

**ADOPTION OF BARI GROUNDNUT VARIETIES BY THE FARMERS OF
FARIDPUR DISTRICT**

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**ADOPTION OF BARI GROUNDNUT VARIETIES BY THE FARMERS OF
FARIDPUR DISTRICT**

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CERTIFICATE

This is to certify that the thesis entitled “**ADOPTION OF BARI GROUNDNUT VARIETIES BY THE FARMERS OF FARIDPUR DISTRICT**” submitted to the Faculty of Agriculture, Sher-e-Bangla Agricultural University, Dhaka, in partial fulfillment of the requirements for the degree of **MASTERS OF SCIENCE IN AGRICULTURAL EXTENSION**, embodies the result of a piece of bona fide research work carried out by Subarna Biswas, Reg. No.15-06919 under my supervision and guidance. No part of the thesis has been submitted for any other degree or diploma.

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 by him.

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DEDICATED
TO
MY BELOVED
PARENTS

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LIST OF CONTENTS

CHAPTER	TITLE	PAGE
	ACKNOWLEDGEMENT	i
	LIST OF CONTENTS	ii-iv
	LIST OF TABLES	v
	LIST OF FIGURES	v
	LIST OF APPENDICES	v
	ABBREVIATION & GLOSSARY	vi
	ABSTRACT	vii
CHAPTER 1: INTRODUCTION		1-6
1.1	Background of the study	1
1.2	Statement of the problem	2
1.3	Specific objectives	3
1.4	Justification of the study	4
1.5	Assumptions of the study	5
1.6	Scope of the study	5
1.7	Limitations of the study	5
1.8	Definition of the Terms	6
CHAPTER 2: REVIEW OF LITERATURE		7-15
2.1	Concept of Adoption of Innovation	7
2.2	Review of literature on general context of adoption	9
2.3	Review of past studies on the relationship between selected characteristics of the farmers with their adoption of innovation	11
2.3.1	Age and adoption	11
2.3.2	Education and adoption	12
2.3.3	Annual family income and adoption	12
2.3.4	Farm size and adoption	13
2.3.5	Farming experience and adoption	13
2.3.6	Agricultural Training and adoption	13
2.3.7	Extension contact and adoption	14
2.3.8	Knowledge and adoption	14
2.4	The conceptual framework of the study	14
CHAPTER 3: METHODOLOGY		16-26
3.1	Locale of the study	16
3.2	Design of the study	16
3.3	Population and sampling design	19
3.4	Instruments for Data Collection	19
3.5	Collection of Data	19
3.6	Data Processing and Analysis	20
3.7	Selection of the Variables of the Study	20
3.8	Measurement of Variables	20

CHAPTER	TITLE	PAGE
3.9	Measurement of Problems Faced by the Farmers	24
3.10	Statement of Hypothesis	25
3.10.1	Research hypothesis	25
3.10.2	Null hypothesis	25
3.11	Statistical Treatment	25
CHAPTER 4: RESULTS AND DISCUSSION		27-45
4.1	Selected characteristics of the respondents	27
4.1.1	Age	28
4.1.2	Education	29
4.1.3	Annual family income	30
4.1.4	Farm size	30
4.1.5	Area under groundnut cultivation	31
4.1.6	Groundnut cultivation experience	32
4.1.7	Agricultural Training Exposure	33
4.1.8	Extension media contact	33
4.1.9	Knowledge about groundnut cultivation	34
4.2	Adoption of BARI groundnut varieties	35
4.3	Relationship of adoption of BARI groundnut varieties with selected characteristics of the groundnut farmers	36
4.3.1	Relationship between age of the farmers and their adoption of BARI groundnut varieties	37
4.3.2	Relationship between adoption of BARI groundnut varieties and their education	37
4.3.3	Relationship between adoption of BARI groundnut varieties and their annual family income	38
4.3.4	Relationship between adoption of BARI groundnut varieties and their farm size	39
4.3.5	Relationship between adoption of BARI groundnut varieties and their area under groundnut cultivation	39
4.3.6	Relationship between adoption of BARI groundnut varieties and their experience under groundnut cultivation	40
4.3.7	Relationship between adoption of BARI groundnut varieties and their agricultural training exposure	41
4.3.8	Relationship between adoption of BARI groundnut variety and their extension media contact	41
4.3.9	Relationships between adoption of BARI groundnut variety and their knowledge about groundnut cultivation	42
4.4	Problems Faced by the Farmers in Adopting of BARI groundnut varieties	43
CHAPTER 5: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS		46-52
5.1.1	Major findings	46
5.1.2	Adoption of BARI groundnut varieties	47

CHAPTER	TITLE	PAGE
5.1.3	Relationship between the selected characteristics of the farmers with their adoption of BARI groundnut varieties	47
5.1.4	Problem faced by the farmers adopting wheat production technologies	48
5.2	Conclusions	48
5.3	Recommendations	50
5.3.1	Recommendations for policy implications	50
5.3.2	Recommendations for further study	51
CHAPTER 6:	BIBLIOGRAPHY	53-57

LIST OF TABLES

TABLE	TITLE	PAGE
	Nutritional value of groundnut per 100 g	1
Table 4.1	Farmers' Personal Characteristics Profile	27
Table 4.2	Distribution of the Farmers According to their Age	28
Table 4.3	Distribution of the Farmers According to their Education	29
Table 4.4	Distribution of the farmers according to their annual family income	30
Table 4.5	Distribution of the farmers according to their farm size	31
Table 4.6	Distribution of the farmers according to their area under groundnut cultivation	31
Table 4.7	Distribution of the farmers according to their groundnut cultivation experience	32
Table 4.8	Distribution of the farmers according to their agricultural training exposure	33
Table 4.9	Distribution of the farmers according to their extension media contact	34
Table 4.10	Distribution of the farmers according to their knowledge about groundnut cultivation	35
Table 4.11	Distribution of the farmers according to their adoption of groundnut cultivation	35
Table 4.12	Relationships between the dependent and independent variables	36
Table 4.13	Distribution of the farmers according to their PFI	43
Table 4.14	Problem Confrontation Index (PCI) with Rank Order	44

LIST OF FIGURES

FIGURE	TITLE	PAGE
2.1	The conceptual model of the study	15
3.1	A map of Faridpur district	17
3.2	A map of Faridpur Sadar Upazila	18

LIST OF APENDIX

APENDIX	TITLE	PAGE
APENDIX-A	An English version of interview schedule	58-65
APENDIX-B	Bangla version of interview schedule	66-72
APENDIX-C	Correlation matrix showing interrelations among all of the variables(N=88)	73

ABBREVIATIONS AND GLOSSARY

GDP	Gross Domestic Product
MOA	Ministry of Agriculture
%	Percent
KG	Kilogram
MT	Metric Ton
Kcal	Kilocalories
g	Gram
ha	Hectare
r	Pearson's Product Moment Correlation Co-efficient
<i>et al</i>	And others (at elli)
BBS	Bangladesh Bureau of Statistics
RDA	Recommended Dietary Allowance
BARI	Bangladesh Agricultural Research Institute
BRRI	Bangladesh Rice Research Institute
GOs	Government Organization
NGOs	Non-Government Organization
PFI	Problem Face Index

ADOPTION OF BARI GROUNDNUT VARIETIES BY THE FARMERS OF FARIDPUR DISTRICT

ABSTRACT

The Purpose of this study was to determine the extent of adoption of BARI groundnut varieties by the farmers, to explore the relationship of the selected characteristics of the groundnut farmers with their adoption of BARI groundnut varieties and to determine the problems faced by the farmers in groundnut cultivation. The selected characteristics were age, education, annual family income, farm size, area under groundnut cultivation, groundnut cultivation experience, agricultural training exposure, extension media contact and knowledge on groundnut cultivation. Data were gathered from 88 groundnut growers of two unions of Faridpur Sadar Upazila under Faridpur District by using personal interview schedule during the period from 15th January to 28th February, 2017. Yamens Formula was used to develop the sample size and proportionate random technique was used to select the sample from each of the unions. Pearson's Product Moment Co-efficient of Correlation was used to examine the relationship of the selected characteristics of the groundnut growers with their adoption of BARI groundnut varieties. The Findings revealed that 42 percent of the respondents had medium adoption, while 33 percent had high adoption and the rest 25 percent had low adoption of BARI groundnut varieties. The Findings again reveal that most (75 percent) of the farmers had medium to high adoption of BARI groundnut varieties. Correlation indicated that among the nine selected experimental variables, farm size, area under groundnut cultivation, groundnut cultivation experience, extension media contact and knowledge in groundnut cultivation had significant and positive relationship with their adoption of BARI groundnut varieties. The rest of the variables namely age, education, annual family income, and agricultural training exposure did not show any significant relationship with their adoption of BARI groundnut varieties. Farmers faced higher problems in "non-availability of credit" followed by "non-availability of hybrid seed".

CHAPTER 1

INTRODUCTION

1.1 General Background:

Bangladesh is an agricultural country. Most of her inhabitants are directly or indirectly involved in agricultural activities for their livelihood. Agriculture has a great contribution (14.75%) to the Gross Domestic Product (GDP) of the country (MOA, 2017). Still, agriculture plays a vital role and is known as the most important sector of the country's economy. Bangladesh by birth possesses very fertile land in which diversified crops like cereals, pulses, oilseeds, vegetables and fruits are grown very easily.

Groundnut (*Arachishypogaea L.*) is an annual leguminous oil seed crop. It is one of the principal economic crops of the world, holding 13th position among the food crops (Reddy and Kaul, 1986). Groundnut is the third major oil crops in Bangladesh covering an area of 78464 acres, yield per acre 723kg and producing 56713 MT of groundnut (Rabi &Kharif) (BBS 2015). Presently, the requirement of country's edible oil is about 1.4 million metric tons is being supplied from the external oilseeds production. This huge shortage is met through importing, which amount to about 76,729 million taka (Bakr,2009). In the other hand, our country imports 10400 kg groundnut oil which costs 436800 taka (BBS 2015). Increase in the production of groundnut can help to minimize the shortage of edible oil in our country. It is the richest plant source of thiamin (B1). Groundnut contains at least 13 different types of vitamins and also rich in 26 essential minerals.

Table 1.1: Nutritional value of groundnut per 100 g

Principle	Nutrient Value	Percentage of RDA
Energy	567 Kcal	29%
Carbohydrate	16.13 g	12%
Protein	25.80 g	46%
Total Fat	49.24 g	165%
Dietary Fiber	8.5 g	22%
Vitamins		
Niacin	12.066 mg	75%
Pantothenic acid	1.767 mg	35%

Pyridoxine	0.348 mg	27%
Riboflavin	0.135 mg	10%
Thiamin	0.640 mg	53%
Vitamin E	8.33 mg	55.5%
Minerals		
Calcium	92 mg	9%
Copper	1.144 mg	127%
Iron	4.58 mg	57%
Magnesium	168 mg	42%
Manganese	1.934 mg	84%
Phosphorus	76 mg	54%
Zinc	3.27 mg	30%

Source: United States Department of Agriculture, May, 2016.

Considering the ever-increasing demand of edible oils of the country, it is extremely needed to increase the total production of oil crops by replacing the low yielding varieties by HYVs, improving management practices. To minimize the yield gap between the farmers field and research station trails, it is essential to undertake intensive research, extension and development activities (Wahhabet. *al.* 2002). A number of indigenous low yielding oilseeds traditionally cultivated in different parts of the country are highly susceptible to disease and insect pests.

1.2 Statement of the Problem:

The success of any technology depends on its dissemination among the potential users, which ultimately is measured by the level of adoption of that technology. When an innovation is introduced to the farmer, it may be readily accepted, partly accepted, fully accepted and it may also happen that the adoption of innovation is discontinued or totally stopped.

Groundnut is the most important oilseed crops in Bangladesh. The importance of the cultivation of this crop is increasingly recognized by the implement as of agricultural extension programs as well as policy makers. As oilseed crop, groundnut has much potentiality for widespread and stability for cultivation by the respondents. But before undertaking any massive programs for its increased production in Bangladesh, it is first necessary to know the existing situation of the extent of adoption of groundnut varieties in the most potential areas of Bangladesh.

FaridpurSadarUpazila of Faridpur district is an important place of groundnut cultivation in this country. To expand the cultivation of this crop in other parts of the country, the knowledge on the present situation of adoption of BARI groundnut varieties in this region would be significantly contributory to design appropriate programs for its widespread cultivation.

These happenings are certainly due to a number of factors. Adoptions of BARI groundnut varieties are influenced by the farmer's demographic and socio-economic position. An understanding about the same will be useful to the researchers, planners and extension workers in doing research, planning and execution of extension programs for enhancing adoption of rice cultivation.

In these respects, the answers to the following questions would be very much pertinent.

1. To what extent of BARI groundnut varieties have been adopted by the groundnut farmers.
2. What were the important characteristics of the groundnut farmers influencing their adoptions of BARI groundnut varieties?
3. What are the problems of adoption of BARI groundnut varieties?

1.3 Specific Objectives:

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

- 1) To determine the extent of adoption of groundnut cultivation technologies by the farmers
- 2) To assess the following selected characteristics of the groundnut farmers:
 - (i) Age
 - (ii) Education
 - (iii) Annual Family Income
 - (iv) Farm Size
 - (v) Area Under Groundnut Cultivation
 - (vi) Groundnut Cultivation Experience

- (vii) Agricultural Training Exposure
 - (viii) Extension Media Contact
 - (ix) Knowledge on Groundnut Cultivation.
- 3) To explore the relationship between each of the selected characteristics of the groundnut farmers on their adoption of groundnut cultivation technologies
 - 4) To determine the problems faced by the farmers in groundnut cultivation

1.4 Justification of the study:

Productivity of groundnut can be raised manifold if both improved varieties and management practices are attained (Reddy and Kaul, 1986). It is to be disseminated about the concept and benefits of the groundnut varieties to the farmers in a convincing and attractive manner, so that farmer's respond quickly to adopt groundnut varieties. Surely, it is an educative process and is possible through Extension Education System, which is concerned mainly with increasing agricultural production and improving living standards of the farmers. A substantial portion of that, groundnut cultivation play a great role for decreasing edible oil crisis where the requirement is 1400000 MT in our country but producing only 56713 MT (BBS, 2015). Now considerable effort is being made through research and extension delivery system to increase groundnut production through adoption of improved technologies in our country. Considering these factors, Bangladesh Agricultural Research Institute (BARI) have already released 9 high yielding groundnut varieties individually, along with recommended production packages. Considering its economic importance to achieve the sustainable groundnut production in Bangladesh, the researcher of this study felt necessity to conduct the research on "Adoption of BARI Groundnut varieties by the Farmers of Faridpur District". Nevertheless, the scope of extending total acreage is becoming more apparent with the ever increasing charlands/shoals over the past few decades for the continued shortfall of annual precipitation and water tables. In shoals, no important economic crops can be grown other than water melons and mask melons. That's why the researcher deemed it a timely necessity to undertake the present study entitled "Adoption of BARI groundnut varieties by the farmers".

1.5 Assumptions of the Study:

During the study the following assumptions were taken into consideration:

1. The randomly selected respondents were competent enough to provide proper responses to the questions concerned with adoption.
2. The views and opinions furnished by the respondents were the representative views and opinions of all the farmers of that area.
3. The researcher was well adjusted to the environment of the study area. So, the collection of data from the respondents was free from bias.
4. The responses furnished by the respondents were reliable.

1.6 Scope of the Study:

The main focus of the study was to determine adoption of BARI groundnut varieties. The findings of the study will be specifically applicable to Faridpur district. However, the findings will also have implications for other areas of the country having relevance to the socio-cultural context of the study area. The investigator believes that the findings of the study will reveal the phenomenon related to diffusion of innovation. These will be of special interest to the policy makers and planners in formulating and redesigning the extension programmers especially for groundnut cultivation. The findings are expected to be helpful to the field workers of different nation building departments and organizations to develop appropriate extension strategies for effective working with the rural people.

1.7 Limitations of the Study:

Considering the time, money and other necessary resources available to make the study manageable and meaningful, it was necessary to consider the following limitations:

1. The study was confined mainly to farmers' adoption of groundnut production technologies.
2. The study was confined in North Channel union in FaridpurSadarUpazila under Faridpur District.
3. The characteristics of groundnut growers were many and varied but only nine characteristics were selected for investigation in this study.
4. Population of the study includes only the heads of the farm families.

5. Facts and figures were collected by the investigator applied to the present situation in the selected area.
6. For information about the study, the researcher was dependent on the data furnished by the selected respondent during data collection.

1.8 Definition of the Terms:

Certain key terms used throughout the study are defined in this section for clarity of understanding.

Age: It is defined as the period of time from the birth of the groundnut growers to the time of interview. It was measured in terms of year.

Education: Education is defined as the ability if an individual to read and write or, formal education was measured in terms of actual year of successful schooling.

Annual income: The term annual income refers to the total earnings of the respondent himself from agricultural and non agricultural sources (services business etc) during a year. It was expressed in Taka.

Farm size: Farm size refers to the cultivated area either owned by a farmer or obtained from others on 'Borga' (sharecropping) system the area being estimated in terms of full benefit and benefit to the farmer respectively. The self-cultivated land as well as mortgaged land from others was full benefit.

Area under groundnut cultivation: It referred to the total area in hectare of groundnut cultivation by the farmers in particular seasons (two preceding seasons of data collection).

Groundnut cultivation experience: It refers to the total number of years that a groundnut farmer cultivate groundnut.

Agricultural training exposure: It refers to the total number of days attended by the farmers in his life to the training on various agriculture related subject matter.

Extension media contact: Extension media contact refers to an individual exposure to or contact with different information sources and personalities being contacted for technology dissemination among the farmers.

Knowledge in groundnut cultivation: It is the extent of basic knowledge of a groundnut grower in different aspects of agricultural subject matters. It includes the basic understanding of nut.

CHAPTER 2

REVIEW OF LITERATURE

The purpose of this Chapter is to review the literatures having relevance to the present study. The researcher made an elaborate search of available literature for the above purpose. But, there is hardly any study dealing with the relationship of the characteristics of farmers and their adoption of selected groundnut varieties. The researcher attempted to search the literatures on a number of studies have been conducted on the adoption of innovations by the farmers. Therefore, the findings of such studies related to the extent of adoption of selected groundnut varieties by the farmers and other partial studies have been reviewed in this Chapter. This chapter comprises of four sections. The first section deals with concept of adoption of innovation. The second section reviewed the literature of findings researches on adoption. Third section deals with relationship between selected characteristics of the farmers with their adoption of innovation and the final section dealt with the conceptual framework of the study.

2.1 Concept of Adoption of Innovation

Adoption is a decision to make full use of 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. Diffusion is the process by which an innovation is communicated through certain channels overtime among the members of social system (Ray, 1991). Rogers and Shoemaker (1971) stated the adoption process as the traditional view of the innovation-decision process, called “adoption process” which was postulated by a committee of rural sociologists in 1955 as consisting of five stages:

1. **Awareness stage:** The individual learns of the existence of the new idea but lacks detailed information about it.

2. **Interest stage:** The individual develops interest in the innovation and seeks additional information about it.

3. **Evaluation stage:** The individual makes mental application of the new idea to his present and anticipated future situation and decides whether or not to try it.

4. **Trial stage:** The individual actually applies the new idea on a small scale in order to determine its utility in its own situation.

5. **Adoption stage:** The individual uses the new idea continuously on a full scale. The innovation-decision process is the process through which an individual (or other decision-making unit) passes from first knowledge of an innovation, to forming an attitude towards the innovation, to a decision to adopt or reject, implementation of new idea and to confirmation of this decision. This process consists of series of actions and choices over time through which an individual or organization evaluates a new idea into ongoing practices. The behavior consists essentially of dealing with the uncertainty that is inherently involved in deciding about a new alternative to those previously in existence. It is the perceived newness of the innovation and the uncertainty associated with this newness that is a distinctive aspect of innovation-decision making. An individual decision about an innovation is not an instantaneous act. Rather, it is a process that occurs overtime and consists of a serious of actions (Rogers, 1995). The innovation-decision process consists of five stages:

1. **Knowledge:** It occurs when an individual is exposed to the innovation's existence and gains some understanding of how it functions.

2. **Persuasion:** It occurs when an individual (or other decision-making unit) forms a favorable or unfavorable attitude towards the innovation.

3. **Decision:** It occurs when an individual (or other decision making unit) engages in activities that leads to choice either adoption or rejection of the innovation.

4. **Implementation:** It occurs when an individual (or other decision-making unit) puts an innovation into use.

5. **Confirmation:** It occurs when an individual (or other decision-making unit) seeks reinforcement of an innovation decision already made but he or she may reverse his or her previous decision if exposed to conflicting messages about the innovation.

2.2 Review of literature on general context of adoption

Hasan (2015) carried out a study on the adoption of modern practices in rice cultivation by the farmers of Madhukhaliupazila under Faridpur district. He found that 56.1 percent had medium adoption where 15.9 percent had low adoption and only 24.3 percent had high adoption of selected modern practices for rice cultivation.

Kabir (2015) carried out a study on the adoption of integrated pest management (IPM) practices in rice cultivation by the farmers of Shahjadpurupazila under Sirajganj district. He found that near about half of the respondents (44.4%) had medium adoption where 24.1 percent had low adoption and 31.5 percent had high adoption of IPM practices in rice cultivation.

Mou(2015) carried out a study on the adoption of improved vegetable cultivation practices by the farmers in selected areas of Shajahanpurupazila under Bogra district. She found that the low adoption experience constitutes the highest proportion (50.00 %) followed by medium adoption (40.20 %) and high adoption (9.80 %). Results revealed that the maximum percentage of respondents was in the category of low to medium adoption (90.20 %).

Islam (2014) carried out a study on the stagewise use of cosmopolite interpersonal communication channels in adoption of BRRI dhan 29. She found that at knowledge stage use of CIP channels as medium use and high use almost found equal 36.96% and 34.78% respectively. More than one fifth of the respondents belonged to low use category, at persuasion stage more than one half of the respondents (51.09) had high use of CIP channels, almost all the respondents (97.82%) were low user to medium user of CIP channels at decision stage, about two thirds of the respondents had low use of CIP channels at implementation stage and more than three fifths of the respondents were low user of CIP channels at confirmation stage. The remaining two-fifths respondents were medium to high user.

Ruma (2014) carried out a study on the use of mass media by the farmers in adoption of rice production technologies in Beraupazila of Pabna district. She found that 83% respondents belonged to very low user to low user category of use mass media in adoption of rice production technologies. Adoption depends on the use of mass media.

Hossain (2003) found that majority (67 percent) of the Boro rice farmers had medium adoption, 17 percent had low adoption and 16 percent high adoption of modern Boro rice cultivation practices.

Podder and Kashem (2000) studied on, Use of Extension Contact Media by the farmers in the Adoption of Meheragar banana. They concluded that about half (47%) of the growers had medium adoption compare to 14 percent low adoption and 39 percent high adoption of Meheragar banana.

Haidaret *al.* (2001) studied the adoption level of improved package for T- Aman rice cultivation in Gouripurupzila of Mymensingh district. He found that the 5 percent farmers were non-adopters, 62 percent had low adoption, 24.5 percent were medium adopter and 8.5 percent high adopter. A Vast majority (95 percent) of the farmer's adopted MV programmer of T. Aman rice.

Rahman (2003) revealed that about half (47 percent) of the growers had medium adoption, 44 percent had low and 1 percent had high adoption of year round homestead fruit cultivation practices.

Haque (2003) found that the majority (47 percent) of the growers had medium adoption of modern maize cultivation technologies while 28 percent had high adoption and 25 percent low adoption.

Rahman (2003) found that ninety seven percent of the pineapple growers adopted 2-4 interc
Salam (2003) found that an overwhelming majority (94 percent) of the respondents were found having high constraints in adopting environmentally friendly farming practices while 6 percent had medium constraints. No farmer was found having low constraint. *ropsviz*, Zinger, turmeric, sweet ground and aroid in pineapple cultivation.

Ekram (2014))carried out a study on the adoption of commonly used integrated pest management (IPM) practices by the boro rice growers. He found that more than half (57.69 %) of the respondents had medium adoption and 42.31 percent had low adoption of commonly used IPM practices in boro rice cultivation.

Akter (2014) carried out a study on the stagewise mass media in adoption of BRR1 dhan 28 by the farmers of Gazariaupazila under Munshiganj district. She found that a large proportion of the farmers (61.1%) belonged to medium mass media use category. Thus it is observed from the data that an overwhelming majority (83.3%) of the farmers used mass media at knowledge stage ranged from medium to high, a large proportion of the farmers (62.2%) belonged to medium mass media use category. Thus, it is observed that majority (about 66.6%) of the farmers used mass media at persuasion stage ranged from medium to high category, almost all the respondents (95.5%) were low user to medium user of mass media channels at decision stage, a large proportion of the farmers (62.2%) belonged to medium mass media use category. Thus it is observed from the data that an overwhelming majority (86.6%) of the farmers used mass media at implementation stage ranged from low to medium category and revealed that more than three fifths of the respondents were low user of mass media channels at confirmation stage. The remaining two-fifths respondents were medium to high user.

2.3 Review of past studies on the relationship between selected characteristics of the farmers with their adoption of innovation

2.3.1 Age and adoption

Ahmed (2006) found that the age of the farmers had no significant negative relationship with their adoption of selected wheat varieties.

Mahmud (2006) found that the knowledge on wheat cultivation of the farmers had significant positive correlation with their adoption of modern wheat cultivation technologies.

Sardar (2002) found that the age of the farmers had positive significant negative correlation with their adoption of IPM practices.

Aurangozeb (2002) observed that there was significant negative relationship between age and adoption of integrated homestead farming technologies.

Hasan (2015)) found that the age of the farmers had non significant positive relationship with their adoption of selected groundnut varieties.

Afroz (2013) found that the age of the farmers had non significant positive relationship with their adoption of selected groundnut varieties.

2.3.2 Education and adoption

Ahmed (2006) found that the education of the farmers had no significant positive relationship with their adoption of selected wheat varieties.

Mahmud (2006) found that the education of the farmers had significant positive correlation with their adoption of modern wheat cultivation technologies.

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

Sardar (2002) found that the education of the farmers had significant positive relationship with their adoption of IPM practices.

Aurangozeb (2002) studied on the extent of adoption of integrated homestead farming technologies by the rural women in RDRS. He observed that there was positive relationship between education and adoption of integrated homestead farming technologies.

Afroz (2013) found that the age of the farmers had significant positive relationship at 0.05 level of probability with their adoption of selected wheat cultivation.

2.3.3 Annual family income and adoption

Ahmed (2006) found that the annual family income of the farmers had no significant positive relationship with their adoption of selected wheat varieties.

Mahmud (2006) found that the annual income of the farmers had no significant negative correlation with their adoption of modern wheat cultivation technologies.

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

Hossain (2007) revealed that family income of the farmers had a significant and positive relationship at 0.05 level of probability with their adoption of modern high yielding varieties (HYV) of wheat by the farmers.

Ruma (2014) revealed that family income of the farmers had a significant and positive relationship at 0.01 level of probability with their adoption of rice production technologies.

2.3.4 Farm size and adoption

Islam (2002) conducted a study on adoption of modern agricultural technologies by the farmers of Sandwip. He observed that farm size of the farmers had a positive significant relationship with their adoption of modern agricultural technologies by the farmers under PETRRA project of RDRS. He found that farm size of the farmers had a positive significant 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 had no relationship between homestead area and their adoption of integrated homestead farming technologies.

Ruma (2014) revealed that farm size of the farmers had a significant and positive relationship at 0.01 level of probability with their adoption of rice production technologies.

Hossain (2007) revealed that farm size of the farmers had a significant and positive relationship at 0.05 level of probability with their adoption of modern high yielding varieties (HYV) of wheat.

Sadekuzzaman (2007) revealed that farm size of the farmers had a significant and positive relationship at 0.01 level of probability with their adoption of intercropping in sugarcane by the farmers.

2.3.5 Farming experience and adoption

Islam (2007) revealed that farming experience of the farmers had a non significant and positive relationship at 0.05 level of probability with their adoption of recommended potato cultivation practices.

2.3.6 Agricultural Training and adoption

Islam (2007) revealed that extension contact of the farmers had a non significant and positive relationship at 0.05 level of probability with their adoption of mixed cropping in rabi season by the farmers of MadaripurSadarUpazila.

Hossain (2007) revealed that agricultural training of the farmers had a significant and positive relationship at 0.01 level of probability with their adoption of modern high yielding varieties (HYV) of wheat.

Sadekuzzaman (2007) revealed that agricultural training of the farmers had a significant and positive relationship at 0.01 level of probability with their adoption of intercropping in sugarcane by the farmers.

2.3.7 Extension contact and adoption

Islam (2007) revealed that extension contact of the farmers had a non significant and positive relationship at 0.05 level of probability with their adoption of mixed cropping in rabi season by the farmers of MadaripurSadarUpazila.

Sadekuzzaman (2007) revealed that Extension contact of the farmers had a significant and positive relationship at 0.05 level of probability with their adoption of intercropping in sugarcane by the farmers.

Ekram (2014) revealed that contact with pesticide dealer of the farmers had a significant and positive relationship at 0.01 level of probability with their adoption of commonly used integrated pest management (IPM) practices by the boro rice growers.

2.3.8 Knowledge and adoption

Ruma (2014) revealed that agricultural knowledge of the farmers had a significant and positive relationship at 0.01 level of probability with their adoption of rice production technologies.

Sadekuzzaman (2007) revealed that agricultural knowledge of the farmers had a significant and positive relationship at 0.01 level of probability with their adoption of intercropping in sugarcane by the farmers.

Ekram (2014) revealed that agricultural knowledge of the farmers had a non significant and positive relationship at 0.05 level of probability with their adoption of commonly used integrated pest management (IPM) practices by the boro rice growers.

2.4 The conceptual framework of the study

It is evident from the past studies that every occurrence or phenomenon is the outcome of a number of variables, which may, or may not be interdependent or interrelated with each other. In

other words, no single variable can contribute wholly to a phenomenon. Variables together are the cause and the phenomenon is effect and thus, there is cause effect relationship everywhere in the universe. The conceptual framework was kept in mind framing the structural arrangement for the variables. This study was concerned with the farmer’s adoption of BARI groundnut varieties as predicted variable and the selected characteristics of the farmers as experimental variables. Constraints of an individual may be affected through interacting forces of many characteristics in his surroundings. It is impossible to deal with all characteristics in a single study. It was therefore, necessary to limit the characteristics, which include age, education, annual family income, farm size, area under groundnut cultivation, groundnut cultivation experience, agricultural training exposure, extension media contact and knowledge in groundnut cultivation. The conceptual model of the study has been presented below:

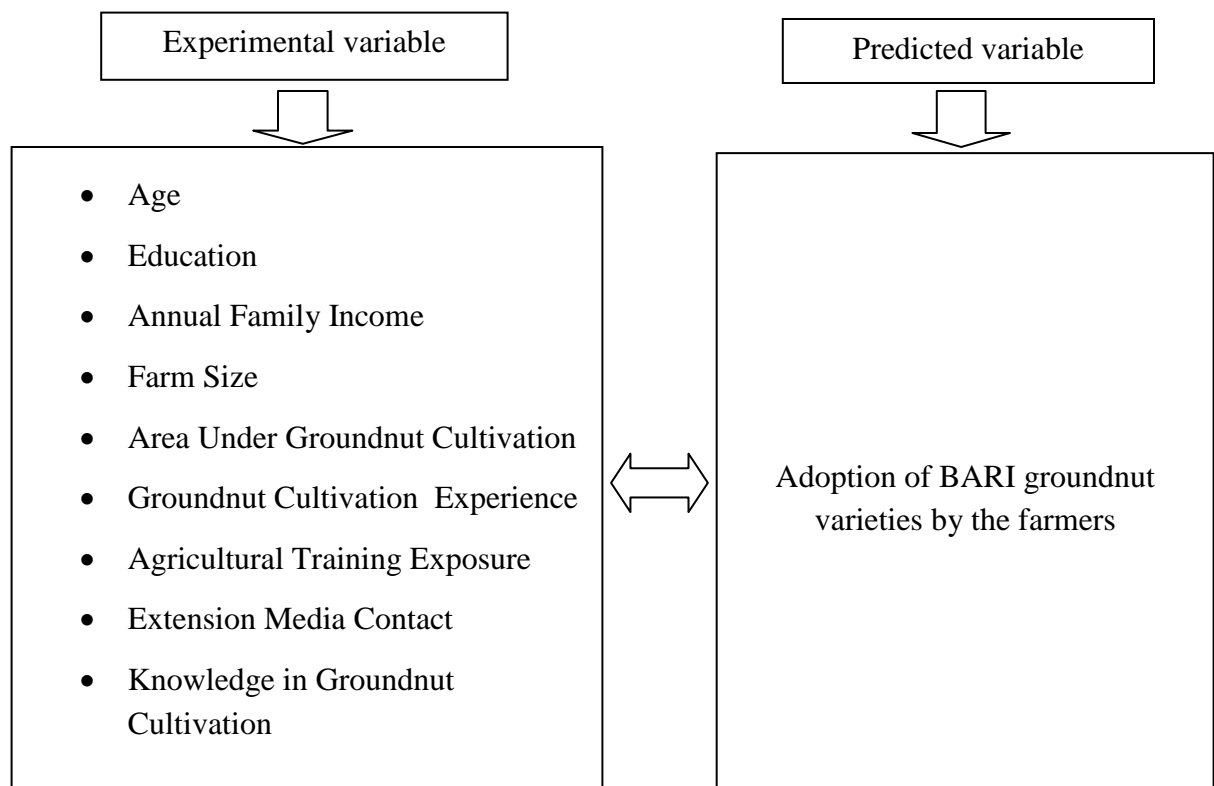


Figure 2.1: The conceptual framework of the study.

CHAPTER 3

METHEDODOLOGY

In any scientific research methodology plays an important role. Methodology should be such that enables the researcher to collect valid information and to analyze the same properly to arrive at correct decisions. The purpose of this chapter is to describe the methods and procedures followed in conducting the present study.

3.1 Locale of the Study

The study was conducted in FaridpurSadarUpazila under Faridpur district. Area of this upazila is 407.02 sq km and located in between 23°29' and 23°34' north latitudes and in between 89°43' and 89°56' east longitudes. The upazila was selected purposively as the study area. There are 11 unions from where farmers of 2 unions were regular in groundnut cultivation. These 2 unions namely North Channel and Aliabad were selected respectively for locale of this study as groundnut was cultivated more in these unions. A map of FaridpurDistrict and a map of FaridpurSadarUpazila showing the study areas have been presented in Figures 3.1 and 3.2 respectively.

3.2 Design of the Study

The design of the study was a descriptive survey research. It was designed to describe the relationship between selected characteristics of the farmers and their extent of adoption of BARI groundnut varieties. Efforts were also made to assess the problems of the farmers in adopting the groundnut cultivation.

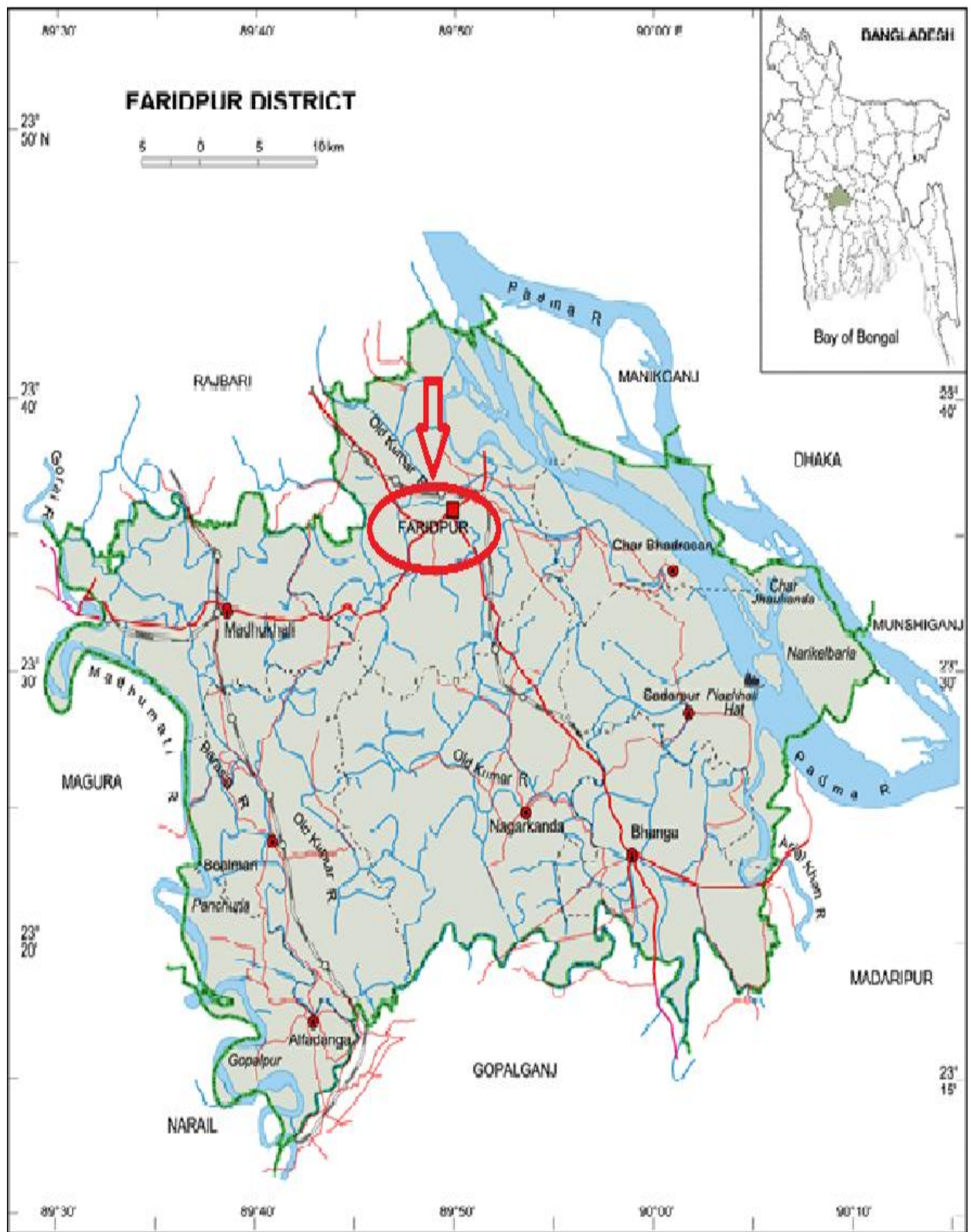


Figure 3.1 A map of Faridpur district

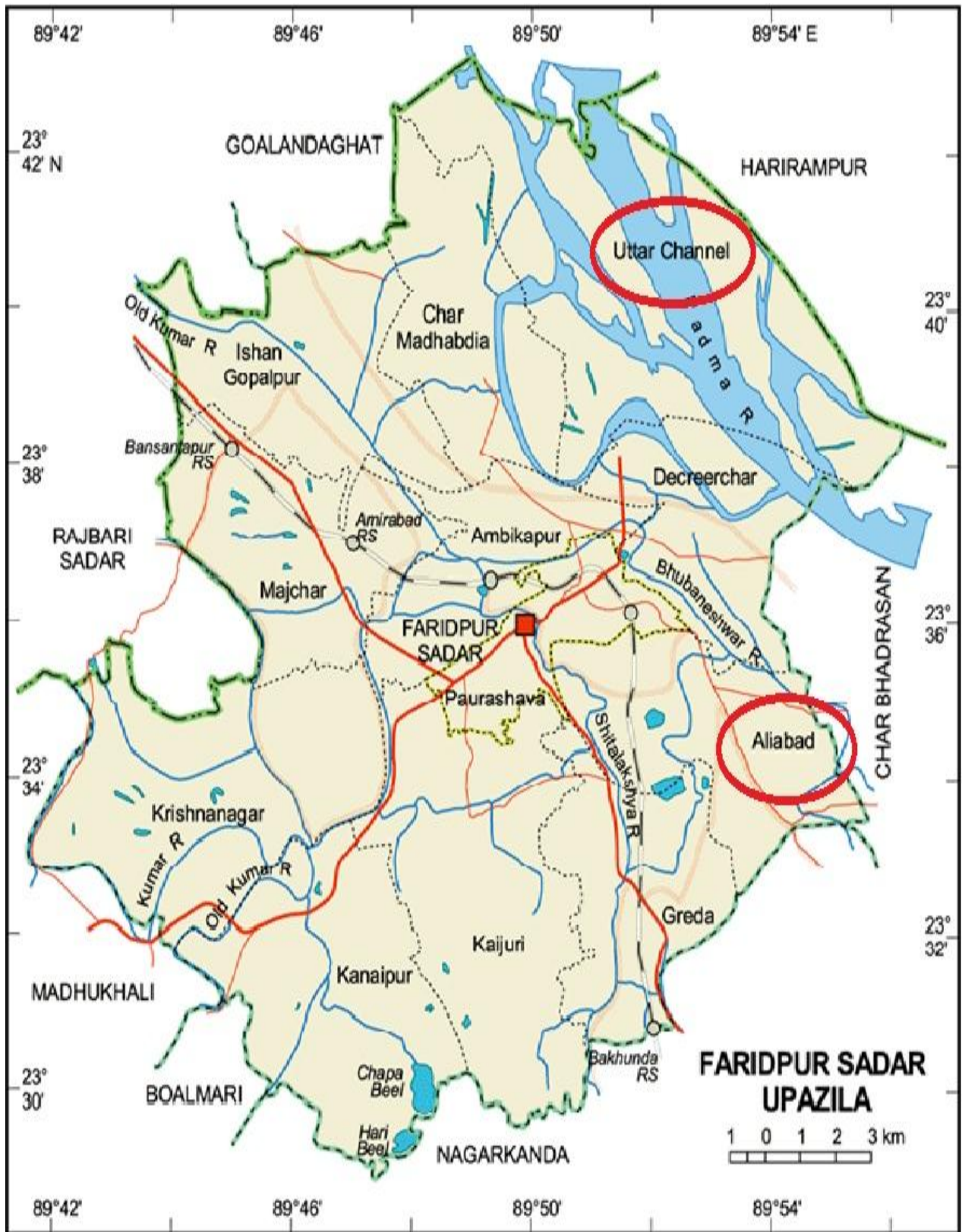


Figure 3.2 A map of Faridpur Sadar Upazila showing North channel and Aliabad Union

3.3 Population and Sampling Design

Proportionate random technique was used to select the sample. Two lists of farmers of these two unions were made by the help of the Sub-Assistant Agriculture Officer of that area. The number of groundnut grower families of the selected two unions were 735 which constituted the population of the study. Only heads of these 735 families constituted the population. Yamen's formula was used to develop the sample size. Thus, the sample was 88.

$$\text{Yamen's formula: } n = \frac{N}{1+N(e)^2} = \frac{735}{1+735(.1)^2} = \frac{735}{1+7.35} = \frac{735}{8.35} = 88$$

3.4 Instruments for Data Collection

In order to collect relevant data from the respondents an interview schedule was prepared keeping the objectives of the study in mind. Both open and closed form questions were used in collecting data. Simple and direct questions were included in the schedule to ascertain dependent and independent variables. The interview schedule was pre-tested with 10 farmers of the study area. On the test experiences, necessary additions and modifications of the schedule were done.

Appropriate scales were developed to operationalize some characteristics of the farmers. The interview schedule was prepared both in English & Bangla . A copy of the interview schedule in English & Bangla version is presented in the Appendix-I & 2.

3.5 Collection of Data

Data were collected personally by the researcher himself through face to face interview from the selected respondents. But, to familiarize researcher with the study area and for getting local support and establishing rapport during conducting the interview with the farmers. Interviews were usually conducted with the respondents in their houses. While starting interview with any respondent the researcher took all possible care to establish rapport with him so that he did not hesitate to furnish proper responses to the questions and statements in the schedule. However, if any respondent failed to understand any question the researcher took care to explain the issue. He received excellent co-operation from the respondents and others concerned during the time of interview. The entire process of collecting data took place during 15 January to 28 February 2017.

3.6 Data Processing and Analysis

After completion of field survey, all the data were processed according to the objectives of the study. Local units were converted into standard unit. All the individual responses to questions of the interview schedule were transferred to master sheet to facilitate tabulation, categorization and organization. In case of qualitative data, appropriate scoring technique was followed to convert the data into quantitative form. Data was transferred to coding sheet with numerical scores given to each question. Simple statistics like frequency, percentage, range, mean, standard deviation and rank order were used to perform the data analysis. Correlation coefficients were to determine the relationships between selected characteristics of the farmers and adoption of BARI groundnut varieties.

3.7 Selection of the Variables of the Study

Selection of inappropriate and inconsistent type of variables may lead to the misleading and unfruitful results. The researcher keeping all these in mind took adequate measurement in selecting the variables of the study. Before setting the variable of the study, the researcher herself visited the study area and talked to the farmers and she was able to observe the selected characteristics of the farmers (in the study area) which might have influence on the adoption of BARI groundnut varieties. Based on this experience, review of literature, discussion with the relevant experts and academicians and also with the research Supervisor, the researcher selected the variables. Adoption of BARI groundnut varieties was the main focus of the study and selected characteristics of the farmers namely age, education, annual family income, farm size, area under groundnut cultivation, groundnut cultivation experience, agricultural training exposure, extension media contact and knowledge in groundnut cultivation might have relationship with the adoption of BARI groundnut varieties. Those characteristics of the farmers were selected as the experimental variables of the study.

3.8 Measurement of Variables

In order to conduct the study in accordance with the objectives, it was necessary to measure the selected variables. This section contains procedures for measurement of variables of the study.

3.8.1 Age

The age of individual is one of the important factors pertaining to his personality make up (Smith and Zope, 1970) which can play an important role in his adoption behavior. The age of respondent growers was measured by counting the actual years from his birth to the time of interview on the basis of his statement. It was measured in terms of actual years. No fraction of year was considered. A score of one (1) was assigned for each years of age. Age was placed in item no. 1 of the interview schedule (Appendix-I).

3.8.2 Education

Education was measured in terms of grades of formal education (school/college) completed by an individual. It was expressed in terms of years of schooling. A score of one (1) was assigned for each year of schooling completed (item no. 2, Appendix-I). For example, if the respondent passed the S.S.C. examination, his education score was given as 10, if he passes the final examination of class Seven, his education score was given as 7. If the respondent did not know how to read and write, his education score was given as 'O' (zero). A score of 0.5 (half) was given to that respondent who could sign his name only.

3.8.3 Annual family income

Annual income refers to the total earnings in taka of the respondent and all family members of a farm family from agriculture, livestock, fisheries and other sources (service, business etc.) during the previous year. The methods of ascertaining income from different sources were involved three phases. In the first phase, the yields of all the crops in the previous year were noted. Then all the yields were converted into cash income according to the prevailing market price. In the second phase, the prices of other enterprises (livestock, poultry, fisheries etc.) were also added to the price of crops. In the third phase, earning of each respondent himself or other members of his family from different sources (like service, business, and labour) were also included in calculating the income. Yearly earning from farming and other sources were added together to obtain total family annual income of a respondent. In case of business or service their monthly income was multiplied by twelve to determine annual income. Annual income of an individual was expressed in 1000 Taka. A score of one was given for each Tk. 1000 to compute the annual income scores of the respondents. Data obtained in response to item no. 3 of the interview schedule were used to determine the family income of the respondents.

3.8.4 Farm size

Farm size of the respondent was measured as the size of his farm (including groundnut and others crops) on which he continued his farm practices during the period of study. Each respondent was asked to mention the homestead area, the land under his own cultivation, land given to others on barga (share cropping) system, land taken from others on barga system, land given to others on lease system, land taken from others on lease system, own pond, own garden and miscellaneous fallow land. The area was estimated in terms of full benefit to the growers or his family. The following formula was used in measuring the farm size:

$$FS = A1 + A2 + 1/2(A3 + A4) + A5$$

Where, FS = Farm size

A1 = Homestead

A2 = Own land under own cultivation

A3 = Land taken from or/and given to others on lease

A4 = Land taken from or/and given to others on barga

A5 = Others (Pond, Fruit garden etc.).

3.8.5 Area under groundnut cultivation

Area under groundnut cultivation of a respondent was measured in terms of hectare of one's total land. Area covered by groundnut cultivation in the season of collecting data was identified at first. It was then converted as the percent of total cultivated land. This variable appears in item no. 5 in the interview schedule as presented in Appendix-A.

3.8.6 Groundnut cultivation experience

Groundnut cultivation experience of a respondent was measured in terms of the actual years from his cultivation of groundnut to the time of interview on the basis of his statement. It was measured in terms of actual years. No fraction of year was considered. A score of one (1) was assigned for each year of experience of groundnut cultivation. Groundnut cultivation experience was placed in item no. 6 of the interview schedule (Appendix-I).

3.8.7 Agricultural training exposure

Training experience of a respondent was measured by the total number of day he/she attended different training programs in his life. A score of one (1) was assigned for each day of training attended. Data obtained in response to item no. 7 of the interview schedule as presented in Appendix-A.

3.8.8 Extension media contact

It was measured on the basis of a respondent's extent of exposure to 16 selected information sources related to agricultural extension. A respondent was asked to choose one answer among four option of contact for each medium, namely: frequently, occasionally, rarely and not at all. Weight was assigned for all extension media in the following manner

<u>Extent of contact</u>	<u>Weighting system</u>
Frequently	3
Occasionally	2
Rarely	1
Not at all	0

The extension media contact score of a respondent was, therefore, determined by adding the total responses against 16 selected extension media. Thus, the extension media contact score could range from 0 to 48, where 0 indicating no extension media contact and 48 indicating highest contact.

3.8.9 Knowledge in groundnut cultivations

Groundnut cultivation knowledge of a respondent was measured by asking him 19 questions related to different aspects of groundnut cultivation e.g. pests, pesticides, fertilizer etc. It was measured assigning weightage 2 for each question. So, the total assigned scores for all the questions became 38. The score was given according to response at the time of interview. Answering a question correctly an individual could obtain full score. While for wrong answer or

no answer he obtained zero score. Partial score was assigned for partially correct answer. Thus, the agricultural knowledge score of a respondent could range from 0 to 38, where 0 indicates very poor knowledge and 38 indicates sound knowledge.

3.8.10 Adoption of BARI groundnut varieties

Adoption of BARI groundnut varieties was the main focus of this study. It was measured on the basis of the extent of adoption of BARI groundnut varieties by the farmer for a period of three (3) years such as 2013-2014, 2014-2015 and 2015-2016. Adoption of BARI groundnut varieties was measured by computing Adoption Quotient (AQ). It was calculated by asking the farmers, (i) area used for BARI groundnut varieties, (ii) potential area for the cultivation of BARI groundnut varieties, (iii) years of cultivation. It was measured by Adoption Quotient as the following formula suggested by Bhuiyan (2005).

$$AQ = \frac{C1+C2+C3}{3 \times P} \times 100$$

C1=Area used for BARI groundnut varieties for the first year

C2=Area used for BARI groundnut varieties for the second year

C3=Area used for BARI groundnut varieties for the third year

P= Potential area.

3.9 Measurement of Problems Faced by the Farmers

Farmers in the study area might have faced various types of problems in the way of adopting groundnut cultivation. But, the investigator gained an experience through personal contact regarding common problems faced by the respondents before collection of data. Besides, the researcher gained experience through consultation with experts, pre-testing experience and reviewing previous research findings. Finally, she prepared a list of ten possible problems in this regard. A scale was prepared to indicate the extent to which each of the ten problems was applicable in the case of a respondent. The responses were obtained through a 4-point scale: 'high', 'moderate', 'little' and 'not at all' and weights were assigned to these responses as, 3, 2, 1 and 0 respectively (item no 9, Appendix-I). Thus, problems in adopting groundnut cultivation

score of a respondent could range from 0-30 where 0 indicating no constraints and 30 indicated highest problems.

3.10 Statement of Hypothesis

According to Kerlinger (1973), a hypothesis is a conjectural statement of the relation between two or more variables. Hypotheses are always in declarative sentence form and they relate either generally or specifically variables to sentence form and they relate either generally or specifically variables to variables. Hypothesis may be broadly divided into two categories, namely, research hypothesis and null hypothesis.

3.10.1 Research hypothesis

The following research hypothesis was put forward to know the relationships between each of the nine selected characteristics of the farmers and their adoption of BARI groundnut varieties: Hypothesis: “Each of the nine selected characteristics of the farmers will have significant relationships with their adoption of BARI groundnut varieties.”

3.10.2 Null hypothesis

A null hypothesis states that there is no relationship between the concerned variables. The following null hypothesis was undertaken for the present study: H₀: There is no relationship between the selected characteristics of farmers and their adoption of BARI groundnut varieties. If a null hypothesis is rejected on the basis of a statistical tests, it is assumed, that there is a relationship between the concerned variables.

3.11 Statistical Treatment

Data collected were compiled, coded, tabulated and analyzed in accordance with the objectives of the study. Qualitative data were quantified by means of suitable scoring techniques. The statistical measures such as range, mean, standard deviation, percentage distribution and rank order were used to describe both the independent and dependent variables. Tables were also used in presenting data for clarity of understanding.

In order to explore the relationships of the selected characteristics of the growers with their adoption of BARI groundnut varieties, the Pearson’s Product Moment Correlation Co-efficient was computed. Correlation matrix was also figured out to determine the interrelationships among

the variables. At least five percent (0.05) level of significance was used as the basis of rejecting 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.

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. These are presented in four sections according to the objectives of the study. The **first** section deals with selected characteristics of the groundnut growers, while the **second** section deals with the adoption of BARI groundnut varieties by the farmers, in the **third** section, relationships between selected characteristics of the farmers and their adoption of BARI groundnut varieties have been discussed. The **fourth** section deals with the problem confronted by the groundnut growers during groundnut cultivation.

4.1 Selected characteristics of the respondents

A behavior of an individual is largely determined by his personal, social and economic characteristics. It was, therefore, assumed that the adoptions of BARI groundnut by the farmers were influenced by their various personal and socio-economic characteristics. Some selected characteristics of the respondents have been studied and presented in Table 4.1.

Table 4.1 Farmers' Personal Characteristics Profile

SI. No.	Characteristics	Measuring Unit	Possible range	Observed range	Mean	Standard deviation
1.	Age	Actual years	Unknown	25-75	52.8977	10.71473
2.	Education	Years of schooling	Unknown	0-9	1.3409	2.16496
3.	Annual family income	'000' Taka	Unknown	102.65-415.04	223.5929	50.22717
4.	Farm size	Hectare	Unknown	0.31-5.55	1.5543	0.72674
5.	Area under	Hectare	Unknown	0.11-2	0.5116	0.29676

	groundnut cultivation					
6.	Groundnut cultivation experience	Actual years	Unknown	2-30	9.4091	5.69460
7.	Agricultural training exposure	Score	Unknown	0-26	2.4773	3.02472
8.	Extension media contact	Score	0-48	5-34	21.1250	6.25293
9	Knowledge on groundnut cultivation	Score	0-38	10-32	24.3864	4.20025

4.1.1 Age

Age of the farmers ranged from 25 to 75 having an average of 52.8977 with a standard deviation of 10.71473. On the basis of the age scores of the farmers, they were classified into three categories: young aged, middle aged and old. The distribution of the groundnut growers according to their age is shown in Table 4.2.

Table 4.2 Distribution of the Farmers According to their Age

Categories	Basis of categorization	Farmers (N = 88)	
		Number	Percent
Young aged	≤35	7	8
Middle aged	36-50	28	31.8
Old	>50	53	60.2
Total =		88	100

The finding indicates that a large proportion (60.2 percent) of the farmers were old compared to 8 percent and 31.8 percent having young and middle aged respectively. It appears that 92% of the farmers in the study area were old to middle-aged as compared to 8% constituting the young aged category. That means old to middle-aged farmers in the study area were adopt BARI groundnut varieties more than the young farmers as old farmers were more experienced.

4.1.2 Education

The education scores of the farmers ranged from 0 to 9 having an average of 1.3409 and the standard deviation was 2.16496. On the basis of their education scores, the groundnut growers were classified into four categories, namely illiterate, can sign only, primary, secondary. The distribution of the farmers according to their education is shown in Table 4.3.

Table 4.3 Distribution of the Farmers According to their Education

Categories	Basis of categorization	Farmers (N = 88)	
		Number	Percent
Illiterate	0	29	33
Can sign only	0.5	40	45.4
Primary (1 -5)	1-5	12	13.6
Secondary (6-10)	6-10	7	8
Total=		88	100

Data contained in Table 4.3 indicated that the majority (45.4 percent) of the farmers can sign only. 33 and 13.6 percent were illiterate and had primary level of education respectively. 8 percent of the respondent had secondary level of education. It appears that 78.4% of the farmers in the study area were illiterate to can sign only as compared to 13.6% and 8% had primary and secondary level of education respectively. The findings indicate that 67 percent respondents were educated. The literacy rate of the country is 62.7 percent (BBS, 2017). Thus the findings

revealed that the literacy rate in the study area seems to be higher than the national average. Basher (1993) and Hussen (2001) also found the similar results in their studies.

4.1.3 Annual family income

The observed annual family income of the respondents ranged from 102.65-415.04 having the average of **223.5929** and standard deviation was 50.22717. Based on their income scores, the farmers were classified into three categories: low income, medium income and high income. The distribution of the groundnut growers according to their annual family income is shown in Table 4.4

Table 4.4 Distribution of the farmers according to their annual family income

Categories	Basis of categorization	Farmers (N = 88)	
		Number	Percent
Low income	<198.49 <(Mean-0.5 sd)	27	30.7
Medium income	198.49-248.72 Mean±0.05 sd	37	42
High income	>248.72 >(Mean±0.5 sd)	24	27.3
Total=		88	100

Data presented in Table 4.4. show that the highest proportion (42 percent) of the farmers had medium annual family income, while 30.7 percent had low income and 27.3 percent had high income. It appears that 72.7% of the farmers in the study area had medium to low income as compared to 27.3% had high income. That means medium to low income farmers in the study area were adopt BARI groundnut varieties more than the highly income farmers as the percent of medium category farmers were higher than other two categories and about half of the farmers belonged to medium category farmers. Islam (2002) also found almost similar findings in his study

4.1.4 Farm size

The farm size scores of the respondents varied from 0.31-5.55. The average farm size was 1.5543 hectares with a standard deviation of 0.72674. The respondents were classified into the following three categories based on their farm size: "small" (up to 0.98), "medium" (1.01-2.47), and "large" (>2.47) The distribution of the farmers according to their farm size is shown in Table 4.5

Table 4.5 Distribution of the farmers according to their farm size

Categories	Basis of categorization	Farmers (N=88)	
		Number	Percent
Small	≤ 0.98	12	13.6
Medium	1.01-2.47	69	78.4
Large	> 2.47	7	8
Total =		88	100

The Table 4.5 shows that the highest proportion (78.4 percent) of the farmers belonged to medium farm size compared to 13.6 and 8 percent having small and large farm size respectively. It appears that majority (92%) of the total respondents in the study area had medium to small size of farm. The average farm size of the farmers of the study area (1.5543 hectare) was higher than that of national average 0.60 hectare of Bangladesh (BBS, 2014).

4.1.5 Area under groundnut cultivation

The area under groundnut cultivation scores of the respondents varied from 0.11-2. The average area under groundnut cultivation was 0.5116 hectares with a standard deviation of 0.29676. The respondents were classified into the following three categories based on their area under groundnut cultivation: low, medium, and high. The distribution of the farmers according to their area under groundnut cultivation is shown in Table 4.6

Table 4.6 Distribution of the farmers according to their area under groundnut cultivation

Categories	Basis of categorization	Farmers (N=88)		Mean	Standard Deviation
		Number	Percent		
Low	≤ 0.36 <(Mean-0.5 sd)	22	25	0.5116	0.29676
Medium	0.40-0.65 Mean \pm 0.05 sd	48	54.5		
High	> 0.65 >(Mean+0.5 sd)	18	20.5		
Total =		88	100		

The Table 4.6 shows that the highest proportion (54.5 percent) of the farmers belonged to medium area compared to 25 and 20.5 percent having low and high area under groundnut cultivation respectively. It appears that majority (79.5%) of the total respondents in the study area had medium to low area under groundnut cultivation.

4.1.6 Groundnut cultivation experience

The observed experience under cultivation of the respondents ranged from 2-30 having the average of 9.4091 and standard deviation was 5.69460. The respondents were classified into the following three categories based on their experience under groundnut cultivation: low, medium and high. The distribution of the farmers according to their experience under groundnut cultivation is shown in Table 4.7

Table 4.7 Distribution of the farmers according to their groundnut cultivation experience

Categories	Basis of categorization	Farmers (N=88)		Mean	Standard Deviation
		Number	Percent		
Low	≤6 <(Mean-0.5 sd)	36	40.9	9.4091	5.69460
Medium	7-12 Mean±0.5 sd	28	31.8		
High	>12 >(Mean+0.5 sd)	24	27.3		
Total =		88	100		

The Table 4.7 shows that the highest proportion (40.9 percent) of the farmers belonged to low experience compared to 31.8 and 27.3 percent having medium and high experience under groundnut cultivation respectively. It appears that majority (72.7%) of the total respondents in the study area had low to medium experience under groundnut cultivation.

4.1.7 Agricultural Training Exposure

The agricultural training exposure score of the groundnut growers ranged from 0-26 with an average of 2.4773 and standard deviation 3.02472. The respondents were classified into the following three categories based on their agricultural training exposure: no, low and medium. The distribution of the farmers according to their experience under groundnut cultivation is shown in Table 4.8

Table 4.8 Distribution of the farmers according to their agricultural training exposure

Categories	Basis of categorization	Farmers (N=88)	
		Number	Percent
No	0	17	19.3
Low	1-3	50	56.8
Medium	>3	21	23.9
Total =		88	100

Data presented in Table 4.8 indicate that the majority proportion (56.8 percent) of the respondents had low training exposure while 23.9 percent had medium training and 19.3 percent had no training exposure. Training exposure play an important role in motivating the farmers in adoption of modern cultivation. But the fact is that overwhelming majority 56.8 percent of groundnut growers receive low training who needs attention of the authorities by extension services (GOs & NGOs) in the country.

4.1.8 Extension media contact

The extension media contact score of the respondent farmers ranged from 5 to 34 against the possible range of zero (0) to 48 with a mean and standard deviation of 21.1250 and 6.25293 respectively. Based on their extension media contact score, the respondents were classified into three categories. These categories were low, medium and high extension media contact. The distribution of the respondents according to their extension media contact has been presented in Table 4.9

Table 4.9 Distribution of the farmers according to their extension media contact

Categories	Basis of categorization	Farmers (N=88)	
		Number	Percent
Low	≤ 11	11	12.5
Medium	12-24	52	59.1
High	> 24	25	28.4
Total		88	100

Table 4.9 indicated that the farmers having medium extension media contact category constituted the highest proportion (59.1 percent) followed by high contact (28.4 percent) and low contact category (12.5 percent). Table 4.9 showed that the overwhelming majorities (59.1 percent) of the farmers had medium to high extension media contact of the study area. This shows that extension work in the study area is satisfactory but not highly satisfactory. So, it needs vigorous extension works in the study area.

4.1.9 Knowledge on groundnut cultivation

Knowledge on groundnut cultivation score of the respondents was found a range from 10 to 32 against a possible range from zero (0) to 38. The average score was 24.3864 with a standard deviation of 4.20025. Based on the score of farmers' knowledge on groundnut cultivation the respondents were classified into three categories as very poor knowledge level, moderate knowledge level and sound knowledge level. The distribution of the respondents according to their knowledge about groundnut cultivation has been presented in Table 4.10

Table 4.10 Distribution of the farmers according to their knowledge on groundnut cultivation

Categories	Basis of categorization	Farmers (N=88)	
		Number	Percent
Low	≤12	2	2.3
Medium	13-24	40	45.4
High	≥25	46	52.3
Total=		88	100

Findings shown in Table 4.10 indicated that the highest proportion (52.3 percent) of the respondents had high knowledge about groundnut cultivation, while 45.4 percent and 2.3 percent of the respondents had medium and low knowledge about groundnut cultivation respectively. The findings revealed that majority (97.7 percent) of the farmers had high to medium knowledge about groundnut cultivation. It indicates that the adoption rate of groundnut cultivation in the study area is significantly strong.

4.2 Adoption of BARI groundnut varieties

Adoption of BARI groundnut varieties score was found to range from 59.62 to 99.00. The average score was 86.4368 with a standard deviation of 8.65209. Based on the scores of adoption of BARI groundnut varieties, the farmers were classified into three categories as low adoption, medium adoption and high adoption. The distribution of the respondents according to their BARI groundnut varieties has been presented in Table 4.11.

Table 4.11 Distribution of the farmers according to their adoption of groundnut cultivation

Categories	Basis of categorization	Farmers (N=88)		Mean	Standard Deviation
		Number	Percent		
Low	≤ 82 <(Mean-0.5 sd)	22	25	86.4368	8.65209
Medium	83-90 Mean ±0.5 sd	37	42		
High	> 90 <(Mean+0.5 sd)	29	33		
Total=		88	100		

Findings shown in table 4.11 revealed that the highest proportion (42 percent) of the respondents had medium adoption of BARI groundnut varieties, while 33 percent had high adoption and the rest 25 percent had low adoption of BARI groundnut varieties. Table 4.11 showed that majority

(42 percent) of the farmers had medium to high adoption of BARI groundnut varieties. So, it is revealed that among the farmers of the study area the adoption scenario is highly significant.

4.3 Relationship of adoption of BARI groundnut varieties with selected characteristics of the groundnut farmers

Pearson's product moment correlation coefficient (r) was computed in order to explore the relationship between the selected characteristics of farmers and their adoption of selected groundnut varieties. The selected characteristics constituted independent variables and adoption of BARI groundnut varieties by the farmers constituted the dependent variable. The summary of the results of the correlation co-efficient between the selected characteristics of the respondent/ growers and their adoption of BARI groundnut varieties is shown in Table 4.12. Correlation co-efficient among all the variables might be seen in the correlation matrix in appendix-B.

Table 4.12 Relationships between the predicted and experimental variables

Selected characteristics of the farmers	Correlation coefficient (r) value with adoption of BARI groundnut varieties
Age	0.035 ^{NS}
Education	0.037 ^{NS}
Annual family income	0.048 ^{NS}
Farm size	0.328**
Area under groundnut cultivation	0.343**
Groundnut cultivation experience	0.248*
Agricultural training exposure	-0.099 ^{NS}
Extension media contact	0.276**
Knowledge in groundnut cultivation	0.298**

** Correlation is significant at 1% level of probability,

* Correlation is significant at 5% level of probability, ^{NS} Non-significant

4.3.1 Relationship between age of the farmers and their adoption of BARI groundnut varieties

The relationship between age of the farmers and their adoption of BARI groundnut varieties was examined by testing the following null hypothesis: “There is no relationship between age of the farmers and their adoption of BARI groundnut varieties.” As shown in the Table 4.12 the coefficient of correlation between the concerned variables was computed and found to be ‘r’ = 0.035 which led to the following observation.

- Firstly, the relationship showed a positive trend.
- The computed value of ‘r’ (0.035) was smaller than the table value ($r = + 0.212$) with 86 degrees of freedom at 0.05 level of probability.
- Hence, the concerned null hypothesis was accepted.
- The correlation co-efficient between the two concerned variables was non significant.

Based on the above findings, it was concluded that age of the famers had no significant positive relationships with the adoption of BARI groundnut varieties. That is young, middle aged or old famers of Faridpursadarupazila had no distinction in respect of adoption of BARI groundnut varieties.

4.3.2 Relationship between adoption of BARI groundnut varieties and their education

Relationship between education and adoption of BARI groundnut varieties was determined by Pearson’s product moment correlation coefficient. The coefficient of correlation between education and adoption of BARI groundnut varieties was presented in Table 4.12. The coefficient of correlation between the concerned variables was found to be 0.037. The following observations were made on the basis of the value of correlation coefficient between the two concerned variables of the study under consideration.

- The relationship showed a positive trend between the concerned variables.
- The observed value of “r” (0.037) between the concerned variables was found to be smaller than the tabulated value ($r = + 0.212$) with 86 degrees of freedom at 0.05 level of probability.
- The null hypothesis was accepted

- The relationship between the concerned variables was statistically non significant at 0.05 level of probability.

Based on the above findings, it was concluded that education of the famers had no significant positive relationship with the adoption of BARI groundnut varieties. It means that higher or lower educated famers of Faridpursadarupazila had no distinction in respect of adoption of BARI groundnut varieties. So, reasonably education had non significant relationship with adoption of BARI groundnut varieties.

4.3.3 Relationship between adoption of BARI groundnut varieties and their annual family income

Relationship between annual family income and adoption of BARI groundnut varieties was determined by Pearson's product moment correlation coefficient. The coefficient of correlation between annual family income and adoption of BARI groundnut varieties was presented in Table 4.12. The coefficient of correlation between the concerned variables was found to be 0.048. The following observations were made on the basis of the value of correlation coefficient between the two concerned variables of the study under consideration.

- The relationship showed a positive trend between the concerned variables.
- The observed value of "r" (0.048) between the concerned variables was found to be smaller than the tabulated value ($r = + 0.212$) with 86 degrees of freedom at 0.05 level of probability.
- The null hypothesis could not be rejected.
- The relationship between the concerned variables was statistically non significant at 0.05 level of probability.

Based on the above findings, it was concluded that annual family income of the famers had no significant relationships with the adoption of BARI groundnut varieties.

4.3.4 Relationship between adoption of BARI groundnut varieties and their farm size

Relationship between farm size and adoption of BARI groundnut varieties was determined by Pearson's product moment correlation coefficient. The coefficient of correlation between farm size and adoption of BARI groundnut varieties was presented in Table 4.12. The coefficient of correlation between the concerned variables was found to be 0.328. The following observations were made on the basis of the value of correlation coefficient between the two concerned variables of the study under consideration.

- The relationship showed a positive trend between the concerned variables.
- The observed value of "r" (0.328) between the concerned variables was found to be greater than the tabulated value ($r = +0.275$) with 86 degrees of freedom at 0.01 level of probability.
- The null hypothesis was rejected.
- The relationship between the concerned variables was statistically significant at 0.01 level of probability.

Based on the above findings, it was concluded that farm size of the farmers had significant relationships with the adoption of BARI groundnut varieties. It means that higher the farm size, higher adoption of BARI groundnut varieties and lower the farm size lower adoption of BARI groundnut varieties.

4.3.5 Relationship between adoption of BARI groundnut varieties and their area under groundnut cultivation

Relationship between area under groundnut cultivation and adoption of BARI groundnut varieties was determined by Pearson's product moment correlation coefficient. The coefficient of correlation between area under groundnut cultivation and adoption of BARI groundnut varieties was presented in Table 4.12. The coefficient of correlation between the concerned variables was found to be 0.343. The following observations were made on the basis of the value of correlation coefficient between the two concerned variables of the study under consideration.

- The relationship showed a positive trend between the concerned variables.
- The observed value of "r" (0.343) between the concerned variables was found to be

greater than the tabulated value ($r = +0.275$) with 86 degrees of freedom at 0.01 level of probability.

- The null hypothesis was rejected.
- The relationship between the concerned variables was statistically significant at 0.01 level of probability.

Based on the above findings, it was concluded that area under groundnut cultivation of the famers had significant relationships with the adoption of BARI groundnut varieties. The conclusion implies that the more percentage of area under groundnut cultivation the farmers had, the more was their adoption of BARI groundnut varieties.

4.3.6 Relationship between adoption of BARI groundnut varieties and their experience under groundnut cultivation

Relationship between groundnut cultivation experience and adoption of BARI groundnut varieties was determined by Pearson's product moment correlation coefficient. The coefficient of correlation between groundnut cultivation experience and adoption of BARI groundnut varieties was presented in Table 4.12. The coefficient of correlation between the concerned variables was found to be 0.248. The following observations were made on the basis of the value of correlation coefficient between the two concerned variables of the study under consideration.

- The relationship showed a positive trend between the concerned variables.
- The observed value of "r" (0.248) between the concerned variables was found to be greater than the tabulated value ($r = +0.212$) with 86 degrees of freedom at 0.05 level of probability.
- The null hypothesis was rejected.
- The relationship between the concerned variables was statistically significant at 0.05 level of probability.

Based on the above findings, it was concluded that experience under groundnut cultivation of the famers had significant relationships with the adoption of BARI groundnut varieties. The

conclusion implies that the more percentage of experience under groundnut cultivation the farmers had, the more was their adoption of BARI groundnut varieties.

4.3.7 Relationship between adoption of BARI groundnut varieties and their agricultural training exposure

Relationship between agricultural training exposure and adoption of BARI groundnut varieties was determined by Pearson's product moment correlation coefficient. The coefficient of correlation between agricultural training exposure and adoption of BARI groundnut varieties was presented in Table 4.12. The coefficient of correlation between the concerned variables was found to be -0.099. The following observations were made on the basis of the value of correlation coefficient between the two concerned variables of the study under consideration.

- The relationship showed a negative trend between the concerned variables.
- The observed value of "r" (-0.099) between the concerned variables was found to be smaller than the tabulated value ($r = + 0.212$) with 86 degrees of freedom at 0.05 level of probability.
- The null hypothesis could not be rejected.
- The relationship between the concerned variables was statistically non significant at 0.05 level of probability.

Based on the above findings, it was concluded that agricultural training exposure of the farmers had no significant relationships with the adoption of BARI groundnut varieties.

4.3.8 Relationship between adoption of BARI groundnut variety and their extension media contact

Relationship between extension media contact and adoption of BARI groundnut varieties was determined by Pearson's product moment correlation coefficient. The coefficient of correlation between extension media contact and adoption of BARI groundnut varieties was presented in Table 4.12. The coefficient of correlation between the concerned variables was found to be 0.276.

The following observations were made on the basis of the value of correlation coefficient between the two concerned variables of the study under consideration

- The relationship showed a positive trend between the concerned variables.
- The observed value of “r” (0.276) between the concerned variables was found to be greater than the tabulated value ($r = +0.275$) with 86 degrees of freedom at 0.01 level of probability.
- The null hypothesis was rejected.
- The relationship between the concerned variables was statistically significant at 0.01 level of probability.

Based on the above findings, it was concluded that extension media contact of the farmers had highly significant positive relationships with the adoption of BARI groundnut varieties. That is if the extension media contact is higher, the adoption of BARI groundnut varieties would be also higher. The finding is quite logical because extension contact makes the farmers innovative and strengthens their basic knowledge. So, high media contact farmers are supposed to be highly eager to adopt groundnut cultivation.

4.3.9 Relationships between adoption of BARI groundnut variety and their knowledge about groundnut cultivation

Relationship between knowledge about groundnut cultivation and adoption of BARI groundnut varieties was determined by Pearson’s product moment correlation coefficient. The coefficient of correlation between knowledge about wheat cultivation and adoption of wheat cultivation was presented in Table 4.12. The coefficient of correlation between the concerned variables was found to be 0.298. The following observations were made on the basis of the value of correlation coefficient between the two concerned variables of the study under consideration.

- The relationship showed a positive trend between the concerned variables.
- The observed value of “r” (0.298) between the concerned variables was found to be greater than the tabulated value ($r = 0.275$) with 86 degrees of freedom at 0.01 level of probability.

- The null hypothesis was rejected.
- The relationship between the concerned variables was statistically highly significant at 0.01 level of probability.

Based on the above findings, it was concluded that knowledge about groundnut cultivation had highly significant positive relationships with the adoption of groundnut cultivation. So, it could be said that higher is the knowledge about groundnut cultivation, higher is the adoption of BARI groundnut varieties. Knowledge helps the farmers to take the right decision. It guides the farmers to take action for that which is best or profitable for them.

4.4 Problems Faced by the Farmers in Adopting of BARI groundnut varieties

Problem scores of the respondents were determined by using 10 selected problems. Computed scores of the respondents ranged from 16 to 26 against the possible range of 0 to 30 with the average being 20.3750 and the standard deviation was 2.41315 (Table 4.13). Based on problem, faced in groundnut cultivation, the farmers were classified into three categories: low, medium and high.

Table 4.13 Distribution of the farmers according to their problems faced in groundnut cultivation

Categories	Basis of categorization	Farmers (N=88)		Mean	Standard Deviation
		Number	Percent		
Low (up to 19)	≤ 19 <(Mean-0.5sd)	32	36.4	20.3750	2.41315
medium (20-23)	20-23 Mean ± 0.5 sd	46	52.2		
high (above 23)	> 23 <(Mean+0.5sd)	10	11.4		
Total=		88	100		

Most (52.2 percent) of the farmers faced medium extent of problems regarding groundnut production technologies and the rest 36.4 percent and 11.4 percent faced low and high extent of problems. It indicates that the farmers are intermingled with diversified problems in adopting groundnut varieties. To compare the severity of the problems rank order of the problems was done based on the decreasing order of the problem faced index (PFI). PFI of each problem was ranked by using the following formulae:

$$PFI = P_h \times 3 + P_m \times 2 + P_l \times 1 + P_n \times 0$$

Where, PFI = Problem faced Index,

P_h = No. of respondents faced high problem,

P_m = No. of respondents faced medium problem,

P_l = No. of respondents faced low problem,

P_n = No. of respondents faced no problem

Data contained in Table 4.14 indicate that “Non-availability of credit” ranked first with PFI value of 219. The second most important problem of the growers was "Non-availability of hybrid seed" with the PFI of 209. The growers of the study area did not get sufficient hybrid seed for groundnut cultivation. However, lack of technical information, no seed production in farmers’ level and low market price of groundnut, non-availability of storage facility at farmers’ level due to high moisture content, low scope of marketing, high input cost (seed, fertilizer, pesticide), non-availability of land for groundnut cultivation and Low scope for consuming as food were also some important problems which are needed to pay attention. No program for the farmers cannot be successful unless these problems are not properly addressed and triggered to be eliminated.

Table 4.14 Problem Confrontation Index (PCI) with Rank Order

Description of problem	Frequency of farmers				PFI	Rank Order
	High problem	Medium problem	Low problem	Not at all problem		
Non-availability of credit	52	31	1	4	219	1
Non-availability of hybrid seed	47	33	2	6	209	2
Lack of technical information	32	51	1	4	199	3
No seed production in farmers’ level	34	36	10	8	184	4

Low market price of groundnut	25	50	8	5	183	5
Non-availability of storage facility at farmers' level due to high moisture content	35	31	14	8	181	6
Low scope of marketing	22	43	13	10	165	7
High input cost (seed, fertilizer, pesticide)	17	42	20	9	155	8
Non-availability of land for groundnut cultivation	20	35	24	9	154	9
Low scope for consuming as food	8	50	20	10	144	10

Chapter 5

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1.1 Selected characteristics of BARI groundnut variety growers

Age

The highest proportion (60.2 percent) of the farmers were old aged, while 31.8 percent were middle aged and 8 percent young aged.

Education

Large proportion (45.4 percent) of the farmers Can sign only (0.5) compared to 33 percent Illiterate (0) only 13.6 percent Primary (1 -5) and 8 percent Secondary (6-10) education.

Annual family income

The highest proportion (42 percent) of the farmers had medium annual income compared to low annual income and having high annual income. 30.7 percent of the respondent had low income and 27.3 percent had high income.

Farm size

Based on their farm size, 78.4 percent of the farmers had medium farm, 13.6 percent had small farm and 8 percent had large farm.

Area under groundnut cultivation

Large proportion (54.5percent) of the farmers had medium area compared to 25 percent had low and 20.5 percent had high area under groundnut cultivation.

Groundnut cultivation experience

The highest proportion (40.9 percent) of the farmers were low experienced, while 31.8 percent were medium and 27.3 percent were highly experienced.

Agricultural training exposure

The highest proportion (56.8 percent) of the respondents had low training exposure while 23.9 percent had medium training and 19.3 percent had no training exposure.

Extension media contact

The highest proportion (59.1 percent) followed by high contact (28.4 percent) and low contact category (12.5 percent). Table 4.9 showed that the overwhelming majorities (59.1 percent) of the farmers had medium to high extension media contact of the study area.

Knowledge about groundnut cultivation

The highest proportion (52.3 percent) of the respondents had high knowledge about groundnut cultivation, while 45.4 percent and 2.3 percent of the respondents had medium and low knowledge about groundnut cultivation respectively. The findings revealed that majority (52.3 percent) of the farmers had high to medium knowledge about groundnut cultivation.

5.1.2 Adoption of BARI groundnut varieties

The highest proportion (42 percent) of the respondents had medium adoption of BARI groundnut varieties, while 33 percent had high adoption and the rest 25 percent had low adoption of BARI groundnut varieties. Table 4.11 showed that majority (42 percent) of the farmers had medium to high adoption of BARI groundnut varieties.

5.1.3 Relationship between the selected characteristics of the farmers with their adoption of BARI groundnut varieties

Pearson's product moment correlation coefficient (r) was calculated to explore the relationship between the selected characteristics of the farmers and their adoption of BARI groundnut varieties. Among nine selected characteristics, age, education, annual family income and agricultural training exposure were not significantly related with their adoption of BARI groundnut varieties whereas farm size, area under groundnut cultivation, extension media contact and knowledge in groundnut cultivation had significant positive relationship with the adoption of BARI groundnut varieties at 0.01 level of probability and groundnut cultivation experience had significant positive relationship with the adoption of wheat production technologies at 0.05 level of probability.

5.1.4 Problem faced by the farmers adopting wheat production technologies

Most (52.2 percent) of the farmers faced medium extent of problems regarding groundnut production technologies and the rest 36.4 percent and 11.4 percent faced low and high extent of problems. It indicates that the farmers are intermingled with diversified problems in adopting groundnut production technologies. As many as 10 problems were mentioned by the farmers and ranked based on problem facing index. The problems were as follows according to rank order:

1. Non-availability of credit
2. Non-availability of hybrid seed
3. Lack of technical information
4. No seed production in farmers' level
5. Low market price of groundnut
6. Non-availability of storage facility at farmers' level due to high moisture content
7. Low scope of marketing
8. High input cost (seed, fertilizer, pesticide)
9. Non-availability of land for groundnut cultivation
10. Low scope for consuming as food

5.2 Conclusions

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

I. Finding shows that 42% percent of the farmers had medium adoption of BARI groundnut varieties. Therefore it can be concluded that adoption of BARI groundnut varieties is not at satisfactory level and needs further improvement.

II. Age of the farmers had no significant relationship with their adoption of BARI groundnut varieties. It may, therefore be concluded that for adoption of selected BARI groundnut varieties by the farmers, the extension workers should concentrate their works with all age categories of farmers.

III. Education of the farmers showed that there was no significant relationship with their adoption of BARI groundnut varieties. Formal education system can hardly influence farmers to adopt BARI groundnut varieties. So, it may, therefore be concluded that formal education of the respondents had negligible contribution to increase adoption of BARI groundnut varieties.

IV. Annual family income of the farmers showed that there was no significant relationship with their adoption of BARI groundnut varieties. That means it can hardly influence farmers to adopt BARI groundnut varieties. So, it may, therefore be concluded that annual family income of the respondents had negligible contribution to increase adoption of BARI groundnut varieties.

V. Farm size of the farmers had significant positive relationship with their adoption BARI groundnut varieties. The farmers having large farms and being economically solvent always try to adopt new innovations. Considering the above facts, it may be concluded that the adoption of BARI groundnut varieties can be encouraged to the farmers having large farms.

VI. Area under groundnut cultivation of the farmers showed significant positive relationship with their adoption of BARI groundnut varieties. The farmers having large area for groundnut cultivation always try to adopt new innovations. Considering the above facts, it may be concluded that the adoption of BARI groundnut varieties can be encouraged to the farmers having large area under groundnut cultivation.

VII. Groundnut cultivation experience of the farmers had positive significant relationship with their adoption of BARI groundnut varieties. The farmers having high experience about groundnut cultivation gained more knowledge and as a result, they adopted new innovations swiftly. Considering the above fact, it may be concluded that the adoption of BARI groundnut varieties can be increased if there is more experience about groundnut cultivation.

VIII. Agricultural training of the farmers had no significant relationship with their adoption of BARI groundnut varieties. So, it may, therefore be concluded that agricultural training of the respondents had negligible contribution to increase adoption of BARI groundnut varieties.

IX. Contact with different media of the farmers had positive significant relationship with their adoption of BARI groundnut varieties. It can be concluded that any attempt to increase the communication behavior of the farmers would be helpful to increase the adoption of BARI groundnut varieties.

X. Knowledge on groundnut cultivation of the farmers had significant positive relationship with their adoption of BARI groundnut varieties. So, the farmers' knowledge on groundnut cultivation should be developed by arranging various training courses to get higher adoption rate of BARI groundnut varieties

5.3 Recommendations

5.3.1 Recommendations for policy implications

Based on the findings and conclusions of the study, the following recommendations are presented below:

I. It may be recommended that agricultural extension agencies especially the DAE and relevant NGOs should critically review their training programs and make sound provisions so that the farmers understand the benefits of adoption of BARI groundnut varieties. The DAE and other non-governmental organizations should strengthen their extension.

II. Majority of the farmers had medium farms and they could give more attention to their farming operation as they generally work on the farm. Hence, extension workers should give emphasize to the farmers having medium farm size so that they can increase the adoption of modern BARI groundnut varieties on a high significant scale.

III. Extension services should provide adequate farm management advice to the growers for increasing their farm income. In this connection government should come forward to launch various income generating activities for the rural people and encourage them to involve with those activities in order to enhance their income.

IV. The concerned authorities should take necessary steps to find out how communication behavior of the farmers can be increased. For this, the Sub Assistant Agriculture Officer (SAAO) should frequently visit the farmers and advice them to adopt BARI groundnut varieties. Other print, electronic and inter-personal information media should be used extensively to create awareness and encourage them for adopting BARI groundnut varieties.

V. Adoption of BARI groundnut varieties had significant positive correlation with the knowledge on groundnut cultivation of the farmers. This indicates an urgent need for an effective training program to increase the knowledge on groundnut cultivation for developing favorable

attitude of the farmers towards the adoption of BARI groundnut varieties. Hence, it may be recommended that arrangements should be made by the relevant authorities to increase the knowledge on groundnut cultivation of the farmers through increased extension contact, training program and so on.

VI. Necessary inputs such as seedling, chemical fertilizers, insecticides and quality seeds to be made available to the respondents at right time and at fair prices.

VII. To ensure proper prices for groundnut products marketing support should be ensured.

VIII. Extension agencies should realize the existing problems of the groundnut cultivation and take necessary steps to minimize these problems.

5.3.2 Recommendations for further study

A small piece of study as has been conducted which could not provide all information for the proper understanding of the adoption of BARI groundnut varieties. Therefore, the following suggestions are made for further study:

I. The present investigation explored the relationships of the ten characteristics of the groundnut growers with their adoption of BARI groundnut varieties. Further research may be conducted by taking other characteristics to observe relationships with their adoption of BARI groundnut varieties.

II. The present study was conducted in two union of FaridpurSadarUpazila under Faridpur district. So, similar studies may be undertaken in other parts of the country to verify the findings of the present study.

III. A positive trend of relationship was obtained between education of the growers and their adoption of BARI groundnut varieties, but the relationship was not statistically significant. Generally a positive significant relationship is expected to be observed between education of the farmers and their adoption of BARI groundnut varieties. Hence, further studies are necessary to verify the relationship between the concerned variables.

IV. The present study has been carried out among the male farmers only. So, a similar study may be conducted with the farm women to examine their views and opinions regarding the adoption of BARI groundnut varieties.

V. The present study was concerned only with the adoption of BARI groundnut varieties. It is therefore, suggested that future studies should include other important HYV crop varieties rather than groundnut only.

CHAPTER 6

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APPENDIX-A

ENGLISH VERSION OF THE INTERVIEW SCHEDULE

DEPARTMENT OF AGRICULTURAL EXTENSION AND INFORMATION SYSTEM
SHER-e-BANGLA AGRICULTURAL UNIVERSITY

DHAKA-1207

AN INTERVIEW SCHEDULE ON

“Adoption of BARI Groundnut Varieties by the Farmers of Faridpur District”

Serial No : _____

Name of respondent : _____

Village : _____

Upazila : _____

District : _____

Contact number : _____

(Please answer the following questions. Secrecy will be strictly maintained.)

1. **Age:** How old are you? Age..... Years
2. **Education:** What is the level of your education?
 - a. Illiterate
 - b. Can sign only
 - c. Have passed class.....
3. **Annual Family income:**

Please mention your annual family income in Taka from the following sources:

a) Agriculture:

1. Crops:

Name of The Product	Total Production	Price/unit (Tk)	Total price (Tk)
Groundnut			
Rice			
Wheat			
Jute			
Maize			
Potato			
Vegetables			
Fruits			
8.Others			
Total			

2. Livestock and fisheries:

Name of the product	Total production(local unit)	Price/unit (Tk)	Total Price (Tk)
Cow			
Milk product			
Cow dung			
Goat rearing			
Poultry rearing (chick+duck)			
Eggs			
Fisheries			
Others			
Total			

b) Non Agriculture:

Name of the Sources	Taka/month	Taka/ Year
Labor		
Motorcycle		
Small business		
Service		
Others		
Total		

Total annual family income = $a(1+2)+b= \dots\dots\dots$ Tk

4. Farm size:

Mention the area of your land according to tenure and use.

Type of land	Land Area	
	Local unit	Hectare
Homestead		
Own land under own cultivation		
Land taken from others on lease		
Land taken from others on borga		
Land given to others on borga		
Others/pond/garden		
Total		

5. Area under groundnut cultivation (hectare):

Item	2014-2015	2015-2016
Land under groundnut cultivation		

6. Groundnut cultivation experience:

Farming experience.....years

7. Agricultural training exposure:

Do you participate to agricultural training programme? Yes No

If yes, furnish the following information:

SI. No	Name of the training course	Organization	Day (s)
1.			
2.			
3.			
4.			

8. Extension media contact:

Please mention the frequency of communication with the following persons and agriculture related media:

SI. No.	Communication media	Extent of communication			
		Frequently	Occasionally	Rarely	Not at all
Personal media contact					
1.	Neighboring Model farmer	7 or more times/month	3-5 times/month	1-2 times/month	0
2.	Input dealers	3 or more times/month	1-2 times/month	At least once a year	0
3.	NGO worker	3-4 times/month	1-2 times/month	At least once a year	0
4.	Field level Extension Officer	6-7 times/month	4-5 times/month	1-2 times/month	0

5.	Upazila level Extension Officer	4-5 times/month	2-3 times/month	1 time/month	0
Group media contact					
6.	Participation in group discussion	6-7 times/year	4-5 times/year	1-2 times/year	0
7.	Participation in Result demonstration	2 times/year	1 time/year	1 time/2 years	0
8.	Participation in Method demonstration	2 times/year	1 time/year	1 time/2 years	0
9.	Participation in Field day/Farmers rally	3 times/year	2 times/year	1 time/year	0
10.	Participation in training	3 or more times/life	2 times/life	1 time/life	0
Mass media contact					
11.	Radio	Regularly	4-5 times/week	1-2 times/week	0
12.	Television	Regularly	4-5 times/week	1-2 times/week	0
13.	Newspaper	Regularly	4-5 times/week	1-2 times/week	0
14.	Poster	6-7 times/year	4-5 times/year	1-2 times/year	0
15.	Agriculture related book/magazine/leaflet	6-7 times/year	4-5 times/year	1-2 times/year	0
16.	‘Krishimela’	2 times/year	1 time/year	1 time/2 years	0

9. Knowledge in groundnut cultivations:

Please reply the following question:

SI. No.	Questions	Weighted	Obtained
1.	Mention two modern varieties of groundnut.	2	
2.	Which type of land is suitable for groundnut cultivation?	2	
3.	What is the optimum time of sowing of groundnut?	2	
4.	Do you treat groundnut seed before sowing? If so, name the seed treating chemical.	2	
5.	What is the optimum seed rate (kg/bigha) for modern groundnut varieties?	2	
6.	Mention the rate of fertilizers per bigha for groundnut cultivation	2	
7.	What are the importance of applying balanced fertilizer in groundnut?	2	
8.	What is the spacing required for sowing groundnut seed?	2	
9.	After how many days of sowing you should complete gap filling or thinning out?	2	
10.	How many irrigation are required for cultivating groundnut in rabi season?	2	
11.	How many irrigation are required for cultivating groundnut in kharif season?	2	
12.	Mention the stages of groundnut in which irrigations are required?	2	
13.	How can you control cutworm, jassid and thrips in groundnut field?	2	
14.	How can you control tikka, rust, and root rot of groundnut?	2	
15.	What is the optimum time of groundnut harvesting?	2	

16.	Mention the name of a pesticide for groundnut cultivation.	2	
17.	Do you test optimal moisture content of groundnut seed for storage?	2	
18.	What is the best method for seed storing?	2	
19.	Mention two important major crops which can be intercropped with groundnut?	2	
	Total	38	

10. Problem confrontation in groundnut cultivation/production:

Sl. No.	Problems	Extent of problem			
		High	Moderate	Little	Not at all
1.	Non-availability of hybrid seed				
2.	Lack of technical information				
3.	Non-availability of credit				
4.	No seed production in farmers' level				
5.	Low market price of groundnut				
6.	Low scope of marketing				
7.	High input cost (seed, fertilizer, pesticide)				
8.	Low scope for consuming as food				
9.	Non-availability of land for groundnut cultivation				
10.	Non-availability of storage facility at farmers' level due to high moisture content				

11. Adoption of BARI groundnut varieties:

Sl. No.	Varieties	2013-2014		2014-2015		2015-2016	
		Cultivated area (ha.)	Potential area (ha.)	Cultivated area (ha.)	Potential area (ha.)	Cultivated area (ha.)	Potential area (ha.)
1.	Maijcharbadam or Dhaka-1						
2.	Tridanabadam or DM-1						
3.	Basantibadam or DG-2						
4.	Jhingabadam						
5.	BARI chinabadam-5						
6.	BARI chinabadam-6						
7.	BARI chinabadam-7						
8.	BARI chinabadam-8						
9.	BARI chinabadam-10						

Thank you for your kind co-operation.

Signature of the respondent

Signature of the interviewer

Date:

Date:

APPENDIX-B

কৃষিসম্প্রসারণ ও ইনফরমেশনসিস্টেম বিভাগ

শেরেবাংলা কৃষি বিশ্ববিদ্যালয়

ঢাকা-১২০৭

“Adoption of **BARI** Groundnut Varieties by the Farmers of Faridpur District”

(ফরিদপুর জেলার কৃষকদের বারিচিনাবাদামজাত হাণ্ডগবেষণাকর্মের সাক্ষাতকার সূচী)

ক্রমিকনং :
উত্তরদাতার নাম :
গ্রাম :
উপজেলা :
জেলা :
কন্টাক্ট নাম্বার :

অনুগ্রহপূর্বক নিম্নলিখিত প্রশ্নগুলোর উত্তর দিন।

১. বয়স: আপনার বয়স কত? বয়স..... বছর।

২. শিক্ষা: আপনার শিক্ষাগত যোগ্যতাকী?

ক. অশিক্ষিত

খ. শুধুমাত্র স্বাক্ষর দানে সক্ষম

গ. শ্রেণী পর্যন্ত।

৩. বার্ষিক পারিবারিক আয়:

অনুগ্রহপূর্বক নিম্নলিখিত উৎসসমূহ হতে আপনার বার্ষিক আয়টাকায় উল্লেখ করুন।

ক) কৃষি:

১. শস্য:

পণের নাম	মোট উৎপাদন	মূল্য/একক (টাকা)	মোট মূল্য (টাকা)
চিনাবাদাম			
ধান			
গম			
পাট			
ভূট্টা			
আলু			
শাকসবজি			
ফলমূল			
অন্যান্য			
মোট			

২. গবাদি পশু এবং মৎস সম্পদ:

পণের নাম	মোট উৎপাদন (স্থানীয় একক)	মূল্য/একক (টাকা)	মোট মূল্য (টাকা)
গরু			
দুগ্ধজাত পশু			
গোবর			
ছাগল পালন			
হাঁস-মুরগী পালন			
ডিম			
মৎস			
অন্যান্য			
মোট			

খ) অকৃষি:

উৎসের নাম	টাকা/মাস	টাকা/বছর
শ্রম		
মোটরসাইকেল		
ক্ষুদ্র ব্যবসা		
চাকুরী		
অন্যান্য		
মোট		

মোটবার্ষিকপারিবারিকআয় = ক(১+২) + খ =টাকা।

৪. জমিরপরিমাণ:

ব্যবহারঅনুযায়ীআপনারজমিরপরিমাণউল্লেখকরণ

জমিরপ্রকৃতি	জমিরপরিমাণ	
	স্থানীয় একক	হেক্টর
বসতবাড়ি		
নিজেরজমিনিজেচাষ		
অন্যেরনিকট থেকে জমিলীজ নেয়া		
অন্যেরনিকট থেকে জমিবর্গা নেয়া		
নিজেরজমি অন্যকে বর্গা দেয়া		
অন্যান্য/পুকুর/বাগান		
মোট		

৫. বাদামচাষেরআওতায়জমিরপরিমাণ

চাষকৃত জমিরধরন	২০১৪-২০১৫	২০১৫-২০১৬
বাদামচাষেজমিরপরিমাণ		

৬. বাদামচাষে অভিজ্ঞতা:

কৃষি অভিজ্ঞতা..... বছর

৭. প্রশিক্ষণ অভিজ্ঞতা:

আপনিকি কৃষি বা অন্যান্য বিষয়ে কোন প্রশিক্ষণে অংশগ্রহণ করেছেন? হ্যাঁ না

ক্রমিকনং	প্রশিক্ষণের বিষয় বস্তু	প্রশিক্ষণ প্রদানকারী প্রতিষ্ঠান	প্রশিক্ষণের মেয়াদ কাল (দিন)
১.			
২.			
৩.			
৪.			

৮. সম্প্রসারণ যোগাযোগ মাধ্যম:

নিম্নলিখিত সম্প্রসারণ কর্মে আপনার অংশগ্রহণের ধরণ উল্লেখ করুন।

ক্রমিকনং	যোগাযোগ মাধ্যম	যোগাযোগের মাত্রা			
		নিয়মিত	মারোমারো	কদাচিৎ	কখনোই না
ব্যক্তিগত যোগাযোগ মাধ্যম					
১.	প্রতিবেশীরূপে আদর্শ কৃষক	≥ ৭বার/মাস	৩-৫ বার/মাস	১-২ বার/মাস	০
২.	ডিলরদের সাথে	≥ ৩বার/মাস	১-২ বার/মাস	বছরে কমপক্ষে ১ বার	০
৩.	এনজিও	৩-৪ বার/মাস	১-২ বার/মাস	বছরে কমপক্ষে ১ বার	০
৪.	মাঠপর্যায় সম্প্রসারণ কর্মকর্তা	৬-৭ বার/মাস	৪-৫ বার/মাস	১-২ বার/মাস	০
৫.	উপজেলাপর্যায় সম্প্রসারণ কর্মকর্তা	৪-৫ বার/মাস	২-৩ বার/মাস	১বার/মাস	০
দলীয় যোগাযোগ মাধ্যম					
৬.	দলীয় আলোচনায় অংশগ্রহণ	৬-৭বার/বছর	৪-৫ বার/বছর	১-২ বার/বছর	০
৭.	প্রদর্শনীতে অংশগ্রহণ	২ বার/বছর	১ বার/বছর	১ বার/বছর	০

৮.	পদ্ধতিপ্রদর্শনীতে অংশগ্রহণ	২ বার/বছর	১ বার/বছর	১ বার/২ বছর	০
৯.	মাঠদিবস/কৃষকর্যালিতে অংশগ্রহণ	৩ বার/বছর	২ বার/বছর	১ বার/বছর	০
১০.	প্রশিক্ষণে অংশগ্রহণ	জীবদ্দশায় ৩ বার অথবা বেশি	২ বার/বছর	জীবদ্দশায় ১ বার	০
বহুল যোগাযোগমাধ্যম					
১১.	রেডিও	নিয়মিত	৪-৫ বার/সপ্তাহ	১-২ বার/সপ্তাহ	০
১২.	টেলিভিশন	নিয়মিত	৪-৫ বার/ সপ্তাহ	১-২ বার/সপ্তাহ	০
১৩.	সংবাদপত্র	নিয়মিত	৪-৫ বার/ সপ্তাহ	১-২ বার/সপ্তাহ	০
১৪.	পোস্টার	৬-৭ বার/বছর	৪-৫ বার/বছর	১-২ বার/বছর	০
১৫.	কৃষিসম্পর্কিত বই/ সাময়িকী/ প্রচারপত্র	৬-৭ বার/বছর	৪-৫ বার/বছর	১-২ বার/বছর	০
১৬.	কৃষি মেলা	২ বার/বছর	১ বার/বছর	১ বার/২ বছর	০

৯. বাদামচাষে জ্ঞান:

অনুগ্রহপূর্বক নিম্নলিখিত প্রশ্নগুলোর উত্তর দিন।

ক্রমিক নং	প্রশ্নাবলি	মোট নম্বর	প্রাপ্ত নম্বর
১.	বাদামের দুটি উন্নত জাতের নাম বলুন?	২	
২.	বাদামচাষের জন্য কোন ধরনের জমি উপযুক্ত?	২	
৩.	বাদাম বপনের উপযুক্ত সময় কখন?	২	
৪.	আপনি কি বপনের পূর্বে বীজ পরিশোধন করেন? যদি তাই হয়, তবে বীজ পরিশোধনের রাসায়নিক দ্রব্যের নাম বলুন?	২	
৫.	উন্নত জাতের বাদামের বিঘা প্রতি বীজহার কত?	২	
৬.	বাদামচাষে বিঘা প্রতি সারের পরিমাণ কত?	২	
৭.	বাদামচাষে সুষ্ণ সার প্রয়োগের সুবিধা কি?	২	
৮.	বাদামচাষে আদর্শ দূরত্ব কত?	২	
৯.	বীজ বপনের কয়দিন পর আপনি খালি জায়গা পূরণ করন এবং পাতলা করন করেন?	২	
১০.	রবি মৌসুমে বাদামচাষের জন্য কি পরিমাণ সেচ দরকার?	২	
১১.	খরিপ মৌসুমে বাদামচাষের জন্য কি পরিমাণ সেচ দরকার?	২	
১২.	বাদামচাষের কোন পর্যায়ে সেচ কাজ দরকার বলে আপনি মনে করেন?	২	
১৩.	আপনি কি ভাবে বাদাম ক্ষেতে কাটাই পোকা, জ্যাসিডি, থ্রিপস দমন করেন?	২	
১৪.	আপনি কি ভাবে বাদামের টিক্কা, মরিচা এবং গোড়াপচা রোগ নিয়ন্ত্রন করেন?	২	
১৫.	বাদাম সংগ্রহের উপযুক্ত সময় কোনটি?	২	
১৬.	বাদামচাষের জন্য কীটনাশকের নাম উল্লেখ করুন।	২	

১৭.	বাদামবীজসংরক্ষণের উপযুক্ত আদ্রতাআপনিকিভাবেপরীক্ষাকরেন?	২	
১৮.	বীজসংরক্ষণের উপযুক্ত পদ্ধতিকি?	২	
১৯.	বাদামের দুটিসাথীফসলেরনামবলুন?	২	
	মোট	৩৮	

১০. বাদামচাষে/উৎপাদনে সমস্যাসমূহ:

ক্রমিকনং	সমস্যা	সমস্যারমাত্রা			
		খুব	মাঝারি	কম	সমস্যা নেই
১.	হাইব্রিডবীজেরঅসহজলভ্যতা				
২.	প্রযুক্তি তথ্যেরঅভাব				
৩.	ঋণেরঅসহজলভ্যতা				
৪.	কৃষকপর্যায়েবীজউৎপাদনহীন				
৫.	বাদামের কম বাজারমূল্য				
৬.	বাজারজাতকরনেরসীমাবদ্ধতা				
৭.	উচ্চ ইনপুটখরচ (বীজ, সার, কীটনাশক)				
৮.	খাদ্য হিসেবেব্যবহারেরসীমাবদ্ধতা				
৯.	বাদামচাষেরজন্য জমিরঅসহজলভ্যতা				
১০.	উচ্চ আদ্রতারজন্য কৃষকপর্যায়ে গুদমজাতকরনেরঅসহজলভ্যতা				

১১. বারিচিনাবাদামেরজাতগ্ৰহণ:

ক্রমিকনং	জাত	২০১৩-১২০৪		২০১৪-২০১৫		২০১৫-২০১৬	
		চাষকৃত এলাকা (হেক্টর)	মোটএলাকা (হেক্টর)	চাষকৃত এলাকা (হেক্টর)	মোটএলাকা (হেক্টর)	চাষকৃত এলাকা (হেক্টর)	মোটএলাকা (হেক্টর)
১.	মাইজচরবাদাম/ঢাকা-১						
২.	ত্রিদানাবাদাম/ডিএম-১						
৩.	বাসন্তীবাদাম/ডিজি-২						
৪.	বিঙ্গা বাদাম						
৫.	বারি চিনাবাদাম-৫						
৬.	বারি চিনাবাদাম-৬						
৭.	বারি চিনাবাদাম-৭						
৮.	বারি চিনাবাদাম-৮						
৯.	বারি চিনাবাদাম-১০						

আপনারসহযোগিতারজন্য ধন্যবাদ।

উত্তরদাতার স্বাক্ষর

তারিখ:

স্বাক্ষাতকারকারীর স্বাক্ষর

তারিখ:

Appendix-C

CORRELATION MATRIX SHOWING INTERRELATIONS AMONG ALL OF THE VARIABLES (N=88)

Variables	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	Y1
X1	1										
X2	-.356**	1									
X3	.084	.184	1								
X4	.108	.318**	.508**	1							
X5	.091	.252*	.363**	.651**	1						
X6	.438**	.066	.207	.292**	.185	1					
X7	-.194	.375**	.247*	.156	.146	-.039	1				
X8	.178	-.237*	.176	.260*	.335**	.042	.111	1			
X9	.132	-.078	.266*	.307**	.247*	.275**	-.024	.545**	1		
X10	-.151	.106	.004	-.164	-.132	-.208	.080	-.169	-.302**	1	
Y1	.035	.037	.048	.328**	.343**	.248*	-.099	.276**	.298**	-.349**	1

*Correlation is significant at 0.05 level of probability (Table Value =.212)

** Correlation is significant at 0.01 level of probability (Table Value =.275)

X1: Age

X2: Education

X3: Annual family income

X4: Farm size

X5: Area under groundnut cultivation (hectare)

X6: Groundnut cultivation experience

X7: Agricultural training exposure

X8: Extension media contact

X9: Knowledge in groundnut cultivation

X10: Problem confrontation in groundnut cultivation

Y1: Adoption of BARI groundnut varieties