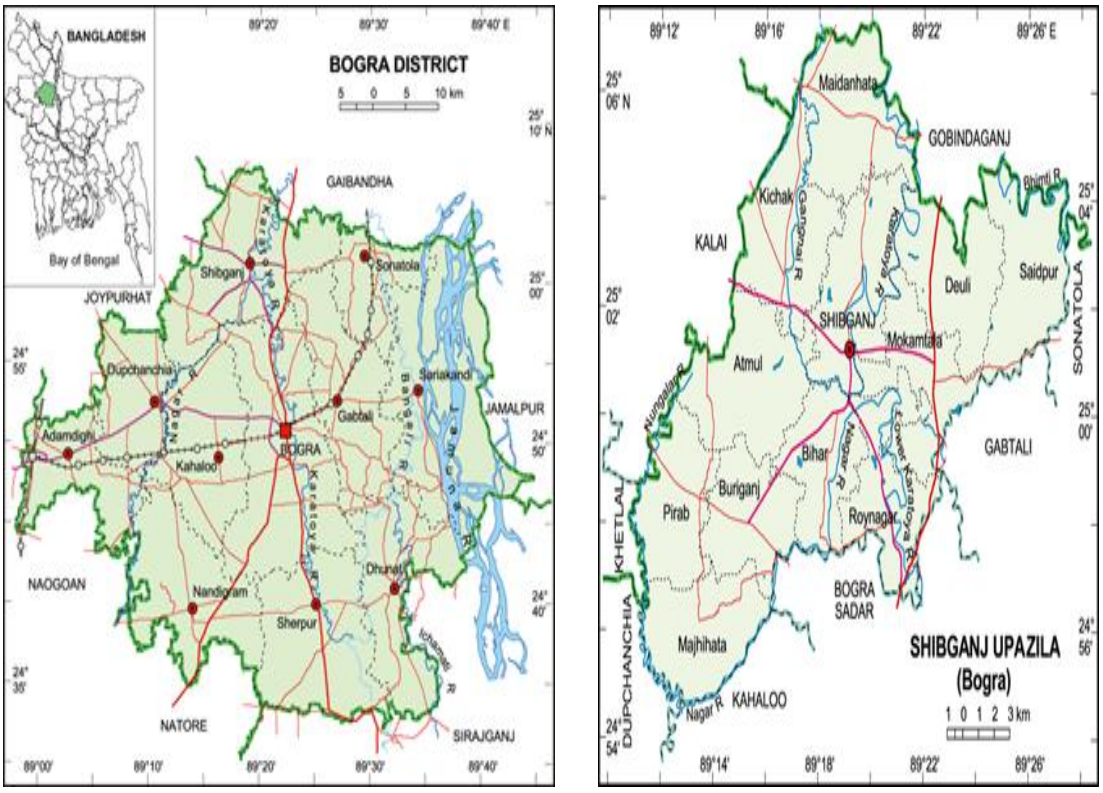

Figure 1 Study Area

Farmers who were involved with the cultivation of potato in the study village were the target population of this study. The total number of farmer engaged in potato farming in the village was 535, out of which 15% were selected by random sampling method as sample of the study. Hence, the sample of the study constituted of 80 potato farmers. A structured interview schedule was carefully prepared keeping the objectives of the study in mind. The survey was conducted from 1 August to 2 September, 2018. In the survey, the data were collected data from 80 potato farmers through structured interview schedule by the authors. The questions were clarified whenever any respondent had difficulties in understanding. Eleven selected characteristics of the potato farmers were considered for the study as explanatory variables and training need of the potato farmers was the focus variable of the study. To measure the training need of the potato farmers, eighteen aspects regarding potato

production were included. Each respondent was asked to indicate the nature of his/her training need to those aspects. Weights were assigned according to the nature of training need. The similar methodology was used by Yesmin (2007), Ferdousi (2010), Yeasmin (2013) and Sumon (2014) in their respective studies. The selected aspects were measured on a four-point rating scale. Scores were assigned as 3, 2, 1 and 0 for 'high', 'medium', 'low', and 'no' training need, respectively. Thus, total score of training need for each respondent for this variable could range from 0 to 54. Pearson's product moment correlation coefficient (r) was applied for data evaluation and hypothesis testing.

Results & Discussion

Socioeconomic characteristics of the Potato farmers

Table 1 shows that the average age of the potato framers was 44.14 years with standard deviation of 9.92 years and the highest proportion (61.50%) of the potato farmers were middle aged compared to 15% were young and 23.50% old. Yeasmin (2013) and Sumon (2014) in their respective studies found that maximum respondents in their study area were in middle-aged category. It is expected that middle aged and old potato farmers (about 85% of the respondents) will have more training needs than younger potato farmers.

Because, it is assumed that the young and middle-aged farmers were more active, innovative, and energetic to acquire trainings. Furthermore, the result shows that educational level of potato farmers ranged from 0 to 12 years, with an average of 3.98 years and standard deviation of 3.32. According to the result, among the respondents 16.25% were illiterate, 21.25% can sign only, 38.75% had education at primary level, and 23.75% had education at secondary level. No respondents were found from higher secondary level and higher study. Hoque (2011) and Alam (2001) found their study 53.85%, 34% and 63.39% respondents had secondary level education, respectively. This implies that farmers had no ability to acquire knowledge from different information sources as education helps to motivate farmers in acquiring useful information, technologies to produce more potatoes for their betterment through printed materials and mass media. The findings of this study, however, indicate that about 16.25% farmers were illiterate and about 21.25% farmers can sign only; the farmers of these two categories are supposed to show high training needs due to poor level of education. Based on the data, majority of the farmers (85%) had medium farm size and 72.50% farmers had medium land size of potato cultivation. About 66.25% of farmers had medium income and 91.25% had medium to high experience of potato cultivation. Thus, farmers had the capacity to grow more potato. Moreover, farmers had low to medium communication exposure, social mobility, and knowledge on potato cultivation, implying they need more care to increase their exposure and improve these aspects in their characteristics.

Table 1 Distribution of respondents based on socioeconomic characteristics (n = 80)

Characteristics (Measuring unit)	Score Range		Respondents			Mean	St. dev.
	Possible	Observed	Category	No.	%		
Age (Year)	Unknown	25-66	Young (up to 30)	12	15	44.14	9.92
			Middle-aged (31-50)	49	61.50		
			Old (>50)	19	23.50		
Level of education (Schooling year)	Unknown	0-10	Cannot read & write (0)	13	16.25	3.98	3.32
			Can sign only (0.5)	17	21.25		
			Primary (1-5)	31	38.75		
			Secondary (6-10)	19	23.75		
			Higher secondary (11-12)	0	0		
Household size (No. of member)	Unknown	4-9	Small (Up to 4)	9	11.25	6.53	1.46
			Medium (5-6)	8	10		
			Large (>6)	63	78.75		
Farm size (Hectare)	Unknown	0.69-2.38	Small (0.21-1.0 ha)	10	12.50	1.63	0.41
			Medium (1.01-2.0 ha)	68	85		
			Large (>2.0 ha)	2	2.50		
Area of potato cultivation land (Hectare)	Unknown	0.68-2.25	Small (Up to 1.0 ha)	21	25	1.56	0.43
			Medium (1.01-2.0 ha)	57	72.50		
			Large (>2.0 ha)	2	2.5		
Annual income ('000' taka)	Unknown	85-275	Low (Up to Tk. 100)	9	11.25	213.95	38.94
			Medium (Tk. 101-200)	53	66.25		
			High (>Tk. 200)	18	22.50		
Experience of potato cultivation (Year)	Unknown	7-50	Less (Up to 10)	7	8.75	26.10	10.49
			Medium (11-20)	58	72.50		
			High (>20)	15	18.75		
Communication exposure (Score)	0-36	10-30	Low (Up to 12)	22	27.5	17.40	4.99
			Medium (13-24)	52	65		
			High (>24)	6	7.5		
Social mobility (Score)	0-18	4-16	Low (Up to 6)	20	25	9.40	2.86
			Medium (7-12)	58	72.50		
			High (>12)	2	2.5		
Credit received ('000' taka)	Unknown	0-150	No credit	56	70	13.06	34.52
			Low credit (Up to 20)	15	18.75		
			Medium credit (21-100)	7	8.75		
			High credit (>100)	2	2.5		
Knowledge on potato cultivation (Score)	0-20	6-19	Low (Up to 7)	27	33.75	14.06	3.27
			Medium (8-14)	46	57.50		
			High (>14)	7	8.75		

Overall training need of the potato farmers

The observed training need scores ranged from 12 to 50 with an average of 37.42 and standard deviation of 6.27.

Table 2 Distribution of the potato farmers according to their overall training need (n= 80)

Respondents			Mean	SD
Category (Score)	Number	Percentage (%)		
Low need (Up to 18)	2	2.5	37.42	6.27
Medium need (19-36)	51	63.75		
High need (>36)	27	33.75		
Total	80	100		

Data presented in the Table 2 show that the highest proportion (about 63.75%) of the potato farmers had medium training needs while the rest 33.75% and 2.5% of them had high and low training need, respectively. Similar results were found by Ferdousi (2010), Ahmed (2007), Yeasmin (2013) and Sumon (2014). They found that majority of the respondents had medium to high training need in their respective studies. The findings clearly showed that 47.5% of the potato farmers had medium to high training need on various aspects regarding production, intercultural operation, post-harvest handling and marketing of potato. The potato farmers in the study area could not perform their jobs satisfactorily due to lack of knowledge, education, social mobility, communication exposure etc. about the expected activities.

Aspect-wise training need of the potato farmers

Eighteen aspects of potato farming were selected to determine the extent of training need of the potato farmers. The computed total score of all the aspects have been shown in Table 3. Observed range of total score was 18-240. On the basis of total score, the aspects were classified into three categories as shown in Table 3. It can be mentioned here that much difference was observed between the total score of aspects of training need opined by the potato farmers. The potato farmers did not feel similar extent of training need for all the eighteen aspects regarding potato cultivation.

Data in Table 3 revealed that out of eighteen aspects, on the basis of computed total score, six aspects need high training such as ways of potato disease control, preventive measure of disease control, proper identification of the disease of potato plant, proper dose of the pesticide application in the potato field, proper dose of the insecticide application in the potato field, method of potato pest control. On the other hand, another eight aspects need medium training such as fertilizer application technique with appropriate amount, combination of method of application of fertilizers, determining the technique of potato tuber

harvesting, determining time of harvesting, technique of packaging of potato, potato storage technique, effectively seedling production of potato, land preparation technique of potato cultivation. Rest, four aspects, marketing technique of potato, proper time of fertilizer application, methods of irrigation technique, method of mulching technique in potato field need low training. According to computed total score, the aspect namely 'ways of potato disease control' ranked first while 'method of mulching technique' was last in rank order. Due to lack of knowledge regarding potato farming, lack of education, low social mobility and communication exposure potato farmers were not aware of improved management practices of pests and diseases of potato. Study conducted by Yeasmin (2013) and Sumon (2014) showed lack of knowledge and education inspired farmers to participate training with intension to increase their skill level. For this reason, they felt high training on issues related to disease and pest problem.

Table 3 Aspect-wise training need of the potato farmers (n=80)

Extent of training needs (Score)	Training aspects	Nature of training needs (No. of farmers)				TS	M	Rank order
		H	M	L	N			
High (>161)	Ways of potato disease control	80	0	0	0	240	3.00	1
	Preventive measure of disease control	76	4	0	0	236	2.95	2
	Proper identification the disease of potato plant	62	16	0	0	224	2.80	3
	Proper dose of pesticide application in the potato field	6	13	3	0	215	2.68	4
	Proper dose of insecticide application in the potato field	50	30	0	0	210	2.63	5
	Method of potato pest control	40	25	15	0	184		6
Medium (89-161)	Fertilizer application technique with appropriate amount	18	45	17	0	161	2.30	7
	Combination of method of application of fertilizers	10	55	14	1	154	1.93	8
	Determining the technique of potato tuber harvesting	7	50	21	2	142	1.77	9
	Determining time of harvesting	4	44	31	1	131	1.64	10
	Technique of packaging of potato	4	42	28	6	124	1.55	11
	Potato storage technique	13	26	22	19	113	1.42	12
	Effectively seedling production of potato	4	29	32	15	102	1.27	13
	Land preparation technique of potato cultivation	2	25	33	20	89	1.12	14
Low (Up to 89)	Marketing technique of potato	0	20	32	28	72	0.90	15
	Proper time of fertilizer application	0	15	25	40	55	0.68	16
	Methods of irrigation technique	0	5	34	46	44	0.55	17
	Method of mulching technique in potato field	0	0	18	62	18	0.22	18

Relationship between the selected characteristics of the Potato farmers and their training need

The relationships between the training needs of the potato farmers and their selected characteristics have been presented in Table 4. Data show that household size and experience of potato cultivation had significant positive relationships with the training need while level of education, communication exposure, social mobility and knowledge of potato cultivation had significant negative relationships with the training need. Thus, increased household size and experiences implied that their training need will be increased to gather more skills on potato cultivation. With the increase of educational level of the potato farmers, their training need tended to be decreased. This is logical because more educated potato farmers were more skilled and felt less necessity of training. Proper focus on communication exposure, social mobility, and knowledge of farmers can increase their training need. However, age, farm size, amount of land under potato cultivation, annual income and credit received had no relationship with their training need.

Table 4 Relationship between the selected characteristics of the potato farmers and their training need (n=80)

Focus variable	Explanatory variables	'r' value with 78 df
Training need of the Potato farmers	Age	0.316
	Level of Education	-.554**
	Household size	0.298**
	Farm size	0.057
	Amount of land under potato cultivation	-.066
	Annual income	-.057
	Experience of potato cultivation	0.340**
	Communication exposure	-.450**
	Social mobility	-.575**
	Credit received	0.099
	Knowledge on potato cultivation	-.472**

** Significant at 0.01 level of probability

Notes: Tabulated 'r' values with 78 df are 0.286 (at 0.01 level) and 0.220 (at 0.05 level).

Conclusion

The findings of the study showed that 97% of the farmers had medium to high need for increasing their skill on potato cultivation. Moreover, the respondents had basic knowledge

on potato cultivation. The level of education of the respondents in the study area being very low and has an effect on demanding training need on potato cultivation. The results also show that farmers opined priority to attend training on the potato diseases control measures. The research shows that it is very difficult for the potato farmers in the study area to afford timely communication with the extension agents and to increase their social mobility to enhance improved skills on potato cultivation. The result of the hypothesis confirms that as the level of education, household size, experience of potato cultivation, communication exposure, social mobility, and knowledge of potato cultivation increases their extent of training need increases as well. The study therefore recommended that advocacy campaigns should not be left till an outbreak occurs, there should be a synergy among the Ministry of Agriculture, Department of Agricultural Extension specially the training division to organize joint advocacy campaigns on training conduction for skills development issues of potato farmers which can ensure higher potato production with better quality.

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