

Farmer's Preferred Traits of Modern Boro Rice Varieties Cultivated in Haor Area in Sunamganj District, Bangladesh

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ABSTRACT

Agriculture is the basic foundation of Bangladesh. It is highly essential to attain food security ensuring high yield and production of various agricultural crops. Modern technology of field crop varieties can be one of the means in this respect. The most vital constraint in the haor areas is high price of inputs (fertilizer, seed, labor) and this was opined by 86% of the sample farmers. Transportation of the output (e.g, paddy) after harvesting also appeared to be a major problem since in most areas the roads are non-metal 'kacha' roads and 80% farmers reported about this constraint. With this back drop the aim of the study was to determine the preferred traits of the cultivating modern boro rice variety preferred by the farmers of the haor area. An attempt was made to explore relationships between the selected characteristics of the farmers with their preferred traits. The data has been collected by personal interview methods with the help

of a well-structured pretesting interviews schedule from the 80 numbers selected farmers of Sunamganj Sadar Upazila of Sunamganj district. The five most preferred traits of modern boro rice varieties cultivated by the haor farmers were short-duration crop varieties, weed control from rice fields, cultivation in more places, and long plants. Middle age and medium farms were the highest score (41.2) and (44) and the lowest score for old age and large farm (28.8) and (6). Pearson's Product Moment Correlation Coefficient (r) indicated that out of ten variables family size, farm size, family income, extension contact and agricultural knowledge on preferred traits of the cultivating modern boro rice variety in haor areas showed positive significant relationship whereas age, education, farming experience, and training experience showed non-significant relationship and among the character of attitude towards modern crop production practices showed only negatively significant relationship.

Keywords Bore rice, Innovation, Traits, 'r', Agro-ecological-zone, Income generating activities.

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INTRODUCTION

Bangladesh is an agricultural-based country. In a word Bangladesh can be told Golden Bangla, as well as a child of nature with her excellent habitat at the great Ganges deltoids in Asia, constitutes favorable climate for agricultural practice having flat topography, abundant water and humid climate. In fact, she has

a diverse environment, varying from enough prone high lands through the coastal playground of a flood, these varied natures of her land, soil types, hydrology, and climate are characterized by 30 Agro-Ecological Zones (AEZ) with specific characteristics. All the 30 AEZ have some common fields that are grown with suitable crop production practices. Besides, some have specific crops, which are grown with the help of suitable production practices only for that AEZ. About 85% people of the total country's population depend on agriculture directly or indirectly. The people involved in agriculture always like to get more benefits and feel secure by cultivating their preferable crops mainly rice. So, they do not show interest to cultivate other field crops or other new technologies. But to get a sustainable development in agriculture that is the oldest and biggest occupation of the people of Bangladesh essential to cultivate other field crops with the new technologies simultaneously in large scale to increase our agricultural production. To make the farmers zeal in practicing new crop production technologies extensively it is important to show them the benefits. There are no alternatives to adopt modern crop production practices increasing the proneness of innovativeness to get higher benefits from agricultural crops and here the main issue is the innovativeness of farmers to adopt modern crop production practices. With the passage of time, the population increased at a rapid pace and the gap between crop production and the requirement of food for the millions of people widened. The supplement of food security for the sixteen core country people comes from the agriculture sector. Besides this 3 lakh tons additional food supply is to be needed for 2 billion new mouths (BBS 2015). The present scenario is to increase per hectare production and more crops per hectare per year to achieve self-sufficiency in the agricultural sector. To implement it is essential to provide effective use of modern improved practices. Among those modern improved practices that can be adopted by the farmers' modern crop production practices draw the highest attention. Innovativeness is an idea of practice any method or technique perceived as new and earliness to be a user of that method or technique by the individual. It is the newness of the idea to the individual that determines his reaction to it. It is most unwise to think that, the adoption of scientific practices is an instantaneous metamorphosis

of the farmers' activities (DAE, (2014). Rather it is an activity of the farmers taking place over a period of time. According to their innovativeness, they may wait for several years before trying the new practice for the first time. One has to find out the reasons that encourage innovativeness. But available research findings provide a little help for this purpose under the Bangladesh context. To contribute to the knowledge base an endeavor was taken to explore the current status of rice variety adoption and farmers' preferred traits of modern boro rice with the objectives, to ascertain the extent of adoption of modern boro rice varieties by the haor farmers; to determine the preferred traits of the cultivating modern boro rice variety and to explain the relationship between the socio-psychological economic characteristics of the farmers with their preferred traits of modern boro rice varieties.

MATERIALS AND METHODS

The study was conducted in Sunamganj Sadar upazila of Sunamganj district purposively due to easy access of researcher. The study area encompasses only haor area under Sunamganj Sadar upazila of Sunamganj district. List of all farmer of the selected haor was prepared with the help of local village leader and SAAO. There were 312 households are situated in the Bahadurpur village. Sample farmers were selected following simple random sampling method. The numbers of farmers were 80. In order to collect necessary information, an interview schedule was prepared based on the objectives of the research interview. The interview schedule was prepared in Bengali for clear understanding of the respondents. Questions were included in the schedule to collect data on the selected dependent and independent variables. Appropriate scales were developed to operationalize some selected characteristics of the farmers and the dependent variable. The questionnaire prepared earlier was used for data collection. Excellent co-operation was obtained from the field extension workers and the local leaders. All possible efforts were made to explain the purpose of the study to the farmers' in order to get valid and pertinent information from them. Interviews were conducted with the farmers in their homes during their preferred time on a pre-contact basis. After completion of field

Table 1. Selected socio-economic characteristics of the respondents.

Sl. No.	Characteristics	Measuring units	Possible range	Observed range	Observed mean	Std deviation
1	Age	Year	Unknown	22-72	44.82	11.63
2	Education	Schooling year	Unknown	0-12	3.44	3.60
3	Family size	Person	Unknown	3-16	7.45	2.50
4	Farm size	Hectare	Unknown	0.4-6.68	1.49	1.03
5	Family income	10000 tk/year	Unknown	6.5-50	15.27	8.50
6	Farming experience	Year	Unknown	10-50	25.00	9.48
7	Training experience	Days	Unknown	0-7	2.76	2.14
8	Extension contact	Score	0-56	6-46	22.33	9.29
9	Agricultural knowledge	Score	0-40	20-38	25.61	4.39
10	Attitude towards modern practices	Score	0-60	3-22	11.45	4.33

survey, all the interview schedules were compiled, tabulated and analyzed according to the objectives of the study. In this procedure, all the responses in the interview schedule were given numerical coded values and local units were converted into standard units. The responses to the questions in the interview schedule were then transferred to a master sheet to conduct tabulation. Tabulation and cross tabulations were done on the basis of categories developed by the investigator himself. The analysis was performed using statistical package for social science (SPSS) computer package. Descriptive analysis such as range, frequency count, number and percentage, mean, standard deviation and rank order were used, person's Product Moment Coefficient Correlation (r) was used in order to explore the relationship between the concerned variables. Throughout the study, five percent (0.05) level of probability was used as a basis of rejecting a null hypothesis. In order to determine difference between the respondents from two study locales regarding dependent and independent variables, student t-test for the difference of means was used.

RESULTS AND DISCUSSION

The data presented in the Table 1 indicates that the percentages of the young, middle and old aged farmers were 30%, 41.2% and 28.8% respectively. Where 40% were illiterate, 31.3%, 26.3% and 2.4% of the farmers achieved primary, secondary and higher education respectively. The range of family size 3–16 numbers was observed with a mean value of 7.45. There was no marginal farm in the study area. Largest portion (55%) of the farmers had medium

farm. 37.5% and 7.5% farmers are belonging to small and large farm size category respectively. Annual income of the farmers in the study area range from 6.5 to 50 unit (1unit=10,000 tk). The largest portion of the farmers (87.5%) constitutes the medium income category. Most of the farmers (58.8%) had medium farming experience with a range of 10 to 50 years. 23.8% and 17.4% farmers were low and high experience category respectively. Training experience of the farmers of the locale was very poor. Most of the farmers (63.8%) had no training experience at all and 33.8% and 2.4% had low and medium experience respectively (Roy 2006). Major portion (70%) of the farmers had medium extension contact. 15% farmers had low and high level of extension contact. Agricultural knowledge score of the farmers ranged from 20 to 38 with the mean value of 25.61. The highest portion (71.2%) of the farmers had moderate agricultural knowledge, 18.8% had poor and 10% had good agricultural knowledge (Alam 1997 and Hossain 2003). Attitude score of the farmers ranged from 3 to 22, the average 11.45 with standard deviation of 4.328. The highest proportion (61.2%) of the farmers had moderately favorable attitude towards modern crop production practices compared to 2 % having low favorable and 18.8% highly favorable.

Farmer preferred traits of modern boro rice: Preferred traits index (PTI)

According to nature, 28 traits of cultivated modern boro rice were categorized into five different groups; relative advantages, compatibility, complexity, trial-ability and observeability. Under relative advantage

Table 2. Rank order of preferred traits index (PTI) of the farmers.

Sl. No.	Aspects	Strategies	Extent of use N=80					PTI	APTI	Rank
			4	3	2	1	0			
1	Relative advantage	Short duration	80	0	0	0	0	320	264.14	1 st
		Long duration	5	10	20	40	5	130		
		High yield	80	0	0	0	0	320		
		Grown in rain-fed condition	60	10	5	4	1	284		
		Use more fertilizer	25	20	20	10	5	204		
		High market price	70	10	0	0	0	320		
		Taste	60	10	5	5	0	271		
2	Compatibility	Cold tolerant	40	25	10	5	0	260	236.25	3 rd
		Drought tolerant	20	20	20	15	5	185		
		Flood tolerant	80	0	0	0	0	320		
		Heat tolerant	20	20	20	15	5	180		
3	Complexity	Recommending age seedlings are planted	25	30	10	10	5	225	186	4 th
		Planting seedlings in a row	20	20	25	7	8	197		
		Insect infestation	0	0	0	70	10	70		
		Maintain seedlings age	15	20	20	18	7	178		
		Weed control	40	20	20	0	0	260		
4	Triability	Cultivation in more places	40	20	10	10	0	250	136.67	5 th
		Cultivation in less	25	25	10	15	5	210		
		Planting seedling	5	15	20	20	20	125		
		Lodging plants	0	0	0	10	70	210		
		Use of weed and insect and insect poison	15	30	20	15	0	205		
		Falling the grains when harvesting the paddy	0	0	0	20	60	20		
5	Observeability	Long plant	30	30	10	10	0	240	236.67	2 nd
		Short plant	29	28	11	9	2	239		
		Large grain	31	29	8	4	1	232		
		Small grain	30	30	10	8	0	238		
		Color of grain	33	28	9	7	0	237		
		Pest control	20	20	40	0	0	220		

there were 8 traits identified the above preferred traits of the farmers' level in the study area. It was found from the Table 2 in the result section that farmers give top rank to the relative crop production aspect (Mollah 2006). There are 7 strategies under this aspect such as short duration (PTI=320), long duration (PTI=130), high yield (PTI=320), grown in rain-fed condition (PTI=284), use more fertilizer (PTI=204), high market price (PTI=320) and taste (PTI=270). They ranked to 2nd as life security aspect followed by long plant (PTI=240), short plant (PTI=239), large grain (PTI=232), small grain (PTI=238), color of grain (PTI) and learnt (PTI=237). They ranked 4th as means of livelihood aspects followed by recommending age of seedlings are planted (PTI=132), planting seedlings in a row (PTI=197), insect infestation (PTI=70), maintain seedlings age (PTI=178)

and weed control (PTI=260). They ranked 5th as housing and shelter aspects followed by cultivation in more places (PTI=250), cultivation in less places (PTI=210), planting seedlings in more or less deep (PTI=125), lodging plant (PTI=10), use of weed and insects poison (PTI=205) and falling the grains at harvesting the paddy (PTI=20).

Relationship between the selected characteristics of the farmers on their preferred traits of modern boro rice in haor area

Data from the Table 3, it revealed that family size, farm size, family income, extension contact and agricultural knowledge of the respondents were positively significant while attitude towards modern crop production practices of the respondents was

Table 3. Farmer preferred traits of modern boro rice correlation coefficient (r) analysis.

Dependent variable	Independent variable	Correlation coefficient (r) values with 78 df	'r' value	
			0.05 level	0.01 level
Farmer preferred traits of modern boro rice varieties cultivated in haor area	Age	0.165		
	Education	0.142		
	Family size	0.529**		
	Farm size	0.874**		
	Family income	0.707**	0.276	0.396
	Farming experience	0.218		
	Training experience	0.137		
	Extension contact	0.276*		
	Agricultural knowledge	0.396**		
	Attitude towards modern crop production practices	-0.073		

* Significant at 5% (0.05) level of probability.

** Significant at 1% (0.01) level of probability.

insignificant and negative. Age, education, farming experience and training experience of the respondent were positively insignificant (Uddin 2007). The purpose of the section is to examine the relationship of each of the independent variables. Pearson's Product Moment Co-efficient of Correlation (r) was computed to determine the relationship between any two variables concerned.

CONCLUSION

Based on the findings of the study the following conclusion can be drawn and their logical interpretation. Family size, farm size, annual family income, communication and knowledge of the respondents were positively significant with the perception about the preferred traits of haor areas boro rice. The findings lead to the conclusion that, above characteristics effect on farmers are more preference traits of modern boro rice in haor area. The traits of modern boro varieties cultivated in haor area were preferred medium to low level by the overwhelming majority (82.5%) of the farmers. One may, therefore, conclude that, an effective extension program aimed at educating the farmers about different innovation will enhance the preference level of the traits of modern boro rice in haor area. The study indicated that the age and educated farmers had no significant but positive relationship with their preferred traits of modern boro rice. The findings lead to the conclusion that, comparatively young also educated farmers are more preference

traits of modern boro rice than that of olds. Experience and training of the respondent had no significant but positive relationship with their preference traits of modern boro rice in haor area. The findings lead to the conclusion that, farmers more farming experience and training may have high innovation.

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