ATTITUDE OF FARMERS TOWARDS MODERN JUTE CULTIVATION IN BALIAKANDI UPAZILLA UNDER RAJBARI DISTRICT

A THESIS BY:

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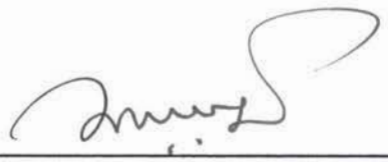

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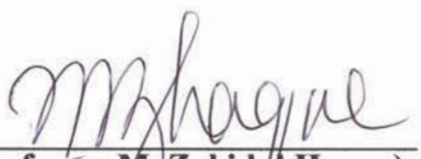

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CERTIFICATE

This is to certify that the thesis entitled "FARMERS ATTITUDE TOWARDS MODERN JUTE CULTIVATION IN RAJBARI DISTRICT" 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 results of a piece of bona fide research work carried out by ZAHIDUL ISLAM, Registration No. 02169, under my supervision and guidance. No part of this thesis has been submitted for any other degree in any other institutions.

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

Dated: 30.12.2007

Dhaka, Bangladesh

(Professor Md. Rafiquel Islam)
Supervisor

THE WORK IS DEDICATED
TO
THE MEMORY
OF
MY BELOVED PARENTS

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The Author

ABSTRACT

The purpose of the research was to investigate the attitude of farmers towards modern jute cultivation, problem faced by the farmers and probable suggestion to overcome the problem. The research also explored the relationships of selected characteristics namely age, education, farm size, training received, credit availability, knowledge on jute cultivation, innovativeness, annual family income, fatalism and extension media contact of jute growers with their attitude towards modern jute cultivation. Baliakandi upazilla of Rajbari district was selected for the study. This upazilla is consisted of 7 unions and Narua union was selected purposively for this research. There were 31 villages in Narua union and 10 villages were selected randomly for the study. A total of 1002 jute farmers were in these 10 villages. Among the total farmers 100 jute farmers were selected as sample population with using proportionate random sampling method. Data were personally collected through interview schedule during 15 July to 14 August, 2007. The findings revealed that majority of the jute farmers (72 percent) had favourable to moderately favourable attitude towards modern jute cultivation. Attitude of the jute growers was ascertained through a 5 point Likert type scale. Coefficient of correlation (r) was computed to explore the relationships between jute grower's attitude and their selected characteristics. The literacy rate was higher than the national average, this attribute would give positive attitude towards the innovative agricultural technologies and also help extension providers to demonstrate, disseminate, train and motivate farmers to adopt appropriate technologies. In the present study, about 65 percent of the respondents showed medium to high innovativeness. The study reveals that only 37 percent jute growers access to receive training and 40 percent access to credit. There was inequality in annual family income and the large farmers had possessed the bulk of the income of the community. Lack of HYV seed, unavailability of seeds during sowing period, lack of credit during cultivation are the most serious problem of farmers for modern jute cultivation. Training received, knowledge on jute cultivation and fatalism had positive significant relationship and extension media contact had negative significant relationship with their attitude towards modern Jute cultivation. On the other hand Age, Education, Farm size, Annual income, Credit availability and Innovativeness had no relationship with their Attitude towards modern Jute Cultivation of the jute growers. The respondents appeared to be frustrated with lower demand of their produce (fibre) as well as constrained with shortage of cash resource to allocate in jute cultivation. The jute growers also opined that the selling price of jute should be remunerative, and the Government should fix the minimum purchase price at the primary market, to develop and create demand in side and outside the country with a long term planning.

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ACRONYMS AND ABBREVIATIONS

AEO	**Agricultural Extension Officer**
ASA	**Association for Social Advancement**
BADC	**Bangladesh Agricultural Development Corporation**
BDR	**Bangladesh Rifles**
BRAC	**Bangladesh Rural Advancement Committee**
BRDB	**Bangladesh Rural Development Board**
BJRI	**Bangladesh Jute Research Institute**
BBS	**Bangladesh Bureau of Statistics**
SAAO	**Sub-Assistant Agriculture Officer**
DOF	**Department of Fisheries**
DAE	**Department of Agricultural Extension**
FAO	**Food and Agricultural Organization**
FFS	**Farmers Field School**
GO	**Government Organization**
GTI	**Graduate Training Institute**
HYV	**High Yielding Variety**
IPM	**Integrated Pest Management**
IPSA	**Institute of Post Graduate Studies in Agriculture**
MJC	**Modern Jute Cultivation**
Ltd	**Limited**
NGO	**Non Government Organization**
Non-FFS	**Non Farmers Field School**
SD	**Standard Deviation**
TK	**Taka**
UAO	**Upazilla Agriculture Officer**
USG	**Urea Super Granules**

CHAPTER 1

INTRODUCTION

1.1 General Background

Jute is a natural fiber popularly known as the golden fiber. It is one of the cheapest and the strongest of all natural fibers. The jute fiber is also known as Pat. It is the important long fiber and the plant which is known as "Jute". The jute plant grows six to ten feet in height. It has no branches. The stem of the jute plant is covered with thick bark and it contains the fibre. In two or three month's time, the plants grow up and then they are cut, tied up in bundles and kept under water for fermentation for several days. Thus the stems rot and the fibres from the bark become loose. Then the cultivators pull of the fibres from the bark and wash the fibres very carefully, dry them in the sun and put them in bundles for sale. Jute is used in making cloth, shawl, ropes, carpet, gunny bags and many other useful things. Jute bags are very suitable for packing of food grains.

Bangladesh has plenty of low lands that go under water during rainy season. Eighty percent of the world's high quality jute grows in Bangladesh. Jute has been cultivated in Bangladesh from the time immemorial but no one can say exactly when or from where it came. However, from the available records it is found that jute began to be commercially cultivated in 1828 and it started to be produced on a large scale from 1865. It is said that Bangladesh was the first jute producing country in the world.(Ahmed, 1968). But at present, jute production has tremendously declined. India produces the highest quantity of jute in the world (Mandal, 1995). In Bangladesh greater Mymensingh and Faridpur, Dhaka, Comilla, Rangpur and Jessore are the major jute growing districts. Other jute growing countries are India, China, Nepal, Thailand, Pakistan, Maxico etc. (IJO 1993/94).

There are around 40 species of jute in Bangladesh. The farmers of this country, however, grow mainly two species of jute commercially such as:

(i) *Corchorus capsularis* (White or Deshi jute).

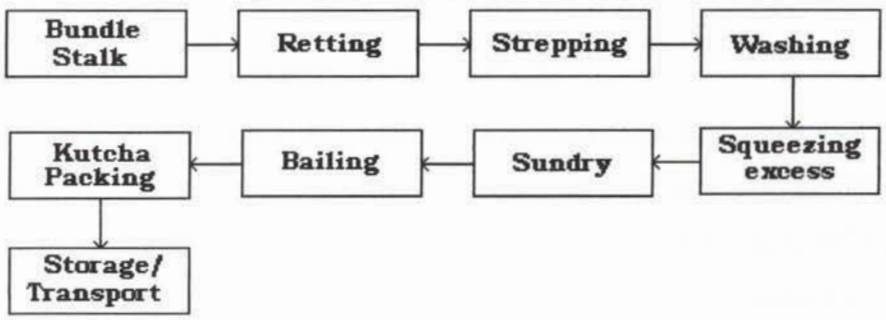
(ii) *Corchorus olitorius* (Tossa or boghi jute).

It may be noted here that there is another variety of jute is grown in the country which is locally called "Mesta" but its hectareage is negligible.

Production of quality jute depends on favourable or suitable soil, topography, environment, seasonal condition and on the skill of the producers in timely sowing, harvesting, retting, stripping, washing and drying. Jute is produced within a prominently rice growing area. Jute is a rainy season crop. It grows better in damp weather with 25°C to 35°C temperature and 70-90 percent humidity, 50 to 75 millimeters (mm) rainfall spread over a month at the sowing period and about 50 mm per week subsequently with occasional bright sun shine are considered most suitable for jute production.(Jabbar 1971).Sandy loam or loam soil which can hurry up absorb rain water and simultaneously retain moisture is needed to jute growth. The grayish coloured Brahmaputra and Jamuna alluvium, which contains very little carbonate of lime but large proportion of potash and phosphoric acid, is the best soil to jute cultivation (Ahmed 1968).

Jute is harvested any time between 120 days to 150 days when the flowers have been shed, early harvesting gives good healthy fibers. The plant from 8 to 12 feet high are cut with stickles at or close the ground level. In flooded land, plants are up rooted. The harvested plants are left in field for 3 days for the leaves to shed. The stems are then made up into bundles for striping in water. Stripping is carried out immediately after harvest. To extract the fibres from the stem, the process is carried out in the following stages.

Process of Fibre Extraction



Retting is a process in which the tied bundles of jute stalks are taken to the tank by which fibres get loosened and separated from the woody stalk. The bundles are steeped in water at least 60 cm to 100 cm depth. The retting process is completed in 8 to 30 days, when the barks separate out easily from the stick or wood and the fibres are ready for extraction. Stripping is the process of removing the fibres from the stalk after the completion of retting. When there is a plenty of water, bundles of stalks are laid in the

pond ditches or slow moving streams and left for 5-15 days under water. The bunch of stem is held in one hand and the root end tapped lightly with a mallet. After loosens the rest of fibres, fibres are extracted and washed. Extracted fibres are washed in clean water. The dark colour of fibres can be removed by dipping them in tamarind water for 15 to 20 minutes and again washed in clean water. After squeezing excess water the fibres are hanged on bamboo railing for sun drying for 2-3 days. Later on it is graded into tops, middles, B, C and X-bottoms.

From the view point of the farmers, jute is an important cash crop and most of jute produced by farmers is sold for earning cash to meet their various kinds of expenditures. But at the initial stage jute was not at all significant crop in Bangladesh and the farmer did not grow it on a large scale basis. They just used to grow it for their domestic use only. It has calculated that the consumption of jute by the farmers for their domestic use is not more than 1 percent of their total production, 99 percent of it they sell for earning cash. Jute has currently been facing still competition at the farm level also. This is due to the fact that jute land is equally suited for growing rice and rice is commanding a record high price in the home market. The farmers are quickly adjusting their production plans accordingly and taking the advantage of the high price of rice.

Productivity or yield is very important feature in agriculture. More important is that the productivity of jute has been increasing slowly, when for about two decades jute is being pushed to marginal lands and minimum care. For convenience, the facts and features of jute production through the past 59 years may be assessed and compared in two periods of 23 years and 36 years each. The span, 1947-70 is generally referred to as the Pakistan period (except only one 1971-72). The next span of the years, 1972-2006 comprises the Bangladesh period. Before independence jute alone accounted for the biggest share of total export earning of the then Pakistan. Since 1947 jute contributed much for the economic development of the then Pakistan and acted in the boosting of industrial sector. The contribution of jute in the economy of the then Pakistan is evident from the table presented in Table 1.1.

Table 1.1 Areas, Production, Yield and Contribution of Jute in the National Economy of Pakistan

Year	Area (000 ha)	Production (000 Tons)	Yield (kg/ha)	Foreign exchange earned by jute alone in crores of Taka	Percentage share of foreign exchange earning by jute
1947-48	833.14	1221.41	1466	105.06	59.43
1952-53	771.68	1217.86	1578	53.26	35.27
1957-58	632.18	1017.58	1610	99.08	69.68
1962-63	697.31	1124.55	1613	116.46	51.06
1967-68	946.07	1190.60	1258	138.82	47.06
1968-69	878.18	1027.14	1170	140.98	43.70
1969-70	997.46	1280.02	1283	154.62	47.24

Source: Jute Board, Ministry of Commerce, Govt. of Pakistan, The Jute season (1969-70), An Annual Review, P. 28.

After the emergence of Bangladesh as a sovereign state, jute has assumed a renewed responsibility to build her devastated economy. It must be produced in excess not only for earning enough foreign exchange to develop its traditional agriculture but also supports the industrial sector to bring about a sustained economic growth. But unfortunately the yield remained around 1.5 to 2.07 tons/ha during the last 40 years (BBS, 1997).

India, Bangladesh, China and Thailand are the leading producers of Jute. It is also produced in southwest Asia and Brazil. In the last three decades, world's production of jute ranged from 2.1 million to 4.0 million metric tons. Production fluctuated greatly resulting in a high degree of supply volatility. The annual average variation in world's production during this period was 14.3 percent (Rahman, 1984). About 67 percent of the world's jute was produced in Bangladesh until 1950 (Anonymous, 1960). Between 1950's and 1980's also the declining trend continued. In 1982-83 Bangladesh's share in world production was about 22 percent mainly due to the declining production. During 1952-70, fluctuations in production were about 14 percent for change in acreage and 7 percent for change in yield (Tarapores, 1972). The production of jute in India, China, Thailand and Nepal also gradually showed a declining trend during 1960's to 1990's. Between 1947 and 1953 India's production increased from 23 percent of world production to nearly 50 percent. In the 1960's Thailand became an important producer of Mesta fibre. Area, production and yield of Jute, Kenaf and allied fibres during the period (1990-2000) in Bangladesh are shown in Table.1.2.

Table 1.2. Area, production and yield of Jute, Kenaf and allied fibres in Bangladesh

Years	Area (000' ha)	Production (000' tons)	Yield(Quintal/ha)
1990-91	591.7	726.0	23.3
1991-92	586.8	508.0	20.3
1992-93	500.2	550.0	22.0
1993-94	521.3	672.0	24.5
1994-95	567.8	380.0	15.8
1995-96	500.0	270.0	12.3
1996-97	547.6	364.9	24.8
1997-98	698.1	429.5	26.5
1998-99	477.5	248.0	26.8
1999-00	355.3	176.0	26.7

Source: Jute, Kenaf and Allied fibre, statistics June 2000 (CCP: Ju/St/2000/1) (CCP:Ju/Qs/1993/2) Quarterly June 1993.

It may be mentioned in this connection that during 1947-70 the yearly average area was 813.86 thousand ha and production 1154.16 metric tons (Table 1.1). Whereas during1972-2000 both area and production of jute declined to 628.59 thousand ha and 936.45 metric tons respectively. During 1947-1970 and 1990-1991 the trend of jute area, production and yield has been shown in Table 1.1 and in Table 1.2 respectively. The reasons of these declines of jute were probably because jute was pushed to marginal land and an acute competition with synthetic fibre was evident all over the world. The total world production of jute though steadily decreased. It is estimated that there was no significant improvement in production of jute in Bangladesh. As a result her share dropped to about 35 % in 1985-86 and 12.37% in 1991-93 (Statistics Dept, Bangladesh Bank, 1991-1993). From the view of that feature the country is loosing its monopoly in the world jute market mainly due to entrance of other countries in jute and allied fiber production, competition of synthetic fiber as well as unstable domestic production.

During the period of 2002-2007 the total area, production and yield of Jute, Kenaf and allied fibres in Bangladesh are shown in the Table 1.3.

Table 1.3. Area, production and yield of Jute, Kenaf and allied fibres in Bangladesh

Years	Area (000' ha)	Production (000' tons)	Yield(Quintal/ha)
2002-2003	436.6	793.4	18.2
2003-2004	499.8	963.0	19.3
2004-2005	450.0	810.0	18.0
2005-2006	500.0	990.0	19.8
2006-2007	500.0	990.0	19.8

Source: FAO statistics, June 2007.

Demographic pressure warrants more land to food crops. This ever increasing demand caused shrinkage and shift of jute acreage. Moreover, over the years, preference to jute as kharif crop has changed; shifting land to rice, wheat and other high value crops like banana, vegetables, maize and tobacco has become a recent trend (Talukder *et. al.*, 1985). Domestically, jute is revolving around many problems. Due to uncertain weather condition, and scarcity, high input cost and unfavorable jute-rice price ratio, jute is being pushed to the marginal and less productive lands. In order to overcome the problems sustainable improvement is of great importance before the planners, researchers and extentionists involved in jute agriculture. Introduction of irrigation schemes associated with gradual adoption of dwarf HYV Aus rice and to some extent dwarf HYV Aman rice has increasingly pushed jute to land unsuitable for jute. On the other hand, farmers considered that producing rice would bring more benefit than producing jute. Since the price of rice has gone up at least three times compared to jute. Moreover, Govt. has not yet been successful to safe guard farmers interest from the exploitation of intermediaries such as "Brokers and Farias" and could not fix and implement minimum price for jute at primary market.

In the last 30 years world market share of natural fibre has been badly affected by the intensive completion from synthetic materials. Synthetic packaging materials now meet 80-85 percent of the market demand and the rest being met by jute and allied firbres. All these events indicate that farmers are facing constraint to adopt modern jute cultivation. Attitude of farmers of Bangladesh regarding modern agriculture was studied by a number of workers. Bari (2000) indicated that aspiration of the farmers had significant positive relationships with their agricultural knowledge. This means that higher the agricultural knowledge of the farmers the higher was their aspiration. Kashem (1986) reported that educated and cosmopolite farmers gain knowledge from a variety of

sources. They further emphasized that training is an essential component for increasing the knowledge and skill of modern practice of agriculture. Hosssain (2002) reported that agricultural knowledge, cosmopoliteness, innovativeness and adoption of modern agricultural technologies were found to have positively significant relationships with the attitude of farmers.

In the light of above discussion it is evident that the prospective future of jute production in Bangladesh is best with a host of problems and constraints which calls for concerted effort if it is to continue and maintain its dominant position in the world market. Bangladesh is faced with the dilemma of supplying adequate jute at a competitive price to the foreign buyers and paying at the same time a remunerative price to her own growers. The necessity of increasing per acre yield of jute can thus hardly be overemphasized.

It is the testimony of agricultural experts that to increase the present poor yield of jute, the farmers must adopt scientific technology in its cultivation. In fact, production of jute up to the desired extent is not possible without adopting scientific methods of cultivation. Modern agricultural technology, according to Ali (1993) may be broadly divided into three categories namely, biotype, chemicals and machinery. High yielding varieties of different are the biotype technology. Chemical technology consists of fertilizer, insecticides, growth hormones etc. Machines, tools and equipments developed for efficient performance of farm works comprise the machinery for modern agriculture. Most of the farmers of our country have not yet adopted modern agricultural technologies to a desirable extent in their farm. It indicates, among others, that the farmers have not yet been approached properly in respect of acceptance of scientific technologies.

An exhaustive review of literature indicated that there is no work done on attitude of farmers towards modern jute cultivation. However, during 70s there was an intensive jute cultivation scheme implemented at farm level by public sector. That effort gave positive response to yield but with the cessation of the scheme the positive trend did not sustain.

To above discussion, so far it is known to the present investigator, there is no report available on the attitude of farmers towards modern jute cultivation. Hence a study was conducted to assess and evaluate the attitude of farmers towards modern jute cultivation.

1.2 Statement of the problem

The ancient golden fibre is now a very negligible cash crop in Bangladesh. At present, jute is facing competition both internally and externally. Internally Aus paddy is the main competitor of jute. On the other hand, its external competitor is mainly synthetic fibres and synthetic goods. Thus, the demand for jute in the world market has already reduced the volume of its trade. Despite the above mentioned facts, Jute is extensively grown throughout the Bangladesh. Before independence jute alone accounted for the biggest share of total export earning thus average area was 813 thousand ha and occupied about 7% of cultivated land. Now in 2006-2007, the total jute production area was 500.0 thousand ha (FAO, 2007). It indicates that jute cultivation gradually decreased. On this view and preceding discussions, the investigator undertook the study of a problem entitled "Attitude of farmers towards modern jute cultivation". The purpose of the study was to have an understanding of the attitude of farmers towards the use of different technologies namely improved jute seed, line sowing method, proper land preparation, proper weeding and improved ribbon retting method.

Moreover, since various characteristics of farmers are likely to have an influence on the formation and development of their attitude towards certain technologies, there was a need for ascertaining the relationships of such factors with respect to their attitude component. Therefore examining the relationships of a set of personal, socio-economic and psychological characteristics of farmers with their attitude towards modern jute cultivation were considered pertinent to the present study which is a major concern in Agricultural Extension. In this respects, the answers of the following questions will be very much pertinent.

1. What are the different modern jute cultivation technologies towards the attitude of jute growers?
2. What are the characteristics of the jute growers?
3. Is there any relationship between the characteristics of the jute growers and their extent of attitude towards jute cultivation?
4. What problems and constraints are usually faced by the jute growers towards modern jute cultivation?

These questions obviously indicate the need for conducting a research study entitled "Attitude of farmers towards modern jute cultivation in Baliakandi upazilla under Rajbari district".

1.3 Significance of the Study

Jute remains relatively neglected comparing to production aspects in Bangladesh. This neglect is unfortunate since jute being a cash crop and one of the principal sources of cash income for farmers; its production solely depends on its national and international marketing policy. There is no other alternative fibre yielding or cereal crop that can be produced in excess to earn foreign exchange to the extent as jute has been earning since long past. The contribution of jute is being shifted to the marginal land. Jute has been facing as acute competition both within the country by the aus rice cultivation and out side by synthetic fibre. Consequently, there has been a marked reduction in demand of raw jute fibre and acreage of jute cultivation. In order to save jute cultivation or production from inside and out side threat, the extension service must launch a countrywide campaign to produce quality jute at a relatively low cost per hectare. Perhaps, this is possible only through large-scale adoption of improved technologies. It refers to the use of improved seed, line sowing method, ribbon retting method, proper land preparation and proper weeding technologies.

On the basis of the findings of the present study specific recommendations will be made for realistic policy formulation which will help to change attitude of the jute growers and to improve their jute cultivation practices.

1.4 Specific objectives

In order to find proper direction to the purpose of the present study, the following specific objectives were formulated:

(i) To determine the attitude of jute growers towards the use of modern jute cultivation technologies:
- Use of improved seed.
- Line sowing method
- Ribbon retting method.
- Proper land preparation
- Proper weeding.

(ii) To describe the selected characteristics of the farmers. The selected characteristics are:

a) Age
b) Education
c) Farm size
d) Training received
e) Credit availability
f) Knowledge on jute cultivation
g) Innovativeness
h) Annual family income
i) Fatalism
j) Extension media contact

(iii) To explore the relationship of some selected characteristics of the farmers with their overall attitude towards jute cultivation.

(iv) To identify the existing problems and constraints in jute cultivation with the possible suggestions to overcome the same.

1.5 Scope and Limitations of the Study

The present study was undertaken to have an understanding of the farmers' attitude towards the use of modern jute cultivation technologies and to explore the relationships with their selected characteristics. Considering the time and other accessory resources available to the researcher and to make the study manageable and meaningful, it became necessary to impose certain limitations as noted below:

1) The study was confined to only one union of Baliakandi upazilla under Rajbari district.
2) The characteristics of the jute farmers in the study area are many varied but only ten characteristics were selected for investigation in this study as stated in the objectives.
3) In attempting to accomplish the objectives listed above, the researcher depended on information furnished by the respondents.
4) Five jute cultivation technologies were considered for used by the jute growers out of many technologies.
5) In some cases, the researcher faced unexpected interference from the over interested side talkers while collecting data from the target respondents. However, the researcher tried to overcome the problems as far as possible with sufficient tact and skill.

Findings of this study will be particularly applicable to the farmers of Baliakandi upazilla under Rajbari district. However, the jute growers of the study area are likely to have similarly with those of other areas of the country. Therefore, the findings of the study might have implications for the jute growers of other areas too.

1.6 Assumptions of the Study

An assumption is "The supposition that an apparent fact or principle is true in the light of the available evidence (Goode and Hatt, 1952). The following assumptions were kept in mind by the researcher while undertaking this study:

1. The respondents included in the sample were capable of providing proper answer to the question in the interview schedule.
2. The researcher who acted as interviewer was well adjusted to the social environment of the study area. Hence, the data collected by him from the respondents were free from bias.
3. The responses furnished by the respondents were reliable. They expressed the truth about their convictions and opinions.
4. Views and opinions furnished by farmers included in the sample were representative views and opinions of the whole population of the study.
5. The findings of this study will have general application to other parts of the country with similar personal, socio-economic and cultural conditions of the study area.

1.7 Statement of Hypothesis

A hypothesis is "a proposition which can be put to a test to determine its validity. It may seem contrary to or in accord with common sense. It may prove to be correct or incorrect. In any event, however, it leads to an empirical test" (Goode and Hatt, 1952). In order to examine the relationship between variables, research hypotheses are formulated first which state anticipated relationship (positive or negative) between the variables. However, for statistical test, it is necessary to formulate null hypothesis. A null hypothesis states that there is no relationship between the concerned variable. If a null hypothesis is rejected on the basis of empirical test, it is then concluded that there is a relationship between the concerned variables.

The following null hypotheses were formulated to explore the relationships or selected characteristics of the jute growers with their attitude towards modern jute cultivation.

"There are no relationships between attitude of farmers towards modern jute cultivation and any of their ten selected characteristics" i.e. (i) Age (ii) Education (iii) Farm size (iv) Training received (v) Credit availability (vi) Knowledge on jute cultivation (vii) Innovativeness (viii) Annual family income) (ix) Fatalism, and (x) Extension media contact

1.8 Definition of Key Terms

A concept is an abstract of observed thing; events or phenomenon or in other words, it is a short hand representation of variety of facts (Wilkinson and Bhandarkar, 1977). A researcher needs to know the meaning and contents of every term that he uses. It should clarify the issue as well as explain the fact to the investigator and readers. However, for clarity of understanding, a number of key concepts/term frequently used throughout the study is defined and interpreted as follows:

Attitude

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

Modern jute cultivation

This refers to a practice of jute cultivation recommended by the Bangladesh Jute Research Institute. In the present study, five improved farm practices were included. These were use of improved seed, line sowing method, ribbon retting method, proper land preparation and proper weeding.

Farmers/Growers

The persons who were involved in farming activities are called farmers. They participated in different farm and community level activities like crops, livestock, fisheries, and other farming activities.

Respondents

People who answer questions asked by an interviewer for a social survey. They are the people from whom a social research worker usually gets most data required for his research.

Improved seed

It refers to the seeds that have genetic purity, mechanical purity and pathological purity with minimum 80 percent germination capacity for emergence.

Proper Wedding

It refers to eradicate weeds from the jute field timely by using weedicides or using any other devices during intercultural operation.

Proper land preparation

It refers to cultivate jute field by ploughing 3-4 times before sowing the seeds in the field.

Improved retting method

It refers to the certain specific prerequisites before preparation and management of ret during the retting process.

Ribbon retting

Ribbon retting is a technique to solve the problem of jute retting in water scarce areas. With this technology it is now possible to get high quality fibre by retting the peeled barks (instead of whole plants) in very shallow ditches or even in big earthenware.

Line sowing

Line sowing refers to the operation of placing the seeds in the soil in line for production of crops. According to the recommendations of Bangladesh Jute Research Institute jute seeds should be sown in line by using the spacing of 30 cm x 5 cm (Row to row 30 cm and plant to plant 5 cm).

Adoption Process

It is the implementation of a decision to continue the use of an innovation. According to Rogers (1995), "Adoption is a decision to make full use of an innovation as the best course of action available." When an individual takes up a new idea as the best course of action and practices it the phenomenon is known as adoption (Ray, 1991).

Extension agent

Extension agent refers to the professional leaders employed for extension works by various agricultural organizations.

Newspaper

Reading the daily newspaper especially on agricultural items by the clients constitutes the use of this medium.

Publication

It includes materials like leaflet, booklet, circular letter, bulletin and pamphlet on jute cultivation. Both the Department of Agriculture and Bangladesh Jute Research Institute may publish these.

Radio

It is one of the most important mass media that can disseminate information to the largest number of people within a short time. In this study listening to the farm forum broadcasted from of Bangladesh Betar is considered to be the use of this medium. Massages on jute cultivation in the form of talks, debates, dialogues, folk songs on improved farm practices are disseminated through this source for the rural people of Bangladesh.

Innovativeness

Innovativeness is the degree to which an individual is relatively earlier in adopting agricultural innovations, new ideas, practices and things than the other members of a social system (Rogers, 1995). This was comprehended by the quickness of accepting innovations by an individual in relation to others and was measured on the basis of time dimension.

Innovation

An innovation is an idea or practice perceived as new by the individual. It is the newness of the idea to the individual that determines his reaction to it. In the present study, improved farm practices of jute cultivation were considered to be the innovations such as use of improved seed, line sowing method, ribbon retting method, proper land preparation and proper weeding.

Variable

A general indication in statistical research of characteristics that occurs in a number of individuals, objects, groups etc. and that can take on various values, for example the age of an individual.

Problem

Problem refers to a difficulty about which something to be done. Problem faced by the farmers in this study was defined as the extent of difficulties faced by jute growers in the way of adoption of modern jute cultivation technologies.

Assumption

An assumption is "The supposition that an apparent fact or principle is true in the light of the available evidence" (Goode and Hatt, 1952).

Hypothesis

Defined by Goode and Hatt (1952), a proposition this can be put to "a test to determine its validity". It may be true or false, it may seem contrary to or in accord with common sense. However, it leads to an empirical test.

Null hypothesis

The hypothesis which we pick for statistical test is null hypothesis (Ho). In this study the null hypothesis is stated that there is no relationship between the concerned variables.

Statistical test

A body of rules which help to take decision regarding acceptation or rejection of the hypothesis is defined as test. In this study if a null hypothesis is rejected it is assumed that there is a relationship between the variables.

Research methodology

Research methodology is the description, explanation and justification of various methods of conducting research. It may be understood as a science of studying how research is done scientifically. In it we study the various steps that are generally adopted by a researcher in studying the research problem along with the logic behind them.

CHAPTER 2

REVIEW OF LITERATURE

The purpose of this Chapter is to review of literature having relevance to the present study. The researcher made an elaborate search of available literature for the above purpose. But there is no enough dealing with the relationship of the characteristics of jute growers and their attitude towards modern jute cultivation. The researcher attempted to search the literatures on a number of studies have been conducted on the attitudes towards the use of modern jute cultivation. Therefore, the finding of such studies related to the attitude towards modern jute cultivation and other partial studies have been reviewed in this chapter.

This Chapter is divided into three sections; the **first** section deals with concept of attitude with past research findings relating to farmers' attitude, the **second** section deals with past research findings relating to farmers' attitude with their selected characteristics, the **third** section deals with the conceptual framework of the study.

2.1 Concept of Attitude with past research findings relating to farmers' attitude

Different persons have defined attitude in many different ways. Some of these are given below:

The term attitude used by Morgan, Holmes and Bundy (1942) means one's feeling towards person's ideas, institutions, practices or facts.

Campbell (1950) defined attitude of an individual to refer to an enduring syndrome of response of consistency with regard to a set of social objectives.

Bogardus (1960) defined the term attitude as tendency to act towards or against something in the environment, which becomes thereby a positive or negative value.

Barnard (1965) defined attitude as a predisposition to act in certain way. It is a state of readiness that influences a person to act in a given manner.

Baldwin (1967) referred to attitude as a specific mental disposition towards an incoming or arising experience, whereby the experience is modified; or in other works, it is a condition of readiness for a certain type of activity.

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

Ziaul (1987) studied a research on farmers' economic characteristics affecting their attitude towards use of urea in jute cultivation at Keyotkhali Union of Mymensingh Sadar Upazilla. The findings revealed that majority (59 percent) of the growers had unfavourable attitude towards use of urea, while 27 percent had favourable attitude, 10 percent very favourable attitude and the remaining four (4 percent), neutral attitude towards use of urea in jute cultivation.

Bari (2001) conducted a research on attitude of farmers towards Hybrid Rice Alok 6201 at Manda, Mohadebpur and Patnitala Upazillas of Naogaon district. He found that the highest proportion (45.3 percent) of hybrid rice growers had moderately favourable attitudes while 26.5 and 28.2 percent farmers showed unfavourable and favourable attitude respectively towards hybrid rice variety Alok 6201.

Hoque (2001) investigated the farmers' attitude towards organic matter use in crop production at two villages of Sadar Upazilla under Meherpur district. He observed that majority (more than 43%) of the farmers were found to have moderately favourable attitude, while about 30% farmers had highly favourable and 27% had slightly favourable attitude. There was no farmer having unfavourable attitude towards organic matter use.

Paul (2001) carried out a research on attitude of farmers towards use of urea super granule (USG) in rice cultivation at Abhaynagar Upazilla under Jessore district. It revealed that the majority of the farmers (59.62%) had moderately favourable attitude while 25% had slightly favourable attitude and 15.38% had highly favourable attitude towards the use of USG.

Sarker (2002) carried out a research on farmers' attitude towards organic homestead gardening programme of World Vision at Kuptala, Ramnagor, Saihata and Bhelabari villages under Sariakandi upazilla of Bogra district. He found that more than three-fifth (64%) of the World Vision farmers were found to have moderately favourable attitude while 20% having slightly favourable attitude and only 16% farmers belonged to highly favourable attitude. He also found that majority of the World Vision farmers showed moderate to highly favourable attitude towards organic homestead gardening programme of World Vision.

Hossain (2002) also studied on the attitude of island farmers towards adoption of modern agricultural technologies at Musapur and Maitbhanga under Sandwip upazilla of Chittagong district.m His studied revealed that the highest portion (65 percent) of the farmers fell under the medium attitude category, while 30 percent showed high attitude and only 5 percent had low attitude towards modern agricultural technologies. Thus, an overwhelming majority of the farmers had medium to high attitude towards modern agricultural technologies.

Ahaduzzaman (2003) conducted a research on farmers' attitude towards modern T. Aman technologies at two villages of Haridevpur union under Sadar Thana of Rangpur district. He found that about three-fifth (59.09%) of the respondents were found to have moderately favourable attitude while 14.55% having slightly favourable attitude and only 26.36% farmers belonged to highly favourable attitude.

2.2 Past research findings relating to the relationship of farmers' attitude towards selected practices with their selected characteristics

This section presents a review of previous studies relating the association of the selected characteristics of the farmers and their attitude of some selected practices. Ten characteristics of the farmers were selected as independent variables of this study. The researcher made utmost efforts to search out studies dealing with relationships of each of the selected characteristics with attitude towards the use of modern jute cultivation.

2.2.1 Age and Attitude

After an elaborate analysis of association between age and attitudes, Stagner (1961) in his study concluded that it was difficult to say whether age in itself could affect attitudes. He concluded from his review of past researches that people would become better integrated and somewhat more extreme in their attitude, as they would grow older.

Rogers and Leuthold (1962) conducted a study in Miami county and found that farmer of younger age had more favourable attitude towards fertilizers proactive than the elderly farmers, but the differences were not statistically significant.

Iqbal (1963) reported that elderly farmers had more favorable towards improved and modern agricultural practices as compared to younger age groups.

Nawaz (1968) conducted a study on the characteristics of farmers and adoption of improved farm practices in Pakistan villages. He indicated that the age of the farmers was positively associated with the adoption of improved farm practices.

But Rahim (1961) in a study on diffusion and adoption of agricultural practices in Comilla Kotwali thana found that the age of the farmers was not important factor. Adoption of improved farm practices was independent of the age of the farmers.

Karim (1973) conducted a study on adoption of fertilizers by transplanted aman rice growers in Mymensingh district. He found that age of farmers had no significant effect on their adoption behaviour in respect of fertilizers.

Rahman (1974) reported that the age of the schemes farmers had no relationship with the formation of attitude towards HYV of rice, but in case of non scheme farmer's age had a significant positive relationship.

Singh (1982) observed that attitude of farmers towards improved crop production technology of irrigated and non-irrigated groups were heavily skewed into favourable category. However, the difference between mean attitude scores of the two groups of farmers were significant and were in favour of farmer who had irrigated farm holdings. The age of the farmers was positively and significantly related to their attitude of the farmers of two groups.

Singh and Kungroo (1985) found that there was negatively significant relationship between age and attitudes of farmer 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 village. The study revealed that there was relationship between age and attitudes 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.

Bari (2001) conducted a research on attitude of farmers towards Hybrid Rice Alok 6201 at Manda, Mohadebpur and Patnitala Upazillas of Naogaon district. He found no relationship between age of the farmers and their attitude towards Hybrid Rice Alok 6201.

Hoque (2001) investigated the farmers' attitude towards organic matter use in crop production at two villages of Sadar Upazilla under Meherpur district. He observed that there was no relationship between age of the farmers and their attitude towards organic matter use in crop production.

Paul (2001) carried out a research on attitude of farmers towards use of urea super granule (USG) in rice cultivation at Abhaynagar Upazilla under Jessore district. He also found that there was no relationship between age of the farmers and their attitude towards use of USG in rice cultivation.

Sarker (2002) carried out a research on farmers' attitude towards organic homestead gardening programme of World Vision at Kuptala, Ramnagor, Saihata and Bhelabari villages under Sariakandi upazilla of Bogra district. He reported that age was insignificant negative relationship with farmers' attitude towards organic homestead gardening programme of World Vision.

Ahaduzzaman (2003) conducted a research on farmers' attitude towards modern T. Aman technologies at two villages of Haridevpur union under Sadar Thana of Rangpur district. He found that there was insignificant positive relationship between age of the farmers and their attitude towards modern T-Aman technologies.

Islam (2005) conducted a study on adoption of pashu pusti in cattle rearing farmers' level. He observed that age of the respondents had significant relationship with their extent of adoption of pashu pusti in cattle rearing at farmers' level.

2.2.2 Education and Attitude

Rogers and Havens (1961) in their research on comparative study of changes in farmers attitudes towards fertilizers in two counties of Ohio and Miami precondition for forming positive attitudes and farmers having higher education tended to adopt farm innovation earlier.

Rogers and Leuthold (1962) in their study found that the farmers' demonstrators, who were characterized by more years of formal education, were at the same time characterized by more favourable attitudes towards fertilizer.

Ahmad (1967) while conducting a study on the extent of adoption of some selected improved agricultural practices among farmers in Bangladesh reported that among educated farmers, percentage of farmers using NPK in combination was highest and that using no fertilizer was lowest.

Karim (1973) on the adoption behaviour of transplanted aman rice growers in respect of fertilizers revealed that there was a substantial positive relationship between the functional literacy of farmers and their fertilizer adoption.

Wahab (1975) reported that there was positive and significant relationship between education and attitude towards the use of phosphorus and potash fertilizers while the relationship was not significant in case of attitudes towards the use of urea and their education.

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

Bavalatti and Sundaraswamy (1990) observed no significant relationship between education of the farmers and their adoption of dry land farming practices.

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

Okoro and Obibuaka (1992) studied adoption of recommended practices among small holders in IMO state, Nigeria. The findings of the study indicated a positive relationship between education of the respondents and their adoption of recommended management practices.

Muttaleb (1995) studied the relationship of education with adoption of improved potato technologies. The study observed that education had a positive relationship with their adoption of potato technologies.

Hasan (1996) conducted a study on adoption of some selected agricultural technologies among the farmers as perceived by the frontline GO and NGO workers. He found that the education had no significant relationship with the perceived adoption of selected agricultural technologies.

Bari (2001) conducted a research on attitude of farmers towards Hybrid Rice Alok 6201 at Manda, Mohadebpur and Patnitala Upazillas of Naogaon district. He found that there was negative significant relationship between education of the farmers and their attitude towards Hybrid Rice Alok 6201.

Hoque (2001) investigated the farmers' attitude towards organic matter use in crop production at two villages of Sadar Upazilla under Meherpur district. The findings of the study indicated a positive significant relationship between education of the farmers and their attitude towards organic matter use in crop production.

Paul (2001) carried out a research on attitude of farmers towards use of urea super granule (USG) in rice cultivation at Abhaynagar Upazilla under Jessore district. He also found that there was positive significant relationship between education of the farmers and their attitude towards use of USG in rice cultivation.

Aurangozeb (2002) observed that there was positive relationship between education and adoption of integrated homestead farming technologies.

Sarker (2002) carried out a research on farmers' attitude towards organic homestead gardening programme of World Vision at Kuptala, Ramnagor, Saihata and Bhelabari villages under Sariakandi upazilla of Bogra district. He reported that education of the farmers was positive significant relationship with their attitude towards organic homestead gardening programme of World Vision.

Ahaduzzaman (2003) conducted a research on farmers' attitude towards modern T. Aman technologies at two villages of Haridevpur union under Sadar Thana of Rangpur district. He found that there was positive significant relationship between education of the farmers and their attitude towards modern T-Aman technologies.

Hossain (2003) concluded that education of the farmers had a significant and positive relationship with their adoption of modern Boro rice cultivation practices.

2.2.3 Farm Size and Attitude

It was revealed while conducting the first ever-agricultural census (Pakistan Census of Agriculture) of the country in 1960 that the proportion of farms using chemical fertilizers increased with increase in the size of farms. In other words, it meant that farm size was positively related with the fertilizer use.

Ahmed (1967) found that 62.57% of the big farmers, 37.14% of the medium farmers and 8.94% of the small farmers of Dhaka district used NPK. In a sharp contrast to the above findings, proportion of farmers using only nitrogenous fertilizer increased with the decrease in the size of farm.

In regard to adoption of improved practices by the farmers, Ali (1971) opined that the size of farm of rice and banana growers had little bearing upon the rate of adoption of recommended practices.

Hossain (1971) reported a strong and consistent positive relationship between the size of the farm and adoption of each of the four recommended farm practices. But Mannan (1972) in his study on the adoptin of IR-20 in Comilla found that the size of the farm did not appear to be a significant factor influencing the farmers to adopt IR-20.

Rahman (1974) on the basis of a study examined the relationships of six independent variables including farm size with the attitudes of farmers towards HYV of rice and organizational effectiveness of ARPP. He observed that irrespective of scheme or non-scheme farmers, there was no relationship between size of farm and their attitudes towards HYV of rice. The study also revealed that no relationship between size of the farm and attitudes of the farmers towards the organizational effectiveness of ARPP.

Rahman (1975) also did not find any association between the farm size and adoption behaviour of farmers in respect of IR-20.

Wahab (1975) reported that there was positive and significant relationship between farm size and attitudes towards the use of phosphorus and potash fertilizer and there was no relationship between farm size and attitudes toward the use of urea fertilizers.

Sobhan (1975), Singh (1989) and Ali (1993) found that there was no significant relationship between farm size of the farmers and their adoption of improved farm production technologies. However, Inayetullah (1962) made an investigation in Pakistan to determine the factors affecting adoption of improved practices. He did not find any relationship between farm size and the adoption potential. His finding was very much in agreement with that of Islam (1971) and Mannan (1972).

Vidyasankar (1977) found that the seed grower had more favourable attitude towards seed production technology than non-seed growers and seed grower had large farm holding than non-seed growers.

Talukder *et al.* (1983) reported that large (>3ha) and medium farmers (1 to 3 ha) were more careful in the use of NPK for Boro rice only. The fertilizer use was significantly less in local Rice than HYV Rice. In HYVs of major crops the fertilizer use per hectare was more in Boro followed by Aus, T-Aman and Jute.

Karim *et al.* (1987) carried out a study on attitudes of farmers towards the 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.

Bari (2001) reported that there was negative relationship between farm size and attitude in his study attitude of farmers towards hybrid rice Alok 6201.

Hossain (2002) revealed that there was no relationship between attitude and farm size in his study on attitude on Island farmers towards adoption of modern agricultural technologies.

Ahaduzzaman (2003) found in his study on Farmers' attitude towards modern T.Aman technologies that there was positive significant relationship between farm size and attitude.

2.2.4 Training received and Attitude

Planty (1948) points out that the aim of training is to build continuously and systematically to the maximum degree and in proper proportion skills and attitudes, which contribute to the welfare of the organization and the employees.

Setty (1973) revealed that there was no association between overall knowledge of Gramsevks about extension programme planning and their frequency of the service training. Similar was the case with their specific knowledge of various aspects of extension programme planning.

The findings of the study of Manjunatha (1980) revealed that the trained farmers had higher knowledge level and adoption behaviour compared to untrained farmers.

Bari (2001) found in the study attitude of farmers towards Hybrid Rice Alok 6201 that there was no relationship between training received and attitude.

Paul (2001) revealed in his study attitude of farmers towards use of Urea Super Granule(USG) in rice cultivation that there was highly significant relationship between training received and attitude.

Sarker (2002) found in the study farmers' attitude towards organic homestead gardening programme of World Vision that there was negative relationship between training received and attitude.

2.2.5 Credit Availability and Attitude

Beal and Sibley (1967) in their combined study opined that there was a positive correlation between the credit availability and adoption of agricultural technology.

In determining the factors associated with the adoption of three farm namely, cocos, poultry and maize; Clark and Akinbodo (1968) conducted a study in Nigeria and found that the most important single factor regarding extensions of the maize adopters was the non-availability of capital or credit. Credit was also the most important determinant of cocoa farm expansion.

Reddy and Kivlin (1968) from a study of three Indian villages concluded that credit availability was not significantly related to adoption of HYV.

Rahman (1975) made and investigation on the factors in relation to the adoption of IR-20 among the farmers of Bhabakhali union of Mymensingh district. Availability of credit was one of the ten selected characteristics, which were examined to see if there existed any relationship between this characteristic and the adoption behaviour of the farmers. The study revealed that there existed a substantial positive relationship between the credit availability and adoption of IR-20 by the farmers.

Hossain (1981) conducted a study to determine the relationship of selected characteristics of jute with their adoption of improved practices of jute cultivation in Suti union of Tangail district. He found a significant relationship between credit availability and adoption of improved farm practices.

Haque (1984) conducted study on the adoption of improved practices in sugarcane cultivation in some selected areas of Jessore district and found significant positive relationship between credit availability and adoption of improved cane cultivation technologies.

Karim *et al.* (1987) indicated that commercialization, income and credit availability of the farmers had significant and positive relationship with their attitude towards the use of urea.

Bari (2001) found in the study attitude of farmers towards Hybrid Rice Alok 6201 that there was negative relationship between training received and attitude.

2.2.6 Knowledge on jute cultivation and Attitude

Moulik *et al.* (1966) conducted a study on predictive values of some factors of adopting nitrogenous fertilizers by North Indian farmers in India. He found a significant positive relationship between agricultural knowledge and adoption of nitrogenous fertilizers among cultivators. Similar findings between agricultural knowledge and adoption had also been reported by Hoffer and Slangland (1958), Ramachandran (1974), Somasundaram and Singh (1978), Bezbora (1980) and Grewal (1980).

Koch (1985) conducted a study in the north western Orane Free state, South Africa, concerning perception of agricultural innovations, aspirations knowledge and innovation adoption. It was found that there was a strong positive relationship between perception, knowledge and practice adoption. This findings very much in agreement with that of Rogers and Shoemaker (1971). However, a significant difference was found between participant and non-participant farmers with respect of knowledge level and adoption behaviour and there was significant association. Between knowledge and adoption with respect to adoption of an improved package of practices in paddy production by participant and non participant farmers as reported by Reddy *et al.* (1987).

Hoque (2001) investigated the farmers' attitude towards organic matter use in crop production at two villages of Sadar Upazilla under Meherpur district. The findings of the study indicated a positive significant relationship between knowledge in organic matter management and attitude.

Paul (2001) revealed in his study attitude of farmers towards use of Urea Super Granule(USG) in rice cultivation that there was positive significant relationship between agricultural knowledg and attitude.

Hossain (2002) revealed that there was significant relationship between attitude and agricultural knowledge in his study on attitude on Island farmers towards adoption of modern agricultural technologies.

Sarker (2002) found in the study farmers' attitude towards organic homestead gardening programme of World Vision that there was negative significant relationship between knowledge on organic homestead gardening and attitude.

2.2.7 Innovativeness and Attitude

Mansur (1987) found that a significant negative relationship between the farmers innovativeness and their confrontation in feed and feeding the cattle.

Sharma and Sanoria (1983) observed a higher average innovativeness among contact farmers than the non contact farmers. They also found that knowledge of both the contact and non contact differed.

Nuruzaman (2000) in his study observed that innovativeness of the FFS and non FFS farmers had no relationship with their attitude towards IPM.

Paul (2001) revealed in his study attitude of farmers towards use of Urea Super Granule (USG) in rice cultivation that there was positive significant relationship between innovativeness and attitude.

Hossain (2002) revealed that there was significant relationship between attitude and innovativeness in his study on attitude on Island farmers towards adoption of modern agricultural technologies.

2.2.8 Annual Family Income and Attitude

In discussing the characteristics of agricultural innovators, Rogers (1967) in his study mentioned that a much higher gross farm income was the characteristics of innovators and early adopters Iqbal (1966) also concluded that the adopters possessed higher income than non-adopters.

Findings of researchers conducted by Couhgenour (1958) et al. showed an association of income with improved farm practice. Rahman (1973) in their separate studies, however, found no relationship between income and improved farm practices. However, Das (1963) pointed out that pregressive farmers had favourable attitudes towards high yielding varieties of rice.

Kashem (1987) found that income of the small farmers has no significant relationship with their attitude towards community of the farmers. Similar observations were found by Rahman(1974).

Bari (2001) found in the study attitude of farmers towards Hybrid Rice Alok 6201 that there was negative relationship between annual family income and attitude.

Paul (2001) revealed in his study attitude of farmers towards use of Urea Super Granule (USG) in rice cultivation that there was positive significant relationship between annual family income and attitude.

Hossain (2002) revealed that there was no significant relationship between attitude and annual family income in his study on attitude on Island farmers towards adoption of modern agricultural technologies.

Sarker (2002) found in the study farmers' attitude towards organic homestead gardening programme of World Vision that there was negative relationship between annual family income and attitude.

Ahaduzzaman (2003) conducted a research on farmers' attitude towards modern T. Aman technologies at two villages of Haridevpur union under Sadar Thana of Rangpur district. He found that there was significant positive relationship between annual family income and attitude.

2.2.9 Fatalism and Attitude

Chattopadhya (1966) observed the relation of some psychological variables with adoption of innovation in farming. He found about 36 percent of the variation in adoption of farming practices, which was explained by variables as change proneness, conservation and fatalism.

Karim found (1973) significant negative relationship between farmer's fatalism and their adoption of fertilizers. It indicated that higher the fatalism of the farmers, lower was their adoption in respect of fertilizers. Khan (1993) and Pal (1995) found the similar results.

2.2.10 Extension Media Contact and Attitude

2.2.10.1 Individual contact and attitude

Karim (1973) reported that higher the extension exposure of the farmers, higher was their adoption behavior in respect of fertilizer.

Vidyasharker's (1977) study revealed that the contact with extension agency had contributed favourable to the attitudes of the farmers.

Bhaskaran *et al.* (1985) showed that the economic status and adoption were significantly correlated with interpersonal communication in less progressive village. In case of progressive village media participation, management orientation and adoption were significantly correlated with the farmers Interpersonal Communication Behaviour Efficiency Index (ICBEI). And to the non progressive village extension orientation, management orientation and crop yield were significantly correlated with farmers ICBEI.

Ahaduzzaman (2003) conducted a research on farmers' attitude towards modern T. Aman technologies at two villages of Haridevpur union under Sadar Thana of Rangpur district. He found that there was significant positive relationship between extension media contact and attitude.

2.2.10.2 Group contact and attitude

Santlal (1974) undertook a study to find out the relative effectiveness of group discussion, literature and result demonstration. The study revealed that exposure by extension methods produces change in knowledge and attitude of the subjects and that the methods differ in their power to affect such change. A combination of methods was found superior to any method and the effectiveness of the method was greatly influenced by the background variables like values and level of family education.

Kumari (1988) conducted a study on the effectiveness of mix-media of rural women for health education. The study revealed that the majority of women was dependent heavily on locality sources of information and did not have urban contact. However they had somewhat favorable attitudes towards the massages.

Sardar (2002) concluded that the extension contact of the farmers had significant positive relationship with their adoption of IPM practices.

Aurangozeb (2002) conducted a study on adoption of integrated homestead farming technologies by the rural women in RDRS. He found that there was significant relationship between contact with extension media and adoption of integrated homestead farming technologies.

Sarker (2002) found in the study farmers' attitude towards organic homestead gardening programme of World Vision that there was significant positive relationship between extension media contact with and attitude towards organic homestead gardening programme.

2.2.10.3 Mass contact and attitude

Vidyashankar (1977) reported that the media participation has positive relationship with the attitude towards seed production programme of seed growers.

Singh and Kunzroo (1985) measured attitude of farmers towards goat and sheep farming using Likert Type scale. Their study revealed that there was positive and significant relationship between mass media exposure and attitudes of farmers towards sheep and goat farming.

Kaur (1988) found that extension media contact and mass media exposure had significant influence upon opinion, level of knowledge and adoption of selected programme of rural women.

Ajore (1989) observed in his study that mass media exposure had a significant relationship with their attitudes towards chemical fertilizers given to the different dimensions of massages such as completeness and relevance of information, understandability and speed of presentation.

2.3 The Conceptual Framework of the Study

In scientific research, selection and measurement of variables constitute on important task. The hypothesis of a research while constructed properly contains at least two important elements i.e. "a dependent variable" and "an independent variable". A dependent variable is that factors which appears, disappears or varies as the research introduces, removes or varies the independent variable (Townsend, 1953). An independent variable is that factor which is manipulated by the researcher in his attempt to ascertain its relationship to an observed phenomenon. In view of prime findings of review of literature, the researcher constructed a conceptual model of the study, which is self-explanatory and is presented in Figure 2.1.

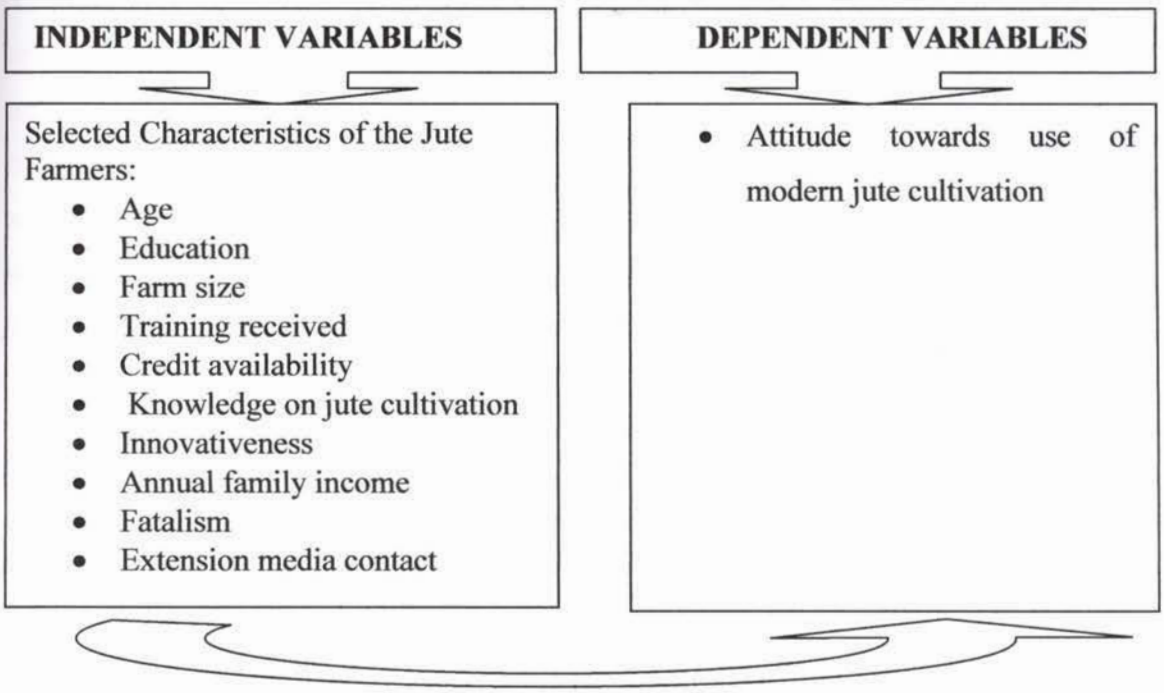


Figure 2.1 The Conceptual Framework of the Study

CHAPTER 3

METHODOLOGY

In any scientific research, methodology and procedures play an important role. To perform a research work systematically, careful consideration is a must. It should be such that it would enable the researcher to collect valid and reliable information to arrive at correct decisions. The methods and procedures followed in conducting this study have been described in below:

3.1 Locale of the Study

The study was conducted in one union of Baliakandi upazilla under Rajbari district. The area was also prominent jute growing upazilla under greater Faridpur district. Baliakandi upazilla is consisted of 7 unions namely Baliakandi, Baharpur, Narua, Jangal, Nabwabpur, Islampur and Jamalpur. For this study 10 villages under Narua union were selected out of 31 villages. The physical, social and cultural heritages of the people of the study areas were similar in many cases with other areas of the upazilla. Figure 3.1 and 3.2 showed the map of the locale of the study.

3.2 Population and sampling procedure

Baliakandi Upazilla of Rajbari district was selected for the study. This Upazilla is consisted of 7 unions namely Baliakandi, Baharpur, Rajdhorpur, Nawabpur, Jamalpur, Islampur, Jangal and Narua .Out of these 7 unions, Narua union was selected purposively for this research. There were 31 villages in Narua union and 10 (ten) villages were selected randomly. The jute growers at 10 villages of Narua union in Baliakandi upazilla constituted the population for this study. A total of 1002 jute farmers were in these 10 villages and 100 jute farmers were selected as sample population with using proportionate random sampling method.

In addition to that, 10 farmers (10% of the selected farmers) were selected randomly which constituted the reserve list and those would be interviewed when any farmers from the sample were not available at the first time of interview. Distribution of the population, sample and reserve list is shown in table 3.1.

Table 3.1 Distribution of the Population, Sample and Reserve Sample for the Study

SL. No.	Name of Union	Name of Villages	Population	Sample	Reserve Sample
1.	Narua	Khalia	69	7	1
2.		Modhupur	130	13	1
3.		Solabaria	149	15	1
4.		Delua	61	6	1
5.		Uttar Salmara	60	6	1
6.		Gangarampur	71	7	1
7.		Narua	139	14	1
8		Sonakandor	121	12	1
9.		Bakshadangi	92	9	1
10.		Konagram	110	11	1
Total			**1002**	**100**	**10**

Figure 3.1: A Map of Bangladesh

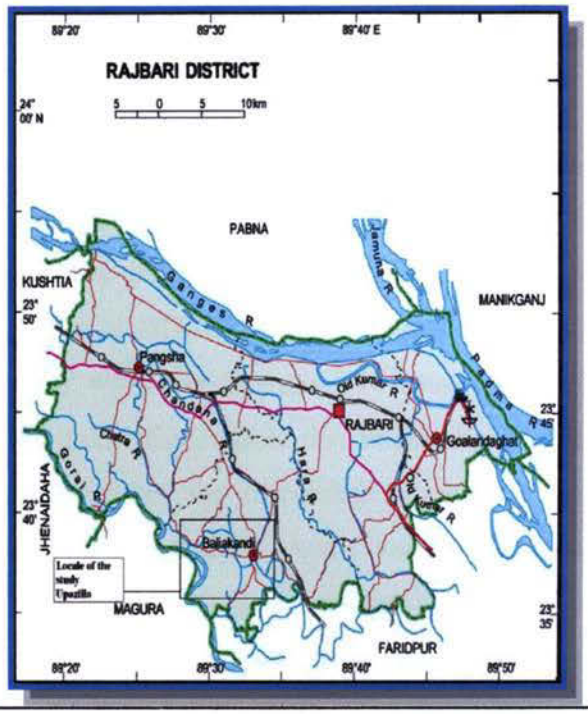


Figure 3.2: A Map of Rajbari District showing the locale of the study

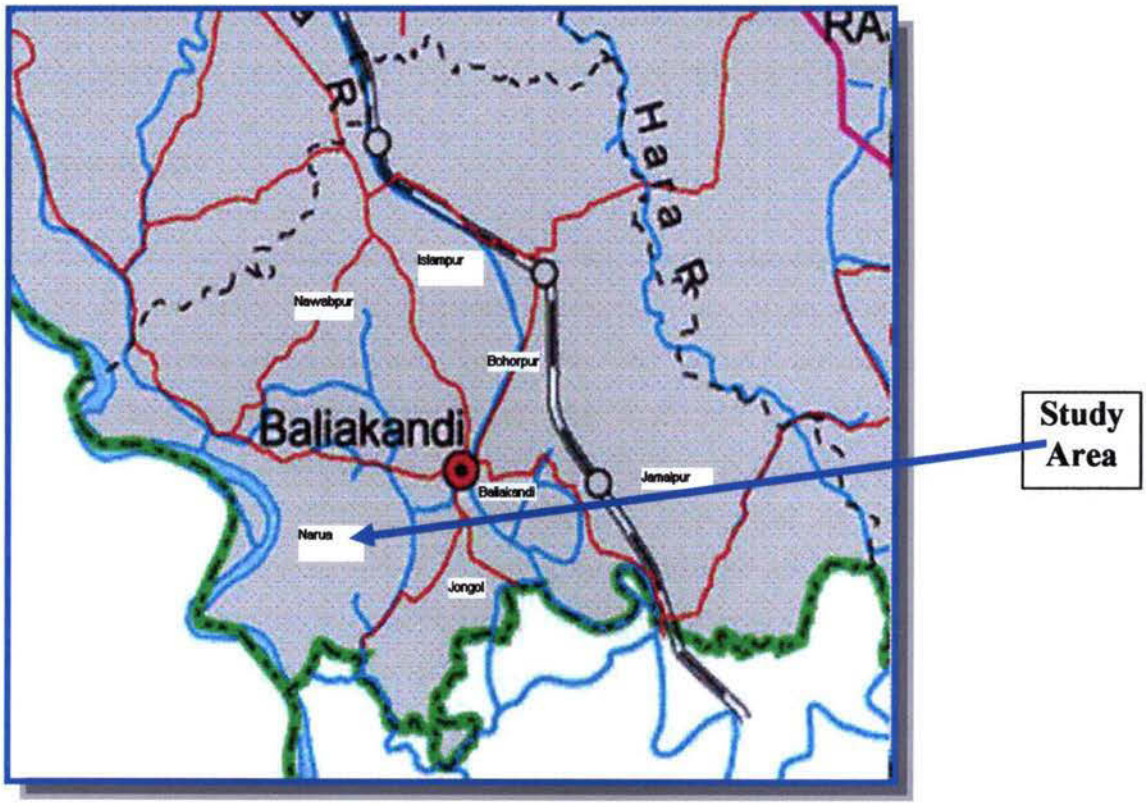


Figure 3.3: A Map of Baliakandi upazilla showing the locale of the Study

3.3 Instruments for collection of data

Keeping the objectives of the study in view an interview schedule was carefully designed to collect relevant data. The schedule contained both closed and open-ended questions. Simple and direct questions were included in the schedule. Scale was developed to ascertain modern jute cultivation by the farmers of Baliakandi upazilla under Rajbari district. The interview schedule was pre-tested with five farmers of Narua union of Baliakandi upazilla who practiced modern jute cultivation. These five respondents were not included in the sample list. The pre-test facilitated the researcher to examine the suitability of different questions and statements of the schedule. Apart from elimination of faulty questions and statements, other necessary corrections, modifications, additions and alterations were made in the schedule on the basis of comments of the experts and pretest results. The final version of the interview schedule (Appendix 1) as then prepared and printed for data collection from the respondents.

For gathering information pen, pencil, writing pad, khata, eraser, and calculator were also with the researcher for writing answer on interview schedule and collecting data.

3.4 Collection of data

Data were collected by interview procedure from 100 selected farmers' through personal interview by the researcher himself. Advance information was given to the respondents before going to them for interview. Interview was usually conducted with the respondents in their houses during their leisure time. Eight jute growers on the original list were not available for interview and hence, these eight respondents were interviewed from the reserve list. While starting interview with any respondent, the researcher took utmost care to establish rapport with the respondent so that the respondent did not feel hesitant to furnish the desired information. Investigator explained clearly the purpose of the study to the respondents. The researcher explained/reviewed the issue to the respondents who failed to understand the question or recollect the previous activities. The researcher did not face any problem in collecting data rather he received excellent cooperation from the respondents during the time of interview. The Agriculture Extension Officer, Sub-Assistant Agriculture Officer of Narua union of Baliakandi upazilla cordially helped the investigator to collect the data. The entire process of data collection took one month from 15 July to 14 August 2007.

3.5 Handling of data

After completion of field survey, data from the entire interview schedule were compiled, tabulated and analyzed according to the objectives of the study. In this process all the jute growers in the interview schedule were given numerical coded values. Local units were converted into standard units. The responses of the jute growers to the questions in the interview schedule were transferred to a master sheet to facilitate tabulation. Tabulation and cross tabulation were done on the basis of categories developed by the researcher himself.

3.6 Variables of the study

The hypothesis of present research constituted two important elements viz. an independent variable and a dependent variable. According to Townsend (1953) an independent variable is that factor which is manipulated by the experimenter in his attempt to ascertain its relationship to the observed phenomenon. A dependent variable is that factor which appears, disappears or varies as the experimenter introduces, removes or varies the independent variables.

3.6.1 Independent variables

The independent variables of the study were: age, education, farm size, training received, credit availability, knowledge on jute cultivation, innovativeness, annual family income, fatalism and extension media contact

3.6.2 Dependent variables

Attitude of farmers towards the use of modern technologies of jute cultivation was the dependent variable. Dependent variable dealt with the following practices:

i) Use of improved seed
ii) Line sowing method
iii) Ribbon retting method
iv) Proper land preparation
v) Proper weeding.

3.7 Measurement of the variables

3.7.1 Measurement of Independent variables

In order to conduct the study it was necessary to measure the selected independent variables. The procedure, followed for measuring the independent variables are briefly discussed below:

3.7.1.1 Age

Age of a respondent referred to the period of time from his birth to the time of interview. It was measured in terms of actual complete years.

3.7.1.2 Education

Education was defined as the ability of an individual to read and write or formal education received up to a certain standard. Actual year of successful schooling was taken as the education score of a respondent. If a respondent passed the S.S.C. examination, his education score was taken as 10, if passed the final examination of class V his education score was taken as 5. If a respondent did not know how to read and write his education score was taken as Zero (0).

3.7.1.3 Farm size

Farm size of a farmer referred to the total area of land owned by the family of the concerned farmer. Land including homestead garden, field crops area and pond of the family either owned by them or taken as borga(share cropper) was also included in the farm size of the family. This was measured in terms of hectares on the basis of the responses to the questions under item number 03 in the interview schedule.

3.7.1.4 Training received

It was operationalised by the number of days a respondent had received short-term training in his life up to the day of interview. The training was related to agriculture that was sponsored by government, non-government/NGO and other relevant organizations.

3.7.1.5 Credit availability

Credit availability of a respondent referred to the degree to which his credit requirement for Jute cultivation was fulfilled by the amount of credit actually received by him. During interview each respondent was asked to indicate whether he needed any credit for jute cultivation during last year or not. If the respondent replied 'yes' then he was asked to mention the sources of credit, how many years received credit from that sources, rate of credit and amount of credit taken by him. Next he was asked to indicate the amount borrowed by him from the sources either or both of institutional and non-institutional sources. Credit availability was initially measured in Taka, however, a unit score of 1 (one) was taken for Tk. 1000.

3.7.1.6 Knowledge on jute cultivation

The knowledge on jute cultivation of the respondents was measured by computing knowledge on jute cultivation scores for each individual. A scale was used for measuring this knowledge consisting of 13 questions having 4 point score might be 52 with a minimum possible score of 0.

3.7.1.7 Innovativeness

Innovativeness is the degree of which an individual adopts an innovation relatively earlier than other members in a social system (Rogers, 1967). So, innovativeness of a respondent was measured by computing an innovativeness score on the basis of the adoption of 6 selected agricultural technologies by the respondents. Adoption rate was assigned by the questions "Used within one year of hearing", "Used after one year and before two year of hearing", "Used after two year and before three year of hearing", "Used after three year and before four year of hearing" and "Never used" with scores were assigned to those alternatives responses as 4, 3, 2, 1 and 0 respectively. Thus the innovativeness score of a respondent was obtained by adding his scores for all the 06 items. Logical frequencies were considered for each of the alternatives responses as indicated in item no. 7 of interview schedule.

3.7.1.8 Annual family income

All the earning of a respondent from crops was added together to determine his gross annual agricultural income and it was measured in Taka by multiplying the quantity of that crop with its prevailing market price per mounds/unit. In case of non agricultural sources i.e. business or service of an individual, his monthly income was multiplied by twelve to determine annual income. The annual family income i.e. the grand total was calculated by income from agricultural sources adding with income from non agricultural sources However, a unit score of one was taken for every Tk 1000 of annual income based on agricultural and other sources.

3.7.1.9 Fatalism

The term fatalism referred to the view of opinion that all events are predetermined by a divine power and, therefore, human being cannot do anything to change the course of events. Fatalism of the respondents was measured by a five point Likert type scale comprising 10 statements (four positive and six negative). Respondents were asked to indicate whether they strongly agreed, agreed, undecided, disagreed or strongly disagreed with each of the statements. A respective weight of 3, 2, 1 and 0 were assigned to each of the positive statement. The weighting system was reversed for the negative statements. The scores obtained for all categories of the jute growers were added together to get the fatalism score.

3.7.1.10Extension media contact

Extension contact refers to a farmer's nature of the contact with different extension media.

It was defined as extent of exposure to different extension teaching media. It was assumed that the more contact an individual would have with different extension teaching methods, the more would be the influence to extension education on the individual. In this study extension media contact score was computed for each respondent on the basis of the extent of his contact with different extension teaching media. Each jute farmer was asked to mention the nature of contacts with sixteen selected media with five alternative responses as 'regularly', 'often', occasionally', 'rarely' and 'not at all' and scores were assigned to those alternative responses as 4,3,2,1 and 0 respectively. Logical frequencies of contact were considered for each of the alternative responses for each media as indicated in item no.10 of interview schedule.

This extension contact score of a respondent could range '0' to '64'; while '0' (zero) indicating no extension contact and '64' indicating high extension contact.

3.7.2 Measurement of Dependent Variable

3.7.2.1 Measurement of Attitude towards modern jute cultivation

Attitude towards modern jute cultivation was the dependent variable. This variable was ascertained through a Likert (1932) type scale.

Ten statements on various aspects of modern jute cultivation were asked to the respondents. The number of positive statements was 5 and that of negative statements was also 5. The positive and negative items were arranged randomly in the schedule in order to facilitate the respondents' real attitude to be revealed. The respondents were asked to indicate for each of the statement whether they strongly agreed, agreed, undecided, disagreed and strongly disagreed with a corresponding score of 4,3,2,1 and 0 for the positive items and vice versa for the negative items. The score of a respondent's attitude towards positive and negative statements of jute cultivation were computed by summing his responses to all the items. Hence, scores of the respondents could range from 0 to 40; Zero indicating highly unfavourable attitude and 40 highly favourable attitudes towards modern jute cultivation.

Beside this there was also calculated Attitude Index(AI) and Rank Order(RO) towards modern jute cultivation technologies. The scores of individual question against the statement strongly agreed, agreed, undecided, disagreed and strongly disagreed were computed by summing the all responses would be indicated as Attitude Index (AI). The scores of AI against the 10 questions were arranged with highest scores to lowest scores and distributed as Rank Order (RO) 1 to 10 respectively. The following formula would be followed to calculate AI:

Attitude Index (AI) = Strongly Agreed (SA) X 4 + Agreed (A) X 3 + Undecided (U) X 2 + Disagreed (D) X 1 + Strongly Disagreed (SD) X 0

3.7.2 Measurement of problems confrontation

Jute growers in the study area might have faced various types of problems. But the investigator gained an experience through personal contact regarding common problems faced by the respondents before collection of data. Accordingly, thirteen problems were selected for the study after consultation with supervisors, co-supervisors and relevant experts. The respondents were asked four alternative responses as 'high problem', 'medium problem', 'low problem 'and' not at all problem' for each of thirteen selected problems. Score were assigned to those alternative responses as 3, 2, 1, and 0 respectively.

Scores for particular problem was measured by Problem Confrontation Index (PCI) as follows:

$$\mathbf{PCI = P_h X 3 + P_m X 2 + P_l X 1 + P_n X 0}$$

Where,

PCI = Problem Confrontation Index

P_h = No. of respondents confronted high problem

P_m = No. of respondents confronted medium problem

P_l = No. of respondents confronted low problem

P_n = No. of respondents confronted not at all problem

In order to determine the comparative severity problems, a Problem Confronting Index (PCI) was computed for each of the thirteen problems by summing up the weights assigned for responses of all the respondents against each problem. Thus PCI for a particular problem could range from '0' to '300', while '0' indicating no problem and '300' indicating highest problem confronted. PCI for all the problems were determined. Finally a rank order was made on the basis of PCI.

3.8 Processing and Analysis of Data

The collected data were summarized and scrutinized carefully before the actual tabulation. After completing the data collection, the data were transferred to a master sheet and compiled with a view to facilitating tabulation. In this study mainly two techniques of analysis such as tabular and statistical were carried out to accomplish.

The collected data were coded, compiled, tabulated, and analyzed in accordance with the objectives of the study. Qualitative data were converted into quantitative data by means of suitable scoring wherever necessary. Simple statistics such as frequency, percentage, range, mean, standard deviation and rank order were used in describing the variables of the study. Pearson's Product Moment Correlation co-efficient was used in order to explore the relationships between the concerned variables. Correlation matrix was computed to determine the correlation among the variables. Five percent level of significance has been used as the basis for rejecting any null hypothesis. Throughout the study a 0.05 and 0.01 level of probability with 98 degrees of freedom was used to reject any null hypothesis. If the calculated value of co-efficient of correlation 'r' was equal to or greater than tabulated value at designated level of significance for the relevant degrees of freedom, the null hypothesis was rejected and it was concluded that there was a significant relationship between the concerned variables. However, when the calculated value of co-efficient of correlation was found to be smaller than the tabulated value at the designated level of significance for the relevant degrees of freedom, it was concluded that the null hypothesis was accepted and hence, there was no relationship between the concerned variables. Co-efficient values significant at 0.05 level is indicated by single asterisk (*) and at 0.01 level by double asterisks (**).

CHAPTER 4

RESULTS AND DISCUSSION

In this Chapter, the findings of the study and interpretation of the results have been presented. Data obtained from respondents by interview were measured, analyzed, tabulated and statistically treated according to the objectives of the study. The selected characteristics along with attitude towards modern jute cultivation and problems confrontation by the respondents are discussed in this chapter under different separate tables. The tables showed the descriptive statistics of the variables were studied.

4.1 Attitude of Farmers Towards Modern Jute Cultivation

Attitude towards modern jute cultivation scores of the farmers ranged from 16 to 36 where as the expected ranged was 0 to 40. The average was 29.02 with a standard deviation of 4.47. Based on the observed attitude scores, the farmers were classified into three categories as shown in Table 4.1.

Table 4.1 Distribution of jute growers according to their attitudes towards modern jute cultivation

Categories	Jute growers		Mean	SD
	Number	Percent		
Less favourable (16-25)	24	24	29.02	4.47
Favourable(26-30)	37	37		
Highly favourable (Above 30)	39	39		
Total	100	100		

Data presented in Table 4.1 indicated that majority of the farmers (39 percent) had highly favourbale attitude towards modern jute cultivation while 24 percent having less favourable attitude and 37 percent fell in the favourable attitude category. It is found that the majority about 76 of farmers showed highly favourable to favourable attitude.

Rank order and attitude indices of farmers towards modern jute cultivation technologies are presented in Table 4.2

Table 4.2 Rank order and attitude indices of farmers towards modern jute cultivation technologies with statements

Attitudinal statement	Frequency of agreement (%)					Attitude Index (AI)	Rank Order
	Strongly agreed	Agreed	Un-decided	Disagreed	Strongly disagreed		
Improved jute seed gives higher yield	84	15	0	1	0	382	1
Presently jute cultivation is not profitable	25	69	2	4	0	315	2
Fibre strength and brightness depends on retting methods applied	45	29	14	10	2	305	3
Ribbon retting is advantageous in water scarce situation	39	35	17	8	1	303	4
Jute cultivation has no adverse effect on environment	33	45	10	12	0	299	5
Line sowing does not provide any extra benefit	35	46	5	10	4	298	6
Improved retting method is profitable compare to usual practice	29	37	17	16	1	277	7
Improved seed alone could not ensure quality of fibre	30	33	12	24	1	267	8
Land preparation does not effect on total jute yield	23	33	11	31	2	244	9
Grading of jute does not effect to total price compare to usual non grading practice	30	15	4	40	11	213	10

The weights assigned for the responses were same for all the statements. The positive score ranged from 0 to 40 for positive responses and vice versa. Data contained in Table 4.2 revealed that the statement "Grading of jute does not effect to total price compare to usual non grading practice" had lowest Attitude Index- AI (213) and ranked 10. It indicated that the jute farmers were not conscious about grading of jute towards the effect of total price. They simply were eager to obtain price without grading.

The negative statements "Presently jute cultivation is not profitable" had AI of 315 and ranked 2, "Line sowing does not provide any extra benefit" had AI 298 and ranked 6, "Improved seed alone could not ensure quality of fibre" had AI 267 and ranked 8, and "Land preparation does not effect on total jute yield" had AI 244 and ranked 9.

The responses also suggest that there are miscoperations on the effectiveness of the technologies namely, use of improved seeds and raising the crop in line sowing with proper land preparation (Table 4.2).

The positive statements such as "Improved jute seed gives higher yield" ranked first (1) and had attitude index (AI) of 382, "Fibre strength and brightness depends on retting methods applied" had AI 305 and ranked 3, "Ribbon retting is advantageous in water scarce situation" had AI 303 and ranked 4, "Jute cultivation has no adverse effect on environment" had AI 299 and ranked 5 and "Improved retting method is profitable compare to usual practice" had AI 277 and ranked 7.

The above positive statements indicate that the jute farmers were acutely aware of the beneficial effect of the improved jute seed and improved retting method, its profitability and advantageous in water scarce situation. Its also observe that due to unawareness the jute farmers do not know about the adverse effect of jute cultivation on environment.

4.2 Selected characteristics of Jute Growers (Independent variables)

This section deals with the classification of the farmers according to their various characteristics. Behaviour of an individual is largely determined by his characteristics. These characteristics of an individual contribute to a great extent in the matter of shaping of his behaviour. In this section the findings on the farmer's ten selected characteristics have been discussed. The selected characteristics are (i) age, (ii) education, (iii) farm size (iv) annual income, (v) credit availability, (vi) training received, (vii) agricultural knowledge, (viii) innovativeness, (ix) fatalism and (x) extension media contact. Therefore, the major hypothesis of the study was that the attitude the farmers towards the use of modern jute cultivation would also be influenced by various characteristics of the farmers. Range, mean and standard deviations of these characteristics of the jute growers are described in this section. Table 4.3 gives a summary profile of the farmer's characteristics.

Table 4.3 A summary profile of the farmer's characteristics.

Sl. No.	Charac-teristics	Measure-ment	Possible range	Observed range	Categories	Number (N=100)	Mean	Standard deviation
1.	Age	Actual years	Unknown	25-72	Young (up to 35) Middle (36-50) Old (above 50)	30 44 26	43.33	10.08
2.	Education	Years of schooling	Unknown	0-16	No education(0) Sign only (0.5-0.9) Primary (1-5) Secondary(6-10) Higher secondary(11-12) Above high. s.dary (13 to above	5 12 33 42 7 1	6.23	3.57
3.	Farm size	Hectare	Unknown	0.31-16.46	Small (0.04-1.00) Medium(1.01-2.50) Large (above 2.50)	28 42 30	2.45	2.47
4.	Training received	Number of days	Unknown	0-30	Less training (0-5) Medium training(6-10) High (Above 10)	72 20 8	1.63	0.485
5.	Credit availability	Thousand Tk. in year	Unknown	(5-50) thousand	No Credit (0) Low Credit (.5-20) Med. Credit (20.1-35) High Credit (above 35)	60 32 02 06	18.61	13.68
6.	Knowledge on jute cultivation	Scaling	0-52	30-46	Low kn.ledge30-35) Medi. knowg.(36-41) High know. (abo. 41)	12 65 23	39.20	3.16
7.	Innovativeness	Scaling	0-24	5-17	Low inno.(5-10) Med. Inno.(11-15) High inno. (above 15)	35 57 08	11.29	2.65
8.	Annual family income	Thousand Tk. in year	Unknown	(52-850) thousand	Low income(50-150) Med.incm(150.1-300) High inco(above 300)	32 50 18	232.15	138.61
9.	Fatalism	Scaling	0-40	15-36	Low fatasm(15-22) Med. fatasm.(23-30) High.fatm.(above 30)	29 43 28	29.24	3.29
10.	Extension media contact	Scaling	0-64	21-40	Low ext.cont.(21-25) Med.ext.cont.(26-30) High.ext.cont(ave 30)	39 48 13	29.16	3.24
11.	Attitude towards modern jute cultivation	Scaling	0-40	16-36	Less favourable (16-25) Favourable (26-30) Highly favor.(abv 30)	24 37 39	29.02	4.02

4.2.1 Age

The respondents' age ranged from 25 to 72 years. The average was 43.33 and standard deviation was 10.08. The farmers were classified into three categories as shown below in Table 4.4.

Table 4.4 Distribution of jute growers according to their age

Categories	Jute growers		Mean	SD
	Number	Percent		
Young (up to 35 years)	30	30	43.33	10.08
Middle aged (36-50 years)	44	44		
Old(Above 50 years)	26	26		
Total	100	100		

Data presented in the above table suggest that the highest proportion of 44 percent of the farmers were middle ranging from 36 to 50 years age. About 30 percent of the respondents however belonged to young aged and the lowest proportion of 26 percent of the farmers were old aged.

The findings indicated that more than 74 percent of the study population were young to middle aged and were involved in agricultural activities. They were comparatively re-energetic, agile and innovative than the older persons in the community. The extension agents can make use of these views and opinion in designing their extension activities. Middle aged farmers are proving to accept various agricultural innovations and according to rural social system in Bangladesh generally middle aged people of the family to have own land and cash and they dominate family decisions.

4.2.2 Education

Based on the respondents' academic qualification scores, they were classified into four categories as shown in table 4.5.

Table 4.5 Distribution of jute growers according to their education level

Categories	Jute growers		Mean	SD
	Number	Percent		
No Education (0)	5	5	6.23	3.57
Sign only(0.5- 0.9)	12	12		
Primary (1-5)	33	33		
Secondary (6-10)	42	42		
Higher Secondary (11-12)	7	7		
Above Higher Secondary(13 to above)	1	1		
Total	100	100		

The average academic qualification scores of the respondents was 6.23 with a standard deviation of 3.57. About 42 percent of the respondents had education of secondary level. Only 5 percent farmers were illiterate. Thus, the literacy rate is higher than the national average of literacy rate. The findings indicate that minimum level of education of an individual is likely to be more receptive to the modern facts and ideas; they have much mental strength in deciding on a matter related to problem solving. Education helps the jute growers to gain knowledge on the improved methods of cultivation by reading books, leaflets, bulletins and other printed materials. Thus, farming community in the study area may be well considered as a suitable ground for the positive attitude of modern jute cultivation. Considering the largest proportion of farmers having primary level of education (33 percent), it would be obviously necessary to undertake efforts to increase their level of education. Their literacy level is expected to give positive attitude towards the innovative agricultural technologies and also help extension providers to impart training and motivational campaign.

4.2.3 Farm size

The farm size of the respondents ranged from 0.31 to 16.46 hectare. The average was 2.45 hectare with a standard deviation of 2.47. Based on their farm size, the respondents were classified into three categories as in Table 4.6.

Table 4.6 Distribution of jute growers according to their farm size

Categories	Jute growers		Mean	SD
	Number	Percent		
Small (0.04-1.00 ha.)	28	28	2.45	2.47
Medium (1.01-2.50 ha.)	42	42		
Large(Above 2.50 ha)	30	30		
Total	100	100		

The data indicate that 30 percent of the respondents were large farmers followed by 42 percent being medium and 28 percrnt small farmers. However, the average farm size of 2.45 ha was much higher than the national average of 0.33 ha (BBS, 2004). According to the data contained in the table 4.6 there are rich farmers in the study area. So, they can show positive attitude towards new technologies and target oriented special extension services.

4.2.4 Training Received

Training received scores of the respondents ranged from 0-30 with an average of 1.63 and a standard deviation of 0.485. Based on their training received scores of the respondents are classified into three groups: "less training"(0-5), "medium training" (6-10) and "high" (above 10). The distribution of the farmers is shown according to their classified groups in Table 4.7.

Table 4.7 Distribution of jute growers according to their training received

Categories	Jute growers		Mean	Standard deviation
	Number	Percent		
Less Training (0-5)	72	72	1.63	0.485
Medium Training (6-10)	20	20		
High Training (Above 10)	8	8		
Total	100	100		

The majority i.e. 72 percent of the respondents received less training; while about 28 percent received medium to high training. Thus most of the respondents had low level of exposure to agricultural training. During the investigation it was revealed that the respondents received training from different Government and Non-Government organization like Department of Agricultural Extension (DAE), Department of Livestock, Department of Youth Development, Bangladesh Rural Development Board (BRDB), NGOs like BRAC, Nabojug. It also proved that there is always a relationship between training received and change attitude towards modern technologies. Because training received develops the farmers' to Knowledge, Skill and Attitude in positive manner. The findings suggest that training experience might be the most important factor for the respondents to change their attitude towards modern jute cultivation.

4.2.5 Credit availability

The credit availability of the jute growers ranged from Taka 5000 to Taka 50000 and only 40 percent received credit from different organizations and most of respondents i.e. 60 percent did not receive any credit. On the basis of their credit availability, the respondents were classified as shown in Table 4.8.

Table 4.8 Distribution of jute growers according to their access of amount of credit received

Credit availability	Categories	Jute growers		Mean	SD
		Number	Percent		
Credit received- 40 jute growers	Low credit(Tk.5000-20000)	32	80	18.61	13.68
	Medium credit (Tk.20001- 35000)	02	05		
	High credit (Above Tk.35000)	06	15		
No Credit - 60 jute growers	-	-	-	-	-
	Total	40	100		

The average credit availability was 18.61 and the standard deviation of 13.68. It presented in Table 4.8 revealed that a large number of respondents (80 percent) received

low credit ranged from Taka 5000 to Taka 20000, 05 percent of the respondents received credit as Taka 20001 to Taka 35000 and 15 percent of the respondents received high credit as Taka. 35000(above). It also revealed that the jute growers received credit from different sources like Bangladesh Krishi Bank, BRDB, NGOs like BRAC, ASA, Nabojug etc. It may be concluded that financial institutions provided credit on agricultural farm thus could be helped the farmers to change their attitude towards modern jute cultivation.

4.2.6 Knowledge on jute cultivation

Knowledge on scores of the jute growers ranged from 30 to 46. The average was 39.20 and standard deviation was 3.16. Based on their scores, the respondents were classified into three categories as shown Table 4.9.

Table 4.9 Distribution of jute growers according to their knowledge on Jute cultivation

Categories	Jute growers		Mean	SD
	Number	Percent		
Low knowledge(30-35)	12	12	39.20	3.16
Medium knowledge (36-41)	65	65		
High knowledge(above 41)	23	23		
Total	100	100		

Data suggest that about two-thirds (65 percent) of the jute growers of the respondents had medium knowledge on jute cultivation compared to slightly more than 23 percent of them having high knowledge. The findings indicate 88 percent of the respondents had medium to high level of knowledge on jute cultivation, so far overall knowledge on jute cultivation is concerned. Thus in general, the modern jute cultivation knowledge level of the farmers of the study area was satisfactory.

4.2.7 Innovativeness

The computed innovativeness scores of the jute growers ranged from 5 to 17 against the possible range of 0 to 40. However the average was 11.29 with a standard deviation of 2.65. Based on their innovativeness, the jute growers were classified into three categories (Table 4.10).

Table 4.10 Distribution of jute growers according to their innovativeness

Categories	Jute growers		Mean	SD
	Number	Percent		
Low innovativeness(5-10)	35	35	11.29	2.65
Medium innovativeness (11-15)	57	57		
High innovativeness (above 15)	08	08		
Total	100	100		

Data presented in Table 4.10 indicate that the highest proportion (57 percent) of the jute farmers had medium innovativeness score as compared to 08 percent high innovativeness and 35 percent of them had low innovativeness. It may also be concluded that majority of the respondents of the study area had medium innovativeness. The result would help the extension planners to chalk out future extension programmes for transferring technologies to the potential growers.

4.2.8 Annual family income

The observed annual income of the respondents ranged from Tk.52000 to Tk.850000. On the basis of the annual income questions presented in serial no. 8 in the interview schedule; the jute growers were classified into three categories as shown in Table 4.11.

Table 4.11 Distribution of jute growers according to their annual income

Categories	Jute growers		Mean	SD
	Number	Percent		
Low income(Tk.50000-150000)	32	32	232.15	138.61
Medium income (Tk. 150001-300000)	50	50		
High income(above Tk.300000)	18	18		
Total	100	100		

The average annual income was 232.15 with a standard deviation 138.61. The findings indicate that one-third (32 percent) of the respondents had low income of up to Taka 150000 and eighteen (18 percent) had high income group which was calculated minimum Tk. 300000 to above in yearly basis. The average income of the farmers of the study area was much higher than the average national income of the country. This might be due to the fact that the farmers of the study area were not engaged only on agriculture, they may be earned from other sources such as service, business etc. The data also suggest that among the respondents there was inequality in income.

4.2.9 Fatalism

Fatalism scores ranged from 15 to 36 as observed against the possible range of 0 to 40 with an average of 29.24 and a standard deviation of 3.92. Based on their fatalism scores, the jute growers were classified into the following categories as shown in Table 4.12.

Table 4.12 Distribution of jute growers according to their Fatalism

Categories	Jute growers		Mean	SD
	Number	Percent		
Low fatalism(15-22)	29	29	29.24	3.92
Medium fatalism (23-30)	43	43		
High fatalism(Above 30)	28	28		
Total	100	100		

Data obtained in Table 4.12 indicates that about 43 percent of the respondents belonged to medium, 29 percent low and 28 percent high fatalism categories. The data also revealed that 71 percent of the respondents had either medium or high fatalism. This may be due to some superstition and consequent belief in fate of the farmers of the study area.

4.2.10 Extension media contact

Extension media contact scores of the respondents ranged from 0 to 64 where as the observed ranged was 21 to 40 with mean 29.16 and standard deviation of 3.24. On the basis of their extension media contact scores, the respondents were classified into three categories shown in Table 4.13.

Table 4.13 Distribution of jute growers according to their exposure to extension media contact

Categories	Jute growers		Mean	SD
	Number	Percent		
Low extension contact(21-25)	39	39	29.16	3.24
Medium extension contact (26-30)	48	48		
High extension contact (Above 30)	13	13		
Total	100	100		

Data presented in the table 4.13 indicated that the highest proportion 48 percent respondents had medium extension contact compared to 39 percent of the respondents had low extension contact and 13 percent having high extension contact. Thus, most of the respondents (61 percent) had medium to high extension contact which has a significant relationship with negative attitude towards modern jute cultivation.

4.3 Relationships between the selected characteristics of the farmers and their attitude towards modern jute cultivation

The purpose of this section is to explore the relationships between each of the selected characteristics of the farmers and their attitude toward modern jute cultivation. The selected characteristics constituted independent variables and the dependent variable was considered attitude of farmers towards modern jute cultivation. Pearson's Product Moment Correlation Co-efficient 'r' was used to test the null hypothesis concerning the relationship between any two variables. The summary results of test of correlation coefficient are shown in Table 4.14. However, a correlation matrix for independent and dependent variables were presented in Appendix 2.

Table 4.14 Relationships between the selected characteristics of the farmers and their attitude towards jute cultivation

SL. No.	Selected Characteristics (Independent variables)	Observed correlation co-efficient (r) value
1	Age	-0.061_{NS}
2	Education	0.075_{NS}
3.	Farm size	0.014_{NS}
4.	Training received	0.217*
5.	Credit availability	0.169_{NS}
6.	Knowledge on jute cultivation	0.503**
7.	Innovativeness	0.026_{NS}
8.	Annual family income	-0.149_{NS}
9.	Fatalism	0.516**
10.	Extension media contact	-0.352**

N = 100, Degree of freedom =98 NS = Not significant

* = Significant at 0.05 level (tabulated r = 0.196)

** = Significant at 0.01 level (tabulated r = 0.256)

4.3.1 Relationship between Age and Attitude

The relationship between age of the farmers and their attitude towards the use of modern jute cultivation was measured by testing the null hypothesis "There is no relationship between age of the farmers and their attitude towards the modern jute cultivaiton". The calculated value of ('r'= -0.061) was found smaller than the tabulated value ('r' = 0.196) with 98 degrees of freedom at 0.05 level of probability as shown in Table 4.14. Hence the concerned null hypothesis could not be rejected. It was concluded that there was no significant relationship between age of the farmers and their attitude towards the use of modern jute cultivation. It means that age had no effect on attitude towards modern jute cultivation.

4.3.2 Relationship between education and attitude

The relationship between education of the farmers and their attitude towards the modern jute cultivation was measured by testing the null hypothesis; "There is no relationship between the education of the farmers and their attitude towards modern jute cultivation". The calculated value ('r' = 0.075) was smaller than the tabulated value ('r'= 0.196) with 98 degree of freedom at 0.05 level of probability as shown in Table 4.14. It was, therefore, education of the jute farmers had no relationship with their attitude towards modern jute cultivation. Hence, the null hypothesis in this respect was accepted. So, there is no significant relationship between education and attitude towards modern jute cultivation. It means that education had no effect towards farmers' attitude on modern jute cultivation. Wahab (1975) had also found no relationship between education and attitude towards adoption of improved technologies.

4.3.3 Relationship between farm size and attitude

The relationship between farm size of the farmers and their attitude towards modern jute cultivation was studied by testing the concerned null hypothesis; "There is no relationship between farm size of the farmers and their attitude towards modern jute cultivation". The calculated value of ('r' = 0.014) was much smaller than the tabulated value ('r' = 0.196) at 0.05 level of probability as shown in Table 4.14. So the null hypothesis could not be rejected. Moreover about 72 percent (30 percent large and 42 percent medium) farm holdings dominated the study area. It was, therefore, concluded that farm size of the farmers had no relationship with their attitude towards the modern jute cultivation. This means that the farmers' attitude towards modern jute cultivation was not influenced by the farm size.

4.3.4 Relationship between training received and attitude

The relationship between training received of the farmers and their attitude towards modern jute cultivation was "There is no relationship between training received of the farmers and their attitude towards modern jute cultivation". The calculated value of ('r'= 0.217) was found to be small than the tabulated value of ('r' = 0.256) with 98 degree of freedom at 0.01 level of probability as shown in Table 4.14. Thus, the null hypothesis could be rejected. It was, therefore, suggested that training received by the farmers had significant relationship with their attitude towards modern jute cultivation. It means that with the increase of training received by the farmers, attitude towards modern jute cultivation was increased.

4.3.5 Relationship between credit availability and attitude

The relationship between credit availability of the farmers and their attitude towards modern jute cultivation was studied by testing the concerned null hypothesis; "There is no relationship between credit availability of the farmers and their attitude towards modern jute cultivation". The calculated value of ('r' = 0.169) was smaller than the tabulated value ('r' =0.196) at 0.05 level of probability as shown in Table 4.14. So the null hypothesis could not be rejected.

Based on the above findings, the researcher concluded that credit availability of jute growers had no significant relationship with their attitude towards modern jute cultivation. So, credit availability had no effect with the increase or decrease of attitude towards modern jute cultivation.

4.3.6 Relationship between knowledge on jute cultivation and attitude

The relationship between knowledge on jute cultivation of the farmers and their attitude towards modern jute cultivation was studied by testing the concerned null hypothesis: "There is no relationship between knowledge on jute cultivation of the farmers and their attitude towards modern jute cultivation". The calculated value of ('r' = 0.503) was found greater than the tabulated value ('r' = 0.256) at 0.01 level of probability with 98 degree of freedom as shown in Table 4.14. So the null hypothesis could be rejected. Moreover, the relationship showed a positive trend. It was therefore, suggested that knowledge on jute cultivation had a highly positive significant relationship with their attitude towards modern jute cultivation. This means that the more knowledge on jute cultivation the higher of their attitude towards modern jute cultivation.

4.3.7 Relationship between innovativeness and attitude

The relationship between innovativeness of the farmers and their attitude towards modern jute cultivation was studied by testing the null hypothesis: "There is no relationship between innovativeness of the farmers and their attitude towards modern jute cultivation". The calculated value of ('r' = 0.026) was much smaller than the tabulated value('r'= 0.196) with 98 degree of freedom at 0.05 level of probability is shown in Table 4.14. So the null hypothesis could not be rejected. About 65 percent of the respondents had medium to high innovativeness. It suggested that innovativeness of the farmers had no relationship with their attitude towards modern jute cultivation. It also means that innovativeness had no effect with increase or decrease of attitude of farmers towards modern jute cultivation. Nurzaman (2000) observed that innovativeness of the FFS and non-FFS farmers has no relationship with their attitude towards IPM.

4.3.8 Relationship between annual family income and attitude

The relationship between annual family income of the farmers and their attitude towards modern jute cultivation was examined by testing the concerned hypothesis: "There is no relationship between annual family income of the farmers and their attitude towards modern jute cultivation." The calculated value of ('r'= -0.149) was found smaller than the tabulated value of ('r' =0.196) with 98 degrees of freedom at 0.05 level of probability as shown in Table 4.14. So this null hypothesis was, therefore, accepted. Also it was negative trend. It was, therefore, suggested that annual family income of the jute growers had no significant relationship with their attitude towards modern jute cultivation.

4.3.9 Relationship between fatalism and attitude

The relationship between fatalism and their attitude towards modern jute cultivation was examined by testing the concerned hypothesis: "There is no relationship between fatalism and their attitude towards modern jute cultivation." The calculated value of ('r'= 0.516) was found larger than the tabulated value of ('r' = 0.256) with 98 degrees of freedom at 0.01 level of probability as shown in Table 4.14.

Based on the above findings, the concerned null hypothesis could be rejected and hence, it was concluded that fatalism of jute growers had a highly positive significant relationship with their attitude towards modern jute cultivation. That means the higher of the fatalism of the jute farmers, the higher of their attitude towards modern jute cultivation.

4.3.10 Relationship between extension media contact and attitude

The relationship between extension media contact of the farmers and their attitude towards modern jute cultivation was studied by testing the null hypothesis: "There is no relationship between extension media contact of the farmers and their attitude towards modern jute cultivation". The calculated value of(r = -0.352) was higher than that of tabulated value ('r'= 0.256) with 98 degrees of freedom at 0.01 level of probability as shown in Table 4.14. So the concerned null hypothesis was rejected. It was, therefore, concluded from the findings that there was highly negative significant relationship between the extension media contact of the farmers and their attitude towards modern jute cultivation. It means that attitude towards modern jute cultivation by the farmers reduced with the decrease of extension media contact. However, Karim (1973) and Vidyasharker (1977) reported that the exposure to extension agency contributed favourably to the attitudes of farmers to the adoption of technologies.

4.4 Problem confrontation in jute cultivation

Problem scores of the respondents were determined by using 13 statements. Computed scores of the respondents ranged from 18 to 33 against the possible range of 0 to 39 with the average being 29.54 and the standard deviation was 2.86. Based on their problem confrontation scores, the jute growers were classified into the following categories as shown in Table 4.15.

Table: 4.15 Distribution of the farmers according to their problems confrontation

Categories	Jute growers		Mean	Standard Deviation
	Number	Percent		
Low (18-28)	27	27	29.54	2.86
Medium (29-31)	48	48		
High (Above 31)	25	25		
Total	100	100		

Based on problem scores, the farmers' problems were classified into three categories: "low" (18-28), "medium" (29-31), and "high" (above 31). Data presented in table 4.15 indicate that the majority (48 percent) of the jute farmers faced medium problems compared to 25 percent of them faced high problem and 27 percent of the farmers faced low problems. If a farmer can be able to overcome these problems, he may contribute to his attitude towards modern jute cultivation.

In order to measure the problems regarding attitude of the farmers towards modern jute cultivation open and closed questionnaire were used. The purpose of this section was to have an understanding on the problems faced by the jute growers towards attitude of modern jute cultivation. Problem in each item has been presented with frequency distribution of the jute growers in percent.

However, jute situation in Bangladesh has been passing through a crisis for about two decades. The major problems faced by the farmers at the study area have been presented in Table 4.16.

Table 4.16 Rank order of the problems in cultivating jute as faced by the jute growers

Sl. no.	Problems	Level of problems				PCI	Rank order
		High	Medium	Low	Not at all		
1	Lack of available HYV seed of jute	92	7	0	1	290	1
2	Large numbers of day labours are needed for weeding.	64	24	11	1	251	2
3	Low market price and low demand of jute	59	29	11	1	246	3
4	Deprive of fair price due to influence of Farias over public sector purchasers	54	32	13	1	239	4
5	Planting in line needs higher no. of labour	46	47	7	0	238	5
6	Unavailability of machinery inputs for land preparation	46	45	9	0	237	6
7	No price incentives for quality fibre at primary market	50	37	12	1	236	7
8	Inadequate grading knowledge of the farmers	49	40	8	3	235	8
9	Scarcity of retting water impacts appropriate retting practices	49	42	2	7	233	9
10	Lack of capital for jute cultivation	46	41	10	3	230	10
11	High cost of HYV seed	7	92	1	0	206	11
12	Lack of adequate knowledge of improved technology on jute cultivation	14	62	22	2	188	12
13	Inadequate help from Sub Assistant Agriculture Officer	4	10	78	8	110	13

Problem Confrontation Index(PCI) at the jute growers attitude towards modern jute cultivation ranged from 110 to 290. According to the rank order the thirteen problems are described with presenting a bar graph in the below:

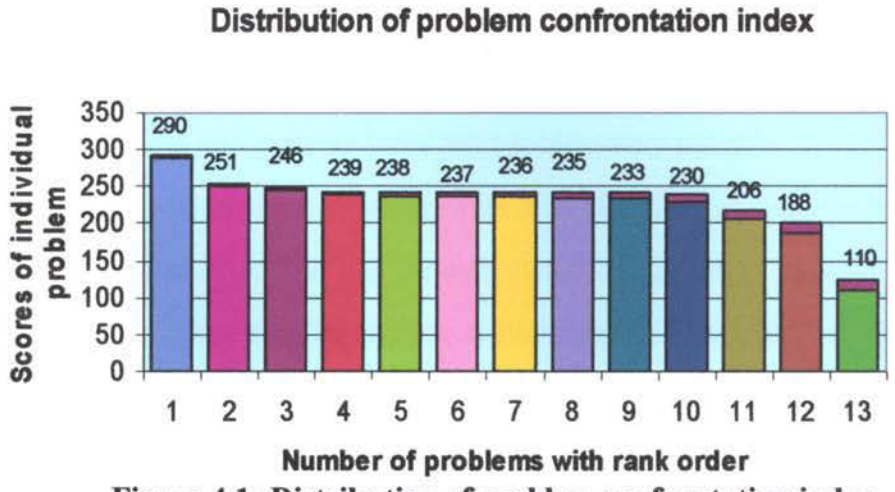


Figure 4.1: Distribution of problem confrontation index.

The data contained in Table 4.16 indicated that the problems faced by the jute farmers in respect of "Lack of available HYV seed of jute" was the most serious problem with problem index of 290 . Firstly HYV seeds are most serious problem during sowing period of jute, It may be reasons for the seeds supplied by BADC are not enough and available against the demand of the farmers. So, less quality of jute seeds are imported by different seed companies, most of the time Indian jute seeds are coming through black marketing process which are available in the local market. These types of seeds are not germinated with farmer's expectation. It may be concluded that non-availability of High Yielding Variety (HYV) jute seeds on the eve of sowing time, farmers are not interested in jute cultivation.

The **second** cited problem of the jute growers was "Large numbers of day labours are needed for weeding" with the PCI of 251. The jute growers stated that there are large numbers of day labours are needed for eradicating weeds from the jute field with paying high labour charge. The labour charge increased but the jute price was not increased. Probably due to this reason growers faced problem in this respect.

The **third** cited problem of the growers was "Low market price and low demand of jute" with the PCI of 246. The jute price was not high due to low demand in internal and external market, because government policy was not supported to consume total production of jute in the country. Probably due to this reason growers faced problem in this respect.

The **fourth** cited problem of the jute growers was "Deprive of fair price due to influence of Farias over public sector purchasers" with PCI of 239. The Farias influenced the jute growers to purchase jute in fixed price which was less than the public sector purchasers. Probable that is why jute growers faced this problem very much.

The **fifth** cited problem of the jute growers was "Planting in line needs higher no. of labour" with PCI of 238. The jute farmers stated this problem because they were not habituated to plant jute seeds in line due to have lack of information to them. It may be the jute farmers knew that line sowing needed more labours with paying high labour charge.

The **sixth** cited problem of the jute growers was "Unavailability of machinery inputs for land preparation" with PCI of 237. The jute farmers stated this problem because during land preparation machineries for land preparation was not available, because most of the farmers had not modern agricultural machineries like power tiller. Probable that is why jute growers faced this problem very much.

The **seventh** cited problem of the jute growers was "No price incentives for quality fibre at primary market" with PCI of 236. The jute farmers were depended on primary market and they did not get price incentives for quality fibre. Probable that is why jute growers faced this problem very much.

The **eighth** cited problem of the jute growers was "Inadequate grading knowledge of the farmers" with PCI of 235. The jute farmers were limited grading knowledge for selling in high price. Probable that is why jute growers faced this problem very much.

The **ninths** cited problem of the jute growers was "Scarcity of retting water impacts appropriate retting practices" with PCI of 233. The jute farmers were faced water scarcity during retting of the jutes, due to this problem was very much to them.

The **tenth** cited problem of the jute growers was "Lack of capital for jute cultivation" with PCI of 230. The jute farmers stated that during jute cultivation most of the farmers had limited capital to cultivate jute in modern practices. Probable that is why jute growers faced this problem very much.

The **eleventh** cited problem of the jute growers was "High cost of HYV seed" with PCI of 206. The seed dealers were not seeds in reasonable price due to the cause of unavailability of BADC and Indian jute seeds.

The **twelfth** cited problem of the jute growers was "Lack of adequate knowledge of improved technology on jute cultivation" with PCI of 188. The farmers of this study area were deprived of modern technologies. So, it a problem for the jute growers taking positive attitude towards modern jute cultivation.

The **thirteenth** cited problem of the jute growers was "Inadequate help from Sub Assistant Agriculture Officer" with PCI of 110. It may be the covering area of Sub-Assistant Agriculture Officer was larger to provide support to the jute farmers individually.

CHAPTER 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter presents the summary of findings, conclusion and recommendations of the study.

5.1 Summary of Findings

The title of the study was "**Attitude of farmers towards modern jute cultivation in Baliakandi upazilla under Rajbari district.**" The term attitude comprises with knowledge, belief and action. The attitude of farmers is very important factor in measuring their credibility as professional workers. Knowledge makes a man perfect and versatile. On the other hand, attitude of individual serves as a driving force for constant effect on certain perceived action. Unless, farmers have sufficient knowledge on the subject matter and have favorable attitude towards modern jute cultivation, it would be practically very difficult to popularize the modern jute cultivation among farmers. It was therefore, necessary to undertake a research study entitled "**Attitude of farmers towards modern jute cultivation in Baliakandi upazilla under Rajbari district**" with the following specific objectives.

(i) To determine the attitude of jute growers towards the use of modern jute cultivation technologies:

- Use of improved seed.
- Line sowing method
- Ribbon retting method.
- Proper land preparation
- Proper weeding.

(ii) To describe the selected characteristics of the farmers. The selected characteristics are:

(a)Age (b)Education (c)Farm size (d)Training received (e)Credit availability (f) Knowledge on jute cultivation (g) Innovativeness (h)Annual family income (i) Fatalism (j) Extension media contact

(iii) To explore the relationship of some selected characteristics of the farmers with their overall attitude towards jute cultivation.

(iv) To identify the existing problems and constraints in jute cultivation with the possible suggestions to overcome the same.

5.1.1 Hypothesis

The null hypotheses, which were formulated in this study, summarized as "there were no relationships between farmers attitude toward modern jute cultivation" and each of their ten selected characteristics:

(i)Age (ii) Education (iii) Farm size (iv) Training received (v)Credit availability (vi) Knowledge on jute cultivation (vii) Innovativeness (viii) Annual family income (ix) Fatalism (x) Extension media contact.

5.1.2 Methodology

Baliakandi upazilla under Rajbari district was purposively selected as the locale of the study. It is situated on the bank of the river Chandana. This upazilla is consisted of 7 unions and Narua union was selected purposively for this research. There were 31 villages in Narua union and within these 10 villages were selected randomly for the study. A total of 1002 jute farmers were in these 10 villages and 100 jute farmers were selected as sample population with using proportionate random sampling method. Beside this 10 farmers were kept in reserved list. Data were personally collected through interview schedule during 15 July to 14 August, 2007. The total number of jute growers in these ten villages was considered as the population of the study.

Keeping the objectives of the study in view an interview schedule was carefully designed to collect relevant information from the farmers. Direct questions and some were used to open and close form questions to obtain information.

Attitude of farmers towards modern jute cultivation were the dependent variable in this study. Considering time, money and other resources, the researcher selected 10 individual characteristics of the farmer as the independent variables. There were (i)Age (ii) Education (iii) Farm size (iv) Training received (v)Credit availability (vi) Knowledge on jute cultivation (vii) Innovativeness (viii) Annual family income (ix) Fatalism (x) Extension media contact.

In order to collect the required data for this study an interview schedule was translated into Bangla. Simple direct questions and scales were included in the interview schedule for determining the ten individual characteristics. Five point Likert type scale was used in the interview schedule for ascertaining the farmer's attitude towards the use of modern jute cultivation.

The interview schedule was pre-tested before finally using the same for collection of data. Necessary corrections, alterations and amendments were made in the interview schedule on the basis of the results of the pretest.

Advance information was given to the respondents before going to them for interview and it was usually conducted with the respondents in their houses during their leisure time.

The responses of jute growers to the question in the interview schedule were transferred to a master sheet. Tabulation and cross tabulation were done on the basis of categories developed by the researcher himself. Qualitative data were converted into quantitative ones by means of suitable scoring whenever necessary.

5.2 Attitude towards Modern Jute Cultivation

In order to conduct the study it was necessary to measure the selected dependent variables. The procedure followed for measuring the dependent variables are briefly discussed below.

Attitude towards jute cultivation was ascertained through Likert (1932) type scale. Ten aspects of modern jute cultivation were asked to the respondents. The number of positive items was five and negative items were also five. The respondents were asked to indicate for each of the statement whether they strongly agreed, agreed, undecided, disagreed and strongly disagreed with a corresponding score of 4,3,2,1 and 0 for the positive items and vice versa. The score of a respondent's attitude towards the positive statement of jute cultivation were computed by summing his responses to all the items.

Statements have been calculated separately to identify the farmers' agreement with the scores of 4, 3, 2, 1 and 0. Descriptive statistics such as range, mean and standard deviation were used in describing the variables of the study. Product Moment Correlation coefficients was used in order to explore the relationships between the concerned variables. Correlation matrix was computed to determine the inter-correlationship among the variables. 5% & 1% (percent) level of significance has been used as the basis for statistical significance.

5.3 Relationship between Selected Characteristics of the Jute Growers with their Attitude towards Modern Jute Cultivation

To explore the relationships between each of the 10 selected characteristics of the Jute growers with their attitude towards modern jute cultivation, overall 10 null hypotheses were formulated. For testing the hypothesis coefficient of correlation (r), 5 percent & 1 percent level of significance were the basis for rejecting a null hypothesis. The results of hypothesis of testing are presented below.

Correlation analysis indicated that among the ten selected characteristics training received, knowledge on jute cultivation and fatalism had positive significant relationship with their attitude towards modern jute cultivation. Extension media contact had negative significant relationship with their attitude towards modern jute cultivation of the jute growers. Hence, the researcher rejected the null hypotheses concerning these four variables. On the other hand age, education, farm size, annual income, credit availability and innovativeness had no relationship with their attitude towards modern jute cultivation of the jute growers. Hence, the concerning null hypotheses of these six variables were accepted.

5.4. Findings

- **Age:** More than 74 percent of the respondents were young to middle aged and were comparatively more innovative than the older persons in the community.

- **Education:** About 42 percent of the respondents had education of secondary level, 7 percent were higher secondary education and only 5 percent were illiterate.

- **Farm size:** Large farmers were 30 percent, medium were 42 percent farm holdings dominated in the study area.

- **Training received:** More than half (63 percent) of the respondents had no training experience. Only 37 percent had training duration at one to thirty days.

- **Credit availability:** Only 40 percent of the respondents had access to credit availability and about 60 percent farmers had no credit availability.

- **Knowledge on jute cultivation:** About two-thirds (65 percent) of the jute growers of the respondents had medium knowledge on jute cultivation compared to slightly more than 23 percent of them having high knowledge.

- **Innovativeness:** More than half (57 percent) of the jute farmers had medium innovativeness score as compared to 08 percent high innovativeness and 35 percent of them had low innovativeness.

- **Annual family income:** One-third (32 percent) of the respondents had low income of up to Taka 150000 and Eighteen (18 percent) had high income which was calculated above Tk. 300000 annually. 50 percent of the respondents were medium income with the range of Taka.150001 to 300000. The data also suggest that among the respondents there were inequality in income.

- **Fatalism:** About 71 percent of the respondents had either medium or high fatalism and they believe in fate. 29 percent of the respondents showed in low fatalism categories. This may be due to some superstition and consequent belief in fate of the farmers of the study area.

- **Extension media contact:** About 48 percent respondents had medium extension contact compared to 39 percent of the respondents had low extension contact and 13 percent having high extension contact.

5.5 Problems in cultivating jute as faced by the jute growers

Problem scores of the respondents were determined by using 13 statements. Computed scores of the respondents ranged from 18 to 33 against the possible range of 0 to 39 with the average being 29.54 and the standard deviation was 2.86. Based on their problem confrontation scores, the jute growers were classified into three categories as Low (18-28), Medium (29-31) and High (above 31).

Data indicated that the majority (48 percent) of the jute farmers faced medium problems compared to 25 percent of them faced high problem and 27 percent of the farmers faced low problems. Thirteen problems were selected and it was determinate through Problem Confrontation Index (PCI) with ranking order.

- It observed that "Lack of available HYV seed of jute" was the most serious problem with problem index of 290.
- The second cited problem of the jute growers was "Large numbers of day labours are needed for weeding" with the PCI of 251.
- The third cited problem of the growers was "Low market price and low demand of jute" with the PCI of 246.
- The fourth cited problem of the jute growers was "Deprive of fair price due to influence of Farias over public sector purchasers" with PCI of 239.
- The fifth cited problem of the jute growers was "Planting in line needs higher no. of labour" with PCI of 238.
- The sixth cited problem of the jute growers was "Unavailability of machinery inputs for land preparation" with PCI of 237.
- The seventh cited problem of the jute growers was "No price incentives for quality fibre at primary market" with PCI of 236.
- The eighth cited problem of the jute growers was "Inadequate grading knowledge of the farmers" with PCI of 235.
- The ninths cited problem of the jute growers was "Scarcity of retting water impacts appropriate retting practices" with PCI of 233.
- The tenth cited problem of the jute growers was "Lack of capital for jute cultivation" with PCI of 230.
- The eleventh cited problem of the jute growers was "High cost of HYV seed" with PCI of 206.
- The twelfth cited problem of the jute growers was "Lack of adequate knowledge of improved technology on jute cultivation" with PCI of 188.
- The thirteenth cited problem of the jute growers was "Inadequate help from Sub Assistant Agriculture Officer" with PCI of 110.

5.6 Conclusions

The section deals with the conclusion made on the basis of the study conducted. In the light of the analyzed data and its logical interpretation, the following conclusion were drawn and presented below:

- The literacy rate was higher than the national average, this attribute would give positive attitude towards the innovative agricultural technologies and also help extension providers to demonstrate, disseminate, train and motivate farmers to adopt appropriate technologies. In the present study about 65 percent of the respondents showed medium to high innovativeness.
- Most of the respondents had low level of exposure to receive training and hence, more exposure to training experience would be a most important factor for the respondents to change their attitude towards jute cultivation. In this study only 37 percent had access to receive training.
- Access to the credit was not available to about 60 percent of the respondents. They were either not interested or did not have and collateral that they could offer to take loans. There was inequality in annual family income and the large farmers had possessed the bulk of the income of the community.
- The respondents showed medium to high favourable attitude towards modern jute cultivation. This means that in order to create more favourable attitude, extension providers should give greater emphasis on such activities.
- Lack of HYV seed, unavailability of seeds during sowing period are most serious problem of farmers for modern jute cultivation. BADC with other prominent seed companies should be supplied quality seeds before sowing.
- Less quality of Indian seeds are transferring through Indian border to Bangladesh under black marketing, so that Bangladesh Rifles and Bangladesh Govt' should be developed policy and controlled strictly.
- The farmers identified that jute was not remunerative against its present production cost. Moreover, the low demand of fibre in the primary market as one of the main problem in jute cultivation. It leads to the conclusion that in order to create favourable attitude towards jute cultivation technologies, these problem should be addressed by the Govt: policy as early as possible.
- One of important steps to encourage farmers in producing jute might be that the Public sector should fix a minimum price for jute (fibre) prior to the harvest of the crop and the fixed price should be ensured at primary market level. This would be a welcome move towards favorubale attitude towards jute cultivation on a sustainable basis.

5.7 Recommendations for policy implication

Based on the finding and conclusion of the study the following recommendations were made-

- Support services in jute cultivation should be provided by DAE, BJRI, BADC and NGOs. The services may include subsidized rate of improved jute seed, special training to motivate farmers on improved retting and enhance skill in grading of fibre.

- Less quality of Indian jute in black marketing process should be protected strictly by the Bangladesh Rifles.

- To keep farmers well informed of the technical know-how of improved retting practices, farmers may be made more oriented towards different campaigns, demonstration, Multi Location Trails (MLT) and field days.

- Fixation of minimum purchase price of jute at primary market and offer the price of jute fibre according to grade. It may be ensured by the supervision of the Government agencies through Jute Ministry or by Agriculture Ministry.

- For stabilizing jute prices, forecasting of jute and target production should be made in time before sowing so that the jute growers can adjust jute acreages accordingly.

- For keeping our golden heritage, Government should be provided special subsidy to the farmers involved in jute cultivation with taking more projects related with jutes production, diversification, export etc.

- Institutional & NGOs credit should be made available to the farmers for jute cultivation at a reasonable interest rate.

5.8 Recommendations for further study

- The study was conducted in Baliakandi upazilla of Rajbari district. Findings of this study need verification by similar study in other parts of the country.
- Jute grower's attitude toward modern jute cultivation in other areas needs investigation.
- Further research should be conducted to explore relationship of other characteristics of jute growers with their attitude towards modern jute cultivation
- Age, annual income and extension media contact had negative relationship with attitude towards modern jute cultivation. But in reality these could show significant positive correlation with farmers' attitude towards the use of modern jute cultivation. These relationships need further verification.
- Larger farm size compared to national average suggests further studies may be conducted with larger samples than the sample taken at present study.
- Investigation is necessary to formulate principles and procedures for increasing the extension contact of the jute growers, so that the resultant good effect creates favourable attitude of the jute growers towards modern jute cultivation and such attitude is conducive to adoption of improved practices.

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APPENDIX 1

DEPT. OF AGRICULTURAL EXTENSION & INFORMATION SYSTEM
SHER-E-BANGLA AGRICULTURAL UNIVERSITY
Sher-e-Banglanagar, Dhaka-1207

An interview schedule on "**Attitude of Farmers Towards Modern Jute Cultivation in Baliakandi Upazilla Under Rajbari District"**

Date:

SL. No:

Name of the farmer:

Father's name :
Village ..... **Union** .....
Upazilla ..... **District** .....

Please answer the following questions:

1. Age: (Present age)

How old are you? ..... Years

2. Education: [Please put tick(√) mark in appropriate box]

A. Don't know how to read and write

B. Do not know how to read and write but can sign the name

C. Can read only

D. Did not attain to school but can read and write and my level of education is equivalent to a class

E. Passed the class

3. Farm size:

Please indicate the area of land of your family.

Sl. No.	Land Type	Land Ownership	
		Local Unit (Decimal)	Hectare
1.	Uncultivated land on homestead		
2.	Cultivated land on homestead		
3.	Own land under own cultivation		
4.	Own land given to others as borga (share cropping system).		
5.	Land taken from others as borga (share cropping system).		
6.	Land taken from others as lease		
Total			

4. Training Received:
Please mention the following particulars

Sl. No.	Title of the training	Duration of training (day)	Sponsoring organization

5. Credit availability:

Yes	No

A. During the year 2006 did you access any credit?
If yes, please indicate the source of credit .....
B. Rate of interest .....Tk/year (Flat /decline system interest) please tick (√).
C. Amount of the credit taken ....Tk.
D. Availability of the credit as against your total requirement: Please (√) marks mention following particulars
Full quantity ..... # Three fourth ..... # Half .....
One fourth ..... # Less than one fourth .....

6. Knowledge on Jute Cultivation:
Please provide answer to the following questions:

SL. No	Questions	Score	
		Full Marks	Marks obtained
1.	Name two varieties of each of deshi and tossa jute	4	
2.	What do you mean by good qualities of Jute seeds	4	
3.	Mention proper time of sowing jute seeds	4	
4.	Mention sowing method of jute seeds	4	
5.	Mention appropriate type of land for jute cultivation	4	
6.	Mention proportional dose of Urea, TSP and MP for Jute cultivation	4	
7.	Mention two major harmful insect/ pest of jute	4	
8.	Mention proper time of harvest of jute	4	
9.	Mention the improved method of jute retting	4	
10.	Describe the ribbon retting process of jute	4	
11.	Mention two merit of crop rotation	4	
12.	What do you know about IPM on checking environmental pollution?	4	
13.	Which crops of Bangladesh are exported in abroad?	4	

7. Innovativeness:
Please provide information about the following agricultural technologies:

Sl no.	Name of the technology	Rate of adoption				
		4	3	2	1	0
		Used within one year of hearing	Used after one year and before two year of hearing	Used after two year and before three year of hearing	Used after three year of hearing	Never used
1.	Line sowing of jute seeds					
2.	Crop rotation					
3.	Ribbon retting of jute					
4.	Method of late jute seed production					
5.	Prepare of compost and green manure					
6.	Application of IPM for diseases and pests control					

8. Annual family income:

Sl. No.	Source of income	Total Tk.
A.	From agriculture sector	
B.	Only from jute	
C.	Livestock and poultry	
D.	From fish culture	
E.	Off farm services	
F.	From labour/wages or service	
G.	Others (specify)	
	Grand total	

9. Fatalism: (Please state the following statement)

Sl. No	Statement	SA	A	U	D	SD
1. (+)	If luck favors, producer will be high without proper management of fertilizer, insecticides, weed and water.					
2. (-)	Not only depending on fate, we should cultivate jute to save increasing population by earning cash and foreign currency through it					
3. (+)	It is possible to develop economic condition by cultivating quality jute.					
4. (-)	Success depends on hard labour, but not on fate.					
5. (+)	It is not possible to change out fate taking loan from the bank or NGOs.					
6. (-)	For the development of agriculture jute cultivation is essential					
7. (+)	It is not possible to protect our crops by using insecticides, if luck does not favour					
8. (-)	Use of improved technology in jute cultivation gives higher profit and is feasible at farm level.					
9 (-)	It is better to depend on fate then worried about diseases of crops.					
10 (-)	Man has nothing to do for their food, cloth and shelter.					

SA= Strongly Agreed, A= Agreed, U= Undecided, D= Disagreed, SD= Strongly Disagreed.

10. Extension media contact:
Please mention the nature of contact with the following extension media:

Type of Contact	Source of Contact	Nature of Contact				
		Regularly (4)	**Often (3)**	**Occasionally (2)**	**Rarely (1)**	**Not at all**
Personnel contact	Upazilla Agriculture Officer	4 and more times/year ( )	3 times/ year ( )	2 times /year ( )	1 time/ year ( )	0 time/ year ( )
	Upazilla Additional Agriculture Officer	4 and more times/year ( )	3 times/ year ( )	2 times/ year ( )	1 time/ year ( )	0 time/ year ( )
	Agriculture Extension Officer	6 and more times/year ( )	4 times/ year ( )	3 times/ year ( )	2 times/ year ( )	0 time/ year ( )
	Sub Assistant Agriculture Officer	4 and more times/month ( )	3 times/ month ( )	2 times/ month ( )	1 time/ month ( )	0 time/ month ( )
	NGO personnel	4 and more times/month ( )	3 times/ month ( )	2 times/ month ( )	1 time/ month ( )	0 time/ month ( )
	Ideal farmer	6 and more times/month ( )	3 times/ month ( )	2 times/ month ( )	1 time/ month ( )	0 time/ month ( )
	Seed /Fertilizer/insecticide dealer	4 and more times/month ( )	3 times/ month ( )	2 times/ month ( )	1 time/ month ( )	0 time/ month ( )
	Neighbors/ Relatives	8 and more times/month ( )	5 times/ month ( )	3 times/ month ( )	1 time/ month ( )	0 time/ year ( )
Group contact	Participation in result and method demonstration	3 and more times/year ( )	1time/year ( )	1time/2 year ( )	1 time/4 year ( )	0 time/ year ( )
	Participation in agricultural training programme	3 and more times/year ( )	1time/year ( )	1time/2 year ( )	1 time/4 year ( )	0 time/ year ( )
	Participation in field day programme	2 and more times/year ( )	1 time/ year ( )	1time/2 year ( )	1 time/4 year ( )	0 time/ year ( )
	Participation in group discussion	6 and more times/ 6month ( )	4-5 times/ 6month ( )	2-3 time/ 6month ( )	1 time/ 6 month ( )	0 time/ 6 month ( )
Mass contact	Listening Radio programme on agricultural	4 and more times/week ( )	3 times/ week ( )	2 times/ week ( )	1 time/ week ( )	0 time/ week ( )
	Watching agriculture related programme in television.	4 and more times/month ( )	3 times/ month ( )	2 times/ month ( )	1 time/ month ( )	0 time/ month ( )
	Leaflet/Booklet/Krishi Kotha/ Krishi Biplop/Samprosaron Barta/ Urbora/Ikkhu Samachar	4 and more times/year ( )	3 times/ year ( )	2 times/ year ( )	1 time/ year ( )	0 time/ year ( )
	Reading agricultural news in Newspaper	4 and more times/month ( )	3 times/ month ( )	2 times/ month ( )	1 time/ month ( )	0 time/ month ( )

11. Attitudes towards modern jute cultivation:
What is your degree of agreement with the following statement?

Sl. No	Attitudinal Statements	Frequency of agreement (%)				
		SA	A	U	D	SD
1. (+)	Improved jute seed gives higher yield					
2. (-)	Presently jute cultivation is not profitable					
3. (+)	Jute cultivation has no adverse effect on environment					
4. (-)	Line sowing does not provide any extra benefit					
5. (+)	Fibre strength and brightness depends on retting methods applied					
6. (+)	Ribbon retting is advantageous in water scarce situation					
7.(+)	Improved retting method is profitable compare to usual practice					
8.(-)	Improved seed alone could not ensure quality of fibre					
9.(-)	Land preparation does not effect on total jute yield					
10.(-)	Grading of jute does not effect to total price compare to usual non grading practice					

SA= Strongly Agreed, A= Agreed, U= Undecided, D= Disagreed, SD= Strongly Disagreed

12. Problems confrontation in Jute Cultivation:

Please mention the nature and level of problems faced by you in cultivating jute:

Sl. No	Problems	Level of problems			
		High	Medium	Low	Not at all
1.	Lack of available HYV seed of jute				
2.	High cost of HYV seed				
3.	Inadequate help from Sub Assistant Agriculture Officer				
4.	Lack of adequate knowledge of improved technology on jute cultivation				
5.	Planting in line needs higher no. of labour				
6.	Scarcity of retting water impacts appropriate retting practices				
7.	Low market price and low demand of jute				
8.	Deprive of fair price due to influence of Farias over public sector purchasers				
9.	Inadequate grading knowledge of the farmers				
10.	No price incentives for quality fibre at primary market				
11.	Lack of capital for jute cultivation				
12.	Unavailability of machinery inputs for land preparation				
13.	Large number of day labours is needed for weeding.				
14.	Others				

Thanking you.

Signature of the interviewer
Dated

Appendix-2

NTERCORELATIONSHIPS OF THE SELECTED CHARACTERISTICS OF JUTE GROWERS IN BALIAKANDI UPAZILLA UNDER RAJBARI DISTRICT

Variable code	Age	Education	Farm size	Training received	Credit availability	Knowledge on jute cultivation	Annual family income	Fatalism	Attitude towards modern jute cultivation	Problem confrontation in jute cultivation	Extension media	Innovativeness
Age	1											
Education	-.166	1										
Farm size	-.131	.290**	1									
Training received	.143	-.076	-.029	1								
Credit availability	-.083	-.102	.046	.220*	1							
Knowledge on jute cultivation	-.118	.022	.151	-.030	-.045	1						
Annual family income	-.049	.196	.505**	.080	.253*	-.155	1					
Fatalism	-.084	.024	.067	.344**	.092	.518**	-.068	1				
Attitude towards modern jute cultivation	-.008	.046	-.007	-.135	-.105	-.217*	.012	-.245*	1			
Problem confrontation in jute cultivation	-.061	.075	.014	.217*	.169	.503**	-.149	.516**	-.352**	1		
Extension media contact	-.142	.062	-.113	.283**	.083	.309**	-.203*	.559**	-.210*	.409**	1	
Innovativeness	-.078	-.129	.096	-.104	-.150	-.061	-.166	.023	-.051	.026	.023	1

* = Correlation is significant at the 0.01 level (2-tailed)

** = Correlation is significant at the 0.05 level (2-tailed)