Attitude of Farmers' towards Practicing of Agricultural Farm Machineries for Crop Production

Md. Ruhul Amin, Md. Mostafizur Rahman*

Department of Agronomy and Agricultural Extension, University of Rajshahi, Rajshahi-6205, Bangladesh

ARTICLE INFO	ABSTRACT
	The study was undertaken with the objective to determine and describe the extent of farmers' attitude towards practicing of agricultural farm machineries for crop production and to explore the relationships between the selected characteristics of the respondents and their extent of attitude. The study was conducted in 8 different villages of Begumpur and Titudah union of Chuadanga Sadar upazila under Chuadanga districts. Data were collected from 104 farmers as a sample by using a pre-tested interview schedule during the period from September to October, 2020. Attitude of the farmers towards practicing of agricultural farm machineries was the focus variable of this study which was measured by four-point Likert type modified scale. The independent variables were measured as usual methods which are available in social arena. Analysis indicated that the highest proportion (60.58%) of the farmers had moderately favorable attitude towards practicing of agricultural farm machineries followed by 20.19% had highly friendly attitude and only 19.23% had low favorable attitude towards practicing of agricultural machineries. Pearson correlation test depicted that out of 12 variables education, organizational participation, training received and extension media contact had significant positive relationships and three characteristics namely age, family size and subsidy received had significant negative relationships with the farmer's attitude towards practicing of agricultural farm machineries while farm size, annual income, credit received, ownership of agricultural machinery and capacity of repairing the farmer's had no significant relationships.

*CORRESPONDENCE
mostafizur2001@yahoo.com
Professor, Department of Agronomy and Agricultural Extension, University of Rajshahi, Rajshahi-6205

1. INTRODUCTION

Agriculture keeps the most momentous division of the Bangladesh economy, subscribing 12.65 % to the typical GDP and giving service for 60 % of the people (BBS, 2020). Approximately 78 % of the state's people reside in rustic regions, actually all of them preparing their vital solely or impersonated from agriculture. The rice, wheat, maize, potato, sugarcane, jute, pulses, vegetables etc. are the main crops in our agriculture. Agricultural farm machineries mean the machinery which is used in the operation on agricultural farm or area. In case of tillage, weeding, fertilizer application, harvesting, drying, carrying, packaging, storing etc. operations are related with agricultural farm machineries such as power tiller, pedal thresher/power thresher, different types of pumps, winnower tractor, combine harvester, sprayer etc. The capacity and power of different machinery are different. In Barind area, due to mechanization production return for Aman rice increases 25% and 40% for Boro rice (Reza & Khan, 2013). But our farmers in rural area do not know the level of power is applied per agricultural farm area. That's why the benefits are not

known to farmers and also the costs of the agricultural farm machinery are too high-particularly for the small and marginal farmers.

Different research organizations like Bangladesh Agricultural Research Institute (BARI), Bangladesh Rice Research Institute (BRRI),Bangladesh Institute of Nuclear Agriculture (BINA) etc. have manifested improved machinery and also some multinational companies are importing but a few of them are at the reach of the farmers. Consequence power tiller, ladder and four-wheel tractors are practice for soil formulation. Planting of field crops are almost completely made by hand broadcasting process in our country. Lately a manually-activated seed-cum-substances distributor has been improved, which is popular to become yet.

For sowing/planting of rice, maize, pulses, wheat, oilseeds, jute, sugarcane PT-sliced seeders/planters have been manifested by BARI. In line planting crops, hand-sliced weeders for arid soil and wet soil functions are practiced for weeding. Line planting and practice of weeders is flourishing in the current years. Spraying is generally made by endemically done knapsack sprayers. It is manually scratched. Labor scarcity fall out during this generation, resulting in muscular reducing during harvesting and conduction. Due to scarcity of betimes harvesting of rice, wheat, maize, pulses, and sugarcane, a reasonable amount of snacks grain is ruined each year in the state.

Strength need for crop plants expansion activities are regular insufficiency. In 1960, agricultural farm ability ownership was 0.26 KW/ha, which has aggravated to 1.07 KW/ha in 2009. Present state administration has commenced some projection to mechanize different crop plant occurrence activations like tillage, seeding transplanting, weeding, transplanting herbicide spraying, harvesting, drying, threshing, packaging and storing. During last three decades, average growth of rice production of the country was aggravated. However, over the same period the growth of population was 2.5%. At present the cropping intensity of the country is more than 200%. The demand of food is prominent from 20 million tons to 30 million in 2020 (Rahman, 2017).

The demand of food cannot be extinguished unless the cropping intensity is to be increased from 183 to 200%. Shortage of labor and draught power in agriculture has become great problems during peak period of planting and harvesting. Moreover, Bangladesh does not have any excessive land for expanding cultivation. In this context, farm mechanization with small, low cost and easily conventional farm machinery could lead to make cultivation more economical and to maximize production (Ziauddin & Ahmmed, 2010). A swelling pattern is outgoing in the industrial of agricultural machines and their additional parts in the state in spite of disadvantages faced practicable to comparatively high tariff on raw components, scarcity of technical advantages, lack of technical education, capital and realization. Considering these points of view, the researcher intended to conduct the study with following objectives: to

describe attitude of the farmers towards practicing of agricultural farm machineries for crop production; and to determine and describe the selected characteristics of farmers with their attitude towards practicing of agricultural farm machineries for crop production.

2. MATERIALS AND METHODS

The study was carried out in eight villages namely Hizalgari, Nehalpur, Kundipur, Krishnopur, Boldia, Chotosholua, Borosholua and Boyalia of Begumpur and Titudah union of Chuadanga Sadar upazila under Chuadanga district of Bangladesh where farmers were received extension services provided by upazila agriculture office and local agent of agricultural farm mechanization suppliers.

Total number of farmers of these six villages who engaged in farming actively and received extension services provided by extension agent was 520 which constituted the population of the study, 104 farmers were selected randomly by using random number table (Kerlinger, 1973) as the representative cover 20% of active population. Data were collected from the sample by using interview schedule during September to October, 2020.

2.1. Measurement of Independent Variable

The independent variables such as age, education, family size and farm size were measured by using measuring units of year, year of schooling school, number of members and hectare, respectively. The annual income was measured on the basis of total earning annually by all the members of the family and expressed in Taka. The training experience was indicated by the numbers of days of training that a farmer had received during period of last four years under different agricultural training program. A score 1 (one) was assigned for each training received each day. Organizational participation of a respondent was measured on the basis of nature of his participation and duration of his participation in different organization in various capacities.

The subsidy and credit received of respondents were measured on the basis of yearly total receiving from government, NGOs and other organizations, respectively. A score of one (1) was assigned for each of "000" taka for measuring the subsidy and credit received of a respondent, respectively. The ownership of agricultural machineries of respondents were measured on the basis of owner and rent from others.

A score of one (1) was assigned for rent and two (2) for owner. Farmers' capacity of repairing was measured on the basis of three categories such as "not at all", moderate" and "high". A score of one (1) was assigned for moderate, two (2) for high and zero (0) for not at all. The term extension media contact refers to one's becoming accessible to the influence of extension education through different extension media. Score on the basis of a farmer's extent of contact with 9 information sources in this study.

2.2. Measurement of Dependent Variable

Farmer's attitude towards practicing of agricultural farm machineries for crop production was the dependent variable

Table 1 Distribution farmers according to their attitude scores

Categories	Number	Percentage	Mean	SD	Variance
Low favorable attitude (22-26)	20	19.23			
Moderately favorable attitude (27-31)	63	60.58			
Highly favorable attitude (32-36)	21	20.19	27.14	3.17	10.08
Total	104	100			
Min = 22.00; Max = 36.00; Range = 14.00					

of this study. This variable was measured through a four-point Likert type modified scale. Sixteen statements (8 positive and 8 negative) on various aspects regarding agricultural farm machineries were asked to the farmers. The positive and negative statements were arranged randomly in the schedule in order to achieve the real picture of attitude of the farmers. There were four options to response a statement, namely 'strongly agree', 'agree', 'disagree' and 'strongly disagree' with a corresponding score of 3, 2, 1 and 0, respectively for the positive statements and the scoring was reversed for the negative statements. A respondent was asked to indicate his/her attitude regarding a statement by selecting the appropriate option. The attitude score of a respondent was computed by summing the scores for his responses to all the statements. Hence, scores of a respondent could range from 0 to 48; while 0 indicating highly unfavorable attitude and 48 highly favorable attitudes towards practicing of agricultural farm machineries for crop production.

The collected data were coded, compiled, tabulated and analyzed. The local units were converted into standard units. The qualitative data were transferred into quantitative data by appropriate scoring techniques. Data were analyzed in accordance with objectives of the study. SPSS (Statistical Package for Social Sciences) computer program was practiced to perform the data analysis. Various statistical measures such as range, mean, number percentage, standard deviations and rank order were practiced to describe the selected characteristics of the respondents of the study area. In order to find out the relationship between the individual characteristics of farmers and attitude, Pearson's Product Moment Correlation Co-efficient (r) was computed.

3. RESULTS AND DISCUSSION

3.1. Attitude of the Farmers towards Practicing of Agricultural Farm Machineries for Crop Production

Attitude of farmers towards practicing of agricultural farm machineries for crop production was the primary hub of the experiment. Attitude scores of the farmers several from 22 to 36 versus the feasible size of 0 to 48, with a mean of 27.14 and standard deviation 3.18. Based on the accomplished attitude scores, the respondents were divided into three classes as displayed in Table 1. The majority (60.58%) of the farmers had moderately favorable attitude towards practicing of agricultural farm machineries compared to only 20.19% had highly friendly attitude and only 19.23% had low

favorable attitude towards practicing of agricultural machineries.

The reasons behind the favorable attitude may be its ownership, high yield and easy working operation. Farmers get more benefit during their land preparation by practicing of agricultural farm machineries. It is easier to prepare their cropping land and reduce their labor cost by saving time. Agricultural farm machinery is helped in cultivation, harvesting and storing. Agricultural farm machinery is also increased rural welfare such as income, employment, living standards, alleviating poverty etc. So, the attitude of farmers towards practicing of agricultural farm machineries for crop production is increasing day by day. Use of different farm machineries assist at all levels of sophistication; usually involves injection of capital and exertion.

3.2. Characteristics of the Farmers

The distribution of farmers based on their characteristics has been shown in Table 2. The highest proportion (48.07%) of the farmers were in the middle aged category, while 17.31% and 34.62% belonged to young and old aged categories respectively. As shown in Table 2, 82.70% of the respondents were middle to old aged. Middle and old aged farmers might have of value ideas in practicing of agricultural farm machinery. A large proportion (32.69%) of the farmers had secondary education compared to 24.04% respondents with no education or can sign only, 30.77% having primary education and 12.50% having above secondary education. The overwhelming majority (75.96%) of the respondent were literate from primary to above secondary. This finding also indicated that the respondents had relatively higher level of education than the national level, which is 72% on an average (BBS, 2018). Farmers those who had higher level of education were more receptive to use farm machineries for crop production. The majority proportion (71.15%) of the farmers fell under the medium family category followed by 1.92% and 26.92% small and large family respectively. These findings indicate that more than 98.07% of the respondents had either medium or large family size. The highest proportion (64.42%) of the farmers belonged to medium farm size compared to 32.69% and 2.88% having small and large farm size respectively. Thus, most of the farmers were in possession of small farm and number of farmers having marginal and medium farm is almost similar. Thus, the possessed majority (97.11%) of the farmers were the owners of small to medium farms. About 62.50% of the respondents had low revenue likened to 27.88% of them having medium and 9.62 % having high income. The maximum ratio (59.62%) of the respondents

Table 2 Farmer's characteristics profile

Characteristics	Measuring unit	Observed value	Categories	No	%	Mean ± SD
Age	Year	25-72	Young (upto 35)	18	17.31	49.66±1.74
			Middle (36 to 50)	36	34.62	
			Old (>50)	50	48.07	
Education	Scores	0-16	Illiterate (0)	5	4.81	5.59±4.40
			Can sign only (0.5)	20	19.23	
			Primary (1-5)	32	30.77	
			Secondary (6-10)	34	32.69	
			Above Secondary (>10)	13	12.50	
Family size	No.	3-11	Small (Up to 4)	2	1.92	5.93±1.54
			Medium (5-8)	74	71.15	
			Large (>8)	28	26.92	
Farm size	Hectare	0.48 -3.55	Small (up to 1 ha.)	34	32.69	1.43±0.66
			Medium (1.01 to 3.0 ha.)	67	64.42	
			Large (above 3 ha.)	3	2.88	
Annual income	Taka (Thousand)	67- 358	Low (up to 162 thousand)	65	62.50	156.84±54.38
			Medium (163-230 thousand)	29	27.88	
			Large (>230 thousand)	10	9.62	
Training experience	Scores	0-15	No (0)	11	10.58	5.94±3.34
			Short (1-5)	62	59.62	
			Medium (6-10)	21	20.19	
			High(above 10)	10	9.62	
Organizational participation	Scores	0-6	No participation (0)	22	21.15	2.80±1.174
			Ordinary (1-3)	66	63.46	
			Active (4-6)	16	15.38	
Subsidy received	Taka (Thousand)	0-5	No received (0)	29	27.88	2.23±1.49
			Low (1- 2.5)	37	35.58	
			Medium (2.51-3.5)	28	26.92	
			High(3.51-5)	10	9.62	
Credit received	Taka (Thousand)	0-150	No received (0)	10	9.62	55.06±28.23
			Low (1-50)	11	10.58	
			Medium (51-100)	76	73.08	
			High (>100)	7	6.73	
Ownership agricultural machineries	Scores	0-14	Rent (0-8)	32	30.77	8.88±2.44
			Owner (9-14)	72	69.23	
Farmers' capacity of repairing	Scores	0-11	Low (0-4)	38	36.54	7.75±1.28
			Medium (5-8)	59	56.73	
			High(9-11)	7	6.73	
			High (>45)			
Extension media contact	Scores	0-27	Low (0-9)	63	60.58	25.61±4.26
			Medium (10-18)	33	31.73	
			High (19-27)	8	7.69	

had short training, 10.58% had no duration training, 20.19% had medium term training and 9.62% respondents had high duration training. The real situation regarding the training by the different organization is not covering the all farmers in field level and duration of training is also very short. So, the farmers of that area lack of training from both GOs and NGOs. The highest ratio (63.46%) of the respondents were ordinary member while (15.38%) were active member, 21.15% had no participation. This may be due to willingness, motivation and other social factors. In case of subsidy received, the highest proportion (35.58%) of the respondents had low received, 27.88% had no received, and 26.92% respondents had medium received and 9.62% respondents had high received. The highest proportion (73.08%) of the respondents had medium received of credit where 9.62% had no, 10.58% respondents had low and 6.73% respondents had high credit received. Table 2 shows that maximum ratio (69.23%) of the respondents were practicing of agricultural farm machineries on owner, 30.77% respondent were used by rent. The highest proportion (56.73%) of the respondents had medium capacity of repairing compare to 6.73 %respondent had high capacity and 36.54 %had low capacity of repairing. The largest proportion (60.58 %) of the respondents had low.

Table 3 Correlation between farmers' characteristics and their attitude towards practicing of agricultural farm machineries

Dependent variable	Independent variable	Observed co-efficient of co-relation (r) with df 102	Table value of 'r' of 102 degree of freedom (N=104)	
			At 0.05 level	At 0.01 level
Farmer's attitude towards practicing agricultural machineries	Age	-0.623**		
	Education	0.742**		
	Family size	-0.312**		
	Farm size	-0.114NS		
	Annual income	0.181NS		
	Organization participation	0.316**		
	Training received	0.394**	0.193	0.251
	Subsidy received	-0.257**		
	Credit received	0.188NS		
	Ownership of agricultural machineries	-0.023NS		
	Capacity of repairing	-0.048NS		
	Extension media contact	0.577**		

*Significant at 0.05 level; **Significant at 0.01 level; NS=Non-significant

extension media contact while 31.73 %had medium extension media contact and 7.69 had high extension media contact.

3.3. Relationship between the Characteristics of the Farmers and Their Attitude towards Practicing of Agricultural Farm Machineries for Crop Production

The objective of this article is to pursue the references between each of the approved characteristics of the farmers and their attitude towards practicing of agricultural farm machineries. The reference between the selected characteristics of the farmers and their attitude towards practicing of agricultural farm machineries is presented in Table 3.Pearson's Product Moment Correlation Co-efficient (r) was practiced to test the invalid presumption concerning references between any two changeable. Out of twelve variables, the relationships of seven variables with farmers' attitude were found significant and positive and five were non-significant.

Out of twelve selected characteristics of the farmers, four characteristics namely education, organizational participation, training received and extension media contact had significant positive relationships and three characteristics namely age, family size and subsidy received had negative relationship with the farmers' attitude towards practicing of agricultural farm machineries while farm size, annual income, credit received, ownership of agricultural machineries and capacity of repairing the farmers showed non-significant relationship with their attitude towards practicing of agricultural farm machineries for crop production.

4. CONCLUSION

Farm mechanization helps to improve the production in agricultural sector by using farm machines that can take the place of human and animal power in agricultural farm processes. Use of different farm machineries assist at all levels of sophistication; usually involves injection of capital

and exertion augmenting. Overall findings indicate that more than four-fifths of the farmers had low to moderately favorable attitude towards practicing of agricultural farm machineries for their crop production. It indicated that there is a gap in case of farm mechanization in our agricultural sector. Massive and relevant training program should be taken for the farmers to upgrade their awareness and understanding of the knowledge about practicing of agricultural farm machineries. It also needed for the Government and DAE to provide adequate facilities for buying farm machineries.

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