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Training Need of the Mango Farmers in a Selected Area of Nawabganj Sadar Upazila

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Abstract:

The study was carried out to determine and describe the training need of the mango farmers and to explore the relationship between the selected characteristics of the mango farmers and their training need. The village, namely Mohammadpur under Maharajpur union parishad of Nawabganj sadar upazila was the locale of the study. Seventy eight mango farmers (out of the total of 520) were randomly selected as sample of the study. Data were collected from the sample mango farmers by using a pre-tested interview schedule through personal interview method during 01 April to 02 May, 2016. Training need of the mango farmers was the focus variable and selected fourteen characteristics of the respondents 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 mango farmers and their training need. Among the mango farmers, 100% of them had medium to high training need while 35.90% of them had high, 64.10% had medium and none of them had low training need. Correlation analysis indicated that three characteristics of the mango farmers, namely age,

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household size and experience of mango gardening had significant positive relationships with their training need. Educational level, social mobility, communication exposure, knowledge on mango production, post-harvest handling and marketing, perception on mango gardening and ICT adoption and use index had significant negative relationships with their training need. The concerned GOs e.g. Ministry of Agriculture (MoA), Department of Agricultural Extension (DAE), CBOs and NGOs should play a vital role arranging more and more need based training campaign for the mango farmers for increasing their skills to produce good quality mangoes.

Key words: Training need; Mango farmers; Mango orchard; Nawabganj Sadar Upazila

INTRODUCTION

Bangladesh is a medium incoming country having a population of 156.8 million living in an area of 1,47,570 sq. km. The country is densely populated with 1.37% population growth rate (BBS, 2015). The economy of Bangladesh is largely dominated by agriculture. Total workforce of Bangladesh is 61.4 million and about 43% of the total workforce (25.7 million) is engaged in agriculture (BBS, 2015). Bangladesh enjoys generally a sub-tropical monsoon climate having 3 distinct seasons. Winter from November to February, a cool temperature (12°-28° C) and little or no precipitation prevail in winter. Summer continues from March to May with a little rainfall with temperature as high as 40° C. The Monsoon prevails from June to October having high rainfall, humidity and temperature from 25°-35° C. The average precipitation per year varies among the regions from 1194-3454 mm. A tropical location, lush greenery, moisture rich loamy soil and production friendly climate all these make Bangladesh one of the notable growers of a vast range of fruits. More than 60 varieties of fruits are grown in Bangladesh. Major fruits are mango, banana, papaya, jackfruit,

pineapple, guava, litchi, pomelo, lemon etc (BBS, 2011). Fruit is very essential for our daily life. For sound health, the daily requirement of fruit is 85g for a person where only 35g is available (Siddiqui and Scanlan, 1995). Among the different fruits of Bangladesh, which are over fifty in number, mango has a unique position. The mango is acknowledged as the 'King of fruits'. It is recognized as one of the choicest and is well accepted fruit all over the world for its excellent flavor, attractive color, delicious taste and high nutritive value. The mangoes are rich sources of vitamin-A and fairly good source of vitamin-C. They contain good amount of minerals, particularly potassium (Parvin, 2005).

Bangladesh is a developing country and malnutrition is a burning problem among its population. The malnutrition problem mainly arises from inadequate production of different food materials followed by imbalance dietary intake. Although Bangladesh has got self-sufficiency in food crops, the production of fruits is still far behind the country's present requirement. It was reported that 93% people of Bangladesh have been suffering from vitamin C deficiency. All such malnutrition problems could be reduced through adequate consumption of fruits, especially fruits that are rich in vitamin and minerals, like mango (Razzaque, 2005).

In Bangladesh, mango was cultivated in 75728 acre of land and the production was 828161 metric tons in 2008-09. In 2009-10 the mango cultivated area was 79066 acres while the production was 1047849 metric tons (BBS, 2010). At present Bangladesh produces near about 1 million tons of mango every year which is 3.9% of world's total mango production. Mango is top listed in terms of hectares and second position in production among the fruits of Bangladesh (Karim, 2006). There are a huge number of farmers all over the country who are directly involved in mango production, but the mango farmers have much lacking in technical knowledge towards different aspects of mango production, post-harvest handling & marketing. The

major problems opined by the farmers were lack of technical knowledge, credit facilities and disease resistant varieties. The concerned GO and NGOs could address the problems encountered by the mango farmers through training, development of disease resistant varieties and arranging credit facilities (Kowsari, 2014). So, it is needed to improve skills of the mango farmers. Before this, training need of the mango farmers should be determined because training is the useful way of improving anyone's skill. Hence, following objectives were set forth for the study -

1) To determine and describe the training needs of the mango farmers regarding different aspects of mango production, post-harvest handling and marketing.
2) To identity the production and management practices in which the mango farmers need training.
3) To explore the relationship between the selected characteristics of the mango farmers and their training need.

METHODOLOGY

Study area

The study was conducted in a village named *Mohammadpur* under *Maharajpur* union (County) of *Nawabganj* sadar upazila (Sub-district). *Nawabganj* is the extreme western border district in Bangladesh which is intensively covered by many mango orchards. *Nawabganj* sadar upazila and *Maharajpur* union was selected purposively consulting with Upazila Agriculture Office, those areas are intensively covered by many mango trees. *Mohammadpur* village was selected randomly out of 37 villages of *Maharajpur* union.

Sampling procedure and sample size

Farmers who were involved with the cultivation of mango of the study village were the target population of this study. The total

number of target population in the village was 520, out of which 15% were selected randomly as sample. Hence, the sample of the study constituted of 78 mango farmers. A pilot test of the survey was conducted with 15 respondents in the study area. Based on the results, some revisions on the interview schedule were made. The survey finally yielded 100% complete interview schedule.

Table 1: The population and the sample size of the mango farmers by village

Name of village	Number of the mango farmers	
	Population	Sample
Mohammadpur	520	78

Source: Authors' Field Survey, 2016

Data collection

The survey was conducted from 1 April to 2 May, 2016. In the survey, the researcher himself collected data from 78 mango farmers through structured interview schedule. The researcher first established rapport with the mango farmers and clearly explained the objectives of the study. As a result the mango farmers furnished proper response to the questions without any hesitation. The questions were clarified whenever any respondent had difficulties in understanding. Excellent cooperation was received from the mango farmers and other people of the study area.

Measurement of variables

The explanatory variables of this study were 14 selected characteristics of mango farmers. These were age, educational level, household size, farmand size**,** size of mango orchard**,** annual income**,** experience of mango gardening**,** social mobility**,** communication exposure**,** organizational participation**,** credit received**,** knowledge on mango production post-harvest handling and marketing**,** perception on mango gardening and

ICT adoption and use. These were measured employing descriptive statistics.

Training need of the mango farmers was the focus variable of the study. To measure the training need of the mango farmers, sixteen aspects regarding mango 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 training need on selected aspect was 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. Scores of all the sixteen aspects formed the total score of the training need for each respondent. Thus, total score of each respondent for this variable could range from 0 to 48, where 0 indicated no training need and 48 indicated high training need for the mango farmers.

To find out the training need of the mango farmers by each of the aspects, Training Need Index (TNI) was calculated and can be expressed in the following ways:

$$\text{Training Need Index (TNI)} = \frac{\text{Total score received}}{\text{Maximum total score}} \times 100$$

Where, Total score = $P_{htn} \times 3 + P_{mtn} \times 2 + P_{ltn} \times 1 + P_{ntn} \times 0$
P_{htn} = Number of respondents with 'high' training need
P_{mtn} = Number of respondents with 'medium' training need
P_{ltn} = Number of respondents with 'Low' training need
P_{ntn} = Number of respondents with 'No' training need
Maximum total score = 234 (3 points x 78 persons)

Thus, the possible TNI score of the mango farmers could range from 0 to 100, where 0 indicates 'no training need' and 100 'high training need'.

Data Analysis

Field editing and central editing were done as soon as possible to detect errors and omissions of the data. The collected data were coded, categorized, tabulated and analyzed scientifically. The local units were converted into standard units. Qualitative data were converted into quantitative data by means of suitable scoring whenever necessary. For this purpose, the collected data were given numerical coded values. The coded data were put into the computer for statistical analysis. The SPSS 22.0 computer program was used for analyzing the data. Various descriptive statistical measures such as range, frequency, number, percentage, mean, standard deviation (SD) and rank order were used for categorization, and describing the variables. Pearson's product moment correlation coefficient (r) was applied for data evaluation and hypothesis testing.

RESULTS AND DISCUSSION

Training Need of the Mango Farmers

The observed training needs scores ranged from 18 to 43 with an average of 29.63 and a standard deviation of 6.26. Based on training needs scores, the mango farmers were classified into three categories as shown in Table 2.

Table 2: Distribution of the mango farmers according to the total score of training need
(n =78)

Score		**Mango farmers**		**Mean**	**SD***
Possible	Observed	**Categories**	**Number**		
0-48	18-43	Low need (Up to 16)	0	29.63	6.26
		Medium need (17-32)	50		
		High need (>32)	28		

SD = Standard deviation
Source: Authors' Field Survey, 2016

Table 2 showed that the highest proportion (64.1%) of the mango farmers had medium training needs while the rest

35.9% of them had high training needs. 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 needs in their respective studies. Thus, the respondents logically felt training needs on catfish culture. The findings clearly indicated that all of the mango farmers had medium to high training need.

Aspect-wise Training Need of the Mango Farmers

Training Need Index (TNI) was calculated to find out aspect-wise training need of the mango farmers. According to Table 3, it was cleared that among 16 items, mango farmers provided the first priority to training on 'ways of mango disease control (TNI: 100)', the second priority on 'ways of mango pest control (TNI: 98.29)' the third priority on 'application of pesticides (TNI: 93.16)', the fourth priority on 'Identification of pests and diseases (TNI: 91.45)' and fifth priority on 'Preventive measures for avoiding pest and disease infestation (TNI: 83)'.

Table 3: Aspect-wise training need of the mango farmers (n = 78)

Sl. No.	Items	Training need				TNI	M	P
		H	M	L	N			
1.	Ways of mango disease control	78	0	0	0	100	3.00	1
2.	Ways of mango pest control	74	4	0	0	98.29	2.95	2
3.	Application of pesticides	62	16	0	0	93.16	2.79	3
4.	Identification of pests & diseases	61	14	3	0	91.45	2.74	4
5.	Preventive measures for avoiding pest & disease infestation	47	31	0	0	86.75	2.60	5
6.	Training on ICT for mango production	34	28	16	0	74.36	2.23	6
7.	Soil & fertilizer management	17	43	18	0	66.24	1.99	7
8.	Conservation techniques of harvested mangoes	9	60	8	1	66.24	1.99	7
9.	Marketing techniques	2	49	25	2	55.13	1.65	8
10.	Management of bearing trees	4	42	31	1	54.27	1.63	9
11.	Post-harvest handling of mangoes for marketing	3	42	28	5	51.71	1.55	10
12.	Mango seedling production	13	26	20	19	47.44	1.42	11
13.	Techniques of packaging & transportation of mangoes for marketing	4	27	32	15	41.88	1.26	12
14.	Mango orchard establishment & management	2	18	35	23	32.91	0.99	13
15.	Seed collection & preservation	0	11	33	34	23.5	0.71	14
16.	Harvesting	0	0	10	68	4.27	0.13	15

H = High (score: 3), M = medium (score: 2), L = Low (score: 1), N = Not at all (score: 0), TNI = Training Need Index, P = Priority, M= Mean

Source: Authors' Field Survey, 2016

Thus, it is cleared that mango farmers felt training need on some important items those need accurate information which they don't have.

Characteristics of the Mango Farmers in the Study Area

A summary of the selected characteristics of fish farmers is presented in Table 4. Among the respondent mango farmers 62.82% were middle aged, 23.08% were old aged and only 14.10% of them were young. Majority (37.18%) of the respondent had primary education while 23.08% of them can sign only, 16.67% had secondary education, 15.38% can not read and write, 5.13% had higher study and 2.56% had higher secondary education. Among the mango farmers 41.03% possessed large size family, 37.18% and 21.79% of them had medium and small size family, respectively. Farm size analysis showed that highest proportion of mango farmers (66.67%) had medium farm size, where 30.77% and 2.56% of them had small and large farm size, respectively and there were no landless and marginal mango farmer in the study area. The findings indicate that most (about 97%) of the mango farmers had small to medium sized farm. Majority (91.03%) of the mango farmers had small sized mango orchard and only 3.85% and 5.12% of them had medium and large sized mango orchard, respectively. Majority (71.79%) of the respondents had medium annual income while 25.65% had high annual income and only 2.56% had low annual income.

Table 4: Salient features of the mango farmers (n = 78)

Characteristic	Measurement unit	Range		Respondents		Mean	SD*
		Possible	Observed	Category	%(n=78)		
Age	Year	-	25-63	Young (up to 30)	14.10	43.14	9.25
				Middle-aged (31-50)	62.82		
				Old (>50)	23.08		
Educational level	Schooling year	-	0-17	Can not read & write (0)	15.38	3.76	4.48
				Can sign only (0.5)	23.08		
				Primary (1-5)	37.18		
				Secondary (6-10)	16.67		
				Higher secondary (11-12)	2.56		
				Higher study (>12)	5.13		
Household size	No. of member	-	3-13	Small household size (Up to 4)	21.79	6.42	2.24

				Medium household size (5-6)	37.18		
				Large household size (>6)	41.03		
Farm size	Hectare	-	0.4-4.05	Landless farmer (Up to 0.02 ha)	0	1.38	0.71
				Marginal farmer (0.02-0.2 ha)	0		
				Small farmer (0.21-1.0 ha)	37.77		
				Medium farmer (1.01-3.0 ha)	66.67		
				Large farmer (>3.0 ha)	2.56		
Size of the mango orchard	Hectare	-	0.07-3.37	Small size (Up to 1.0 ha)	91.03	0.56	0.59
				Medium size (1.01-2.0 ha)	3.85		
				Large size (>2.0 ha)	5.12		
Annual income	'000' taka	-	100-1000	Low income (Up to Tk. 100)	2.56	213.95	146.43
				Medium income (Tk. 101-200)	71.79		
				High income (>Tk. 200)	25.65		
Experience of mango gardening	Year	-	5-35	Less experience (Up to 10)	24.36	19.08	8.53
				Medium experience (11-20)	34.62		
				High experience (>20)	41.02		
Social mobility	Score	0-24	0-3	Low (Up to 8)	100	1.63	0.84
				Medium (9-16)	0		
				High (>16)	0		
Communication exposure	Score	0-54	9-27	Low (Up to 18)	64.1	17.23	4.46
				Medium (19-36)	35.9		
				High (>36)	0		
Organizational participation	Score	-	1-21	Low (Up to 10)	98.72	2.10	2.84
				Medium (11-20)	0		
				High (>20)	1.28		
Credit received	'000' taka	-	0-300	No credit	71.79	16.5	47.73
				Low credit (Up to 20)	14.1		
				Medium credit (21-100)	10.26		
				High credit (>100)	3.85		
Knowledge on mango production, post-harvest handling and marketing	Score	0-105	34-67	Low (Up to 35)	16.67	50.72	10.34
				Medium (36-70)	83.33		
				High (>70)	0		
Perception on mango gardening	Score	0-36	18-29	Low perception (Up to 12)	0	23.08	2.90
				Medium perception (13-24)	66.67		
				High perception (>24)	33.33		
ICT adoption and use	Score	0-15	4-14	Low (Up to 5)	60.26	5.95	2.14
				Medium (6-10)	34.62		
				High (>10)	5.12		

SD= Standard deviation

Source: Authors' Field Survey, 2014

Among the respondent mango farmers 41.02% were highly experienced, 34.62% were medium experienced and 24.36% of them were less experienced. All of the respondent mango farmers in the study area had low social mobility, none of them

had high even medium social mobility. Among the respondent mango farmers 64.10% and 35.90% had low and medium communication exposure, respectively and none of them had high communication exposure. Almost all (98.72%) respondents had low organizational participation and rest of them (1.28%) had high organizational participation.

Major portion (71.79%) of the respondent had not received any amount of credit, where only 14.10%, 10.26% and 3.85% of them were in low, medium and high credit received category respectively. No mango farmers had high knowledge on mango production, post-harvest handling and marketing. 83.33% of them had medium and 16.67% of them had low knowledge on mango production, post-harvest handling and marketing. No one of the respondent mango farmers had low perception on mango gardening, all of them had medium (66.67%) to high (33.33%) perception on mango gardening. Almost all (about 95%) of the respondents were in low (62.26%) to medium (34.62%) category of ICT adoption and use, where only 5.12% were in high category.

Relationship between the Variables

The coefficient of correlation (r) was computed in order to explore the relationships between the selected characteristics of the mango farmers and their training need (Table 5). Table 5 showed that age, household size and experience of mango gardening had significant positive relationships with their training need while educational level, social mobility, communication exposure, knowledge on mango production, post-harvest handling and marketing, perception on mango gardening and ICT adoption and use had significant negative relationships with their training need.

Table 5: Correlation analysis of the selected characteristics of the mango farmers and their training need (n=78)

Focus variable	Explanatory variables	'r' value with 76 df
Training need of the mango farmers	Age	0.911**
	Educational level	-0.554**
	Household size	0.474**
	Farm size	0.029
	Size of mango orchard	-0.059
	Annual income	-0.050
	Experience of mango gardening	0.885**
	Social mobility	-0.660**
	Communication exposure	-0.716**
	Organizational participation	0.117
	Credit received	0.024
	Knowledge on mango production, post-harvest handling & marketing	-0.769**
	Perception on mango gardening	-0.305**
	ICT adoption & use	-0.745**

**Correlation is significant at the 0.01 level (2-tailed).

Source: Authors' Field Survey, 2016

However, farm size, size of mango orchard, annual income, organizational participation and credit received had no relationship with their training need. From the findings of the analysis it could be said that more education, communication exposure, social mobility, knowledge, perception and ICT adoption and use broadens outlook of the mango farmers and leads them to explore new ideas to solve problems. It is assumed that mango farmers having higher education and communication ability are more progressive and innovative than those of illiterate and they could perform better in mango production.

CONCLUSION

The study revealed that the mango farmers need medium to high training on various aspects regarding mango production, post-harvest handling and marketing. The mango farmers in the study area could not perform their jobs satisfactorily due to lack of knowledge, education, communication exposure etc about the expected activities. For this reason, they perceived

training need to improve their skills. So, as soon as possible different kind of training programs should be planned and implemented on various aspects regarding mango production, post-harvest handling and marketing for the mango farmers in the study area to raise their skills. Moreover, adequate non-formal education should be provided to the mango farmers to raise their knowledge, to increase their awareness about different information sources. For this purpose, a number of measures are needed to be taken by major intervening agencies, such as Government Organizations (GOs), specially, Department of Agricultural Extension (DAE), Ministry of agriculture (MoA), Non-government Organizations (NGOs) and the Community Based Organizations (CBOs).

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