FARMERS' KNOWLEDGE AND ATTITUDE REGARDING CULTIVATION OF SALT TOLERANT VARIETY (BRRI dhan47) OF RICE

A Thesis

By

MD. ANISUR RAHMAN

MASTER OF SCIENCE IN AGRICULTURAL EXTENSION AND INFORMATION SYSTEM

DEPARTMENT OF AGRICULTURAL EXTENSION ANDINFORMATION SYSTEM
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By

MD. ANISUR RAHMAN

Reg. No. 09-03540

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SEMESTER: Jan-June, 2015

APPROVED BY:

Thahamina Bagum
Assistant Professor & Supervisor
Dept. of Agricultural Extension and Information System
Sher-e-Bangla Agricultural University

Prof. Dr. Md. Sekender Ali
Co-Supervisor
Dept. of Agricultural Extension and Information System
Sher-e-Bangla Agricultural University

Dr. M.M. Shofi Ullah
Chairman
Dept. of Agricultural Extension and Information system
Sher-e-Bangla Agricultural University

DEPARTMENT OF AGRICULTURAL EXTENSION

AND INFORMATION SYSTEM

Sher-e-Bangla Agricultural University

Sher-e-Bangla Nagar, Dhaka-1207

Memo No: SAU/

CERTIFICATE

This is to certify that the thesis entitled ***"Farmers' Knowledge And Attitude Regarding Cultivation Of Salt Tolerant Variety (BRRI dhan 47) Of Rice"*** *submitted to the Faculty of Agriculture, Sher-e-Bangla Agricultural University, Dhaka, in partial fulfillment of the requirements for the degree of* ***Master of Science in Agricultural Extension and Information System****, embodies the result of a piece of bona fide research work carried out by* ***Md. Anisur Rahman****, Registration No.* ***09-03540*** *under my supervision and guidance. No part of the thesis has been submitted for any other degree or diploma.*

I further certify that any help or source of information, received during the course of this investigation has been duly acknowledged.

Dated:

Dhaka, Bangladesh

Thahamina Bagum
Assistant Professor & Supervisor
Department of Agricultural Extension and Information System
Sher-e-Bangla Agricultural University
Sher-e-Bangla Nagar, Dhaka-1207

Dedicated
To
My Beloved
Parents

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ABSTRACT

The major purpose of this research study was to determine farmers' knowledge and attitude towards BRRI dhan47 cultivation and also to explore the relationships between each of nine selected characteristics of the farmers and their knowledge and attitude towards BRRI dhan47 cultivation. The study was conducted in 3 villages of Kaukhali upazilla under Pirojpur district. The populations of BRRI dhan47 farmers in these villages were 216, from which a sample of 108 farmers were drawn by using random sampling technique. An interview schedule was used for data collection. The data were collected during January 25 to March 5, 2016. Scales were developed in order to measure the variables. Majority (75%) of the farmers possessed medium knowledge and 20.37 and 4.63 percent of the farmers possessed high and low knowledge on rice cultivation respectively. Regarding attitude, the study showed that about 77.78 percent of the respondents had high favorable attitude towards the rice cultivation and 22.22 percent of the respondents had low favourable attitude towards the rice cultivation. Age, level of education, rice cultivation area and extension contact of the farmers had significant positive relationship with their knowledge on BRRI dhan47 cultivation, while problem faced by the farmers had significant negative relationship and family size, farm size, income from rice cultivation and training exposure had no significant relationship with their knowledge on BRRI dhan47 cultivation. In case of attitude age, level of education, rice cultivation area, income from rice cultivation and extension contact of the farmers had significant positive relationship with their attitude towards BRRI dhan47 cultivation, while problem faced by the farmers had significant negative relationship and family size, farm size, and training exposure had no significant relationship with their attitude towards BRRI dhan47 cultivation.

INTRODUCTION

1.1 General Background

Rice (*Oryza sativa* L.) is the most important cereal crops of the world and more than half of the world population used as a staple food. More than 110 countries in the world occupy rice almost 160 million hectares, 700 million tons of rice is being produced every year (IRRI, 2010).The total area of cultivation of rice in Bangladesh almost 11.35 million hectares and average production of rice 31.98 million metric tons. Now-a-days increasing population is one of the key factors in Bangladesh. To provide residence of huge population, cultivable area decrease gradually. However, average rice yield in Bangladesh is only 4.34t ha^{-1} (BRRI, 2011).To. Moreover, rice yield should be increased by using high yielding varieties (HYV) like saline tolerant varieties and its proper management technique.

The coastal saline area spread in 64 upazila under 13 districts of Bangladesh. A huge part of coastal area is covered by the Sundarbans, remaining land used in agriculture.The coastal area like Shatkhira, Khulna, Bagerhat, Barguna, Patuakhali, Bhola, Noakhali, Chittagong and Feni in Bangladesh affected by varying degrees of salinity. Salinity is one of the most serious environmental problems limiting the productivity of agricultural crops. Salinity affects more than 25% of worth land (Levigneron *et al*. 1995; Chahine *et al.*, 2013), and desertification and salinization are rapidly increasing on a global scale declining average yields for most major crop plants by more than 25% (Bray *et al.*, 2000). BRRI dhan 47, new saline tolerant paddy has been introduced in the coastal region in Bangladesh during 2006-2007. Chowdhury *et al.* (2012) reported that the BRRI dhan 47 is more suitable to salinity (12-14 dsm^{-1}) in comparison with the conventional HYV (4dsm^{-1}). Moreover, saline variety is allowed to secure poor farmers to sustain their income and also save their lands, which seems as low profitable land or unused land. According to the BBS (2010) census there are approximately 37 million people living in coastal districts of Bangladesh. Due to lack of income a large number of people

migrated to cities to work as day laborers for improve their livelihood status. Fast-increasing soil salinity, especially in agricultural lands, is a major problem in coastal areas. In Bangladesh, one million hectares out of a total nine million hectares of cultivable land are salinity affected. A new salt- resistant paddy BRRI dhan 47 is offering hope to coastal farmers in Southern Bangladesh whose crops are affected by salinity.

Knowledge means the factual understanding of an issue that effects human attitude reflected in behavior. Attitude means opinion, action of knowing of a person or a group of people. P. Farmers are not so skilled about new innovation although they are being influenced by a number of GOs and NGOs to improve their knowledge. Use of agricultural practices is being increased in Bangladesh day by day.

1.2 Justification of the study

The major focus of the study is to assess the knowledge and attitude of the farmers regarding cultivation of salt tolerant variety (BRRI dhan 47) of rice. Nowadays, BARI has released different salt tolerant varieties specially for coastal area of the country. Government and different non-government organizations are currently putting effort and allocating resources for production oriented research in coastal area. They encourage people in the coastal area people to undertake salt tolerant varieties in cultivation. Hence, evaluation of knowledge and attitude of the concerned farmers is necessary. Though salt tolerant varieties of rice become popular at farmers' level, there are a few researches conducted on knowledge and attitudes of farmers towards these salt tolerant varieties. Considering the above factors, the researcher became interested to undertake a study to determine knowledge and attitude of the farmers regarding cultivation of salt tolerant variety (BRRI dhan 47) of rice.

1.3 Statement of the Problem

Based on the above discussion, this study was intended to explore the following questions:

i. What were the characteristics of the farmers?

ii. What was the extent of knowledge and attitude of farmers regarding cultivation of salt tolerant variety (BRRI dhan 47) of rice?

iii. Is there any relationship of the farmers' selected characteristics with their knowledge and attitude regarding cultivation of salt tolerant variety (BRRI dhan 47) of rice?

1.4 Specific Objectives:

1 .To determine knowledge and attitude of the farmers regarding cultivation of salt tolerant variety (BRRI dhan47) of rice

2. To describe the following selected characteristics of the farmers:

a. Age

b. Level of education

c. Family size

d. Farm size

e. Rice cultivation area

f. Income from rice cultivation

g. Training exposure

h. Extension media contact

i. Problems faced in practicing salt tolerant variety

3. To explore the relationships between each of the selected characteristics of the farmers and their knowledge and attitude of farmers regarding salt tolerant variety of rice (BRRI dhan47) cultivation

1.5 Assumption of the Study

The researcher had the following assumptions in mind while undertaking this study:

1. The selected respondents were competent enough to reply the queries made by the researcher.
2. The responses furnished by the respondents were valid and reliable.
3. Information furnished by the respondents included in the sample was the representative opinion of the whole population of the study area.
4. The researcher who acted as interviewer was well adjusted to social and environment condition of the study area. Hence, the data collected from the respondents were free from bias.

1.6 Limitations of the Study

In order to make the study manageable and meaningful from the point of view of research, it was necessary to state the limitations of this study, which are given as follows:

1. The study was confined to two selected villages of Kaukhali Upazila under Pirojpur district.
2. The characteristics of the respondents in the study area were many and varied. However, only 9 characteristics were selected for investigation in this study as stated in the objectives.
3. The researcher relied on the data furnished by the farmers from their memory during interview.
4. For some cases, the researcher faced unexpected interference from the over interested side-talkers while collecting data from the target population. However, the researcher tried to overcome the problem as far as possible with sufficient tact and skill.

1.7 Definition of the Related Terms

In this section, the terms which have been frequently used throughout the thesis are defined and interpreted below:

Age

Age of a respondent was defined as the span of his/her life and was operationally measured by the number of years from his/her birth to the time of interview.

Education

Education referred to the development of desirable change in knowledge, skill, attitude and ability in an individual through reading, writing, working, observing and other related activities. It was measured on the basis of classes a farmer had passed from a formal educational institution.

Farm size

Farm size referred to the cultivated area either owned by the farmer or obtained from others on borga system, the area being estimated in terms of full benefit and half benefit to the farmer respectively. The self cultivated owned land and cultivated area taken as lease or mortgage from others was recognized as full benefit. In this study farm size was measured in hectare.

Annual family income

The term annual family income referred to the total earning by the earning members of a farm family from agriculture, livestock, fisheries and other accessible sources (business, service, daily labor etc.) during a year. It was expressed in Thousand Taka.

Training exposure

It was used to refer to the completion of an activity by the farmers which were offered by the government, semi-govt. or non-government organization (s) to

improve the knowledge and skills of farmers for better performing an agricultural job. It was measured by the number of days of training received by the respondent.

Extension contact

It referred to an individual's (farmer) exposure to or contact with different communication media, source and personalities being used for dissemination of new technologies.

Problem

By the word problem it was meant any difficult situation which required some actions to minimize the gap between "what ought to be" and "what is". The term problem referred to different difficulties faced by the farmers in case of agricultural activities.

Knowledge on salt tolerant variety (BRRI dhan47) cultivation

It referred to the extent of basic understanding of the farmers in different aspects of salt tolerant variety (BRRI dhan47) cultivation i.e. varieties, soil condition, seed rate, suitable time for cultivation, fertilizers, diseases, insects, fungicides, harvesting time etc.

Attitude towards salt tolerant variety (BRRI dhan47) cultivation

Attitude is the mental predisposition of an individual to act in a particular way. In other words, it refers to one's favorable or unfavorable feelings, beliefs, and actions towards an object and concept. Attitude towards cultivation of salt tolerant variety (BRRI dhan47) of rice referred to one's feeling towards that variety in various aspects.

CHAPTER 2

REVIEW OF LITERATURE

In this chapter, reviews of the related literature to the study are presented. The researcher intensively searched internet, websites, available books, journals and printed materials from different sources of home and abroad. It may be relevant here to mention that a good number of research activities concerning farmers' knowledge and attitude have been made in many countries of the world. However, the literatures have been organized into following four sections to set the context of the study:

First section : Concept of Knowledge and Attitude

Second section : Relationships between Selected Characteristics of the Respondents and Their Knowledge on Innovations

Third section : Relationships between Selected Characteristics of the Respondents and Their Attitude towards Innovations

Fourth section : The Conceptual Framework of the Study

2.1 Concept of Knowledge and Attitude

Bhuiyan (2012) indicated that “Knowledge may be defined as the scientific fact of an idea which is experimentally or empirically verified.”

According to Oxford dictionary “facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject.”

Thurstone (1928) defined attitude as the effect for or against a psychological object.

According to Morgan, Holmes and Bundy (1929) attitude means one's feeling towards persons, ideas, institution, and practices of facts.

Warren (1934) refers to attitude as a specific mental disposition towards an incoming or arising experience, whereby that experience is modified, or in other words, it is a condition of readiness for a certain type activity.

Green (1954) distinguished three kinds of attitude universe to represent three different classes of individual responses to sets of social objects. These are : i) verbal attitudes, given in response to question, ii) spontaneous verbal attitude, usually expressed in normal conversation and iii) action attitudes which include both verbal and non-verbal behaviour directed towards and object in the referent class.

Sherif and Sherif (1956) defined the term attitude as a relatively stable tendency to respond with a positive or negative affect to a specific referent.

McGrawth (1966) defined attitude as the learned orientations towards objects, or predisposition to behave in certain ways towards a given objects or a class of objects. An attitude has always in object, person, thing or concept and it may be general or specific.

Drever (1968) defined an attitude as more or less a stable set or disposition of opinion, interest or purpose, involving expectancy of certain kind of experience and readiness with appropriate kind of response.

According to Allport (1935), an attitude is that disposition to act which is built up by the integration of numerous specific responses of similar type, but which exists as a general neutral set when activated by a specific stimulus, it results in behaviour that is more obviously a function of the disposition than of the stimulus. According to Allport, the chief weakness of the most of the definition lies in their failure to distinguish between attitudes, which are often very general, and habits, which are limited in their scope. However, it is justified to admit that, in spite of existence of disagreements among psychologists, they contributed towards securing greater agreement in future.

Khan (2005) studied on knowledge of maize cultivation and found that majority (68 percent) of the farmers had relatively low level of knowledge and 32 percent of the farmers possessed relatively high level of knowledge.

Sana (2003) studied farmers' knowledge of shrimp culture and showed that majority (61 percent) of them had medium level of knowledge, while 30 percent had low and rest 9 percent possessed high knowledge.

Hassan (2004) reported that the highest proportion of the respondents had medium knowledge on partnership extension approach (70.4 percent) followed by 16.9 percent had low knowledge an 13.3 percent had high knowledge.

Rahman (2004) found in his study that the highest proportion (62.22 percent) of the respondents had medium knowledge compared to 25.56 percent having low knowledge and only 12.22 percent had high knowledge on HYV boro rice cultivation practices.

Hussen (2001) found in his study on farmers' knowledge and adoption of modern sugarcane cultivation practices found that highest proportion (84 percent) of the farmers possessed medium knowledge, 13 percent high knowledge and lowest proportion (3 percent) possessed low knowledge.

Saha (2001) made an attempt on farmers' knowledge in improved practices of pineapple cultivation and found that the majority (62 percent) of the farmers possessed good knowledge, 33 percent poor knowledge and only 5 percent possessed excellent knowledge.

Khan (1996) conducted a research on the effectiveness of a farmer primer on growing rice in knowledge change of the farmers in Shaktipur Thana and found that 67 percent farmers had good knowledge at initial stage, where 21 percent had excellent knowledge and 12 percent had poor knowledge.

Parvene (1995) in her study found that 58 percent of the farm women had moderate knowledge while 35 percent had high and 7 percent had poor knowledge on the use of fertilizer, pesticides and irrigation water.

Abolagba *(*2006) showed that a higher percentage (42.1% and 36.8%) of the farmers were hobby and part time farmers and the average age of the farmers was 47 years. About 94.7% of the farmers feed their fish using locally available feed ingredients; 89.5% and 26.3% of the farmer's use poultry dropping and single super phosphate fertilizers, respectively to fertilize their ponds while 63.2% do not lime their ponds. The pond management practices were and can be generally considered as fair.

Akankali *et al.*(2011)showed in their articles reviews the fish pond management processes, stocking of ponds, feeding of fish, types of culture, fish farming combined with other branches of agriculture, rearing of fish for purposes other than food, other fish culture, types of fish used for fish culture in central east Africa, general biology of the species of value in fish culture and

suitable combinations of fish for stocking to reawaken the minds of individuals, companies and government on the need to develop pond fish culture in Nigeria.

2.2 Relationship between Selected Characteristics of the Respondents and their Knowledge on Innovations

2.2.1 Age and knowledge

Amin (2001) observed in his study that age of PETRRA and non-PETRRA beneficiaries had negative significant relationship with their knowledge on organic cocoon and skills on production, processing, storing of seeds.

Hanif (2000) observed in his study that age of FFs farmers had significant relationship with IPM knowledge on environmental awareness.

Hossain (2003) observed in his study that the age of farmers had no significant relationship on modern Boro rice cultivation practices.

Huda *et al.* (1992) found that older farmers were more careful in keeping moisture content low of their seed.

Islam (1993) in his study concluded that age of the BSs had no significant relationship with their knowledge on modern agricultural technologies.

Islam (1996) conducted a study on farmers' use of indigenous technical knowledge (ITK) in the context of sustainable agricultural development. He found that age of the farmers had significant negative relationship with their extent of use of ITK.

Kashem (1987) in his study on the small farmers constraints to the adoption of modern rice technology found that age of the farmers had significant negative correlation with their agricultural knowledge. This

men that generally younger farmers gained more agricultural knowledge than their older counterpart.

Rahman *et al.* (1988), Chandargi (1980) found positive significant relationship between age and knowledge in their research.

Rayapraddy and Jayaramaiah (1989) worked on Village Extensions Officer's (VEOs) knowledge of rice production technology, and found that age of the VEOs showed negative relationship with the knowledge level of VEOs.

Saha (2003), Sana (2003), Sarker (2002), Saha (2001), Rahman (2001), Hossain (2000) and Islam (1993) found no relationship between age and knowledge in their studies.

2.2.2 Education and knowledge

Saha (2003), Sana (2003), Sarker (2002), Saha (2001), Hossain (2000) found that education of the farmers was positively and significantly related with their knowledge in their research work.

Islam (1993) found that the general education of the BSs had no significant relationship with their knowledge on modern agricultural technologies.

Sharma and Sonoria (1983) found significant differences in knowledge of both contact and non-contact farmers with their education.

Kashem (1987) in his study revealed that there was no significant relationship between education of the farmer and their agricultural knowledge.

Huda *et al.* (1992) found that farmers with education and without education had same level of moisture of their seed.

Alam (1997) observed that the level of education of the farmers had a positive and significant relationship with the use of improved farm practices.

Amin (2001) found that education of PETRRA and non-PETRRA beneficiaries had positive significant relationship with their knowledge on organic cocoon and skills on production and storing of rice seeds.

Huda (2001) reported that of education level of the farmers have motivated them to dry the seed and keep in sealed container to keep the moisture low.

Hossain (2003) found that education of the farmers had significant relationship with modern Boro rice cultivation.

2.2.3 Family size and knowledge

Hossain (2003) found that family size of the farmers was not significantly related to farmers' knowledge on modern Boro rice cultivation practices.

Farhad (2003) found that family size of rural women farmer had no significant relationship with their knowledge in using IPM in vegetable cultivation.

Sana (2003) revealed that family size of the farmers was not related to their knowledge of shrimp culture.

Sutradhar (2002) found that family size of the respondents had a significant positive relationship with their awareness on environmental degradation.

Hanif (2000) found that in his study there was a positive insignificant relationship between family size of the respondents and their awareness on environmental pollution.

Hossain (2000) found that family size of the farmers had significant positive relationship with their knowledge on Binadhan-6.

Alam (1997) in his study found that family size of the farmers had positive and significant relationship with their use of farm practices in rice cultivation.

Rathore and Shsktawat (1990) found that the knowledge about improved agricultural prctices of Bajra cultivation by farm women was found to be sognificant associated with their size.

Parveen (1995) revealed that family size of the farm women had a positive significant relationship with their knowledge on the use of fertilizer, pesticides and irrigation water.

Kashem (1987) in his study, however, did not find any significant relationship between family size and agricultural knowledge of the farmers.

2.2.4 Farm size and knowledge

Sana (2003), Hossain (2000) found that farm size of the farmers had no relationship with their knowledge. Sharma and Sanoria (1983) found that no significant differences in knowledge of both the contact and non-contact farmers with their operational holding size.

Sarker (2002), Hossain (2001) found that there was a positive relationship between farm size of the farmers and their knowledge in their research.

Sharma and Sonoria (1983) found that both the contact and non-contact farmers were different in their size of operational holdings. However, they found no significant differences in knowledge of both the contact and non-contact farmers with the size of their operational holdings.

Islam (1996) found that there was significant and negative relationship between the farm size of the farmers and their extent of use of indigenous technical knowledge.

Alam (1997) studied the use of improved farm practices farm in rice cultivation by the farmers. The findings of the study showed that the farm size had a significant relationship with their use of improved farm practices in rice cultivation. Similar results were found by Verma and Kumar (1991).

Amin (2001) found that farm size of PETRRA and non-PETRRA beneficiaries had no relationship with knowledge on organic cocoon and skills on production, procession and storing of rice seed.

Hossain (2003) reported that farm size of the farmers had significant relationship with modern Boro rice cultivation.

2.2.5 Rice cultivation area and knowledge

No literature was found related to relationship between rice cultivation area and knowledge of farmers.

2.2.6 Income from rice cultivation and knowledge

No literature was found related to relationship between income from rice cultivation and knowledge of farmers.

2.2.7 Training exposure and knowledge

Planty (1998) found that training exposure of the farmers had a positive significant relationship with their knowledge.

Manjunatha (1980) found that training exposure of the farmers had a positive significant relationship with their knowledge.

2.2.8 Extension media contact and knowledge

Sana (2003), Sarker (2002) and Rahman (2001) found in their study that training exposure of farmers were highly positive significant relationships with their knowledge.

Hossain (2000) concluded that media exposure of the farmers had a significant relationship with their knowledge.

2.2.9 Problem faced and knowledge

Ali (1999) concluded that problems of the farmers had a significant relationship with their knowledge.

Raha (1989) concluded that problems of the farmers had no significant relationship with their knowledge.

Anwar (1994) concluded that problems of the farmers had no significant relationship with their knowledge.

2.3 Relationship between Selected Characteristics of the Respondents and Their Attitude towards Innovations.

2.3.1 Age and attitude

Chowdhury (2003), Sarker (2002) found in their study that there is no relationship between age and attitude.

Kashem (1987) in his study also found that there was no relationship between the age and attitude towards community of the farmers.

Ali (2002), Singh and Kunzroo (1985) found that age of the farmers had negative significant relationship with their attitude in their research studies.

Mannan (2001), Parveen (1993), Verma and Kumar (1991) found that age of the respondents had positive relationship with their attitude towards ecological agriculture.

Singh (1982) observed that attitude of irrigated and non-irrigated groups of farmers towards improved crop production technology were heavily skewed into favourable category. However, the differences between mean attitude scores of the two groups of farmers were significant and were in favour of farmers who had irrigated farm holdings.

Singh and Kunzroo (1985) found that there was a negatively significant relationship between age of the farmers and their attitude towards goat and sheep farming.

Verma and Kumar (1991) conducted a study on comparison of farmer's attitude towards buffalo management practice in adopted and non-adopted villages revealed that there was relationship between age and attitude towards buffalo management in case of adopted village and they found no significant relationship between age and attitude of the farmers of non-adopted village.

Parveen (1993) found that age of the modern village women influenced their attitude towards homestead agricultural production. But in case of the women of the traditional village, age was not associated with their attitude towards homestead agriculture production.

Noor (1995) found that age of the relationship with their attitude towards the cultivation of high yielding varieties of potato.

Islam and Kashem (1997) observed that age of the farmers had negative relationship with their attitude towards agrochemical.

Habib (2000) found that age of the BSs had no significant relationship with their attitude towards the use of agro-chemicals.

Nurzaman (2000) observed in his study that age of the FFS and non-FFS farmers had no significant relationship with their attitude towards IPM.

Bari (2000) reported in his study that age of the farmers had no significant relationship with their attitude towards hybrid rice AALOK 6201.

Paul (2000) found that there was negatively significant relationship between age of the farmers and their attitude towards the use of USG.

Mannan (2001) found that age of Proshika farmers had no significant relationship with their attitude towards the Ecological Agricultural Programmes.

Chowdhury (2003) found that age of farmers' had no significant relationship with their attitude towards crop diversification.

2.3.2 Education and attitude

Chowdhury (2003), Shehrawat (2002), Khan (2002), Kumari (1988), Sulakshna (1988) and Kashem (1987) found that education of the farmers had a positive significant relationship with their attitude.

Rogers and Leuthold (1962) in their study on farm demonstration found that the farmer demonstrators, who were characterized by more years of formal education, were characterized by more favourable attitudes towards fertilizer.

Ali (2002) found that education qualification of Block Supervisor's had negative relationship with their attitude.

Singh (1982) observed that family education of the farmers were positively related to their attitude towards agricultural technology and this relationship was significant statistically.

Singh and Kunzroo’s (1985) study revealed that there was a positive and significant relationship between education of farmers and attitude towards sheep and farming.

Kashem (1987) found that attitude towards community of the small farmers had significant positive correlation with their educational level.

Kumari (1988) found the study on communication effectiveness of selected mix-media concluded that there was a significant association between education of the respondents (women) and their attitude towards the massage and knowledge level.

Sulakshna (1988) found that the educational qualification if the extension personnel was positively related with their attitude towards extension work.

Verma and Kumar (1991) reported that there was positive and significant relationship between education of farmers and their attitudes towards buffalo management in non-adopted village but the relationship was not significant in adopted village.

Noor (1995) in his study found that education of the farmers had positive significant relationship with their attitude towards HYV of potato.

Habib (2000) observed in his study that education of the BSs had significant positive relationship with their attitude towards agro-chemicals.

Nurzaman (2000) found that education of the FFS and non-FFS farmers were positively correlated with their attitude on IPM.

Paul (2000) in his study found that academic qualification of the farmers had positive significant relationship with their attitude towards the use of USG.

Mannan (2001) found that academic qualification of Proshika farmers had a positive relationship with their attitude towards the Ecological Agricultural Programme.

Chowdhury (2003) found that academic qualification of the farmers had positive significant relationship with their attitude towards crop diversification.

Sadat (2002) and Haque (2002) found similar relationship towards age and attitude of farmers'.

2.3.3Family size with attitude

Haque (2006) observed that family size of the farmers was not significantly correlated with their attitude towards organic farming.

Ahmed (2006) reported that family size of the farmers had non significant and positive relationship with the attitude towards shrimp farming.

Mahiuddin (2004) found that family size of farmers had significant relationship with their attitude towards the adverse effect of using agrochemicals in rice cultivation.

Chowdhury (2003) conducted a study on farmers attitude towards crop diversification. The study revealed that family size of the farmers had non significant and negative relationship with farmers attitude towards crop diversification.

Paul found no relationship between family size and attitude towards use of Urea Super Granule. Similar results were also found by Bari (2000), Habib (2000), Noor (1995) in their respective studies.

2.3.4 Farm size and attitude

Chowdhury (2003), Shehrawat *et al.* (2002) and Sadat (2002) found that there was a positive and significant relationship between farm size and attitude of farmers in their studies.

Verma and Kumer (1991) and Karim *et al.* (1987) also found that there was positive and significant relationship between farm size and attitude of farmers.

Ali (2002), Nurzaman (2000) and Noor (1995) revealed in their studies that farm size had no significant relationship with the attitude.

Habib (2000) observed in his study that family size of the BSs had no relationship with their attitude towards the use of agrochemicals.

Karim *et al.*(1987) carried out a study on attitude of farmers towards use of urea in jute cultivation and found that farm size of the farmers had significant and positive relationship with their attitude towards the use of urea.

Noor (1995) observed in his study that farm size of the farmers had no significant relationship with their cultivation of HYV of potato.

Nurzaman (2000) observed in his study that farm size of the FFS and non-FFS farmers had no significant relationship with their attitude on IPM.

Paul (2000) also obseved in his study that there was positive and significant relationship between farm size and attitude of farmers towerds the use of USG on rice cultivation.

Mannan (2001) found that the farm size of Proshika farmers had positive significant relationship with their attitude towards the Ecological Agriculture Programmes.

2.3.5 Rice cultivation area and attitude

No literature was found related to relationship between rice cultivation area and attitude of farmers.

2.3.6 Income from rice cultivation and attitude

No literature was found related to relationship between rice cultivation area and attitude of farmers.

2.3.7 Training exposure and attitude

Paul (2000) reported that training exposure of the farmers had a positive significant relationship with ther attitude.

Bari (2001) reported that training exposure of the farmers had no relationship with their attitude.

2.3.8 Extension media contact and attitude

Ajore (1989) and Vidyashanker (1987) also observed in their study that mass media exposure had a significant relationship with their attitude towards chemical fertilizer.

Bari (2000) also reported that there is no relationship between extension media contact and attitude of farmers towards hybrid rice ALOK 6201.

Chowdhury (2003) observed no relationship between extension media contact and attitude of farmers towards crop diversification.

Shehrawat (2002), Sadat (2002) and Siddique (2002) reported in their studies that there was a significant and positive relationship between extension contact and attitude of farmers.

2.3.9 Problem faced and attitude

Karim et al.(1997) found that problems of the farmers had a significant relationship with their attitude Muttaleb et al. (1998) revealed that problems of the farmers had a significant relationship with their attitude.

2.4 The Conceptual Framework of the Study

This study is concerned with the farmers' knowledge and attitude regarding cultivation of salt tolerant variety (BRRI dhan47) of rice. Thus the knowledge and attitude were the main focus of the study and 9 selected characteristics of the farmers' were considered as those might have relationship with knowledge and attitude. Farmers' knowledge and attitude regarding cultivation of salt tolerant variety (BRRI dhan47) of rice may be influenced and affected through interacting forces of many independent factors. It is not possible to deal with all the factors in a single study. Therefore, it was necessary to limit the factors, which included age, education, family size, farm size, rice cultivation area, income from rice cultivation, training exposure, extension media contact and problem faced in practicing salt tolerant variety of rice.

In the review process it was found that there were positive or negative significance or non-significant relationship of the farmers characteristics with their knowledge and attitude towards different innovations. But there was no previous research work which deals with relationship between each of the selected characteristics of the farmers and their knowledge and attitude towards salt tolerant variety of rice. Keeping these considerations in mind, the conceptual framework of the study has been drawn and presented in Fig. 2.1

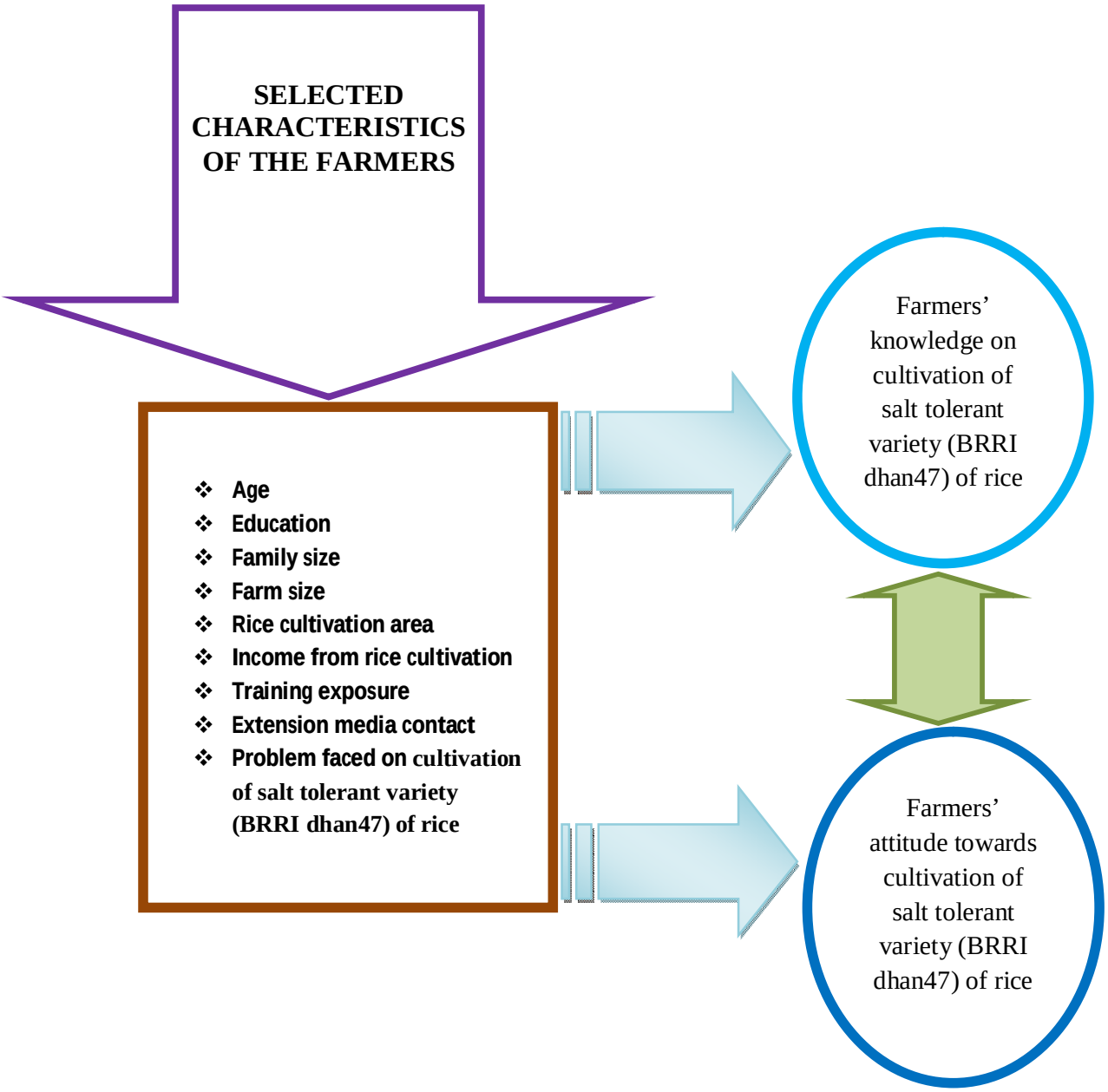

Fig. 2.1 The conceptual framework of the study

CHAPTER 3

MATERIALS AND METHODS

Methods and procedures used in conducting research need very careful consideration. Methodology enables the researcher to collect valid information and to analyze the same properly to arrive at correct decisions. The methods and procedures followed in conducting this research are being described below.

3.1 The Locale of the Study

The study was purposively conducted at Kaukhali upazilla under Pirojpur district. Three villages namely Keundia, Chirapara and Amrajhuri were also purposively selected from kaukhali Upazilla, Kaukhali Upazilla has a great reputation of saline tolerant variety of rice (BRRI dhan47) cultivation activities for decades.A map of Pirojpur district showing Kaukhali upazila and a map of Kaukhali upazila showing the study area are presented in Figure 3.1 and Figure 3.2 respectively

3.2 Population and Sample

The rice (BRRI dhan47) farmers under selected three villages were considered as the population of the study. Three lists of rice (BRRI dhan47) farmers of the selected three villages who are currently cultivating BRRI dhan47 variety were prepared with the help of Upazila Agriculture Officer and his field staffs. The number of rice (BRRI dhan47) farmers of the selected three villages was 216 which constituted the population of the study. Data were collected from the sample rather than whole population due to time and fund constraints. Half of the population was selected proportionally from the selected villages as the sample by following random sampling method. Thus, the total sample size stood at 108. Moreover, a reserved list of 16 rice (BRRI dean 47) farmers was prepared for use when the farmers under original sample were not available during data collection. The distribution of the selected rice (BRRI dean 47) farmers with reserve list of the selected villages is shown in the Table 3.1.

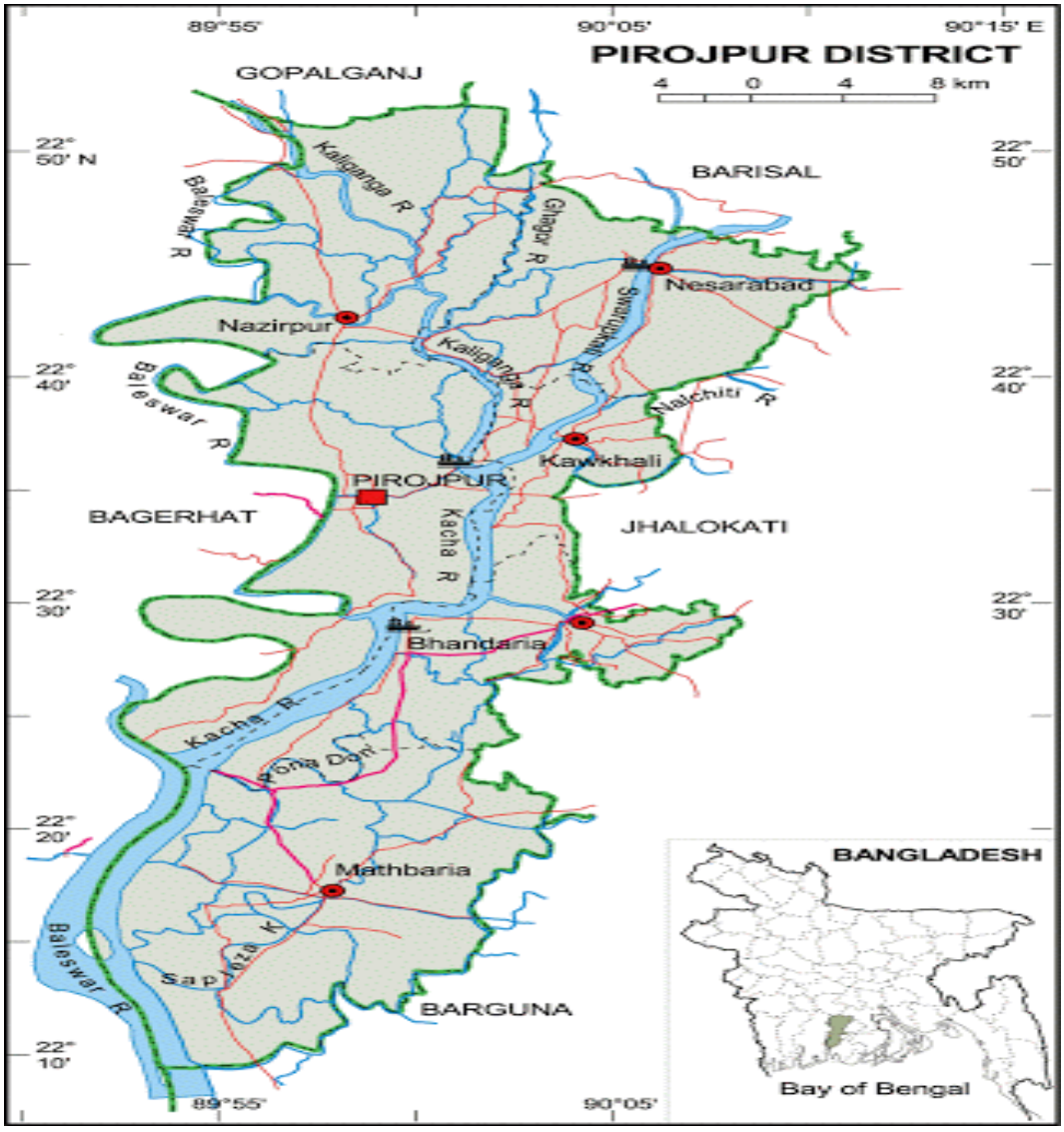

Fig 3.1 A map of Pirojpur district showing Kaukhali upazila

Figure 3.2: A map of Kaukhali upazilla showing the study area

Table 3.1 Distribution of the population, sample and reserve list of the study

Name of village	Total no. of BRRI dhan 47 farmers	Sample	Reserve list
Keundia	86	43	6
Chirapara	64	32	5
Amrajhuri	66	33	5
Total	**216**	**108**	**10**

3.3 Measurement of Variables

The various characteristics of the rice (BRRI dhan 47) farmers might have influence on their knowledge and attitude towards saline tolerant rice (BRRI dhan 47) cultivation. These characteristics were age, level of education, family size, farm size, Rice cultivation area, income from rice cultivation, training exposure, extension contact, and problem faced. The knowledge and attitude of rice (BRRI dhan 47) farmers towards rice (BRRI dhan 47) cultivation were the main focus of the study. Measurement of all the factors of the rice (BRRI dhan 47) farmers and their knowledge and attitude towards rice (BRRI dhan 47) cultivation are discussed in the following sub sections:

3.3.1 Age

The age of a respondent was measured by counting the actual years from his/her birth to the time of interview. It was expressed in terms of complete years.

3.3.2 Level of education

The education of the rice (BRRI dhan 47) farmers was measured by the number of years of schooling completed in an educational institution. A score of one (1) was given for each year of schooling completed. If farmers didn't t know how to read and write, his education score was zero. If a farmer did not go to school but studied at home or adult learning center, his knowledge status was considered as the equivalent to a formal school student.

3.3.3 Family size

The family size was measured by the total number of members in the family of a respondent. The family members included family head and other dependent members like husband/wife, children, etc. who lived and ate together. A unit score 1 was assigned for each member of the family. If a respondent had five members in his/her family, his/her family size score was given as 5 (Khan, 2004). Question regarding this variable appears in the item no. 3 in the interview schedule

3.3.4 Farm size

The farm size of a farmer referred to the total area of land on which his/her family carried out farming operations, the area being in terms of full benefit to his/her family. Data obtained from asking direct question. The farm size was measured in hectares for each farmer using the following formula:

$$\text{Farm size} = A_1 + A_2 + {}^1/_2\,(A_3+A_4) + A_5$$

Where,

A_1 = Homestead area

A_2= Own land under own cultivation

A_3= Land given to others on borga system

A_4= Land taken from others on borga system

A_5= Land taken from others on lease

3.3.5 Rice cultivation area

Rice cultivation area was measured by the area of land under his/her management only for rice cultivation. The unit of measurement was in ha and was considered as the rice cultivation area of a respondent.

3.3.6 Income from rice cultivation

Income from rice cultivation of the respondents was measured in thousand taka on the basis of total income from the value of rice production. It was expressed in '000' taka.

3.3.7 Extension contact

This variable was measured by computing an extension contact score on the basis of a respondent's extent of contact with 10 selected media as obtained in response to item no.8 of the interview schedule (Appendix A). Each respondent was asked to indicate the degree of his contact with each of the selected media with four alternative responses as 'regularly', 'occasionally', 'rarely' and 'not at all' basis and weights were assigned as 3, 2, 1 and 0 respectively. Logical frequencies were assigned for each alternative responses for each of the 10 selected items.

The extension contact score of a respondent was determined by summing up his/her scores for contact with all the selected media. Thus possible extension contact score could vary from zero (0) to 33, where Zero indicated no extension contact and 33 indicated the highest level of extension contact.

3.3.8 Problem faced in rice cultivation

This variable was measured by computing the extent of various problems of the respondents with 10 selected problems as obtained in response to item no. 10 of the interview schedule (Appendix A). Each respondent was asked to indicate the extent of his/her problem as severe problem, moderate problem, low problem and not at all problem and score was assigned as 3, 2, 1 and 0 respectively.

The problem faced score of a respondent was determined by summing up his/her scores for all the problems. Thus, possible score could vary from zero (0) to 30, where Zero indicated no problem and 30 indicated the highest level of problem.

3.3.9 Knowledge on rice cultivation

After thorough consultation with relevant experts and reviewing of related literature, 15 questions regarding salt tolerant variety of rice cultivation were selected and those were asked to the respondent rice farmers to determine their knowledge on rice cultivation. Two (2) score was assigned for each correct answer and zero (0) for wrong or no answer. Score was also assigned for partially correct answer. Thus, the knowledge on rice cultivation score of the respondents could range from 0 to 30, where zero indicating very low knowledge and 30 indicate the very high knowledge on rice cultivation.

3.3.10 Attitude towards salt tolerant rice cultivation

Attitude of a respondent towards salt tolerant rice cultivation was measured by developing an attitude scale through Puttaswamy (1977) developed a scale to measure the attitude of village extension workers towards training and visit system in Indian context. Here five-point Likert method of summated ratings was used to find out the farmers' attitude towards salt tolerant rice cultivation.

Eight statements expressing positive and negative feelings towards tolerant rice cultivation were constructed. A statement was considered positive if it indicated a favorable attitude towards salt tolerant rice cultivation. If the case was reverse, it was considered as a negative statement. Out of these eight statements four were positive and four were negative. Scoring was done by assigning 4, 3, 2, 1 and 0 scores to the five alternative responses as "strongly agreed", "agreed", "undecided", "disagreed", and "strongly disagreed", respectively in case of a positive statement. Reverse score was assigned for a negative statement. However, attitude towards rice cultivation of a farmer was obtained by summing up his/her scores for all the nine statements in item no. 10 in the interview schedule. Attitude score, thus, obtained for a respondent could range from zero (0) to 32, where zero (0) indicated very unfavorable attitude and 32, indicated highest level of favourable attitude.

3.4 Instruments for Data Collection

Data were collected using a structured interview schedule. Both open and closed form questions were included in the schedule based on the measurement procedures discussed earlier in section 3.3.

Before finalization, the interview schedule was pre-tested with 20 rice farmers of the study area. On the basis of the pre- test experiences necessary corrections, modifications and alterations were made before finalizing the interview schedule for final data collection. During modification of the schedule, valuable suggestions were received from the research supervisor and relevant experts. The interview schedule was then printed in its final form and multiplied. A copy of interview schedule in English version is placed in Appendix A.

3.5 Collection of Data

Data were collected personally by the researcher himself through face to face interview. To familiarize with the study area and for getting local support, the researcher took help from the local leaders and the field staffs of Upazila Agriculture Office. The researcher made all possible efforts to explain the purpose of the study to the farmers. Rapport was established with the farmers prior to interview and the objectives were clearly explained by using local language as far as possible. Data were collected during the period of January 25 to March 5, 2016.

3.6DataProcessing

After completion of field survey, all the data were coded, compiled and tabulated according to the objectives of the study. Local units were converted into standard units. All the individual responses to questions of the interview schedule were transferred in to a master sheet to facilitate tabulation, categorization and organization. In case of qualitative data, appropriate scoring technique was followed to convert the data into quantitative form.

3.7 Statistical Analysis

The data were analyzed in accordance with the objectives of the study. Qualitative data were converted into quantitative data by means of suitable scoring techniques wherever necessary. The statistical measures such as range, means, standard deviation, number and percentage distribution were used to describe the variables. Pearson's Product Moment Coefficient of Correlation (r) was used in order to explore the relationships between the concerned variables. Five percent (0.05) level of probability was the basis for rejecting any null hypothesis throughout the study. The SPSS computer package was used to perform all these process.

3.8 Statement of Hypothesis

As defined by Goode and Hatt (1952) 'A hypothesis is a proposition, which can be put to a test to determine its validity.' It may prove correct or incorrect of a proposition. In any event, however, it leads to an empirical test. Hypotheses are always in declarative sentence form and they relate either generally of specifically variables to sentence form and they relate either generally or specifically variables to variables. Hypothesis may be broadly divided into two categories, namely, research hypothesis and null hypothesis.

3.8.1 Research hypothesis

Research hypothesis states a possible relationship between the variables being studied or a difference between experimental treatments that the researcher expects to emerge. The following research hypothesis was put forward to know the relationships between each of the 9 selected characteristics of the farmers and their i) knowledge and ii) attitude regarding the cultivation of salt tolerant variety. "Each of the 9 selected characteristics of the farmers will have significant relationship with their i) knowledge and ii) attitude regarding cultivation of salt tolerant rice variety (BRRI dhan47)."

3.8.2 Null hypothesis

A null hypothesis states that there is no relationship between the concerned variables. The following null hypothesis was undertaken for the present study “There is no relationship between each of the selected characteristics of farmers and their i) knowledge and ii) attitude regarding salt tolerant variety cultivation.” “The selected characteristics were age, level of education, family size, farm size, rice cultivation area, income from rice cultivation, training exposure, extension media contact and problem faced by the farmers in practicing salt tolerant variety.

CHAPTER 4

FINDINGS AND DISCUSSION

The findings of the study and interpretations of the results have been presented in this Chapter. These are presented in three sub-sections according to the objectives of the study. The first sub-section deals with the selected characteristics of the farmers, while the second sub-section deals with the extent of farmers' knowledge on BRRI dhan47 cultivation. The third sub-section deals with the farmers' attitude towards BRRI dhan47 cultivation. The fourth sub- section deals with the relationship between each of the selected characteristics of the farmers with their knowledge and attitude towards BRRI dhan 47 cultivation.

4.1 Selected Characteristics of Rice Farmers

Nine characteristics of the rice farmers were selected to find out their relationships with their i) knowledge and ii) attitude towards BRRI dhan 47 cultivation. The selected characteristics included their age, level of education, family size, farm size, rice cultivation area, income from rice cultivation, training exposure, extension media contact and problem faced in BRRI dhan47 cultivation. These characteristics of the farmers are described in this section.

Data contained in the Table 4.1 reveal the salient features of the characteristics of the BRRI dhan47 farmers in order to have an overall picture of these characteristics at a glance. However, for ready reference, separate tables are provided while presenting categorizations, discussing and /or interpreting results concerning each of the characteristics in this chapter.

Table 4.1 Salient features of the selected characteristics of the farmers (n=l08)

Sl. no.	Characteristics	Unit of measurement	Possible range	Observed range	Mean	SD
1.	Age	Years	unknown	25-56	38.29	8.48
2.	Education	School up years	unknown	0-16	8.55	3.46
3.	Family size	No of family members	unknown	4-8	5.60	1.01
4.	Farm size	Hectares	unknown	0.68-2.70	1.72	0.49
5.	Rice cultivation area	Hectares	unknown	0.27-1.62	1.10	0.34
6.	Income from rice cultivation	'000' Taka	unknown	10.80-64.80	42.89	13.75
7.	Training exposure	No. of days	unknown	0.00-4	1.79	1.21
8.	Extension contact	Scores	0-33	19-26	22.36	1.57
9.	Problem faced in BRRI dhan47 cultivation	Scores	0-30	15-30	22.67	2.19

4.1.1 Age

The age of the rice farmers ranged from 25 to 56 year, the average being 38.29 years and the standard deviation was 8.47. On the basis of their age, the rice farmers were classified into three categories: “young” (up to 35), “middle aged” (36- 50) and “old” (above 50). The distribution of the rice farmers according to their age is shown in Table 4.2.

Table 4.2 Distribution of the farmers according to their age

Categories	Respondents	
	Number	Percent
Young	52	48.15
Middle aged	43	39.81
Old	13	12.04
Total	108	100

Data presented in Table 4.2 indicated that the highest proportion (48.15 percent) of the respondents found in the young aged category compared to 39.81 percent middle and 12.04 percent old aged category. It may also be revealed that overwhelming majority (87.96%) of the respondents of the study area comprised younger to middle-aged categories.

Young people are generally interested to new ideas and things. They have a favorable attitude towards trying new ideas or technologies.

4.1.2 Level of education

Education of a respondent was measured by the level of his/her formal education i.e. the number of class passed by him. The education score of the respondents ranged from 0.00 to 16, the average being 8.55 and the standard deviation was 3.46. Based on their level of education, the respondents were grouped into four categories: “Illiterate” (0), "Primary education" (1-5), "Secondary education" (6-10), “and “above secondary education” (above 10).

Table 4.3 Distribution of the farmers according to their education

Categories	Basis of categorization	Respondents	
		Number	Percent
Illiterate	(0)	4	3.70
Primary	(1-5)	27	25
Secondary	(6-10)	54	50
Above secondary	(>10)	23	21.30
Total		108	100

According to Table 4.3 larger proportion (50 percent) of the respondents were under the category of “secondary education”, 25 percent “primary education”, and 21.30 percent “above secondary education”. And only 3.70 percent of respondents were illiterate. Educations increase our knowledge and help to face adverse condition.

4.1.3 Family Size

The number of family members of the respondents ranged from 4 to 8 with an average of 5.60 and standard deviation of 1.01. Based on the family size the respondents were classified into three categories as small, medium and large family as shown in Table 4.4

Table 4.4 Distribution of the farmers according to their family size

Categories	Basis of categorization	Respondents	
		Number	Percent
Small	(1-4)	14	12.96
Medium	(5-6)	74	68.52
Large	(7-8)	20	18.52
Total		108	100

Data furnished in the Table 4.4 indicated that the highest proportion (68.52%) of the respondents had medium family size consisting of 5 to 6 members, while 18.52% of the respondents belonged to the category of large family compared to 12.96% of them having small family size.

4.1.4 Farm size

Farm size varied from 0.68 to 2.70 hectares with an average of 1.72 hectares and standard deviation of 0.50. Based on their farm size the farmers were classified into three categories as suggested by DAE (1999) which shown in Table 4.4.

Table 4.5 Distribution of the farmers according to their farm size

Categories	Basis of categorization (ha)	Respondents	
		Number	Percent
Small	0.20 - < 1 ha	5	4.63
Medium	1-2.5 ha	96	88.89
Large	Above 2.5	7	6.48
Total		108	100

The data in the Table 4.5 revealed that majority of the respondents (88.89 percent) had medium farm while 6.48 percent had large farm, and 4.63 percent had small farm. The findings again revealed that all most all (95.37%) of the respondents had medium to large farm size.

4.1.5 Rice cultivation area

Rice cultivation area varied from 0.27-1.62 hectares with an average of 1.10 hectares and standard deviation of 0.34. Based on their rice cultivation area the farmers were classified into three categories that were shown in Table 4.6.

Table 4.6 Distribution of the farmers according to their Rice cultivation area

Categories	Basis of categorization (ha)	Respondents	
		Number	Percent
Low	Up to 0.68	16	14.81
Medium	0.69-1.43	71	65.74
Large	1.44-1.62	21	19.45
Total		108	100

From the data furnished in the Table 4.6 revealed that the majority of the respondents (65.74 percent) had medium rice cultivation area, compared to 19.45 percent large farm, and 14.81 percent small farm area for rice cultivation. The findings again revealed that overwhelming majority (85.19%) of the farmers had medium to large rice cultivation area.

4.1.6 Income from rice cultivation

Income from rice cultivation of the respondent ranged from 10.80 to 64.80 thousand taka. The mean was 27.67 thousand taka and standard deviation was 42.89. On the basis of, Income from rice cultivation the respondents were categorized into three groups as shown in Table 4.7.

Table 4.7 Distribution of the farmers according to their Income from rice cultivation

Categories	Basis of categorization (TK)	Respondents	
		Number	Percent
Low	Up to 27	20	18.52
Medium	28-54	69	63.89
High	Above 54	19	17.59
Total		108	100

Data shown in the Table 4.7 indicated that 63.89 percent of the farmers had medium income where 18.52 percent farmers had low and 17.59 percent had high family income from rice cultivation. Thus, the overwhelming 82.41 percent of the farmers had low to medium income from rice cultivation.

4.1.7 Training exposure

The training exposure score of the strawberry farmers ranged from 0 to 4 with a mean of 1.79 and standard deviation of 1.21. Based on the training experience scores, the rice farmers were classified into three categories: “no training” (0),’’single day training” (1) and “low training” (1-2). The distribution of the farmers according to their training experience is presented in Table 4.8.

Table 4.8 Distribution of the farmers according to their Training exposure

Categories	Basis of categorization	Respondents	
		Number	Percent
No training	0.00	23	21.30
Single day training	1	17	15.74
Low training	2-4	68	62.96
Total		108	100

About 62.96 percent of the rice farmers receive low training while the rest 21.30 percent and 15.74 percent of them received no training and single day training respectively. Training increases knowledge and skills of the farmers in a specific subject matter area. Individuals who gain high training experiences are likely to be more competent in performing in different farming activities.

4.1.8 Extension media contact

The observed extension contact scores of the strawberry farmers ranged from 19 to 26 against the possible range from 0 to 33, the mean and standard deviation were 22.36 and 1.57 respectively. According to this score, the rice farmers were classified into three categories:

Table 4.9 Distribution of the farmers according to their Extension contact

Categories	Basis of categorization	Respondents	
		Number	Percent
Low	Up to 20	15	13.89
Medium	21-23	66	61.11
High	Above23	27	25
Total		108	100

Majority proportion (61.11percent) of the rice farmers had medium extension contact compared to 25 percent of them had high media contact and 13.89 percent of them had low media contact. Thus, majority (86.11 percent) of the rice farmer had medium to high extension contact. Extension contact is a very effective and powerful source of receiving information about various new and modern technologies. So extension contact should be increased in the rice (BRRI dhan47) cultivation area.

4.1.9 Problem faced in rice cultivation

The problem faced score of the rice farmers ranged from 15 to 30 against the possible score of 0-30 with a mean of 22.67 and standard deviation of 2.19. Based on the problem faced scores, the strawberry farmers were classified into three categories: “low problem”(up to 20),“medium problem” (21-24) and “high problem” (above 24). The distribution of the strawberry farmers according to their problem faced is presented in Table 4.10.

Table 4.10 Distribution of the farmers according to their problem on BRRI dhan47 cultivation

Categories	Basis of categorization	Respondents	
		Number	Percent
Low	Up to 20	11	10.19
Medium	21-24	87	80.55
High	Above24	10	9.26
Total		108	100

About 80.55 percent of the rice farmers faced medium problem compared to 10.19 percent of them faced low problem and 9.26 percent of them faced high problem.

4.2. Knowledge on Rice Cultivation

Rice farmers' knowledge scores could theoretically range from 0 to 30. However, their observed knowledge scores ranged from 20 to 30, the mean being 25.52 and standard deviation 1.99. Based on the theoretical scores, the farmers were classified into three categories as: "low knowledge", "medium knowledge" and "high knowledge". The distribution of the farmers according to their knowledge level is shown in Table 4.11.

Table 4.11 Distribution of the farmers according to their knowledge on BRRI dhan47 cultivation

Categories	Basis of categorization	Respondents	
		Number	Percent
Low	Up to 22	5	4.63
Medium	23-26	81	75
High	Above26	22	20.37
Total		108	100

Majority (75%) of the farmers possessed medium knowledge and 20.37 and 4.63 percent of the farmers possessed low and high knowledge on rice cultivation respectively. It means that overwhelming majority (95.37%) of the farmers had medium to high knowledge.

4.3 Attitude of the Farmers towards BRRI dhan47 Cultivation

Attitude scores of the respondents towards rice cultivation could theoretically range from 0 to 32. However, their observed scores ranged from 22 to 32 with an average of 26.75, standard deviation of 2.52. Based on these attitude scores, the respondents were placed under two categories namely, low favorable and high favorable. The distribution of the respondents under each of the two categories have been shown in Table 4.12.

Table 4.12 Distribution of the farmers according to their attitude on BRRI dhan47 cultivation

Categories	Basis of categorization	Respondents	
		Number	Percent
Low favorable	Up to 24	24	22.22
High favorable	Above 84	84	77.78
Total		108	100

Data presented in Table 4.12 reveal that about 77.78 percent of the respondents had high favorable attitude towards the rice cultivation and 22.22 percent of the respondents had low favorable attitude towards the rice cultivation.

4.4 Relationship between Each of the Selected Characteristics of the Farmers with their Knowledge and Attitude towards BRRI dhan47 Cultivation

To explore the relationships between the selected characteristics of farmer's knowledge and attitude towards BRRI dhan47 cultivation, "Pearson's Product-Moment Correlation Co-efficient 'r' has been used.

A hypothesis was rejected when the observed 'r' value was greater than the tabulated value of 'r' at 0.05 levels of probability.

As mentioned earlier, the nine selected characteristics of the farmers were considered for the study. The variables were age, level of education, family size, farm size, rice cultivation area, income from rice cultivation, training exposure, extension media contact and problem faced in BRRI dhan47 cultivation.

The results of the correlation analysis between each of the selected characteristics of the farmer with their knowledge and attitude are shown in Table 4.12. In a bid to achieve the said inter-correlations, the correlation coefficients among the variables were arranged in matrix (Appendix-B).

Table 4.13 Co-efficient of correlation (r) of each of the selected characteristics of the BRRI dhan47 farmers' with their i) knowledge on BRRI dhan47 cultivation and ii) attitude towards BRRI dhan47 cultivation

(n=108)

Characteristics of the Farmers	Correlation of co-efficient (r) with knowledge on salt tolerant variety of rice	Correlation of co-efficient (r) with Attitude towards salt tolerant variety of rice	Table value significant at (df = 106)	
			0.05 level	0.01 level
Age	0.297**	0.387**	0.194	0.254
Level of education	0.831**	0.951**		
Family size	-0.170^{NS}	-0.175^{NS}		
Farm size	0.107^{NS}	0.184 ^{NS}		
Rice cultivation area	0.347**	0.524**		
Income from rice cultivation	0.114^{NS}	0.194*		
Training exposure	0.058^{NS}	0.176^{NS}		
Extension Media contact	0.446**	0.345**		
Problem faced in BRRI dhan47 cultivation	-0.583**	-0.647**		

^{NS} Not significant

* Significant at 0.05 level of probability

** Significant at 0.01 level of probability

4.4.1 Relationship between the selected characteristics of the farmers and their knowledge on BRRI dhan47 cultivation

Age and knowledge on BRRI dhan47 cultivation

The computed value of 'r' (0.297) was greater than that of the tabulated value (r=0.254) with 106 degrees of freedom at 0.01 level of probability as shown in Table 4.12. Hence, the concerned null hypothesis was rejected and it was concluded that age of the farmers had significant relationship at 0.01 level of probability with their knowledge on BRRI dhan47 cultivation.

Level of education and knowledge on BRRI dhan47 cultivation

The computed value of 'r' (0.831) was greater than the tabulated value (r=0.254) with 106 degrees of freedom at 0.01 level of probability as shown in Table 4.12 and the relationship showed a positive trend. Hence, the concerned null hypothesis was rejected. The findings indicated that education of the farmers had significant positive relationship at 0.01 level of probability with their knowledge on BRRI dhan47 cultivation.

Family size and knowledge on BRRI dhan47 cultivation

The computed value of 'r' (-0.170) was smaller than the tabulated value (r=0.194) with 106 degrees of freedom at 0.05 level of probability as shown in Table 4.12 and the relationship showed a negative trend. Hence, the concerned null hypothesis could not be rejected. The findings indicated that the family size had no significant negative relationship with their knowledge on BRRI dhan47 cultivation.

Farm size and knowledge on BRRI dhan47 cultivation

The computed value of 'r' (0.107) was smaller than the tabulated value (r=0.194) with 106 degrees of freedom at 0.05 level of probability as shown in Table 4.12 with a positive

trend. Hence, the concerned null hypothesis could not be rejected. The findings indicated that farm size of the farmers had no significant relationship with their knowledge on BRRI dhan47 cultivation.

Rice cultivation area and knowledge on BRRI dhan47 cultivation

The computed value of 'r' (0.347) was larger than the tabulated value (r=0.254) with 106 degrees of freedom at 0.01 level of probability as shown in Table 4.12 with a positive trend. Hence, the concerned null hypothesis was rejected. The findings indicated that rice cultivation area of the farmers had significant positive relationship at 0.01 level of probability with their knowledge on BRRI dhan47 cultivation.

Income from rice cultivation and knowledge on BRRI dhan47 cultivation

The computed value of 'r' (0.114) was smaller than the tabulated value (r=0.194) with 106 degrees of freedom at 0.05 level of probability as shown in Table 4.12. Hence, the concerned null hypothesis could not be rejected. The findings indicated that income from rice cultivation of the farmers had no significant relationship with their knowledge on BRRI dhan47 cultivation.

Training exposure and knowledge on BRRI dhan47 cultivation

The computed value of 'r' (0.058) was smaller than the tabulated value (r=0.194) with 106 degrees of freedom at 0.05 level of probability as shown in the Table 4.12. Hence, the concerned null hypothesis could not be rejected. The findings indicated that training exposure of the farmers had no significant relationship with their knowledge on BRRI dhan47 cultivation.

Extension media contact and knowledge on BRRI dhan47 **cultivation**

The computed value of 'r' (0.446) was larger than the tabulated value (r=0.254) with 106 degrees of freedom at 0.01 level of probability as shown in Table 4.12 with a positive trend. Hence, the concerned null hypothesis was rejected. The findings indicated that

extension media contact of the farmers had significant relationship at 0.01 level of probability with their knowledge on BRRI dhan47 cultivation.

Problem faced in BRRI dhan47 cultivation and knowledge on BRRI dhan47 cultivation

The computed value of 'r' (-0.583) was larger than the tabulated value (r=0.254) with 106 degrees of freedom at 0.01 level of probability as shown in Table 4.12 and the relationship showed a negative trend. Hence, the concerned null hypothesis was rejected. The findings indicated that the Problem faced in BRRI dhan47 cultivation had significant negative relationship at 0,01 level of probability with their knowledge on BRRI dhan47 cultivation.

4.4.2 Relationship between each of the selected characteristics of the farmers and their attitude towards BRRI dhan47 cultivation

Age and attitude towards BRRI dhan47 cultivation

The computed value of 'r' (0.387) was greater than that of the tabulated value (r=0.254) with 106 degrees of freedom at 0.01 level of probability as shown in Table 4.12. Hence, the concerned null hypothesis was rejected and it was concluded that age of the farmers had significant relationship at 0.01 level of probability with their attitude towards BRRI dhan47 cultivation.

Level of education and attitude towards on BRRI dhan47 cultivation

The computed value of 'r' (0.951) was greater than the tabulated value (r=0.254) with 106 degrees of freedom at 0.01 level of probability as shown in Table 4.12 and the relationship showed a positive trend. Hence, the concerned null hypothesis was rejected. The findings indicated that education of the farmers had significant positive relationship at 0,01 level of probability with their knowledge on BRRI dhan47 cultivation.

Family size and attitude towards BRRI dhan47 cultivation

The computed value of 'r' (-0.175) was smaller than the tabulated value (r=0.194) with 106 degrees of freedom at 0.05 level of probability as shown in Table 4.12 and the relationship showed a negative trend. Hence, the concerned null hypothesis could not be rejected. The findings indicated that the family size had no significant negative relationship with their attitude towards BRRI dhan47 cultivation.

Farm size and attitude towards BRRI dhan47 cultivation

The computed value of 'r' (0.184) was smaller than the tabulated value (r=0.194) with 106 degrees of freedom at 0.05 level of probability as shown in Table 4.12 with a positive trend. Hence, the concerned null hypothesis could not be rejected. The findings indicated that farm size of the farmers had no significant positive relationship with their attitude towards BRRI dhan47 cultivation.

Rice cultivation area and attitude towards BRRI dhan47 cultivation

The computed value of 'r' (0.524) was larger than the tabulated value (r=0.254) with 106 degrees of freedom at 0.01 level of probability as shown in Table 4.12 with a positive trend. Hence, the concerned null hypothesis was rejected. The findings indicated that rice cultivation area of the farmers had significant positive relationship at 0.01level of probability with their attitude towards BRRI dhan47 cultivation.

Income from rice cultivation and attitude towards BRRI dhan47 cultivation

The computed value of 'r' (0.194) was equal to the tabulated value (r=0.194) with 106 degrees of freedom at 0.05 level of probability as shown in Table 4.12. Hence, the concerned null hypothesis was rejected. The findings indicated that income from rice cultivation of the farmers had significant positive relationship at 0.05 level of probability with their attitude towards BRRI dhan47 cultivation.

Training exposure and attitude towards BRRI dhan47 cultivation

The computed value of 'r' (0.176) was smaller than the tabulated value (r=0.194) with 106 degrees of freedom at 0.05 level of probability as shown in the Table 4.12. Hence, the concerned null hypothesis could not be rejected. The findings indicated that training exposure of the farmers had no significant relationship at 0.01 level of probability with their attitude towards BRRI dhan47 cultivation.

Extension media contact and attitude towards BRRI dhan47 cultivation

The computed value of 'r' (0.345) was larger than the tabulated value (r=0.254) with 106 degrees of freedom at 0.01 level of probability as shown in Table 4.12 with a positive trend. Hence, the concerned null hypothesis was rejected. The findings indicated that extension media contact of the farmers had significant positive relationship at 0.01 level of probability with their attitude towards BRRI dhan47 cultivation.

Problem faced in BRRI dhan47 cultivation and attitude towards BRRI dhan47 cultivation

The computed value of 'r' (-0.647) was larger than the tabulated value (r=0.254) with 106 degrees of freedom at 0.01 level of probability as shown in Table 4.12 and the relationship showed a negative trend. Hence, the concerned null hypothesis was rejected. The findings indicated that the Problem faced in BRRI dhan47 cultivation had significant negative relationship with their attitude towards BRRI dhan47 cultivation.

CHAPTER 5

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of the Findings

5.1.1 Selected characteristics of the salt tolerant farmers

Age: The highest proportion (48.15 percent) of the respondents fall in the young aged category compared to 39.81 percent middle and 12.04 percent old aged category.

Level of education: Larger proportion (50 percent) of the respondents was under the category of "secondary education", 25 percent "primary education", and 21.30 percent "above secondary education". And only 3.70 percent of respondents were illiterate.

Family size: The highest proportion (68.52%) of the respondents had medium family size while 18.52% of the respondents belonged to the category of large family compared to 12.96% of them having small family size.

Farm size: Majority of the respondents (88.89 percent) had medium farm while 6.48 percent had large farm and 4.63 percent had small farm.

Rice cultivation area: The majority of the respondents (65.74 percent) had medium rice cultivation area, compared to 19.45 percent large farm and 14.81 percent small farm area for rice cultivation.

Income from rice cultivation: Majority 63.89 percent of the farmers had medium income where 18.52 percent farmers had low and 17.59 percent had high family income from rice cultivation.

Training exposure: About 62.96 percent of the rice farmers receive low training while the rest 21.30 percent and 15.74 percent of them received no training and single day training respectively.

Extension contact: Majority proportion (61.11percent) of the rice farmers had medium extension contact compared to 25 percent of them had high media contact and 13.89 percent of them had low media contact.

Problem faced on BRRI dhan47 cultivation: About 80.55 percent of the rice farmers faced medium problem compared to 10.19 percent of them faced low problem and 9.26 percent of them faced high problem.

5.1.2 Knowledge of the farmers on BRRI dhan47 cultivation: Majority (75%) of the farmers possessed medium knowledge and 20.37 and 4.63 percent of the farmers possessed low and high knowledge on rice cultivation respectively.

5.1.3 Attitude of the farmers towards BRRI dhan47 cultivation: About 77.78 percent of the respondents had high favourable attitude towards the rice cultivation and 22.22 percent of the respondents had low favourable attitude towards the rice cultivation.

5.1.4 Result of hypothesis testing

Out of nine selected characteristics of the farmers age, level of education, rice cultivation area and extension contact of the farmers had significant positive relationship with their knowledge on BRRI dhan47 cultivation, while problem faced by the farmers had significant negative relationship with their knowledge on BRRI dhan47 cultivation. Rest four characteristics i.e. Family size, farm size, income from rice cultivation and training exposure had no significant relationship with their knowledge on BRRI dhan47 cultivation. Age, level of education, rice cultivation area, income from rice cultivation and extension contact of the farmers had significant positive relationship with their attitude towards BRRI dhan47 cultivation, while problem faced by the farmers had significant negative relationship with their attitude towards BRRI dhan47 cultivation. Rest three characteristics i.e. Family size, farm size, and training exposure had no significant relationship with their attitude towards BRRI dhan47 cultivation.

5.2 Conclusions

Findings of the study and the logical interpretations in the light of relevant facts prompted the researcher to draw the following conclusions:

1. The findings of the study revealed that vast majority of the farmers (95.37 percent) had medium to high knowledge on BRRI dhan47 cultivation. Knowledge of the farmers had significant positive relationship with their age, education, Rice cultivation and extension contact. Therefore, it may be concluded that it would be a wise thinking to improve the overall situation of knowledge by taking care of the factors related to the increase of knowledge among the farmers.
2. Attitude of the farmers is not up to mark. A proportion of 77.78 percent of the farmers had high favorable attitude towards various aspects of BRRI dhan47 cultivation. It may be concluded that the cultivation of BRRI dhan47 will not be possible to improve to a significant extent unless the concerned authorities take proper steps to improve farmers attitude towards BRRI dhan47 cultivation.
3. Age of the farmers had significant positive relationship with their knowledge and attitude towards BRRI dhan47 cultivation. Therefore it may be concluded that the farmers having more age had more favorable knowledge and attitude towards BRRI dhan47 cultivation.
4. Education of the farmers had significant positive relationship with their knowledge and attitude towards BRRI dhan47 cultivation. Therefore it may be concluded that the farmers having more education had more favorable knowledge and attitude towards BRRI dhan47 cultivation.
5. Rice cultivation area of the farmers had significant positive relationship with their knowledge and attitude towards BRRI dhan47 cultivation. Therefore it may be concluded that the farmers having more rice cultivation area had more favorable knowledge and attitude towards BRRI dhan47 cultivation

6. Income from rice cultivation had significant positive relationship with their attitude towards BRRI dhan47 cultivation. It was thus proved that farmers' attitude are dependent with their income from rice cultivation. Therefore it may be concluded that the farmers having more income from rice cultivation had more favorable attitude towards BRRI dhan47 cultivation
7. Extension contact of the farmers had significant positive relationship with their knowledge and attitude towards BRRI dhan47 cultivation. It was thus proved that farmers' knowledge and attitude are dependent with their extension contact. Therefore it may be concluded that the farmers having more extension contact had more favorable knowledge and attitude towards BRRI dhan47 cultivation
8. Problem faced by the farmers had significant and negative relationship with their knowledge and attitude towards BRRI dhan47 cultivation. It may be concluded that farmers' knowledge and attitude are dependent with their problem faced. Therefore it may be concluded that the farmers facing less problems had more favorable knowledge and attitude towards BRRI dhan47 cultivation

5.3 Recommendations

Based on the findings and conclusions of the study, the following recommendations were made.

5.3.1 Recommendations for policy implication

1. It is observed that 95.37 percent of the farmers had medium to high knowledge on various aspects of BRRI dhan47 cultivation. So, it is strongly recommended that adequate technical support and training facilities should be extended to improve the knowledge of BRRI dhan47 farmers.
2. It is observed that 77.78 percent farmers' showed high favorable attitude towards BRRI dhan47 cultivation. So the concerned GOs and

NGOs should take necessary steps to hold favourable attitude towards BRRI dhan47 cultivation.

3. The farmers' literacy rate was high and it related to their knowledge gain. It is therefore, recommended that farmers can take advantage of different printed materials i.e. book, booklets, leaflets, posters, newspapers, etc. so that they can get more knowledge easily and can increase positive attitude. It is, therefore, recommended that arrangement should be made by the concerned authorities to undertake more educational activities for increasing the education level of the farmers.
4. Extension contact was positive in relation to knowledge. It is thus, strongly recommended that a media campaign should be launched involving all teaching methods in a balanced way to increase the positive attitude towards salt tolerant rice cultivation.
5. Rice (BRRI dhan47) farmers faced considerable amount of problems. It is therefore, recommended that concerned authorities should take attention to the solution of the problems as soon as possible.

5.3.2 Recommendations for further study

1. The study was conducted of the BRRI dhan47 farmers of selected area of Kaukhali upazilla under Pirojpur district . Findings of this study need verification by similar research in other parts of the country.
2. Relationships of nine characteristics of the BRRI dhan47 farmers and their knowledge and attitude have been investigated in this study. Further research should be conducted to explore relationships of other characteristics of the farmers with their knowledge and attitude.
3. Farmers' knowledge and attitude towards BRRI dhan47 cultivation has been investigated in this study. It is also necessary to study the BRRI dhan47 farmers' knowledge and attitude towards other agricultural practices.

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APPENDIX-A

Department of Agricultural Extension and Information system

Sher-e-Bangla Agricultural University, Dhaka-1207

An interview schedule for a research study entitled (English version) :

"FARMERS' KNOWLEDGE AND ATTITUDE REGARDING CULTIVATION OF SALT TOLERANT VARIETY (BRRI dhan47) OF RICE

Respondent No. …….

Name of the respondent: ……...

Village : Upazila :

Union : District :

(Please provide following information. Your information will be kept confidential and will be used for research purpose only)

1. **Age**
   What is your present age? ……. Years

2. **Level of Education**
   a) Can't read and write: ……
   b) Can sign only: ……..
   c) I read up to class: …….

3. **Family Size**

   How many family members are there in your family including you? …….persons

4. **Farm size**
   Please indicate your area of lands according to use

Sl. No	Use of land	Land possession	
		Local unit	Hectare
1	Homestead area (A_1)		
2	Own land own cultivation (A_2)		
3	Land taken from others on borga system (A_3)		
4	Land given to others on borga system (A_4)		
5	Land taken from others on lease (A_5)		
Total			

Total farm size = $A_1 + A_2 + ½ (A_3 + A_4) + A_5$

5. Rice Cultivation Area

Please indicate your land under Rice cultivation …….. (local unit) …….hectare

6. Income from Rice Cultivation

Products name	Production (unit)	Per unit price (Tk.)	Total (Tk)
1. BRRI dhan47			
2. Other varieties			
Total			

7. Training Exposure

Have you received any training on BRRI dhan47 cultivation?

Yes …… No……

If yes, please give the following information:

Sl. No	Subject of training	Duration of training (Days)
1		
2		
3		
4		
5		

8. Extension contact

Please state the extent of your contact with the following communication media

Sl. No	Categories of farmers	Extent of participation			
		Regularly (3)	occasionally (2)	Rarely (1)	Never (0)
1	Model farmers	>4 times/year	3-4 times/year	1-2 times/year	0 times/year
2	Agricultural input dealer	>6 times/year	4-6 times/year	1-3 times/year	0 times/year
3	NGO worker	>4 times/year	3-4 times/year	1-2 times/year	0 times/year
4	Sub-Assistant Agricultural Officer (SAAO)	>4 times/year	3-4 times/year	1-2 times/year	0times/year
5	Upazila Agricultural Officer (UAO)	>4 times/year	3-4 times/year	1-2 times/year	0 times/year

6	Group discussion	Once in a month	Once/2months	Once/3months	0 times/year
7	Radio	Daily	Weekly	Monthly	0 times/year
8	Television program	Daily	Weekly	Monthly	0 times/year
9	Publications like newspaper, poster, leaflet,agricultural fair etc.	Daily	Weekly	Monthly	0 times/year
10	Meeting	Daily	Weekly	Monthly	0 times/year

9. Problem Faced in BRRI dhan47 Cultivation

Please state the extent of the following problems faced in BRRI dhan47 cultivation

Sl. No.	Problem	Extent of problems			
		Severe (3)	**Moderate (2)**	**Low (1)**	**Not at all (0)**
1	Shattering problem on seedling stage				
2	Increasing cost on irrigation facilities				
3	Unable to tolerate salinity at mature stage				
4	Lack of rain or irrigation at tillering stage				
5	Losses due to natural calamities				
6	Inadequate supply of inputs				
7	Lower yield than other high yielding varieties				
8	Less profitable than other crop cultivation				
9	Lack of proper land management techniques				
10	Unable to cope with higher salinity				

10. Rice Cultivation Knowledge

Please answer the following questions

Sl. No.	Questions	Full marks	Mark obtained
1	Mention the name of two salt tolerant rice varieties.	2	
2	How many seedling do you transplant per hill in rice for rice cultivation.	2	
3	What are the qualities of good rice seed?	2	
4	What type of soil is suitable for rice cultivation?	2	
5	Mention four important disease of rice.	2	
6	Mention the name of two organic manures.	2	
7	Mention two harmful weeds of rice field.	2	
8	What precautions should be followed at the time of pesticide application?	2	
9	Mention at least one insecticide, fungicide and one herbicide used in rice cultivation.	2	
10	How much cow dung is required for rice cultivation per bigha?	2	
11	What types of irrigation are needed in boro rice cultivation?	2	
12	Mention two major problems of rice cultivation.	2	
13	Mention the fertilizer doses in rice cultivation (Urea, TSP, MP).	2	
14	Mention two important machineries mostly use in rice cultivation.	2	
15	Name the intercultural operations required in seedbed.	2	
Total	30		

11. Attitude towards BRRI dhan47 cultivation

Please mention your degree of agreement with the following statements

Sl. No.	Statements	Extent of agreement				
		Strongly agreed	Agreed	Undecided	Disagreed	Strongly disagreed
1 (+)	BRRI dhan47 yields higher compared to other salt tolerant varieties.					
2 (-)	Adoption of this variety is risky					
3 (+)	Less insect attack in BRRI dhan47 cultivation.					
4 (-)	It posses higher life duration.					
5 (+)	It Requires less amount of Urea.					
6 (-)	Its intercultural operation is more labor intensive.					
7 (+)	Less infestation of diseases occurs in BRRI dhan47 cultivation					
8 (-)	BRRI dhan47 are not available in the market					

Thank you for your kind cooperation

…….
Signature of the interviewer
Date:

APPENDIX-B

Correlation Matrix

	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}	X_{11}
X_1	-										
X_2	0.409**	-									
X_3	0.083	-0.198*	-								
X_4	0.102	0.220*	0.019	-							
X_5	0.193*	0.505**	-0.105	0.688**	-						
X_6	0.102	0.225*	0.020	0.941**	0.732**	-					
X_7	0.092	0.205*	-0.131	0.743**	0.609**	0.760**	-				
X_8	0.155	0.325**	-0.097	-0.004	0.085	-0.048	0.002	-			
X_9	-0.191**	-0.658*	-0.018	-0.158	-0.289**	-0.193*	-0.126	-0.237*	-		
X_{10}	0.297**	0.831**	-0.170	0.107	0.347**	0.114	0.058	0.446**	-0.583**	-	
X_{11}	0.387**	0.951**	-0.175	0.184	0.524**	0.194*	0.176	0.345**	-0.647**	0.835**	-

^{NS}Non Significant

*Correlation is significant at 0.05 levels (2-tailed)

**Correlation is significant at 0.01 levels (2-tailed)

X_1 : Age X_2 : Level of education X_3 : Family size

X_4 : Farm size X_5 : Rice cultivation area X_6 : Income from rice cultivation

X_7 : Training exposure X_8 : Extension media contact X_9 : Problem on BRRI dhan47 cultivation

X_{10} : Knowledge on BRRI dhan47 cultivation X_{11} : Attitude towards BRRI dhan47 cultivation