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Role of Mass Media in Introducing Climate Smart Agriculture Technologies in Coastal Bangladesh

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Abstract: ***Agriculture extension is essentially a message delivery system organized to convey the latest findings of agricultural research to farmers. Effective communication is therefore, the prime requisite in extension work. The study was conducted to find out the role of mass media in introducing Climate Smart Agriculture (CSA) technologies in coastal area of Bangladesh. The data were collected from 60 randomly selected coastal farmers from the period of April 2017. A mixed method research approach (personal interview and focus group discussion) was used to determine the role of mass media in introducing CSA technologies. The findings of the study revealed that mass media in most of the cases (51.7%) played medium role in introducing CSA technologies while in 33.3% cases played high role and only in 15% cases played low role. Correlation analysis indicated that among the selected socio- economic characteristics, respondent's education, annual family income, household assets, communication exposure, agricultural training and perception showed positive and significant relationship with the role of mass media. On the other hand, age showed negative significant relationship while credit received showed no significant relationship.***

Keywords: Role; mass media; CSA technologies; coastal farmers, Bangladesh

1. Introduction

Bangladesh is a land of agriculture, having total land area of 148,460 sq. km. and among this; the coastal zone constitutes 32 percent of the area and 28 percent of the total population [7]. This huge coastal zone of Bangladesh is used for agriculture, shrimp and fish farming, forestry, salt production, ship-breaking yards, ports, industries, human settlements and wetlands. So there is a great scope in the coastal zone for future Bangladesh, but this area is prone to multiple threats such as cyclones, storm surges, salinity and floods, as well as earthquakes, tsunamis, and above all, climate change. The government has identified the zone as an "agro-ecologically disadvantaged region" [5]. Like in other parts of Bangladesh, coastal livelihoods are largely dependent on agricultural crops, mainly rice and agricultural land in the coastal area is limited to wet season cropping because soil salinity is high in the dry season. As the population, their demand is increasing and cultivable land is decreasing very rapidly so it's high time to make better utilization of the huge costal land for feeding the upcoming population. Now the policy makers have to think about Climate Smart Agriculture (CSA) technologies in this coastal zone. CSA technologies can ensure food security with better adaptation, sustainability in agricultural production and finally mitigation [4]. According to [3] by 2050, South Asian rice production is set to fall by 14%, wheat production by up to 49% and maize production by up to 19% due to climate change impact and at the same time, the South Asian rural population is expected to peak in the next 20 years so climate smart agriculture technologies are urgent. But the concept of CSA is new for the coastal farmers who are disadvantaged in many cases. So numerous advertisements is needed for the betterment of CSA technologies in the huge coastal area and the main duty of introducing this CSA technologies to the coastal farmers is on the Department of Agriculture Extension (DAE) but it is very difficult to cover the large coastal area by the extension personnel with minimum resources. So in spite of voluminous scopes in the coastal zone it can't ensure its productivity to the national as well as international economy. Thus to cover the large area and population there is no alternative to think about mass media. Mass media like television, radio, newspaper, internet etc. can play a great role in introducing these CSA technologies to the coastal farmers of Bangladesh. Coastal farmers have to be informed about this mass media and its role in introducing CSA technologies for their own betterment and Govt. have to take initiatives to increase the use of mass media in the remote coastal zone. With the introduction of CSA technologies through mass media in the coastal area of Bangladesh, the rural farmer's agricultural production will be increased and their livelihood shall be changed which directly influence their standard of livings. So, this study is very meaningful for transfering of CSA technologies through mass media to the coastal farmers.

2. Materials and Methods

2.1 Locale of research and data collection

The study was conducted in two unions namely Char Jabbar and Char Jubille of Subarnachar upazila under Noakhali district (Figure 1). Most of the farmers in this area are coastal, whose livelihood depends on various farming activities. Their farming activities are being changed and affected due to climate change. The area is mainly affected by salinity, sea level-rise, flood, cyclone etc. About 73% of the total farmers are coastal farmers in Subarnachar upazila and around 300 coastal farmers live in each village [2]. The actual population size was 600, out of which 10 percent population were selected from two villages as sample. The sample size was 60 and data were collected during April 2017 using structured questionnaire.

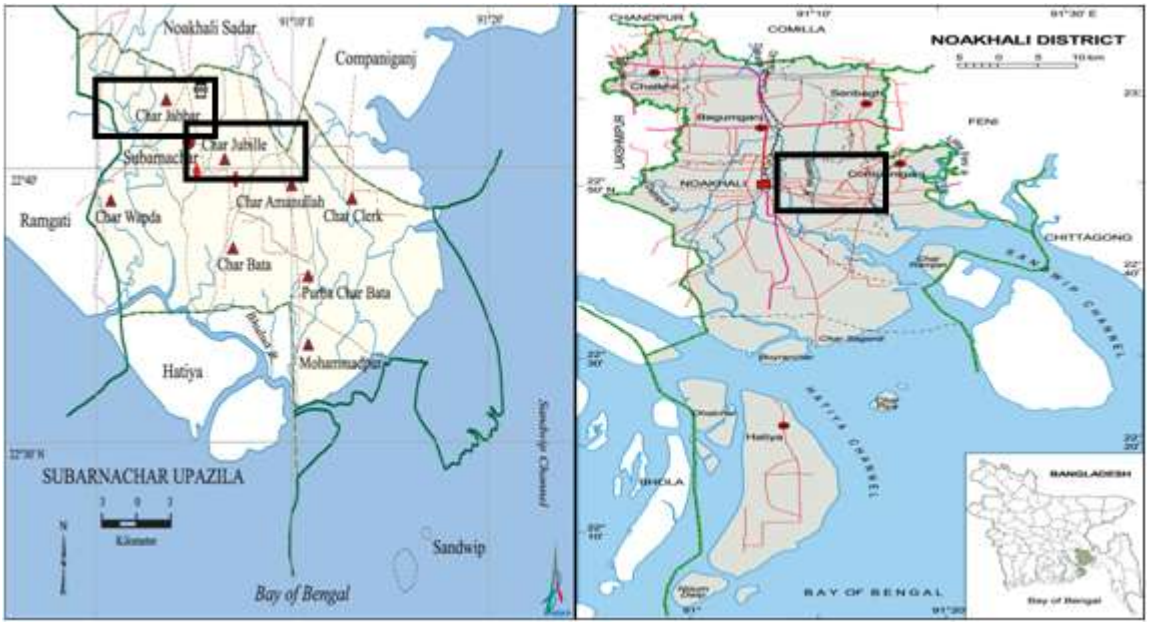

Figure 1: Map of the study area; Subarnachar upazila under Noakhali district

2.2 Data collection

The sample size was 60. In order to get qualitative data two Focus Group Discussions (FGDs) were arranged in the study area. Each group consisted of 12 participants. With a view to getting in depth information another two Key Informant Interviews (KIIs) were conducted in the study area. The qualitative data helped the researcher to design interview schedule for the study. A personal interview was conducted with the 60 respondents through the interview schedule during April 2017. The role of mass media in introducing CSA technologies was the dependent variable of the study. The eight selected characteristics of the coastal farmers namely age, level of education, household assets, annual family income, credit received, communication exposure, training received and perception were the independent variables of this study. The variable was measured on the basis of role of mass media in introducing CSA technologies. The role score was computed on the basis of contribution of mass media in introducing CSA technologies on 15 aspects. A-four point rating scale was developed to measure the role of mass media namely frequently, occasionally, rarely and not at all. Score assigned for each of these responses were 3, 2, 1 and 0 respectively. Thus, score of role of mass media in introducing CSA technologies in 15 items could range from 0 to 45.The existing mass media was identified making a binary question on 10 aspects and the best one was marked by ranking order. The severity of constraints in using mass media was measured by adding scores on different parameters.

2.3 Data Analysis

The collected data were coded, categorized, tabulated and analyzed scientifically. The local units were converted into standard units. The qualitative data were transferred into quantitative data by appropriate scoring techniques. The SPSS computer programme was used for analysing the data. Various descriptive statistical measures such as range, frequency, number, percentage, mean, standard deviation (SD), coefficient of variation (CV) and rank order were used for categorization and describing the variables. Pearson's product moment correlation coefficient (r) was utilized both for data evaluation and hypotheses testing.

3. Results and Discussion

3.1 Socio-demographic characteristics of the coastal farmers

The findings of the study indicated that the highest portion of the respondents (41.7%) were middle aged while majority (43.3%) of the respondents had primary education. The majority (51.7%) of the coastal farmers had medium household assets and highest portion (48.4%) of the respondents had medium annual income while most (43.3%) of the respondents received low amount of credit. The study also revealed that majority (58.3 %) of the farmers' maintained moderate type of communication exposure for using mass media. In terms of training received, the findings indicated that majority (45%) of the respondents received short duration training while majority (54.3%) of the respondents had medium perception on mass media and CSA technology (Table1). [6] Observed similar types of socio-demographic features in their research work; Role of mass media in transfer of Agricultural technologies.

Table 1: Salient features of the selected characteristics of farmers

Socio-economic variables	Farmers (n= 60)		
	(%)	Mean	Standard deviation
Age (years)	-	45.48	14.36
Young (18-35)	30.0		
Middle (36-55)	41.7		
Old (above 55)	28.3		
Level of education	-	5.00	4.29
Illiterate (0)	25.0		
Primary (1-5)	43.3		
Secondary (6-10)	21.7		
Above secondary (Above 10)	10.0		
Household assets (thousand)	-	282.23	178.96
Low (up to 200)	40.0		
Medium (201-500)	51.7		

High (above 500)	8.3		
Annual family income (thousand)	-		
Low (up to 60)	33.3	84.59	33.82
Medium (61-100)	48.4		
High (above 100)	18.3		
Credit received (thousand)	-		
No credit (0)	26.7		
Low credit (up to 35)	43.3	27.92	30.12
Medium credit (36-70)	21.7		
High credit (above 70)	8.3		
Communication exposure (scale score)	-		
Poor exposure (upto14)	20.0		
Medium exposure (15-28)	58.3	22.20	7.74
High exposure (29 and above)	21.7		
Agricultural training received (scale score)	-		
No training (0 days)	35.0		
Short training (1 -7 days)	45.0		
Medium training (8-14 days)	16.7	3.70	4.18
Long training (above 14 days)	3.3		
Perception on mass media(scale score)	-		
Low (up to 10)	12.4		
Medium (11-20)	54.3	18.02	5.46
High (above 20)	33.3		

3.2 Role of mass media in introducing CSA technologies

The results show that the highest portion of the respondents (51.7%) observed medium role of mass media in introducing CSA technologies, while 33.3% identified high contribution and only 15% observed low contribution. This means that the large portion (85%) of the respondents observed medium to high role of mass media in introducing CSA technologies and they were in the categories of young to middle aged (Figure2). It is seen (table 1) that the young to middle aged farmers are educated enough, receive more training and information from different sources and are interested enough to the use of mass media, so they are enjoying too much benefits compare to old categories in using mass media for introducing CSA technologies. According to [1] about 46% of the respondents identified moderate role of mass media in disseminating agricultural technologies while 32% observed low role and 22% observed high role of mass media.

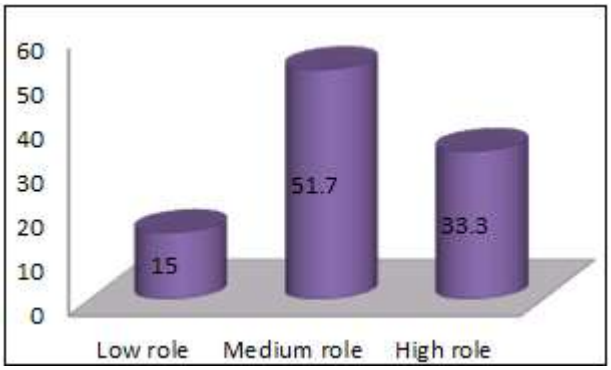

Figure 2: Overall role of mass media in introducing CSA technologies

The result shows that, the role of mass media in introducing CSA technology score ranged from 10 to 40 against the possible range of 0 to 45 with an average of 26.50 and standard deviation 7.88. Findings indicate that majority of the respondents (85%) had faced medium to high role of mass media in introducing CSA technologies in the coastal area of Bangladesh (Table 2). According to [10] the use of television as mass media played vital role in disseminating agricultural technologies to the rural farmers that ensure better practices and 73% of the respondents observed moderate to high role of television in disseminating agricultural technologies.

Table 2: Distribution of the farmers according to the role of mass media

Categories	No.	Percent	Mean	SD
Low role (up to15)	9	15.0	26.50	7.88
Medium role (16-30)	31	51.7		
High role (above 30)	20	33.3		
Total	60	100.0		

3.3 Relationship between dependent and independent variables

The correlation analysis shows that age of the farmers had negative significant relationship with role of mass media in introducing CSA technologies in coastal area while level of education, household assets, annual family income, training received, communication exposure and perception on mass media had positive and significant relationship. On the other hand, credit showed no significant relationship with the role of mass media in introducing CSA technologies (Table3).

Table 3: Correlation analysis showing role of mass media

Variables	*Correlation co-efficient (r)*
Age	-0.669(**)
Education	0.720(**)
Household assets	0 .438(**)
Income	0.644(**)
Credit	0.184
Training	0.583(**)
Communication exposure	0.852(**)
Perception	0.876(**)

** = Significant at 1 percent (0.01) level (2-tailed)

3.4 Existing mass media used in introducing CSA technologies

It is evident from the figure that amongst the ten existing mass media used by coastal farmers in introducing CSA technologies; the television (93%), mobile phone (89%), internet (82%), newspaper (75%), leaflet (65%), poster (56%) etc. are widely used by the coastal farmers (Figure3). According to [9] television is mostly used (75%) for transferring agricultural technologies to the remote farmers followed by radio (65%), newspaper (62%), mobile phone (60%), internet (58%) etc.

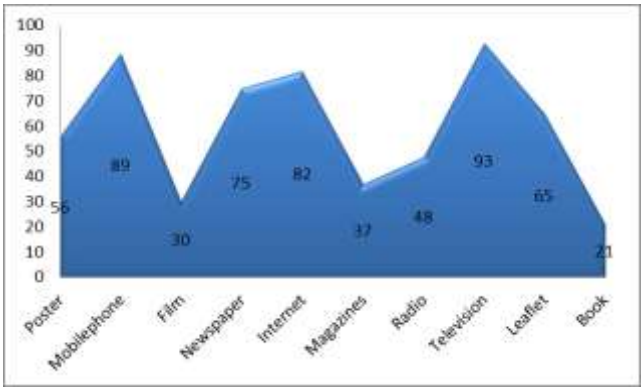

Figure 3: Existing mass media used in introducing CSA technologies

3.5 Constraints in using mass media for introducing CSA technologies

The results show that the highest portion of the respondents (48.3%) had faced moderate constraints in using mass media for introducing CSA technologies while 26.7% of the respondents faced low constraints and 25% respondents had faced high constraints. The coastal farmers are strongly facing the problems of unavailability of mass media (95%), lack of awareness (89%), poor communication (84%), poor extension service (77%), illiteracy (72%), lack of information (69%) ect. According to [8] the farmers are facing various types of constraints in using mass or electronic media for technology dissemination and the common are illiteracy, poverty, unavailability of media, fear of new technology, lack of information, poor extension service, lack of power supply, poor communication system etc.

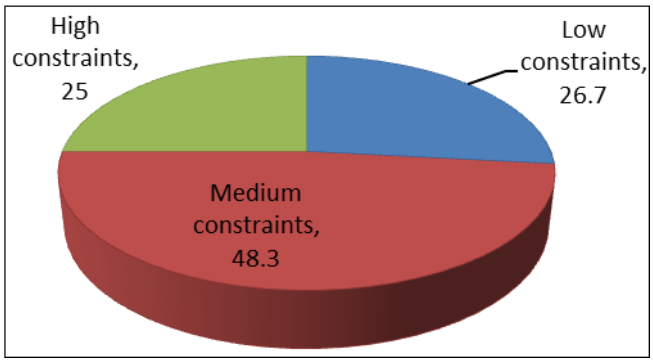

Figure 4: Severity of constraints in using mass media for introducing CSA technologies

4. Conclusions

The study explored that age of the farmers is negatively significant with the role of mass media in introducing CSA technologies while education, annual income, household assets, training, communication exposure and perception had positive and significant relationship. Thus it may be concluded that middle to old aged farmers with proper education, training, income, good communication exposure and better perception can increase the use of mass media in introducing CSA technology in their farming activities and ensure sustainable crop production, better adaptation and mitigation.

Findings showed that majority of the farmers (73.3%) had faced high to moderate extent of constraints in using mass media for introducing CSA technologies in the coastal area. Thus, it may be concluded that various obstacles hinder the way of right use of mass media in introducing CSA technologies and various development agencies should motivate farming communities to adopt appropriate mass media that helps in introducing CSA technologies for their farming activities and should provide adequate technical support, extension service in addition to education, income generating opportunity and training.

Average score of role of mass media in introducing CSA technologies was found 26.50 which are not so satisfactory, because all aspects of contribution of mass media in introducing CSA technologies were not properly fulfilled by the farmers in higher extents. Thus, it can be concluded that such low to medium contribution of mass media may not ensure proper adoption of CSA technology. Various income generating opportunities like establishment of agro-processed industry and small cottage industry should be established for increasing the coastal farmers' income. As a result, farmers can save more money, enlarge farm size and use mass media properly and ultimately produce more crops for upcoming generations.

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