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ABSTRACT

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The purpose of this study was to determine and describe the attitude of the farmers towards the use of *dolochun* for crop production. The study was conducted in three unions under Domar upazila of Nilphamari district of northern Bangladesh. Data were collected from randomly selected 104 farmers with a structured interview schedule. The attitude of the farmers towards the use of *dolochun* for crop production was examined with 5-point Likert scale. Nine selected characteristics (i.e. age, educational qualification, family size, farm size, annual family income, training exposure, organizational participation, extension media contact and agricultural knowledge) of the farmers constituted the independent variables where farmer's attitude towards the use of *dolochun* for crop production was the dependent variable of the study. The findings revealed that the majority of the farmers (58.7 percent) had 'moderately favorable' attitude towards the use of *dolochun* while 22.1 percent and 19.2 percent had 'highly favorable' and 'slightly favorable', attitude towards the use of *dolochun* for crop production, respectively. Among nine selected characteristics of the respondents, 'educational qualification', 'training exposure', 'organizational participation', 'extension media contact' and 'agricultural knowledge' had positive significant relationship, while the 'age' and 'family size' of the respondent had negative significant relationships with their attitude towards the use of *dolochun* for crop production. The findings are fairly satisfactory regarding attitude towards use of *dolochun* and this favorable attitude of the respondents need to be tickled down to form a positive communal attitude to their respective locale for overall agricultural development.

Key words: *farmers' attitude, dolochun, acidic soil*

INTRODUCTION

Bangladesh is an overpopulated country with a population of 155.8 million (BBS 2012). The population of the country is increasing, and the agricultural land is decreasing over time (Bishwajit *et al*. 2014). Agriculture is the largest sector of the country's economy employing about 65% of the current labor force and accounting for around one fourth of the total GDP. In 2009-2010, agriculture accounted for 23.5% of the country's GDP. Average share of agriculture to total GDP is 26.13% in the country since 1980 with a highest 32.77% in 1985 and a minimum of 18.29% in 2011 (BBS 2012) and is therefore considered a lifeline of the country's economy.

Usually the farmers of Bangladesh cultivated two or more crops in a year to meet the demand of the increasing population. But they do not use balance fertilizer for crop production (Mondal 2010). As a result of agricultural intensification and imbalance fertilizer application, the fertility of agricultural land is decreasing day by day and increasing soil acidity especially in the northern region (including greater Rangpur, Dinajpur) of the country (Rasul and Thapa, 2003). At present approximately fifty thousand hectares land are highly acidic to acidic having a low pH as 5.5 to 5.0 which contains high quantity of phosphorous, molybdenum, aluminum and iron resulting decreased crop production (Anonymous 2013). To obtain expected yield this acidic soil should be cured. Cornel University, USA and Wheat Research Centre, Dinajpur introduce the *dolochun* as one of best possible solutions to cure this acidic soil. Farmers use this *dolochun* every year in their crop field randomly (which is not recommended) to cure the soil but they do not apply with recommended dose (Anonymous 2013).

At the present situation *dolochun* is one of the most important and efficient inputs for crop production in acidic soil (Johansen *et al*. 2007). Farmers' attitude to use *dolochun* need to be investigated to judge the socio-economic viability of this technology and to develop an effective management practice for the same. Moreover, it is found that there was no study in this regard. After considering the above issues, the present study has been undertaken to determine and describe the attitude of the farmers towards the use of *dolochun* for crop production. The specific objectives of this study were:

a) to determine and describe the attitude of the farmers towards use of *dolochun* for crop production,
b) to determine and describe the selected characteristics of the farmers (namely age, educational qualification, family size, farm size, annual family income, training exposure, organizational participation, extension media contact and agricultural knowledge), and
c) to explore the relationship between the selected characteristics of farmers and their attitude towards use of dolochun.

METHODOLOGY

The farmers under the "Food for Progress for Bangladesh" project of RDRS Bangladesh of three unions (Domar, Vogdaburi and Jorabari) under Domar upazila was the population of the study. An updated list of 310 farmers was collected from RDRS Bangladesh. Out of them, a sample of 104 farmers (34 percent) was selected by random sampling method. Simultaneously a reserve list of 10 farmers was made in order to use in case of

unavailability of the sampled farmers. A structured interview schedule was prepared for collection of data containing both open and closed form of questions which was pre-tested with 10 farmers selected from the study area. Data were collected from 15th April to 25th June, 2014.

The nine characteristics of the respondents (namely age, educational qualification, family size, farm size, annual family income, training exposure, organizational participation, extension media contact and agricultural knowledge) constituted the independent variables and attitude towards use of *dolochun* used as dependent variable of this study. Attitude towards *dolochun* was measured by using twelve different statements. The selected statements were either positive or negative in nature. The respondents given their opinion against 5-point Likert scale (Likert 1932) as 'strongly agree', 'agree', 'undecided', 'disagree' and 'strongly disagree'. The scores were assigned as 5, 4, 3, 2 and 1, respectively for the positive statements and the reverse score was assigned for the negative statements. Thus, the possible score ranged from 12 to 60, where 12 indicated strongly unfavorable attitude and 60 indicated strongly favorable attitude towards the use of *dolochun* for crop production.

The collected data were coded, compiled, tabulated and analyzed for interpretation. The SPSS computer program was used for analyzing the data. Different descriptive statistical measures such as frequency, number, percentage, mean, standard deviation and rank order was used for categorization and describing the variables. Karl Pearson's Product Moment Correlation coefficient (r) (Pearson 1895) was used for testing the relationship between the concerned variables.

RESULTS AND DISCUSSION

Characteristics profile of the farmers

Nine selected characteristics of the farmers has been selected to describe the characteristics profile of the farmers and standard categorical basis was used for making categories of age, education, family size, farm size and training exposure; whereas equal difference of the observed range was used as the basis of categories for the other variables. Categorical distribution of these characteristics is given in Table 1.

Table 1. Characteristics profile of the respondents (N = 104)

Characteristics (measurement unit)	Possible range (observed range)	Respondents			Mean	SD
		Category	No.	%		
Age (year)	Unknown (24 to 57)	Young (up to 35)	41	39.5	39.59	8.34
		Middle aged (36 to 50)	51	49.0		
		Old (above 50)	12	11.5		
Educational qualification (year of schooling)	Unknown (0.0 to 9.0)	Illiterate (0)	30	28.8	2.42	3.10
		Can sign name only (0.5)	38	36.5		
		Primary education (1 to 5)	15	14.5		
		Secondary education (6 to 10)	21	20.2		
Family size (number)	Unknown (3 to 8)	Small family (up to 4)	37	35.6	5.38	1.50
		Medium family (5 to 6)	40	38.4		
		Large family (7 and above)	27	26.0		
Farm size (hectare)	Unknown (0.194 to 0.802)	Marginal (0.02 ha to 0.199 ha)	1	1.0	0.45	0.11
		Small (0.2 ha to 0.99 ha)	103	99.0		
Annual family income ('000' Taka)	Unknown (52.70 to 124.00)	Low income (up to 75)	29	27.9	88.21	16.57
		Medium income (75 to 100)	45	43.3		
		High income (above100)	30	28.8		
Training exposure (days)	Unknown (0 to 8)	No training (0)	41	39.4	3.51	3.07
		Less than weeklong	9	8.7		
		Weeklong	35	33.7		
		Above weeklong	19	18.2		
Organizational participation (score)	Unknown (10 to 31)	Low (up to 15)	17	16.3	20.96	4.81
		Medium (15 to 25)	69	66.4		
		High (above 25)	18	17.3		
Extension media contact (score)	11 to 33 (11 to 29)	Low (up to 14)	12	11.5	19.0	3.79
		Medium (15 to 23)	74	71.2		
		High (above 23)	18	17.3		
Agricultural knowledge (score)	0 to 35 (19 to 32)	Poor knowledge (up to 22)	22	21.2	25.62	3.00
		Fair knowledge (22 to 28)	66	63.5		
		Good knowledge (above 28)	16	15.3		

The mean age of the farmers was found 39.59 years and about half of them are middle aged. About two-third of the respondents are out of formal education and belongs to illiterate to can sign name only category. The average family size of the respondents is high compared to national average of 4.6 (BBS 2012). Almost all of the respondents belongs to small farm size category. Majority of the respondents fall under the category of medium income although the average income is low considering the average family size of the respondents. Majority of the respondents (41 percent) are out of training exposure calling for improvement of training facilities in the study area. Organizational participation and extension media contact of the respondents is more or less satisfactory, this might be due to the fact that, sample farmers are the beneficiaries of RDRS and RDRS encourage the beneficiary farmers to participate in different organizations and social programs. Similarly the agricultural knowledge of the respondents is fair as the respondents are under 'Food for Progress for Bangladesh' project of RDRS and RDRS try to broaden the horizon of outlook of the beneficiaries through different non-formal education which ultimately improves the agricultural knowledge of the respondents.

Farmers' attitude towards the use of *dolochun* for crop production

The categorical distribution of the respondents based on their 'attitude towards the use of *dolochun*' score are presented in Table 2. The highest proportion (58.7 percent) of farmers had moderately favorable attitude, while 22.1 percent and 19.2 percent had highly favorable attitude and slightly favorable attitude towards the use of *dolochun* for crop production. The respondents are under the 'Food for Progress for Bangladesh' project of RDRS and through this program RDRS provided different non-formal education (like training, information support etc.) to the beneficiaries, all these help to broaden the horizon of outlook of the respondents which help to improve farmers' knowledge on the use of *dolochun* and bring favorable attitude towards the use of *dolochun* for crop production.

Table 2. Distribution of farmers according to their attitude towards the use of *dolochun* for crop production

Range		Categories	Respondents		Mean	SD
Possible	Observed		Number	%		
12-60	36-56	Slightly favorable (up to 41)	20	19.2	46.25	5.15
		Moderately favorable (41 to 50)	61	58.7		
		Highly favorable (above 50)	23	22.1		
		Total	96	100.0		

Relationships between farmers' attitude and their selected characteristics

The relationship between farmers' attitude towards use of *dolochun* and their selected nine characteristics are presented in Table 3.

Table 3. Relationship between the dependent and independent variables

Dependent variable	Independent variable	Correlation coefficient (r)
Attitude towards the use of *Dolochun* for crop production	Age	-0.293**
	Educational qualification	0.369**
	Family size	-0.272**
	Farm size	0.048
	Annual family income	0.042
	Training exposure	0.726**
	Organizational participation	0.408**
	Extension media contact	0.597**
	Agricultural knowledge	0.737**

'**' indicating significant at 1% level of significance

Among the nine (9) selected characteristics five (5) namely, educational qualification, training exposure, organizational participation, extension media contact and agricultural knowledge of the respondents had positively significant relationship with their attitude towards the use of *dolochun* for crop production. Therefore, farmers' high educational qualification, training exposure, organizational participation, extension media contact and agricultural knowledge help to bring their favorable attitude towards the use of *dolochun* for crop production. This might be due to the fact that, all these develop and broaden the horizon of outlook and insight of the farmers which might help farmers to develop more favorable attitude towards use of *dolochun*. On the other hand, age and family size of the respondents had negatively significant relationships with their attitude towards the use of *dolochun* indicating lower age and low family size helps to develop favorable attitude towards use of *dolochun* for crop production. This might be due to the fact that, young farmers are more eager to learn and adopt innovations compared to aged farmers (Rogers 2003). The large family size might give more economic stress to the farmers for maintaining livelihood and the farmers with large family might try to twig with conventional agriculture to avoid risk of innovations, ultimately might not help to develop favorable attitude towards innovations.

CONCLUSION

The majority of the farmers had 'moderately favorable' attitude towards the use of *dolochun* for crop production. These farmers can be used to tickle down their knowledge and information of *dolochun* to form a communal positive attitude to their respective locale. Different non-formal educational programs (like training, motivational campaign, field day, farmers' rally etc.) might enhance this kind of actions. Moreover there is an ample scope to motivate farmers towards the use of *dolochun* for crop production by different Government and Non-Government extension programs. 'Food for Progress for Bangladesh' of RDRS is one of the examples of motivating farmers towards innovations for overall agricultural development of Bangladesh. Such innovation based programs might be encouraged by the agricultural policy planners.

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