

FARMERS' COMMUNICATION BEHAVIOR IN RECEIVING INFORMATION ON IMPROVED RICE PRODUCTION TECHNOLOGIES

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ABSTRACT

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The main objectives of the study were to (i) determine and describe the extent of use of communication media by the farmers in receiving information on improved rice production technologies and (ii) determine the relationship between the individual characteristics of the farmers and their communication behavior in receiving that information. Data were collected from 120 randomly selected respondents of the two villages of Barkhada Union under Kushtia Sadar Upazilla of Kushtia District by using interview schedule. Five rice production technologies and 18 communication media were considered for measuring the communication behavior. According to media use index, the first five media recognized most important among the 18 communication media were progressive farmer (1220), neighbor (1218), friend (1064), sub assistant agriculture officer (924) and group discussion (694) in receiving information on rice cultivation. Among five technologies of rice cultivation, the highest extent of communication media was used for pest management practices for which media use index was 2825 and it was followed by recommended fertilizer dose (2284), modern varieties (1601), recommended seed rate (1289) and recommended irrigation (1171). On the basis of use of communication media, farmers were classified into three categories *viz.* occasional (66.67%), frequent (33.33%) users and none of them found to be regular user of communication media. Co-efficient of correlation was computed to explore the relationship between the selected characteristics of the farmers and their communication behavior in receiving the information. Education, cosmopolitaness, innovativeness, attitude towards agricultural technology had significant positive relationship with the communication behavior of the farmers. However, age of the respondents had significant negative relationship while, family size, farm size, annual income, organizational participation and problem confrontation of the farmers had no relationship with their communication behavior.

Key words: farmers, communication, behavior, information, rice, production technologies

INTRODUCTION

Rice is the staple food crop in Bangladesh. More than 75.35 percent of cultivable land is under rice cultivation and the country produced 25086 thousand MT rice in the year 2000-2001 with an average yield of 2.32 tons/ha (B.B.S. 2002). As population is being increased alarmingly with annual growth rate of 1.47 (B.B.S. 2002) it demands a corresponding increased yield of rice production. Intensive care and use of improved agricultural technologies by the farmers are the key issues for increasing and maximizing rice production. But most of the farmers have not yet adopted improved agricultural technologies though suitable technologies are available. One may quite logically assume that the messages of improved technologies have not yet been properly conveyed to the farmers. It may also happen that the technologies that have been developed do not reach to the bonafide users effectively for their application. The farmers usually are exposed to various forms of communication media to collect information. Different research studies showed that farmers prefer interpersonal information sources, group approach and mass media to receive information. Halim and Miah (1992) found that the small and medium farmers preferred interpersonal communication sources to get their necessary information while the rich farmers preferred interpersonal and mass media sources of information.

In Bangladesh, rice is grown in three seasons *viz.* Aus, Aman and Boro. Weather, climate and soil of Bangladesh are very suitable for rice cultivation but due to lack of use of appropriate practices, farmers are not able to raise potential high yields. Average yield of rice in Bangladesh is 2.32 tons/ha (B.B.S. 2002) while average yield of rice in China was 6.34 tons/ha in 1999 (Rice Production, Vol. 16, May 2002). So, there is great scope to increase rice yield in Bangladesh. Rapid population expansion followed by shrinkage of cultivable land necessitates increased yield of rice to keep pace with growing demand. In order to achieve that end and to diffuse appropriate practices among the farmers, it is inevitable to know the communication behaviors of the farmers in a farming community.

The present study was undertaken with the following objectives:

- (i) to determine and describe the extent of use of communication media by the farmers in receiving information on improved rice production technologies,
- (ii) to determine and describe the selected characteristics of the farmers and
- (iii) to explore the relationship between the individual characteristics of the farmers and their communication behavior in receiving information on improved rice production technologies.

MATERIALS AND METHODS

Two villages namely Jugia and Barkhada of Kushtia sadar Upazilla under Kushtia District were purposively selected as the locale of the study. The total number of the rice growers (600) in the study area was considered as the population of the study. One hundred and twenty farmers were randomly selected at the rate of 20% as sample from the total population. Data were collected through face-to-face interview by using structured interview schedule from the selected respondents of the study area during 01-30 March 2006. The methodology followed for measuring the dependent and independent variables are described below:

Measurement of independent variables

The characteristics of the farmers such as age, education, family size, farm size, annual income, organizational participation, cosmopolitanism, innovativeness, attitude towards agricultural technology and problem confrontation were the independent variables of the study. Age of a farmer was measured in terms of actual years from his birth to the time of interview. The education of a farmer was measured in terms of formal years of schooling. Family size was calculated by computing the total number of members of the respondents' family who jointly lived and ate together. The area possessed by the farmers under farm and homesteads were the basis for calculation of farm size. Annual family income was measured considering the total yearly earnings from agriculture and non agricultural sources of the members of a respondent's family. Organizational participation of the respondents was measured on the basis of two dimension; nature of involvement and number of organizations in which the respondents were involved. Cosmopolitanism of a farmer was measured by computing a cosmopolitanism score on the basis of his frequency of visits to 8 different places outside to his own social system. Innovativeness of the farmers was measured on the basis of their adoption of 10 new technologies related to agriculture and others considering earliness in the use of a technology by a farmer. Attitude towards agricultural technology of a farmer was measured by using Likert-type scale which contained 10 statements out of which 5 statements were positive and 5 statements were negative. The extent of problem faced by the farmer in rice production was measured on 5 aspect of rice cultivation by using a four point rating scale. The agricultural knowledge score of a farmer was measured by asking him 20 questions on different aspects of agriculture. For correct response to a question, a respondent could get a score of 5, while for wrong response he could get 0 (zero) and for partial correctness of the reply he could get partial credit.

Measurement of dependent variable

Communication behavior was the dependent variable of the study. It was measured on the basis of extent of use of 18 communication media of different nature. Extent of use of each communication medium was measured on a 4-point (0-3) rating scale. According to the instrument used for measuring extent of use of communication media, the range of scores of the individual farmer for a particular rice technology could range from 0 to 54 and that for 5 cultivation technologies could range from 0 to 270. Thus the range of total score of the communication behavior of an individual farmer could range from 0 to 270. To identify the important medium or the important technology, a media use index (MUI) was calculated. A total of 120 respondents gave their opinion on a 4 point (0-3) rating scale for a particular technology. Thus media use index of a particular medium for a single technology could range from 0 to 360. However, the media use index of a medium for 5 technologies would range from 0 to 1800. On the other hand, media use index of a technology would range from 0 to 6480 [120 respondents \times 18 media \times (0-3) rating scale].

RESULTS AND DISCUSSION

Selected Characteristics of the Farmers

In this section, the findings on the farmers' selected characteristics have been discussed and a summary profile of these characteristics is presented in table 1, which indicates an overwhelming majority (85.83%) of the respondents belonged to middle and young aged categories except a few (14.17%), among which 53.33% had education ranged from primary to secondary, far below the national average. Large portion (87.5%) of the respondents belonged to medium and small family that means education and population control were emphatically accomplished.

The highest proportion (83.33%) of the farmers had low annual income whereas only 3.33% farmers had high annual income. 39.17% of the respondents had no organizational participation but rest of them maintained low to high organizational participation. Most (75%) of the respondents belonged to medium to high cosmopolitanism category while only 25% had low cosmopolitanism habit. More than two-thirds (70%) of the respondents had low to medium innovativeness while only 30% of them had high innovativeness, more than three-fourths (75.50%) of the farmers in the study area formed moderate favorable to favorable attitude towards agricultural technologies while only 22.50% of them had low favorable attitude. Almost all the (94%) respondents faced low to medium problem confrontation in rice cultivation whereas only 6% faced high problem confrontation. The tabulated data indicates that most (76%) of the respondents had low to medium agricultural knowledge while only 24% of them had high agricultural knowledge.

Table 1. The characteristics profile of the sample farmers

Characteristics	Probable range	Observed ranged	Category	Number (N=120)	Percent	Mean	SD
Age (Years)	Unknown	22-68	Young aged (up to 35)	48	40.00	38.86	10.58
			Middle aged (36-50)	55	45.83		
			Old aged (≥ 51)	17	14.17		
Education (Year of schooling)	Unknown	0-14	No education (0 or 0.5)	47	39.17	4.30	4.16
			Primary education (1-5)	31	25.83		
			Secondary education (6-10)	33	27.50		
			Above secondary (>10)	9	7.50		
Family size (Number)	Unknown	2-12	Small family (2-4)	49	40.83	5.23	1.93
			Medium family (5-7)	56	46.67		
			Large family (>7)	15	12.50		
Farm size (Hectare)	Unknown	0.18-3.00	Marginal farm (upto 0.20 ha)	2	1.67	0.87	0.54
			Small farm (0.21-1.00 ha)	98	81.66		
			Medium farm (1.01-3.00 ha)	20	16.67		
			Large farm (>3.00 ha)	0	0.00		
Annual income ('000 Tk.)	Unknown	18-210	Low income (<100)	100	83.33	62.40	35.91
			Medium income (100-150)	16	13.33		
			High income (>150)	4	3.33		
Organizational participation (Rated score)	0-30	0-22	No participation (0)	47	39.17	2.53	3.53
			Low participation (1-2)	30	25.00		
			Medium participation (3-4)	17	14.16		
			High participation (>4)	26	21.67		
Cosmopolitaness (Rated score)	0-24	4-20	Low cosmopolitaness (<8)	30	25.00	10.97	4.40
			Medium cosmopolitaness (8-16)	72	60.00		
			High cosmopolitaness (>16)	18	15.00		
Innovativeness (Rated score)	0-40	8-40	Low innovativeness (<21)	49	40.83	21.26	7.91
			Medium innovativeness (21-26)	36	30.00		
			High innovativeness (>26)	35	29.17		
Attitude towards technology (Rated score)	10-50	38-50	Favorable attitude (46-50)	36	30.00	42.44	3.67
			Moderate favorable attitude (40-45)	57	47.50		
			Low favorable attitude (≥ 39)	27	22.50		
Problem confrontation (Rated score)	0-15	1-7	Low confrontation (up to 2)	50	41.67	2.84	1.58
			Medium confrontation (3-5)	63	52.50		
			High confrontation (>5)	7	5.83		
Agricultural knowledge (Rated score)	0-100	51-95	Low agricultural knowledge (<59)	29	24.17	70.06	11.29
			Medium agricultural knowledge (60-79)	62	51.67		
			High agricultural knowledge (≥ 80)	29	24.16		

Farmers' communication behavior in receiving information on improved rice production technologies

Farmers use communication media to get information related to agriculture. The present study was carried out to explore the communication behavior of the farmers in receiving information on improved rice production technologies. Farmers' communication behavior was measured by determining extent of use of 18 communication media (neighbors, friends, relatives, progressive farmer, fertilizer dealer etc.) on the basis of five rice production technologies such as modern varieties, recommended seed rate, recommended irrigation, recommended dose of fertilizer and pest management practices. The farmers' communication behavior score ranged from 22 to 135, average being 76.42 and standard deviation 26.06 (Table 2).

Table 2. Distribution of the rice growers according to their communication media use score

Category	Number	Percent	Mean	SD
Occasional user (0-90)	80	66.67	76.42	26.06
Frequent user (91-180)	40	33.33		
Regular user (181-270)	0	0		
Total	120	100		

Data presented in Table 2 revealed that the highest proportion (66.67%) of the rice growers were occasional user and 33.33% were frequent user of communication media while none was found as a regular user of communication media in receiving information on improved rice production technologies. The extent of use of each communication media against each rice production technologies along with their MUI are presented in Table 3 which indicates that as a communication media neighbor, progressive farmer and friends ranked first, second and third respectively for four rice production technologies viz.-recommended seed rate, irrigation, fertilizer and pest management.

Table 3. Communication media used by the farmers in receiving information on five rice production technologies

Communication media	Modern varieties		Recommended seed rate		Recommended irrigation		Recommended fertilizer dose		Pest management	
	Score (MUI)	Rank order	Score (MUI)	Rank order	Score (MUI)	Rank order	Score (MUI)	Rank order	Score (MUI)	Rank order
Neighbor	186	4	202	1	196	1	294	1	340	1
Friend	153	5	165	3	173	3	263	3	310	3
Relatives	92	8	87	7	59	7	192	5	190	7
Progressive farmer	214	1	198	2	186	2	287	2	335	2
Fertilizer dealer	32	12	20	14	12	14	192	5	250	6
Pesticide dealer	18	13	13	17	10	15	130	7	293	4
Seed dealer	198	3	135	4	8	16	64	11	160	9
SAAO	203	2	92	5	135	4	210	4	284	5
NGO Worker	6	16	0	18	0	18	10	17	35	17
Upazilla level officer	32	12	17	15	17	12	49	14	120	10
Group discussion	132	6	88	6	132	5	157	6	185	8
Field day	113	7	86	8	89	6	115	8	48	13
Result demonstration	62	10	54	9	33	10	84	9	40	15
Method demonstration	32	12	32	11	46	8	78	10	39	16
Radio	65	9	39	10	34	9	62	12	64	11
Television	39	11	24	12	22	11	61	13	53	12
Newspaper	14	14	15	16	14	13	24	15	46	14
Agricultural fair	10	15	22	13	5	17	12	16	33	18

To determine the extent of use of each communication media for all the rice production technologies, combined media use index (CMUI) was calculated and based on those CMUI, communication media were ranked and presented in Table 4.

Table 4. Rank order of the communication media used by the farmers in receiving information on all the rice production technologies

Sl. No.	Communication media	Combined media use index (CMUI)	Rank order
1	Progressive farmer	1220	1
2	Neighbor	1218	2
3	Friends	1064	3
4	SAAO (Sub Assistant Agriculture Officer)	924	4
5	Group discussion	694	5
6	Relatives	620	6
7	Seed dealer	565	7
8	Fertilizer dealer	506	8
9	Pesticide dealer	464	9
10	Field day	451	10
11	Result demonstration	273	11
12	Radio	264	12
13	Upazilla level officer	235	13
14	Method demonstration	227	14
15	Television	199	15
16	Newspaper	113	16
17	Agricultural fair	82	17
18	NGO worker	51	18

Data in Table 4 indicates that the progressive farmers were used as the communication media to the highest extent (1220) and it was closely followed by neighbor (1218), friend (1064), Sub Assistant Agriculture Officer (924) and relatives (620). On the other hand, news paper (113), agricultural fair (82) and NGO workers (51) were used relatively to a lower extent. The findings of Table 4 prompted to conclude that farmers use the most easily available and most reliable sources of information. Reliability may be the most important factor in selecting information media for contact. However, cost in respect of time, money and energy is also an

important factor. Economics of information acquisition dictate a person whether she/he will contact with a source or not. And for that reason, farmers used media like neighbor, progressive farmers, friends, Sub Assistant Agriculture Officer and relatives so frequently.

The extent of information seeking varies from technology to technology. That is, for same particular technologies farmers are inclined to particular communication media. So, the study of use of communication media on the basis of innovational information is necessary. In this regard, communication media use index has been calculated for each of rice production technologies, which could range from 0 to 6480, but the observed MUI ranged from 1171 to 2825. According to MUI, the technologies were ranked and presented in Table 5. On the basis of computed MUI, it was observed that the highest extent of media were used for pest management practices (2825) and it was followed by recommended fertilizer, modern varieties (1601), recommended seed rate (1289) and recommended irrigation (1171).

Table 5. Communication media use index for five rice production technologies

Sl. No.	Name of the technologies	Media use index (MUI)	Rank order
1	Pest management practices	2825	1
2	Recommended fertilizer dose	2284	2
3	Modern varieties	1601	3
4	Recommended seed rate	1289	4
5	Recommended irrigation	1171	5

Farmers want to get more yields from his limited land but disease and insect-pest often causes serious damage to their crops. In order to minimize the loss, they use communication media for pest management. Recommended fertilizer dose ranked 2nd for which farmers used communication media. The reason may be high cropping intensity is aggravating soil fertility in Bangladesh. New nutrient deficiency symptoms are being found and farmers are not enough educated to proper dose of fertilizer application.

Relationship between selected characteristics of the farmers with their communication behavior in receiving information on improved rice production technologies

An attempt was made to find out the relationship between the selected characteristics of the respondents with their communication behavior in receiving information on improved rice production technologies. Co-efficient of correlation results revealed that out of 11 selected characteristics of the respondents only 5 namely education, cosmopolitaness, innovativeness, attitude towards technology, agricultural knowledge had significant positive relationship. Possible reason might be higher level of education, cosmopolitaness, innovativeness, attitude towards technology and agricultural knowledge induce and facilitate individuals to receive more agricultural information which helps individuals to increase his/her understanding and awareness on different aspects of agricultural information. Islam (1995), Nuruzzaman (2003), Alam (2004) also found similar relationship. Age of the respondents had significant negative relationship at 0.01 levels with communication behavior in receiving information on improved rice production technologies which indicates that with increase in the age of the farmers, their use of communication media is decreased. The reason may be that with the increase of age of farmers they become more experienced and gather lot of information. Bhuiyan (1988) also found similar relationship.

Table 6. Co-efficient of correlation between selected characteristics of the farmers with their communication behavior

Farmers' characteristics	Correlation Coefficient ('r') of farmers' communication behavior in receiving information on improved rice production technologies
Age	-0.551**
Education	0.530**
Family size	0.091
Farm size	0.152
Annual income	0.074
Organizational participation	0.030
Cosmopolitaness	0.273**
Innovativeness	0.301**
Attitude towards technology	0.735**
Problem confrontation	0.016
Agricultural knowledge	0.642**

* Significant at 0.05 level of probability, ** Significant at 0.01 level of probability

On the other hand, family size, farm size, annual income, organizational participation and problem confrontation had no relationship with communication behavior in receiving information on improved rice production technologies.

CONCLUSION

On the basis of data analysis and their logical interpretation the study revealed that majority (66.67 percent) of the respondents were occasional users of communication media in receiving information on improved rice production technologies while 33.33 percent respondents were frequent users of communication media and none was found as a regular user of communication media. Under the existing circumstances, it may be concluded that diffusion agencies should give proper attention to disseminate information of improved rice production technologies through using appropriate communication media.

The study also revealed that progressive farmers were used as the communication media to the highest extent and it was closely followed by the neighbor, friend, Sub Assistant Agriculture Officer, relative, seed dealer, fertilizer dealer and pesticide dealer. On the other hand, highest extent of media were used for pest management practices and it was followed by recommended fertilizer, modern varieties, recommended seed rate and recommended irrigation. The findings lead to suggest that attempt should be made by the policy makers and concerned authorities to locate and identify the person in the community to whom farmers have confidence and train them so that they can offer better advices to the fellow friends, relatives and neighbors. Besides, dealers of fertilizer, seed and pesticide play a very important role in providing technical advices to farmers in rural areas. Any arrangement for increasing the knowledge level of these dealers would be an important step towards transferring improved rice production technologies to the farmers.

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