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Use of Information and Communication Technology by Farmers to Access Agricultural Information in Jorhat District of Assam, India

Poree Saikia[1*], Manju Dutta Das[1] and Manoshi Baruah Deka[1]

[1]Department of Extension and Communication Management, College of Home Science, Assam Agricultural University, Jorhat-13, India.

Authors' contributions

This work was carried out in collaboration between all authors. Author PS designed the study, the interview schedule and collected the data. Authors MDD and MBD performed the statistical analysis. Author PS managed the analyses of the study. Author MDD wrote the first draft of the manuscript. Author MBD managed the literature searches and edited the manuscript. All authors read and approved the final manuscript.

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ABSTRACT

The benefits of the green revolution greatly improved agricultural productivity. However, there is a demonstrable need for a new revolution that will bring lower prices for consumers (through reduced waste and more-efficient supply chain management), contribute to agriculture, and incentivize farmers (for example, through higher income) to increase their production. ICT is one of these solutions, and has recently unleashed incredible potential to improve agriculture in developing countries like India. Information and communication have always mattered in agriculture. Ever since people have grown crops, raised livestock, and caught fish, they have sought information from one another. Thus the important contribution made by ICT provides the necessary basis and justification for the present research study on "Use of Information and Communication Technology by farmers to

**Corresponding author: E-mail: poreesaikia@gmail.com;*

access agricultural Information in Jorhat District of Assam with following objectives i) To study the personal and socio-economic characteristic of farmers, ii) To find out the type of ICT used by farmers to access agricultural information and iii) To determine the purpose of using ICT by the farmers. The present study was carried out in Jorhat districts of Assam, India to find out the use of ICT by farmers to access agricultural information. For the study two blocks namely Jorhat development block and North west development block were selected randomly. From each block two villages, total four villages were selected randomly. Then, from each village twenty five (25) farmers were selected randomly thus altogether 100 farmers were selected for the present study. Data was collected personally by interview method. The findings revealed that 62.00 per cent of farmers were from the medium socio-economic status group, the majority of farmers (51.00%) used radio to get agricultural information and three main purposes in seeking agriculture information using ICT are information of new technology, market information and disease and pest control measures. So, it can be concluded that that radio was used by majority of farmers. Radio as traditional ICT is still seen as highly effective method of information dissemination and it is the most widely used means of mass communication.

Keywords: ICT; agricultural information; farmers.

1. INTRODUCTION

Agriculture continues to be the occupation and way of life for most of the Indian population even today. Indian Agriculture had been on traditional lines till the first waves of Green Revolution in late 60s. The benefits of the green revolution greatly improved agricultural productivity. However, there is a demonstrable need for a new revolution that will bring lower prices for consumers (through reduced waste and more-efficient supply chain management), contribute to agriculture, and incentivize farmers (for example, through higher income) to increase their production. Public and private sector actors have long been on the search for effective solutions to address both the long- and short-term challenges in agriculture, including how to answer the abundant information needs of farmers. ICT is one of these solutions, and has recently unleashed incredible potential to improve agriculture in developing countries like India. Information and communication have always mattered in agriculture. Ever since people have grown crops, raised livestock, and caught fish, they have sought information from one another.

Farmers in a village may have planted the “same” crop for centuries, but over time, weather patterns and soil conditions change and epidemics of pests and diseases come and go. Updated information allows the farmers to cope with and even benefit from these changes. Providing such knowledge can be challenging, however, because the highly localized nature of agriculture means that information must be tailored specifically to distinct conditions. On the other hand, individual contact through field level staff is limited by logistics, resources, skills and sheer numbers. It has been estimated that there are roughly 110,000 extension workers to cater to the needs of farm families spread across 600,000 villages. Furthermore, the government run public extension system has a poor track record of reaching small and marginal farmers [1]. All these factors combine to result in an information deficit situation where about 60% of the farmers – usually the small and marginal – do not have access to a reliable source of agricultural information.

Therefore the role of Information and communication Technology to develop agricultural research, education and extension to improve quality of life in rural area is well established. ICT can help an average Indian farmer to get relevant information regarding agro-inputs, crop production technologies, agro processing, market support, agro-finance and management of farm agri-business. ICT also gives opportunity for farmers to widen their market and gain new customers through internet [2]. According to Obiechina [3], agricultural farmers have the opportunity to access information through ICT and have the opportunity to create networks with development agencies and other farmers, thus increase their chances to strengthen their agriculture productivity. Thus information and communication technologies are generating possibilities to solve the problem by giving an opportunities to bridging the gap between the information rich and information poor. The above background, therefore, provides the necessary basis and justification for this study with the following objectives.

i) To study the personal and socio-economic characteristic of farmers.
ii) To find out the type of ICT used by farmers to access agricultural information.
iii) To determine the purpose of using ICT by the farmers.

2. METHODOLOGY

The study was conducted in the state of Assam in Upper Brahmaputra Valley Zone, which is selected purposively, for researcher convenient in the year 2014. A multistage purposive cum simple random sampling design was followed. From the selected agro-climatic zone one district namely Jorhat district, India was selected purposively. From the selected district, two Blocks namely Jorhat Development Block and North West Development Block were randomly selected. From each block two villages were selected randomly. Thus total numbers of villages were four. Then twenty five farmers who were engaged in cultivation of paddy and vegetables were randomly selected as the final sample from each village. Thus total 100 farmers as respondents were selected for the present study, as this sample size is the convenient representation of the population.

A pre-tested interview schedule was used for getting the complete and desired information. The collected data were coded, tabulated and analyzed by using appropriate tests and techniques. The statistical techniques along with their uses were:

Percentage: It is a fraction expressed with 100 as its denominator. It is used to any set of data for comparison.

Mean: It is the arithmetic average and was used to measure the type of the observation as a whole. The mean for all the readings were worked out as mentioned below.

$$\text{Mean } \bar{X} = \frac{\sum X}{n}$$

Where,

∑X = Summation of item values
N = Number of item

Standard deviation: To find out the extent of variability shown by the variables, i.e., the dispersion of the variables around the mean, standard deviation (SD) was used. The formula is mentioned below:

$$SD = \sqrt{\frac{\sum(xi - \bar{x})^2}{n-1}}$$

Where,

d = Standard deviation
n = Total number of respondent
Xi = Variables of the study
$\bar{x}$ = Mean of the distribution

3. RESULTS AND DISCUSSION

3.1 Personal and Socio-economic Characteristics of the Farmers

A perusal of data presented in Table 1 revealed that 42.00 percent of farmers belonged to the age group 36 – 45yrs. As regard to the marital status it was revealed that majority of the farmers (83.00%) were married. Majority of the farmers (75.00%) belonged to general caste. Finding further shows that large percent (78.00%) of farmers belonged to nuclear family. In term of family size, 45 per cent of farmers belonged to the small family group i.e. up to 4 members. Data in Table 1 shows that 35 per cent of the farmers had education up to middle school level. In respect to organizational membership higher percentage of the respondents i.e. 68.00 per cent had membership in one organization. The findings also reveals that 47.00 per cent of farmers had marginal land holdings and possessed mixed type of house (43.00%). Majority 55.00 per cent of farmers had medium level of material possession and 62.00 per cent of farmers were from the medium socio-economic status group. This finding is commensurate to the finding of Devi [4] and Saikia. Saikia P [5] who observed that majority of respondents had membership in one organization, had marginal land holding, medium material possession and medium socio-economic status.

3.2 Type of ICT Used by Farmers to Access Agricultural Information

Though farmers are marginal farmers and residing in katcha type of house and due to advancement of ICT farmers have access to different electronic media as radio, T.V, mobile phone, dish T.V.

Table 2 showed that majority of farmers 56.00 per cent used radio followed by mobile (49.00%) and 35 per cent used television for accessing agricultural information. From the findings it can

be conclude that radio was used by majority of farmers and in case of mobile the FM radio services were used by the farmers. This proves that farmers still rely on traditional media for their information. It may be due to the fact that they can listen to radio in their work place and moreover there is no need of electricity.

This finding is in line with Saravanan [6] who in study found that radio is widely possessed by the rural farm families (80 per cent) and used for getting agricultural information.

Findings of the Table 2 further revealed that 21.00 per cent of farmers used Dish TV followed by 9.00 Per cent used CD player, it may be due to not telecasting of agricultural programme in Dish TV and not availability of CD on agricultural topics. It is interesting to know that no farmers used computer and internet to access agricultural information. This may be due to the fact that the farmers may not know the use of computer and internet to access agriculture information.

Table 1. Distribution of farmers according to their personal and socio-economic characteristics N=100

Characteristics	Category	Percentage (%)
Personal characteristics		
Age	25yrs – 35yrs	30.00
	36yrs – 45yrs	42.00
	46yrs – 55yrs	28.00
Marital status	Married	83.00
	Unmarried	17.00
Socio- economic characteristics		
Caste	General	42.00
	OBC	27.00
	MOBC	10.00
	SC	5.00
	ST	16.00
Family type	Nuclear	78.00
	Joint	32.00
Family size	Small (Up to 4)	45.00
	Medium (5-7)	34.00
	Large (8 and above)	21.00
Educational qualification	Illiterate	3.00
	Can read and write	8.00
	Primary school level	15.00
	Middle school level	35.00
	High school level	25.00
	Higher secondary level	17.00
	Graduate and above	5.00
Organizational membership	No membership	22.00
	Member of one organization	68.00
	Member of more than one organization	10.00
Land holding	Marginal farmer	47.00
	Small farmer	24.00
	Medium farmer	21.00
	Big farmer	8.00
Type of house	Katcha	39.00
	Mixed	43.00
	Pucca	18.00
Material possession	Low	34.00
	Medium	55.00
	High	11.00
Socio-economic status	Low SES (below 6.55)	29.00
	Medium SES (6.55 to 9.53)	62.00
	High SES (above 9.53)	9.00

3.3 Purpose of Using ICT by the Farmers

The data presented in Table 3 shows that majority of the farmers (51.00%) used ICT to know the information of new technology followed by 49.00 percent used ICT to know the market information and 42.00 per cent of the farmers used ICT to know disease and pest control measures. Table further reveals that 37.00 per cent of farmers used ICT for loan advice and only 14.00 per cent used ICT for weather information. Similar finding was also observed by Hassan et al. [7], who found that majority of the respondents used mobile phone, telephone and television as their main sources for seeking market information. These three ICT tools are also used by the agri-based entrepreneurs in eleven other purpose such as seeking information on production input, advice, loan service, agricultural land, post harvest, record saving, entrepreneurs information sharing, disease control, output processing, business opportunity and ICT information.

Table 2. Distribution of farmers according to type of ICT used by farmers to access agricultural information N=100

Sl. no	Type of ICT	Percentage (%)
1	Radio	56.00
2	Television	35.00
3	Mobile (radio)	49.00
4	C.D player	9.00
5	Dish T.V	21.00
6	Computer	-
7	Internet	-

Table 3. Distribution of farmers according to purpose of using ICT N=100

Sl. no	Purpose	Percentage
1	Disease and pest control measures	42.00
2	Loan advice	37.00
3	Weather information	14.00
4	Market information	49.00
5	Information of new technology	51.00

4. CONCLUSION

Information is one of the key inputs in agriculture and information deficits constrain agricultural productivity in India. This paper discussed the purpose of seeking agricultural information seeking by farmers in the state of Assam, India. It tried to explain the reasons behind use of certain media – including ICTs - by the farmers over other available sources.

From the result, it can be concluded that radio was used by majority of farmers. Radio as traditional ICT is still seen as highly effective method of information dissemination and it is the most widely used means of mass communication. At low cost, radio can connect mass people in remote areas and help them to improve their farming system and productivity. Now a days radio programmes can be listen through mobile also. On average, three purposes in seeking agriculture information using ICT are information of new technology, market information and disease and pest control measures.

Thus in agriculture extension ICT can be used for the development of farmers which will surely open up a vast range of possibilities, giving an opportunity to the vast majority of the population living in rural areas.

5. RECOMMENDATION

Although there are different types of ICTs but we can encourage the agricultural extension personnel to use the cheapest ICT i.e radio and mobile, to reach the farmers. And also the extension personnel can make CD on different aspects of agriculture like nursery raising, production of vermin-compost etc in local language and can used in their training programmes.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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