

Factors Affecting Farmers' Awareness about Latest Sugarcane Production Technologies in Some Selected Areas of Bangladesh

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ABSTRACT

The study was conducted in four representative sample sugar mills zones viz. Thakurgaon Sugar Mills (TSM), Jaipurhat Sugar Mills (JSM), North Bengal Sugar Mills (NBSM) and Carew & Co. The objectives of the study were to determine level of farmers' awareness and to identify factors affecting farmers' awareness about latest sugarcane production technologies. Overall 81.67% farmers were found to have high level of awareness compared to 18.33% have medium level awareness. None of the sample farmers was found to have low level awareness about selected latest sugarcane production technologies. Out of 11 characteristics, annual income, experience, organizational participation, cosmopolitanism, extension contact, attitude towards sugarcane cultivation and knowledge on modern cane production technologies were found to have significant influence on awareness.

Key words : Farmer's awareness, Sugarcane production technologies

INTRODUCTION

Sugarcane is one of the most important cash crops in Bangladesh. For increasing sugarcane yield, farmers are required to cultivate latest high yielding recommended sugarcane varieties and adopt improved production technologies. For adoption of improved sugarcane production technologies, farmers are required to aware it first i.e. know existence of particular improved technologies before he or she passes through subsequent innovation decision stages such as awareness, interest, evaluation and adoption.

The current recommended sugarcane production technologies e.g. sugarcane varieties tolerant to drought, flood and water-logging, varieties recommended for gur-making, recommended doses of fertilizer for different AEZ, intercropping with sugarcane, sugarcane cultivation with STP technology, paired row sugarcane cultivation, seed treatment with chemicals, use of carbofuran against top-shoot borer and white grub, use of regent against termites, use of sweeping net against pyrilla are recommended in recent years. The benefits from currently recommended technologies will actually be derived by individual farmers when it will be utilized efficiently. It was observed in a study conducted by BSRI that on an average only 11% sugarcane farmers are aware about 70% of the recommended sugarcane production technologies. Ganeshan and Mithiah (1991) found that there was significant difference among the study group with regard to the

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awareness of various schemes. Parveen *et al.* (1997) found that farmers' level of education, family size, annual income, mass media exposure and knowledge were found to have significant positive relationship with their awareness. Farmers, education, extension contacts and annual income had positive relation with their level of awareness (Hamid *et al.* 1997). Islam, *et al.* (1998) found that age of farmers was negatively correlated and agriculture knowledge of farmers was positively correlated with their level of awareness. Education, family size, farm size, organizational participation and cosmopoliteness were found to have significant relation with farmers' awareness.

So, a detail and in-depth study aimed at measuring the level of awareness about latest sugarcane production technologies is very important to undertake future extension education measures by sugar mills of Bangladesh. The study was conducted to determine level of farmers' awareness and to identify the personal, social, educational, psychological and other factors that have influence (either positive or negative) on the level of farmers, awareness about latest recommended sugarcane production technologies.

MATERIALS AND METHODS

The study was conducted within sugar mills zones in January to April, 2001. Sample survey technique was followed for this study. For drawing sample, multi-stage systematic proportionate random sampling method was followed. Out of Sugar mills zones four sugar mills zones were selected randomly. From each of the four sugar mills zones, one sub-zone and from each selected sub-zone one village was selected randomly. All of sugarcane farmers of these villages were listed first and classified as small, medium and large farmers. Thirty sugarcane farmers from each village were selected proportionately from all the farm size groups following systematic random sampling technique. So, the study constitute 120 (30x4) sample sugarcane farmers drawing from the four selected sugar mills zones shown in the Table 1.

Table 1. Distribution of sample sugarcane farmers

Sl. No.	Selected sugar mills	selected villages	Category of farmers							Total No. of farmers in the village	Total No. of selected farmers
			Large farmers		Medium farmers		Small farmers				
			No. of farmers in the village	No. of selected farmers	No. of farmers in the village	No. of selected farmers	No. of farmers in the village	No. of selected farmers			
1.	Thakurgaon Sugar mills	Fakhdanpur	10	4	32	13	33	13	75	30	
2.	Jaipurhat Sugar mills	Khashbatta	5	2	20	7	58	21	83	30	
3.	North Bengal sugar mills	Ashna	15	5	33	10	42	15	90	30	
4.	Carew & Co.	Loknathpur	9	3	47	15	38	12	94	30	
	Total :		39	14	132	45	171	61	342	120	

The level of farmers' awareness about latest sugarcane production technologies was dependent variable in this study. It was measured on the basis of 'farmers awareness' about some selected technologies such as variety Isd 20, Isd 28, Isd 29, fertilizer dose on the basis of AEZ, intercropping, paired row sugarcane with double intercrop, STP technology, seed treatment with chemicals, use of carbofuran, use of regent, use of sweeping net. If the farmer just heard about the selected technology his awareness score was "1" (one) and did not hear about the technology he was assigned with "0" (zero) score. A respondent was asked 11 questions about 11 technologies and he could have maximum of 11 awareness score (1x11). Thus the awareness score of a respondent could range from '0' (Zero) to '11' (Eleven) where '0' means having lack of awareness in all eleven technologies and score of '11' means upto awareness in all selected study technologies. The following characteristics of sugarcane farmers were considered as independent variables which are (i) age, (ii) education, (iii) family size, (iv) farm size, (v) annual income, (vi) experience in sugarcane cultivation, (vii) organizational participation, (viii) cosmopoliteness, (ix) extension contact, (x) attitude towards sugarcane cultivation, (xi) knowledge about sugarcane production technologies.

The collected data were compiled, tabulated and analysed in accordance with the objectives of the study. Percentage, range, mean, standard deviation etc were used as statistical measure describing farmers awareness about latest sugarcane production technologies and their selected characteristics. Correlation and regression analysis were used for determining relationship of farmers' awareness with their selected characteristics.

RESULTS AND DISCUSSION

a) Characteristics of the sugarcane farmers.

Out of various characteristics of sugarcane farmers, 11 characteristics were selected for searching relationship with farmers' awareness about latest sugarcane production technologies. Table 2 indicates that the highest proportion of sugarcane farmers (69.17%) were middle aged and 75% were primary and secondary level of education but still 18.33% were illiterate who did not know how to write and read. More than half (52.50%) of the respondents' families were found to be small size but 91.67% of the respondents' families were small and medium size (up to 7 members). Half of the respondent farmers (50.83%) had small farm size and 88.33% farmers had small and medium farm size (up to 3 ha). More than half (52.50%) of the respondent farmers had low level of income and near about three fourth (72.50%) of the sugarcane farmers had medium level of sugarcane cultivation experience. Near about two third (64.17%) of respondent farmers did not participate in any of voluntary organization but 86.66% of sugarcane farmers were found to have medium and high level of cosmopoliteness. Three-fourth (75.00%) of respondent farmers were found to have low level of extension contact whereas 74.17% of sugarcane farmers had medium level of attitude towards sugarcane cultivation and 78.33% had medium level of knowledge about sugarcane production technologies.

Table 2. Distribution of respondents according to their personal characteristics.

Characteristics	Categories	Number	Percentage	Standard deviation
Age	Young (<32)	15	12.50	12.43
	Middle aged (32 to 56)	83	69.17	
	Old (> 56)	22	18.33	
Education	Illiterate (unable to read or write)	22	18.33	4.17
	Primary education (class I-V)	52	43.33	
	Secondary education (class VI-X)	38	31.67	
	Higher Secondary & above (> class X)	8	6.67	
Family size	Small (up to 4 members)	63	52.50	2.33
	Medium (5 to 7 members)	47	39.17	
	Large (8 to 10 members)	7	5.83	
	Very large (above 10)	3	2.50	
Farm size	Small (0.02 – 1.00 ha)	61	50.83	1.95
	Medium (1.01 – 3.00 ha)	45	37.50	
	Large (3.01 – 10.00 ha)	14	11.67	
Annual income	Low (< Tk. 49,143)	63	52.50	22,390
	Medium (Tk. 49,143 – 93,923)	30	25.00	
	High (> Tk. 93,923)	27	22.50	
Sugarcane cultivation experience	Low (< 12 years)	15	12.50	13.60
	Medium (12- 40 years)	87	72.50	
	High (> 40 years)	18	15.00	
Organizational participation	No participation (Score 0)	77	64.17	4.61
	Low participation (Score < 3)	19	15.83	
	Medium participation (Score 3 to 7)	14	11.67	
	High participation (Score > 7)	10	8.33	
Cosmopoliteness	Low (Score < 8)	16	13.34	3.24
	Medium (Score 8 to 11)	52	43.33	
	High (Score > 11)	52	43.33	
Extension contact	Low (Score < 8)	90	75.00	4.93
	Medium (Score 8 to 16)	22	18.38	
	High (Score > 16)	8	6.67	
Attitude towards sugarcane cultivation	Low (Score < 74)	13	10.83	6.14
	Medium (Score 74 to 86)	89	74.17	
	High (Score > 86)	18	15.00	
Knowledge about sugarcane production technologies	Low level (Score < 2)	16	13.33	2.55
	Medium Level (Score 2 to 7)	94	78.33	
	High level (Score > 7)	10	8.34	

b) Extent of farmers' awareness about selected latest sugarcane production technologies

Eleven latest modern sugarcane production technologies were included in the present study for determining the technology awareness of the farmers. Table 3 reveals that more than three-fourths (76.67%) of the sugarcane farmers were found aware about variety Isd 20, 85% aware about variety Isd 28 and 50% of farmers were aware about variety Isd 29. More than one-third (35%) of the respondent farmers had awareness about recommended fertilizer dose. The most of the sugarcane farmers (98.33%) were aware about cultivation of intercrop, 94.16% of farmers had awareness about STP, 89.17% of respondents were aware about paired row sugarcane cultivation, 90.83% of respondents

were aware about seed treatment. Regarding furadan application 98.33% farmers of the sugarcane were found aware about its effectiveness in controlling top shoot borer and white grub. Only 65% farmers were found aware about use of regent for termites control. More than three-fourths (77.50%) of respondents were found to have no awareness about use of sweeping nets for pyrilla control.

Table 3. Number and percentage of farmers' against level of awareness about the selected technologies.

Name of the Technologies	No awareness		Awareness	
	Number of farmers	% of farmers	Number of farmers	% of farmers
Isd 20	28	23.33	92	76.67
Isd 28	18	15.00	102	85.00
Isd 29	60	50.00	60	50.00
Recommended doses of fertilizer for different AEZ.	78	65.00	42	35.00
Intercropping with sugarcane	2	1.67	118	98.33
Sugarcane cultivation with STP technology	7	5.84	113	94.16
Paired-row sugarcane cultivation	13	10.83	107	89.17
Seed treatment with chemicals	11	9.17	109	90.83
Use of carbofuran against top shoot borer and white grub	2	1.67	118	98.33
Use of regent against termite	42	35.00	78	65.00
Use of sweeping net against pyrilla	93	77.50	27	22.50

c) Overall farmers awareness about latest sugarcane production technologies.

The overall awareness score was estimated by summing the scores obtained against all of selected sugarcane production technologies. As such the total maximum possible awareness score was 11 (1x11). Based on the level of awareness about latest sugarcane production technologies, respondent farmers were classified in the following categories:

Table 4. Distribution of farmers on the basis of overall awareness about latest sugarcane production technologies.

Category	Number	Percentage
Low awareness (Score < 3)	0	0.00
Medium awareness (Score 3 to 6)	22	18.33
High awareness (Score > 6)	98	81.67
Total	120	100.00

From the Table 4 it was found that 81.67% farmers were of high awareness compared to 18.33% were of medium awareness but none of them were of low awareness about latest sugarcane production technologies. It reveals that most of the farmers have high awareness about the latest sugarcane production technologies.

d) **Relationship between farmers' characteristics and their level of awareness**

Simple correlation analysis was used for determining relationship between dependent and independent variables and presented in the Table 5. It shows that farmers' age, education, family size and farm size were found to have no significant relationship with their level of awareness. But annual income, experience, organizational participation, cosmopolitaness, extension contact, attitude towards sugarcane cultivation and knowledge were found to have significant positive relation with their level of awareness.

Table 5. Relationship between farmers awareness level about the latest sugarcane production technologies and their selected characteristics

Independent variables	Correlation coefficient (r)
	Zero order
1. Age	.093 NS
2. Education	.165 NS
3. Family size	.137 NS
4. Farm size	.120NS
5. Annual income	.249**
6. Experience	.203 *
7. Organizational participation	.344**
8. Cosmopolitaness	.362**
9. Extension contact	.356**
10. Attitude	.185 *
11. Knowledge	.270**

NS = Not significant

* = Significant at 0.05 level of probability

** = Significant at 0.01 level of probability.

Table 6. Multiple regression analysis of all the eleven independent variables

Sl No.	Independent variables	Regression coefficients b values	t df 118	Probability
1.	Age			
2.	Education	-.008	-.428	.669
3.	Family size	-.019	-.490	.625
4.	Farm size	-.065	-.789	.432
5.	Annual income	-.112	-1.413	.161
6.	Experience	.000004	2.191	.031
7.	Organizational participation	.021	1.145	.255
8.	Cosmopolitaness	.038	-1.053	.295
9.	Extension contact	.120	2.228	.028
10.	Attitude	.082	2.050	.043
11.	Knowledge	-.048	-.192	.848
		.179	2.992	.003

Multiple regression analysis revealed that farmers' annual income, cosmopoliteness, extension contact, cane production knowledge have significant positive influence on level of awareness shown in the Table 6. But farmers' age, education, family size, farm size, experience in sugarcane cultivation, organizational participation and attitude have no relation with farmers' level of awareness.

From the above discussion it may be concluded that overall 81.67% farmers have high level and 18.33% farmers have medium level of awareness about the latest sugarcane production technologies. Farmer's annual income, experience, organizational participation, cosmopoliteness, extension contact, attitude towards sugarcane cultivation and knowledge have significant positive relationship with their awareness level about latest sugarcane production technologies.

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