USE OF BRINJAL PRODUCTION TECHNOLOGIES BY THE FARMERS OF KASHIANI UPAZILA UNDER GOPALGANJ DISTRICT

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KASHIANI UPAZILA UNDER GOPALGANJ DISTRICT

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CERTIFICATE

This is to certify that the thesis entitled "**USE OF BRINJAL PRODUCTION TECHNOLOGIES BY THE FARMERS OF KASHIANI UPAZILA UNDER GOPALGANJ DISTRICT''** submitted to the Faculty of Agriculture, Sher-e-Bangla Agricultural University, Dhaka, in partial fulfillment of the requirements for the degree of **Master of Science in Agricultural Extension and Information System**, embodies the result of a piece of bona-fide research work carried out by **Gobinda Mandal**, Registration No.**09-03645** under my supervision and guidance. No part of the thesis has been submitted for any other degree or diploma.

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

Dated:

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DEDICATED
TO
MY BELOVED PARENTS

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TheAuthor

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ACRONYMS AND ABBREVIATIONS

BAU	Bangladesh Agricultural University
BBS	Bangladesh Bureau of Statistics
BARI	Bangladesh Agricultural Research Institute
DAE	Department of Agricultural Extension
etal.	All others
FAO	Food and Agriculture Organization
HSTU	Hajee Mohammad Danesh Science and Technology university
SAU	Sher-E-Bangla Agricultural University
SAAO	Sub-Assistant Agriculture Officer

ABSTRACT

The purpose of this study was to determine the farmers' use of brinjal production technologies and explore the contribution of the selected characteristics of the farmers on their use of brinjal production technologies. The selected characteristics were age, level of education, family size, crop farming area, annual family income, brinjal farming experience, agricultural training exposure, extension media contact, brinjal cultivation knowledge, and problem faced in brinjal cultivation. Data were gathered from 89 brinjal growers of two Unions of Kashiani Upazila under Gopalganj district by using a pretested interview schedule. Stepwise multiple regression was used to examine the contribution of the selected characteristics of the brinjal growers on their use of brinjal production technologies. The finding indicates that near about three fourths (71.9 percent) of the farmers had medium use of brinjal production technologies, while 16.9 percent had low use and 11.2 percent had high use of brinjal production technologies. The finding implies that most of the farmers (83.1 percent) had medium to high use of brinjal production technologies. Highest proportion of farmers use technology named 'use of IPM in brinjal field'. Stepwise multiple regression exposed that brinjal farming experience, annual family income and agricultural training exposure of the farmer had significant contribution on their use of brinjal production technologies. The standardized partial 'b' co-efficient of the 3 independent variables formed the equation contributing to 18.0 percent of the total variation on use of brinjal production technologies. It was found that there was a scope to increase the use of brinjal production technologies by the farmers by providing necessary training involving variation income generating activities and providing necessary supports to the lower and medium experience brinjal farmers.

CHAPTER 1

INTRODUCTION

1.1 General Background

Bangladesh is one of the lower-middle developed countries of the World. About three-fourths of the total population lives in rural areas, virtually all of them make their living exclusively or substantially from agriculture. Agriculture is one of the largest sectors of the economy in Bangladesh. The contribution of agriculture to Gross Domestic Product (GDP) in the economy of Bangladesh is 15.96 percent (BER, 2015).

Agriculture is considered as a critical sector in the world economy. It contributes 24 percent of global GDP and provides employment to 22 percent of world's population (FAO, 2010). Out of the total 15.09 million farm holdings, the marginal, small, medium, large holdings account for 38.63, 49.86, 10.34 and 1.17 percent, respectively. The landless holdings account for 14.03 percent of 28.17 million total holdings (BBS, 2012).

Now a day, food security has become a major concern for the country's policymakers in the wake of unusual price like of food items in domestic and international markets. To achieve immediate gain, hybrid seeds are being introduced with private-public patronization (Islam, 2008).

In order to face the chronic food shortage, it is essential to increase agricultural productivity in Bangladesh. For this reason improved agricultural technologies should be used with great care. But in practice till today only one-third of the total cultivable land is covered by the modern technology. The overall development of the country and prosperity of her people is almost absolutely dependent on agriculture.

Vegetable production in Bangladesh has increased between 1980 and 2003, with an average annual growth rate of 2.8 percent. Most of this growth can be attributed to area expansion (2.6 percent) and only a small share to yield increases (0.2 percent).

Brinjal or eggplant (*Solanum melongena* L.) is an important solanaceous crop of sub-tropics and tropics. The name brinjal is popular in Indian subcontinents and is derived from Arabic and Sanskrit whereas the name eggplant has been derived from the shape of the fruit of some varieties, which are white and resemble in shape to chicken eggs. The varieties of *Solanum melongena* L. display a wide range of fruit shapes and colors, ranging from oval or egg-shaped to long club-shaped; and from white, yellow, green through degrees of purple pigmentation to almost black.

Brinjal is Bangladesh's third most important vegetable in terms of both yield and area cultivated. It is only surpassed by potatoes and onions. It also known as aubergine is an admired vegetable crop, grown all over the world, though there is a heavy concentration in Asia. In 2007, China and India contributed respectively 56 percent and 26 percent of the world's production of brinjal. The crop is mainly cultivated on small family farms and is an important source of cash income for many resource-poor farmers in Bangladesh. It is also an important source of nutrition (Meherunnahar and Paul, 2009).

Brinjal fruit (unripe) is primarily consumed as cooked vegetable in various ways and dried shoots are used as fuel in rural areas. It is low in calories and fats, contains mostly water, some protein, fiber and carbohydrates. It is a good source of minerals and vitamins and is rich in total water soluble sugars, free reducing sugars, amide proteins among other nutrients. Brinjal consists of almost 95 percent of water and is superior in terms of fiber, folic acid, manganese, thiamin, Vitamin B6, magnesium and potassium contents to that of most other vegetables. The composition of edible portion of brinjal is given in table 1.1.

Table 1.1 Composition per 100 g of edible portion

Calories	24.0	Sodium (mg)	3.0
Moisture content (percent)	92.7	Copper (mg)	0.12
Carbohydrates (percent)	4.0	Potassium (mg)	2.0
Protein (g)	1.4	Sulphur (mg)	44.0
Fat (g)	0.3	Chlorine (mg)	52.0
Fiber (g)	1.3	Vitamin A (I.U.)	124.0
Oxalic acid (mg)	18.0	Folic Acid (µg)	34.0
Calcium (mg)	18.0	Thiamine (mg)	0.04
Magnesium (mg)	15.0	Riboflavin (mg)	0.11
Phosphorus (mg)	47.0	B-carotene (µg)	0.74
Iron (mg)	0.38	Vitamin C (mg)	12.0
Zinc (mg)	0.22	Amino Acids	0.22

Source: *National Institute of Nutrition, 2007*

On an average, the oblong-fruited eggplant cultivars are rich in total soluble sugars, whereas the long-fruited cultivars contain a higher content of free reducing sugars, anthocyanin, phenols, glycoalkaloids (such as solasodine), dry matter, and amide proteins (Bajaj *et al*., 1979). A high anthocyanin content and a low glycoalkaloid content are considered essential, regardless of how the fruit is to be used. For processing purposes, the fruit should have a high dry matter content and a low level of phenolics. Bitterness in eggplant is due to the presence of glycoalkaloids which are of wide occurrence in plants of *Solanaceae* family. The glycoalkaloid contents in the Indian commercial cultivars vary from 0.37mg/100g fresh weight to 4.83mg) (Bajaj *et al*., 1981). Generally, the high content of glycoalkaloids (20mg/100g fresh weight) produce a bitter taste and off flavor. The discoloration in eggplant fruit is attributed to high polyphenol oxidase activity. The cultivars which are least susceptible to

discoloration are considered suitable for processing purposes.

The Bt brinjal is a suite of transgenic brinjals (also known as an eggplant or aubergine) created by inserting a crystal protein gene (Cry1Ac) from the soil bacterium *Bacillus thuringiensis* into the genome of various brinjal cultivars. The Bt brinjal has been developed to give resistance against lepidopteron insects, in particular the Brinjal Fruit and Shoot Borer (*Leucinodes orbonalis*). Bt brinjal was approved for commercial release in Bangladesh in 2013. On October 30, 2013 with approvals from the ministries of Environment and Forests (MoEF) and Agriculture (MoA), the Bangladesh Agricultural Research Institute (BARI) received permission to release four varieties of Bt brinjal in time for the 2013–2014 growing season: Bt Uttara, Bt Kajla, Bt Nayantara, and Bt ISD006. The Bt varieties undertook seven years of field and greenhouse trials in various environmental and geographic locations in Bangladesh (Wikipedia, 2015).

1.2 Statement of the Problem

When an innovation is introduced to the farmer, it may be readily accepted, partly accepted, completely or partly rejected or sometimes, it may so happen that the adoption of innovation is discontinued or totally stopped. These happening are certainly due to a number of factors. Adoption of brinjal production technologies are influenced by the farmers 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 brinjal production technologies. The purpose of this study therefore, was to explore the relationships between different characteristics of the farmers and their adoption of brinjal production technologies. To expand the cultivation of this vegetable crop in other parts of the country, the knowledge on the present situation of brinjal production technologies in this region will be significantly contributory to design appropriate programs for its widespread cultivation.

The study aimed at providing information regarding the following queries:

1. What are the characteristics of the brinjal cultivating farmers?
2. What is the extent of use of brinjal production technologies by the farmers?
3. What was the contribution of the selected characteristics of the farmers with their use of brinjal production technologies?

1.3 Objectives of the Study

In view of the problems, stated above, the following objectives put forward for giving proper direction to the study:

1. To determine and describe the following selected characteristics of the farmers:

i.	Age	vi.	Brinjal farming experience
ii.	Level of education	vii.	Agricultural training exposure
iii.	Family size	viii.	Extension media contact
iv.	Crop farming area	ix.	Brinjal cultivation knowledge
v.	Annual family income	x.	Problem faced in brinjal cultivation

2. To determine the extent of use brinjal production technologies by the farmers
3. To explore the contribution of the selected characteristics of the farmers on their use brinjal production technologies

1.4 Justification of the Study

Bangladesh is an agro-based country. About 68 percent of the people are living in rural areas and they are directly or indirectly involved in vegetable cultivation (BBS, 2014). The farmers of the country are the center point of agriculture. They are closely involved with vegetable cultivation technologies. Brinjal is one of the most important vegetables of Bangladesh. Brinjal farmers have no sufficient knowledge on the use of Brinjal production technologies. In other side, brinjal production technologies increase yield and production. Many government and non-government organizations are working in Bangladesh in the field of agriculture as well as brinjal production. The farmers are the ultimate users of modern technologies such as fertilizers, hybrids, agro-chemicals and irrigation water etc.

The present study was dealing with the farmers to know the use of brinjal production technologies. This study was a modest attempt to find out the suitable brinjal production technologies such proper land preparation, use of balanced fertilizer in brinjal cultivation, use of modern brinjal varieties, use of quality seedling of proper age, use of IPM in brinjal field, use of sex pheromone etc. The findings from the study may be helpful to the researcher for further studies of similar nature and to the extension personnel who are directly involved in different agricultural development programmers and to the planners for making effective plans.

The study will also aid extension workers to learn the production problems of the vegetables and therefore they will able to give suggestions to the farmers related to various aspects of vegetable cultivation.

1.5 Assumptions of the Study

The researcher made the following assumptions while undertaking the study:

1. The respondents were capable of furnishing proper responses to the questions included in the interview schedule.
2. The researcher who has acted as interviewer was well adjusted to the social and cultural environment of the study area. Hence, the data collected by the researcher from the respondents furnished their correct opinions.
3. The responses furnished by the respondents were reliable and valid. They expressed the truth about their convictions and awareness.
4. Views and opinions given by the respondents included in the sample of the study were the representative views and opinions of the whole population of the study area.
5. The information sought reveals the real situation to satisfy the objectives of the study.
6. The items, questions and scales included in the questionnaire were relevant and appropriate.

7. Data were normally and independently distributed.
8. The sampling procedures followed for this study, the analysis of data and interpretations etc. were free from all biases.

1.6 Limitations of the Study

In order to make the study meaningful and manageable from the point of view of the researcher, it was necessary to impose some limitations as stated below:

1. Since the findings of the study were based on the opinion expression capability and ability to recall of the respondents, the study was confined to both their ability to recall and also their sincerity and honesty in providing the needed information.
2. There are many characteristics of the farmers but only ten of them were selected for this study.
3. For investigation of this study, the researcher depended on the data as furnished by the selected farmers during the time of data collection.
4. The study was conducted at Kashiani upazila under Gopalganj District.
5. The study was limited mainly use of brinjal production technologies.
6. There are various aspects in the process of brinjal production. It was not possible to study the use of technologies related to all the aspects of brinjal production in a single study. In this study, the researcher studied the use of technologies by the farmers on few technologies of brinjal production.
7. Conceptually, use of technologies of the farmers was determined from the respondents opinion collected through their statements.

1.7 Definition of Important Terms

For the purpose of clarity, certain terms frequently used throughout the entire study are defined and explained as follows:

Age: Ageof a respondent can be defined as the span of his/her life and was measured by the number of years from his/her birth to the time of interviewing.

Level of education: Level of education refers to the development of desirable knowledge, skill and attitude in an individual through the experience of reading, writing, observation and relative activities. It was measured by the successful year of schooling of the respondents.

Family size: Family size refers to actual number of members in a subject's family who live in a fixed dwelling unit and eat from the same cooking arrangement.

Crop farming area: Crop farming areameans the total area of land on which a farmer's family carries on farming operations in terms of full benefit to the family.

Annual family income: Annual family incomereferred to the total annual earnings of all the family members of a respondent from agriculture, livestock and fisheries and other accessible resources.

Extension media contact: Extension media contactreferred to one's becoming accessible to the influence of extension contact through different extension teaching methods or refers to the individual exposure to or contact with information sources.

Brinjal farming experience: It means the experience which one gains from brinjal farming activities directly. Farming experience of Brinjal farmers was measured in years which he gained from involvement in farming activities.

Agricultural training exposure: It was used to refer to the completion of an activity by the farmerwhich was offered by the government, semi-govt. or non-government organization (s) to improve the knowledge & skills of farmers for better performing an agricultural job.

Brinjal: A herbaceous vegetable plant lacking a permanent woody stem; many are flowering garden plants; some having medicinal properties.

Farmer: Farmermeans the principal decision maker involved in the management of a brinjal farm, not always be the head of the farm-household (Khan, 2004).

Technology: Technology involves the design and production of innovative and creative products to meet the needs and wants of others. Technology can be viewed as an activity that forms or changes culture (Borgmann, 2006). The word technology refers to the making, modification, usage, and knowledge of tools, machines, techniques, crafts, systems, and methods of organization, in order to solve a problem, improve a pre-existing solution to a problem, achieve a goal, handle an applied input/output relation or perform a specific function.

Problem faced: Problem faced refered to the influences/aspects/features/issues that act as obstruction or barrier in farmer's brinjal cultivation.

CHAPTER 2

REVIEW OF LITERATURE

Review of literature presented in this Chapter is the reviews of researches conducted along with the line of the major focus of this study. The aim of this study was to have an understanding on use of brinjal production technologies by the farmers and to explore the contribution of the selected characteristics of the farmers on their use of brinjal production technologies. Available literatures were reviewed in this Chapter to search out related works conducted in home and abroad. This Chapter is divided into three sections, the first section deals with the general findings on use of brinjal production technologies and second section is devoted to a discussion on the findings of research studies exploring relationships between the selected characteristics of the farmers and use of production technologies. The third section deals with the conceptual frame work of the study.

2.1 Review of Literature on General Context on Use of Technologies

Haider *et al*. (200l) observed that one-third (37 percent) of the farmers fell in low adopter category compared to 32.5 percent in optimum adopter, 23.5 percent above optimum adopter and only 7 percent had non-adopter on Nitrogenous fertilizer. In respect of extent of phosphoric fertilizer two thirds (68 percent) of the farmers belonged to non adopter category compared to 23 percent having above optimum adopter, 5 percent optimum adopter and only 4 percent had below optimum adopter of phosphoric (P) fertilizer. In respect of extent of potassic fertilizer three quarters categories compared to 10 percent falling bellow optimum adopter, 8 percent optimum adopter and only 3 percent above optimum adopter of potassic (K) fertilizer

Aurangojeb (2002) studied on the extent of adoption of integrated farming technology by the rural women in RDRS. He observed that the highest proportion of rural women (64%) used high level, (28 percent) of the women used medium level and only 8% used low level integrated homestead farming technologies.

Islam (2002) conducted a study on adoption of modern agricultural technologies by the farmers of Sandwip. The study revealed that 69 percent of the farmers had medium adoption while 13 percent had low adoption and 18 percent had high adoption of modern agricultural technologies.

Hasan (2003) found that majority (60 percent) of the farmers had medium adoption while 33 percent had low adoption and only seven percent had high adoption of recommended potato cultivation practices.

Rahman (2003) observed that ninety seven percent of the pineapple growers adopted 2-4 intercrops viz. Zinger, turmeric, sweet ground and aroid in pineapple cultivation.

Hasan (2006) reported that about three-fifths (63 percent) of the growers had medium adoption while 17 percent had low adoption and 20 percent had high adoption of improved practices in litchi cultivation.

Yadav and Kumar (2006) found that majority (78.75 percent) of the farmers had medium adoption while 12.50 percent had low adoption and only 8.75 percent had high adoption of scientific wheat cultivation technologies.

Nande and Basunathe (2009) revealed that majority (65.12 percent) of the farmers had medium adoption while 18.60 percent had low adoption and 16.28 percent had high adoption of improved dairy cattle management practices.

Singh (2010) observed that majority (58 percent) of the farmers had medium adoption while 24 percent had low adoption and 18 percent had high adoption of recommended potato cultivation practices.

Prasad and Ram (2010) found that majority (50.00 percent) of the farmers had medium adoption while 16.37 percent had low adoption and 33.63 percent had high adoption of improved wheat cultivation technologies.

Ziauddin and Goswami (2010) reported that 38.3 percent of the farmers had medium adoption while 25.8 percent had low adoption and 35.8 percent had high adoption of scientific fish cultivation practices.

Singh (2010) observed that majority (66 percent) of the farmers had medium

adoption while 19 percent had low adoption and 15 percent had high adoption of recommended vegetable cultivation practices.

Singh and Priyadarshi (2010) found that majority (59.5 percent) of the farmers had medium adoption while 28 percent had low adoption and 12.5 percent had high adoption of improved mango production practices.

Baruah and Singha (2011) revealed that 58.00 percent of the farmers had medium adoption while 31.11 percent had low adoption and 24.44 percent had high adoption of recommended rice cultivation practices.

Singh and Barman (2011) found that majority (48 percent) of the farmers had medium adoption while 25 percent had low adoption and 27 percent had high adoption of recommended tomato and cauliflower cultivation technologies.

Kumbhare and Singh (2011) observed that majority (53.75 percent) of the farmers had high adoption while 14.5 percent had low adoption and 31.75 percent had medium adoption of improved wheat and paddy production technology.

Yadaw and Sharma (2012) reported that majority (82.5 percent) of the farmers had high adoption while only 5.0 percent had low adoption and 12.50 percent had medium adoption of recommended goat rearing practices.

Mehta and Sonawane (2012) revealed that 73 percent of the farmers had medium adoption while 10 percent had low adoption and 17 percent had high adoption of recommended mango cultivation practices.

Devi (2013) found that majority (59.09 percent) of the farmers had medium adoption while 18.18 percent had low adoption and 22.73 percent had high adoption of dairy farming technologies.

Chouhan and Singh (2013) reported that majority (74.16 percent) of the farmers had medium adoption while 12.50 percent had low adoption and 13.34 percent had high adoption of improved sugarcane cultivation practices.

Rao and Singh (2014) observed that majority (65.33 percent) of the farmers had medium adoption while 10 percent had low adoption and 24.67 percent had high adoption of recommended pineapple cultivation practices.

Deshmukh and Bariya (2014) found that majority (65.83 percent) of the farmers had medium adoption while 19.17 percent had low adoption and 15.00 percent had high adoption of recommended *Kharif* groundnut practices.

2.2 Relationship between Farmers Selected Characteristics and Use of Brinjal Production Technologies

2.2.1 Age and use of production technologies

Ali (2004) found there was no relationship between age of the farmers and adoption of aquaculture technology by them.

Hasan (2006) observed that age of the growers did not show any significant relationship with their adoption of improved practices in litchi cultivation.

Ghosh and Maitra (2008) reported that age of the farmers show negative and significant relationship with their adoption of dairy farming practices.

Nande and Basunathe (2009) revealed that age of the farmers did not show any significant relationship with their adoption of improved dairy cattle management practices.

Singh (2010) observed that age of the farmers show negative and significant relationship with their adoption of potato cultivation practices.

Ziauddin and Goswami (2010) found that age of the farmers show negative and significant relationship with their adoption of scientific fish cultivation practices.

Yadaw and Sharma (2012) revealed that age of the farmers show negative relationship with their adoption of recommended goat rearing practices.

Chander and Akila (2012) reported that age of the farmers did not show any significant relationship with their adoption of draught bullock management.

Narayan and Patil (2012) found that age of the farmers show negative and not

significant relationship with their adoption of cashew nut cultivation.

Mehta and Sonawane (2012) revealed that age of the farmers show negative relationship with their adoption of recommended mango cultivation practices.

Chouhan and Singh (2013) reported that age of the farmers show significant relationship with their adoption of improved sugarcane cultivation practices.

Devi (2013) found that age of the farmers did not show any significant relationship with their adoption of dairy farming technologies.

Rao and Singh (2014) observed that age of the farmers show negative and significant relationship with their adoption of pineapple cultivation practices.

2.2.2 Level of education and use of production technologies

Aurangozeb (2002) conducted a study on adoption of integrated farming technologies by the rural women in RDRS. He found that there was a positive relationship between education and their adoption of integrated farming technologies.

Islam (2003) conducted a study on adoption of organic manures. He found that there was a positive and significant positive relationship between education of the farmers and their adoption of organic manures.

Hasan (2006) found that education of the growers showed significant and positive relationship with their adoption of improved practices in litchi cultivation.

Nande and Basunathe (2009) reported that education of the growers showed positive and significant relationship with their adoption of improved dairy cattle management practices.

Singh (2010) observed that education of the farmers showed significant and positive relationship with their adoption of potato cultivation practices.

Ziauddin and Goswami (2010) revealed that education of the farmers did not show any significant relationship with their adoption of scientific fish cultivation practices.

Chander and Akila (2012) found that education of the farmers show positive

but not significant relationship with their adoption of draught bullock management.

Yadaw and Sharma (2012) reported that education of the farmers did not show any significant relationship with their adoption of recommended goat rearing practices.

Mehta and Sonawane (2012) observed that education of the farmers showed significant relationship with their adoption of recommended mango cultivation practices.

Chouhan and Singh (2013) revealed that education of the farmers show significant relationship with their adoption of improved sugarcane cultivation practices.

Devi (2013) reported that education of the farmers showed significant relationship with their adoption of dairy farming technologies.

Rao and Singh (2014) found that education of the farmers showed significant and positive relationship with their adoption of pineapple cultivation practices.

2.2.3 Family sizes and use of production technologies

Hasan (2006) found that family size of the growers showed significant and negative relationship with their adoption of improved practices in litchi cultivation.

Ghosh and Maitra (2008) reported that family size of the farmers show negative relationship with their adoption of dairy farming practices.

Nande and Basunathe (2009) observed that family size of the farmers did not show any significant relationship with their adoption of improved dairy cattle management practices.

Singh (2010) found that family size of the farmers showed positive relationship with their adoption of potato cultivation practices.

Ziauddin and Goswami (2010) revealed that family size of the farmers show

negative and non- significant relationship with their adoption of scientific fish cultivation practices.

Singh and Priyadarshi (2010) reported that family size of the farmers showed negative significant relationship with their adoption of improved mango production practices.

Mehta and Sonawane (2012) found that family size of the farmers showed negative relationship with their adoption of recommended mango cultivation practices.

Yadaw and Sharma (2012) observed that family size of the farmers did not show any significant relationship with their adoption of recommended goat rearing practices.

Chander and Akila (2012) revealed that family size of the farmers showed negative relationship with their adoption of draught bullock management.

Chouhan and Singh (2013) reported that family size of the farmers did not show any significant relationship with their adoption of improved sugarcane cultivation practices.

Devi (2013) found that family size of the farmers did not show any significant relationship with their adoption of dairy farming technologies.

Rao and Singh (2014) observed that family size of the farmers did not show any significant relationship with their adoption of pineapple cultivation practices.

2.2.4 Crop farming area and use of production technologies

Hasan (2006) revealed that farm size of the growers showed significant and positive relationship with their adoption of improved practices in litchi cultivation.

Singh (2010) found that farm size of the farmers showed positive relationship with their adoption of potato cultivation practices.

Ziauddin and Goswami (2010) observed that farm size of the farmers show positive and significant relationship with their adoption of scientific fish cultivation practices.

Chander and Akila (2012) reported that farm size of the farmers showed positive and significant relationship with their adoption of draught bullock management.

Yadaw and Sharma (2012) found that knowledge of the farm size showed positive and highly significant relationship with their adoption of recommended goat rearing practices.

Chouhan and Singh (2013) observed that farm size of the farmers show significant relationship with their adoption of improved sugarcane cultivation practices.

Devi (2013) found that farm size of the farmers show negative relationship with their adoption of dairy farming technologies.

Rao and Singh (2014) reported that farm size of the farmers showed positive and significant relationship with their adoption of pineapple cultivation practices.

2.2.5 Annual family income and use of production technologies

Hasan (2006) reported that annual income of the growers showed significant and positive relationship with their adoption of improved practices in litchi cultivation.

Singh (2010) found that annual income of the farmers showed significant relationship with their adoption of potato cultivation practices.

Ziauddin and Goswami (2010) observed that annual income of the farmers showed positive and significant relationship with their adoption of scientific fish cultivation practices.

Yadaw and Sharma (2012) revealed that annual income of the farmers showed

positive and highly significant relationship with their adoption of recommended goat rearing practices.

Mehta and Sonawane (2012) found that annual income of the farmers showed positive and highly significant relationship with their adoption of recommended mango cultivation practices.

Chouhan and Singh (2013) observed that annual income of the farmers showed significant relationship with their adoption of improved sugarcane cultivation practices.

Rao and Singh (2014) found that annual income of the farmers had positive and significant relationship with their adoption of pineapple cultivation practices.

2.2.6 Farming experience and use of production technologies

Hoque (1993) in his study found that farming experience had negative significant relationship with their adoption of improved practices in sugarcane cultivation.

Sarkar (1995) in his study observed that farming experience had no relationship with their use of communication media for receiving agricultural information.

Alam (1996) in his study observed that there was no relationship between the farming experience of the farmers and their awareness regarding homestead deforestation.

Chowdhury (1996) conducted a study in Nowabgonj, Dhaka on the factor affecting adoption behavior of Boro rice growers. He reported that farming experience significantly influenced farmers in accepting production technology.

Sarkar (1997) found that farming experience of potato growers had no significant relationship with their adoption of improved potato cultivation practices.

2.2.7 Agricultural training exposure and use of production technologies

Hossain (1981) showed that proper training raise the knowledge and skill level of participants significantly.

Verma*et al.* (1989) found there was significant change in attitude of rural women from before training to after training in improved home making tasks. They said that due to gain in knowledge the attitude became more favorable.

Islam (2002) conducted a study on farmers' knowledge and adoption of ecological agricultural practices under the supervision of Proshika. He found that agricultural training exposure of the farmers had no significant relationship with their adoption of ecological agricultural practices.

Haque (2003) found that training received of the respondent had positive significant relationship with their practices in farmers' adoption of modern maize cultivation technologies.

2.2.8 Extension media contact and use of production technologies

Hasan (2006) observed that extension contact of the growers showed significant relationship with their adoption of improved practices in litchi cultivation.

Ghosh and Maitra (2008) found that extension contact of the growers showed positive and highly significant relationship with their adoption of dairy farming practices.

Nande and Basunathe (2009) reported that extension contact of the growers showed positive and significant relationship with their adoption of improved dairy cattle management practices.

Singh (2010) revealed that extension contact of the farmers showed positive relationship with their adoption of potato cultivation practices.

Ziauddin and Goswami (2010) found that extension contact of the farmers showed positive and significant relationship with their adoption of scientific

fish cultivation practices.

Singh and Barman (2011) observed that extension contact of the farmers showed significant relationship with their adoption of tomato and cauliflower cultivation technologies.

Yadaw and Sharma (2012) reported that extension contact of the farmers showed positive and significant relationship with their adoption of recommended goat rearing practices.

Mehta and Sonawane (2012) found that extension contact of the farmers showed positive and highly significant relationship with their adoption of recommended mango cultivation practices.

Chouhan and Singh (2013) revealed that extension contact of the farmers showed significant relationship with their adoption of improved sugarcane cultivation practices.

Devi (2013) reported that extension contact of the farmers showed positive and significant relationship with their adoption of dairy farming technologies.

Rao and Singh (2014) found that extension contact of the farmers showed positive and significant relationship with their adoption of pineapple cultivation practices.

2.2.9 Cultivation knowledge and use of production technologies

Hasan (2006) found that knowledge of the growers showed significant and positive relationship with their adoption of improved practices in litchi cultivation.

Ghosh and Maitra (2008) observed that knowledge of the growers showed positive and highly significant relationship with their adoption of dairy farming practices.

Singh (2010) revealed that knowledge of the farmers showed positive and significant relationship with their adoption of potato cultivation practices.

Ziauddin and Goswami (2010) reported that knowledge of the farmers show

positive and significant relationship with their adoption of scientific fish cultivation practices.

Singh and Barman (2011) observed that knowledge of the farmers showed significant relationship with their adoption of tomato and cauliflower cultivation technologies.

Chander and Akila (2012) found that knowledge of the farmers showed positive and significant relationship with their adoption of draught bullock management.

Yadaw and Sharma (2012) revealed that knowledge of the farmers showed positive and highly significant relationship with their adoption of recommended goat rearing practices.

Mehta and Sonawane (2012) found that knowledge of the farmers show positive and highly significant relationship with their adoption of recommended mango cultivation practices.

Chouhan and Singh (2013) reported that knowledge of the farmers showed significant relationship with their adoption of improved sugarcane cultivation practices.

Devi (2013) found that knowledge of the farmers showed positive and significant relationship with their adoption of dairy farming technologies.

2.2.10 Problem faced and use of production technologies

Muhammad (1974) studied adoption of insect control measures. The study indicated a positive relationship between community problem awareness and adoption of inset control measures.

Hossain (1983) studied adoption of HYV rice by the rice farmers in Bhabakhali union under Mymensingh district. The findings indicated no relationship between community problem awareness and adoption of HYV rice.

Kashem and Hossaion (1992) studied adoption study revealed a positive

relationship between adoptions of sugarcane farmers behavior of sugarcane farmers. The community problem is awareness and adoption of sugarcane farmers.

Rahman (1995) in his study identified problems faced by farmers' in cotton cultivation. Non-availability of quality seed in time, unfavorable and high cost of fertilizer and insecticides, lack of operating capital, not getting fair weight and reasonable price according to grade, affects of cattle in cotton field, lack of technical knowledge, lack of storage facility, stealing from field at maturity stage, and late buying of raw cotton by Cotton Development Board were identified as major problems of cotton farmers in Mymensingh district.

Salam (2003) in his study identified constraints in adopting environmentally friendly farming practices. Top six identified constraints according to their rank order were: i) low production due to limited use of fertilizer (ii) lack of organic matter in soil, (iii) lack of Govt. support for environmentally friendly farming practices, (iv) lack of capital and natural resources for integrated farming practices, (v) lack of knowledge on integrated farm management and (vi) unavailability of pest resistant varieties of crops.

2.3 Conceptual Framework of the Study

In scientific research, selection and measurement of variables constitute an important task. The conceptual framework of Rosenberg and Hovland (1960) was kept in mind while making structural arrangements for the dependent and independent variables. This study is concerned with the use of brinjal production technologies by the farmers. Thus the use of brinjal production technologies was the dependent variable and 10 selected characteristics of the farmers were the considered as the independent variables. Use of brinjal production technologies of an individual may be influenced and affected through interacting forces of many independent variables. It is not possible to deal with all independent variables in a single study.

Therefore, it was necessary to limit the independent variables, which includedage, level of education, family members, crop farming area, annual family income,

brinjal farming experience, agricultural training exposure, extension media contact, brinjal cultivation knowledge and problem faced in brijal cultivation.

In the previous section of the chapter use of production technologies of different crops were reviewed. Again, relationship of the selected characteristics of the farmers with their use of production technologies of different crops was reviewed.

But, no literature was found directly related with the use of brinjal production technologies and the contribution the selected characteristics of the brinjal farmers on their use of brinjal production technologies. On the considerations the conceptual framework has been developed for this study, which is diagrammatically shown in the Figure 2.1.

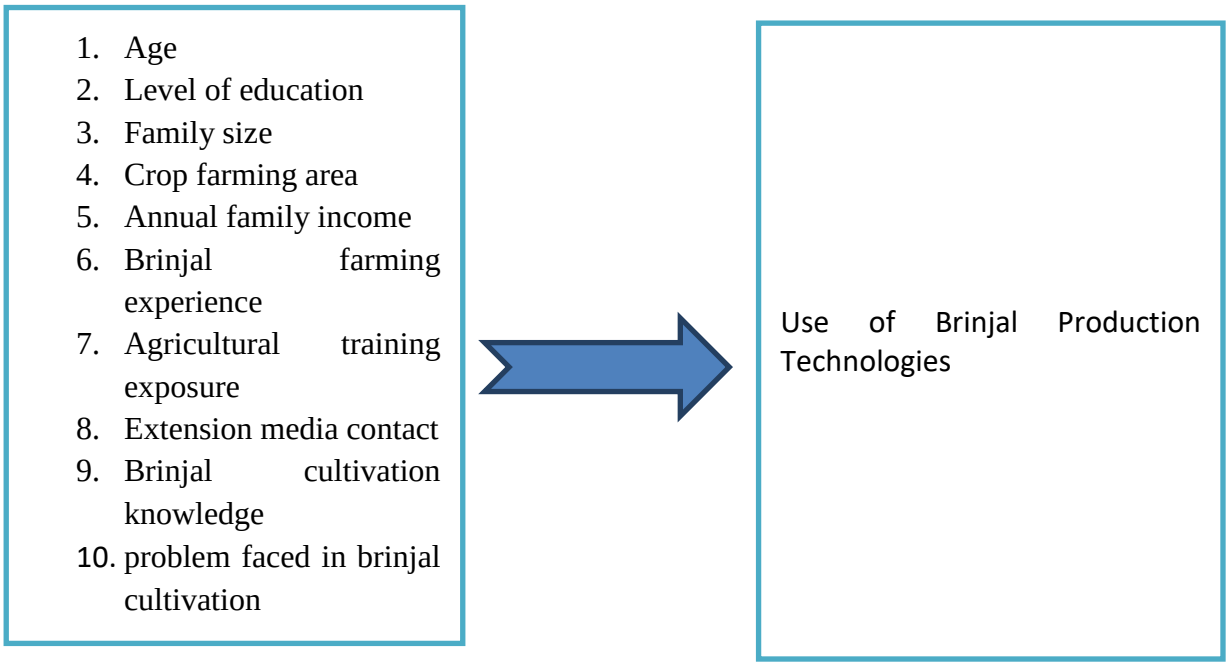

Fig.2.1 Conceptual Framework of the Study

CHAPTER 3

METHODOLOGY

In any scientific research, methodology deserves a very careful consideration. Methodology and procedures are the important factors in conducting a research. Appropriate methodology used in research helps to collect valid and reliable data and analyze the information purposively to arrive at correct decision. This enables the researcher to collect valid and reliable information related to the hypotheses, which

can be analyzed in order to arrive at correct conclusion. The methods and procedures followed in conducting this research have been discussed in this Chapter.

3.1 Locale of the Study

The present study was conducted in two unions namely Singa and Puisur of Kashiani upazila under Gopalganj district. Among the upazilas, Kashiana upazila is one of the agriculturally important upazila where brinjal are intensively cultivated along with agricultural crop production. Most of the farmers of this area are directly and/or indirectly engaged in agricultural activities and few people are service holders and businessmen. The geographical location of the study area is at $22^0 50'$ to $23^0 20'$ north latitudes and $89^0 30'$ to $90^0 05'$ east longitudes. A map of Gopalganj district showing Kashiani upazila and showing study area given in figure 3.1 and 3.2 respectively.

3.2 Population and Sampling Procedure

Multi-stage random sampling procedure was followed in this study. Kashiani upazila of Gopalganj district was purposively selected due to investigator's familiarity of the area, language and culture of the people. Two unions of Kashiani upazila namely Singa and Puisur were selected purposively. These two unions consist of 12 villages in which 2 villages were selected randomly. In these 2 villages contain 1176 brinjal cultivating farmers which constitutes the population of the study. Up to data list of brinjal farmers are selected two villages were prepared with the help of SAAOs of the areas.

From the total population 89 brinjal cultivating farmers were selected proportionately as sample by simple random sampling at 95% confidence level & 10% confidence interval by using calculator developed by creative research system (1984). A reserve list of 9 farmers (about 10 percent of the sample) was prepared so that these farmers could be used for interview in case of unavailability of any farmer included in the original sample in spite of utmost effort during collection of data.

The distribution of population, sample and reserved size are given in Table 3.1.

Table 3.1 Distribution of population and sample of farmers

Name of the	Villages	Population	Sample	Reserve

unions				list
1.Singa	Singa	666	49	5
2. Puisur	Debasur	510	40	4
	Total	**1176**	**89**	**9**

3.3 Research Design of the Study

Research design is a comprehensive master plan of the research study to be undertaken. It is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure. The research design followed in the present study is ex-post-facto, because of uncontrollable and non-manipulating variables. The ex-post-facto research being a systematic empirical inquiry the scientist has no direct control over independent variables (Kerlinger, 1973).

Designing the research for the present study was taken in a scientific manner. Firstly, different research themes are collected and analyzed followed by research problem formulation. Reviews were studied to select appropriate variables and preparation of questionnaire. Pretesting of the interview schedule was done before final data collection. Finally data were collected, analyzed and report was prepared.

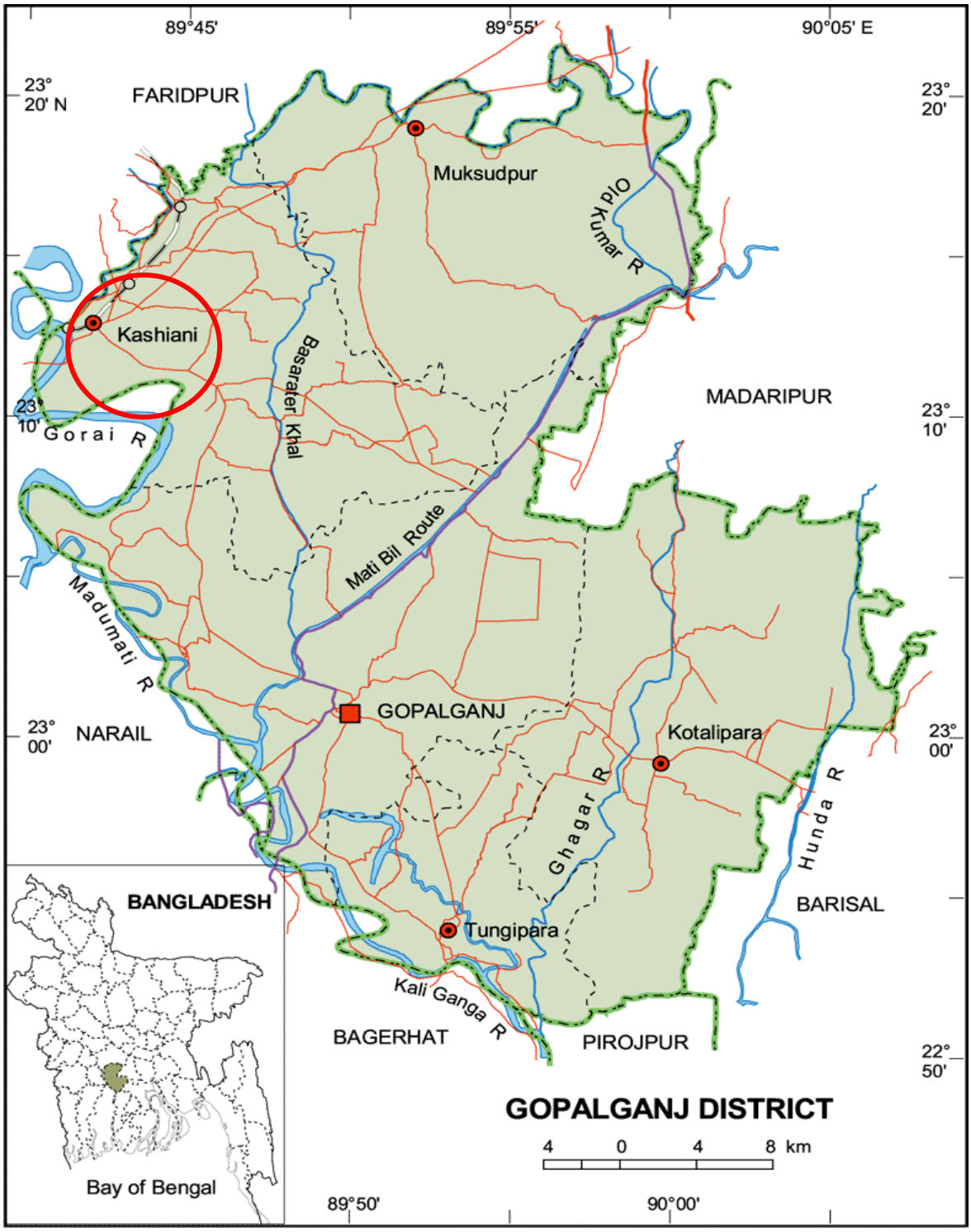

Figure 3.1 Map of Gopalganj district showing Bangladesh inset

Figure 3.2 Map of Kashiani upazila showing the study area

3.4 Research Instrument

An interview schedule was prepared mostly with closed form questions. Simple

questions and statements were included in the schedule to obtain information regarding the research topic. Scales were developed for suitable scores in use of brinjal production technologies and also characteristics of the farmers namely age, level of education, family size, crop farming area, annual family income, brinjal farming experience, agricultural training exposure, extension media contact, brinjal cultivation knowledge and problem faced in brinjal production technologies.

The schedule was translated in Bengali for clarification to the respondents. The schedules were pre-tested in actual field situation before using the same for final collection of data among 9 respondents of the study area. Necessary correction, additions and alternations were made in the interview schedule on the basis of the results of pre-test.

3.5 Variables and their Measurement Techniques

A well-organized piece of research usually contains at least two important elements independent variables and dependent variable. In any scientific research, the selection and measurement of variables constitutes a significant task. In these connections the researcher reviewed the literature to widen his understanding about the nature and scope of the variables relevant to this piece of research.

The selected 10 characteristics of the farmers namely age, level of education, family size, crop farming area, annual family income, brinjal farming experience, agricultural training exposure, extension media contact, brinjal cultivation knowledge and problem faced in brinjal cultivation were considered as independent variables. On the other hand, use of brinjal production technologies was selected as dependent variable of the present study.

3.5.1 Measurement of independent variables

The procedure followed in measuring the independent variables have been discussed in the subsequent sections.

3.5.1.1 Age

The age of the respondents was measured in terms of years from his/her birth to the day of interviewing. A unit score was assigned for each year of one's age. It was measured in a complete year on the basis of responses of the respondents. The variable appears in item No. 1 in the interview schedule (Appendix-A).

3.5.1.2 Level of education

Level of education was measured in terms of one's year of schooling. If a respondent did not know how to read and write, his score was given as zero (0). A score of 0.5 was assigned to that respondent who could sign his/her name only. Besides this, a respondent was given a score of one for every year of successful schooling i.e. 1 for class I, 2 for class II and so on. Similarly if a respondent passed the final examination of class V his/her level of educational score was taken as five. The variable appears in item No. 2 in the interview schedule (Appendix-A).

3.5.1.3 Family Size

The family sizeof the respondent was measured on the basis of the number of family members including her/himself, his wife/husband, children and other dependents living in the same family. For example, if a respondent had five members in his/her family the score of the family members was taken as five. The variable appears in item No. 3 in the interview schedule (Appendix-A).

3.5.1.4 Crop farming area

Crop farming area of a respondent refers to the total area of land on which his/her family carried out farming operations. The variable appears in item No. 4 in the interview schedule (Appendix-I). It was computed in hectare by using following formula:

$$FS = A_1 + A_2$$

Where,

FS = Crop farming area

A_1 = Brinjal farming area

A_2 = Othercrops farming area

3.5.1.5 Annual family income

The annual family income of a farmer was measured on the basis of his/her familys yearly earnings from crops (rice, maize, wheat, potato etc.), fish, business, service and others. The annual family income was expressed in Taka. In measuring the variable, total earning in Taka of a respondent was converted into unit score. A score of one (1) was assigned for each '1000' Taka of the annual income of a respondent. The variable appears in item No. 5 in the interview schedule (Appendix-A).

3.5.1.6 Brinjal farming experience

Brinjal farming experience was determined by total number of years since a farmer engaged in brinjal cultivation. In measuring the variable, total year of engagement of a respondent with brinjal cultivation was converted into unit score. A score of one (1) was assigned for each year of the experience. The variable appears in item No. 6 in the interview schedule (Appendix-A).

3.5.1.7Agricultural training exposure

Agricultural training exposure was determined by total number of days a respondent received training in his/her entire life. For example, if a respondent received three (3) days training then the score was given 3 and so on. This variable appears in the item No. 7 in the interview schedule (Appendix-A).

3.5.1.8 Extension media contact

The extension media contact score was computed for each respondent on the basis of his/her extent of contact with 11 selected extension media among which 4 of them belong to personal contact, 3 of them under group contact and rest 4 of them under mass contact category. For measuring the extension media contact, scoreswere assigned for the extension media as 0, 1, 2 and 3 for the extent of contact for 'not at all', 'rarely', 'occasionally' and 'regularly' respectively. Logical frequencies were

assigned for each attentive response for each media. The variable appears in the item No.8 in the interview schedule (Appendix-A).

Extension media contact score was determined by summing the scores of all the 11extension media contact. Extension media contact score could range from 0 to 33, where 0 indicated no media contact and 33 indicated the highest media contact.

3.5.1.9 Brinjal cultivation knowledge

Brinjal cultivation knowledge of a respondent on performing brinjal cultivation activities was measured by asking 12 questions on different aspects of brinjal cultivation. One (1) score was assigned for one question. Full score was given to the respondents for correct answer and zero (0) for wrong or no answer. For partially correct answer partial score was given on the basis of degree of correctness of the answers. The scores assigned against all the 12 questions were added together to obtain the total brinjal cultivation knowledge score. Thus the brinjal cultivation knowledge score ranged from 0 to 12 where 0 indicated very low knowledge and 12 indicated highest knowledge on brinjal cultivation. The variable appears in the item No. 9 in the interview schedule (Appendix-A).

3.5.1.10 Problem faced in brinjal cultivation

Problems were measured by using of closed form of questions. The farmers were asked to give their opinion on 10 selected problems which were identified during pre-testing of the questionnaire on the use and application of brinjal production technologies. A four point modified Likert scale was used for computing the problem faced score. Weights on responses against each of the 10 problems were assigned as 0 for ‘not at all’, 1 for ‘low’, 2 for medium, and 3 for ‘high’ problem. The weights of responses of all the problems faced by the respondents were added together to obtain the problem faced score. Thus, the possible problems faced score of the respondents could range from 0 to 30, where 0 indicating no problems faced while 30 indicating high problems faced in brinjal cultivation.

For making comparative analysis of the 10 selected problems faced during use of

brinjal cultivation a Problem Faced Index (PFI) was calculated. PFI was calculated for each problem by adopting the following formula:

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

Where,

PFI = Problem Faced Index

P_n = Percentage of farmers faced no problem

P_l = Percentage of farmers faced low problem

P_m = Percentage of farmers faced medium problem

P_h = Percentage of farmers faced high problem

Thus, the possible value of PFI could range from 0 to 300, where 0 indicated no problemfaced and 300 indicated high problem faced in brinjal cultivation.

3.5.2 Measurement of dependent variable

Use of brinjal production technologies by the farmers was the dependent variable of the study. The farmers were asked to give their opinion on11 selected brinjal production technologies. The technologies included proper land preparation, useof balanced fertilizer in brinjal cultivation, use of modern brinjal varieties, use of quality seedling of proper age, use of proper management practices for brinjal cultivation, use of IPM in brinjal field, useofsexpheromone, proper irrigation and drainage, proper intercultural operation for clean cultivation, use of mulching in brinjal field, sorting and grading of harvested brinjal. The rigorous process involved in the selection of use of brinjal production technologies by the farmers can be seen in item number No. 11 in Appendix A.

Use of brinjal production technologies was measured by a four point rating scale.Weights on responses against each of the 11technologies were assigned as 0 for ‘not at all’, 1 for ‘rarely’, 2 for occasionally, and 3 for ‘frequently ‘use. The weights of responses of all the technologiesby the respondents were added together to obtain the technology use score. Thus, the possible score of the respondents could range from 0 to 33, where 0 indicating no use of technologies while 33 indicating highest use of

technologies in brinjal cultivation.

For making comparative analysis of the 11 selected brinjal production technologies a Brinjal Production Technologies Use Index (BPTUI) was calculated. BPTUI of each technology was calculated by adopting the following formula:

$BPTUI = P_n \times 0 + P_r \times 1 + P_o \times 2 + P_f \times 3$

Where,

BPTUI = Brinjal Production Technologies Use Index

P_n = Percentage of farmers used not at all

P_r = Percentage of farmers used rarely

P_o = Percentage of farmers used occasionally

P_f = Percentage of farmers used frequently

Thus, the possible value of BPTUI could range from 0 to 300, where 0 indicated no use and 300 indicated highest use of brinjal production technology.

3.6 Statement of Hypothesis

A hypothesis is a proposition, which can be put to a test to determine its validity. Hypotheses are always in declarative sentence form and they are related, either generally or specifically from variables to variables. In broad sense hypothesis are divided into two categories i.e. research hypothesis and null-hypothesis.

3.6.1 Research hypothesis

Based on review of literatures and development of conceptual framework, the research hypotheses was selected ten characteristics of the brinjal farmers have significant contribution on their use of brinjal production technologies'.

3.6.2 Null hypothesis

The null hypothesis developed for this study was 'there is no contribution of the selected ten characteristics of the farmers and use of brinjal farmers on their use of brinjal production technologies'. The selected characteristics were age, education,

family members, crop farming area, annual family income, brinjal farming experience, Agriculture training exposure, Extension media contact, brinjal cultivation knowledge and problem faced in brinjal production technologies.

3.7 Method and Process of Data Collection

Data for this research were collected by the researcher himself from the sample respondents through personal interviewing. Necessary co-ordination was obtained from the Sub-Assistant Agriculture Officers (SAAOs). To build rapport and motivation in the interview situations, the researcher endeavored to provide conditions that maximum trust maintained each respondent's interest and minimized status difference. Data were collected during 15 December 2015 to 15 January 2016.

3.8 Data Processing and Analysis

3.8.1 Compilation of data

After completion of field survey, data were coded, compiled, tabulated and analyzed in accordance with the objectives of the study. In this process, all the responses in the interview schedule were given numerical coded value. Local units were converted into standard units and qualitative data were converted into quantitative ones by means of suitable scoring whenever necessary. The responses to the questions in the interview schedules were transferred to a excel sheet to facilitate tabulation.

3.8.2 Categorization of data

For describing different characteristics, the respondents were classified into several categories. These categories were developed by considering the nature of distribution of data, general understanding prevailing in the social system and possible scores system. The procedure for categorization of data in respect of different variables is elaborately discussed while describing those variables in Chapter 4.

3.8.3 Statistical technique

The analysis was performed by using Statistical Package for Social Science (SPSS) computer package. Descriptive analysis such as range, number, percentage, mean, standard deviation and rank order were used whenever necessary. For clarity of understanding tables were also used for presenting the data. Pearson's Product Moment Correlation Co-efficient (r) was initially used to examine the relationships between each of the selected characteristics of the farmers with their brinjal production technologies. Full model regression analysis was also done. Due to misleading results from multi co-linearity, stepwise multiple regressions was used to find out the contribution of the independent variables on the dependent variable.At least 5 percent (P=0.05) level of probability was used as a basis for rejection of the null-hypotheses throughout the study.

CHAPTER 4

RESULTS AND DISCUSSION

In this Chapter the findings of the study and interpretation of the results have been presented in three sections according to the objectives of the study. The first section deals with the selected characteristics of the farmers. The second section deals with the use of brinjal production technologies by the farmers. The third and last section deals with contribution of the selected characteristics of the farmers on their use of brinjal production technologies.

4.1 Selected Characteristics of the Farmers

A variety of attributes that aggregate in human life influenced on their activity directly and indirectly. For this reason, it can be assumed that different characteristics of farmers may influence the use of brinjal production technologies by the farmers and hence 10 selected characteristics (i.e. age, level of education, family size, crop farming area, annual family income, brinjal farming experience, agricultural training exposure, extension media contact, brinjal cultivation knowledge and problem faced in brinjal cultivation) were considered as independent variables in this regard. The characteristics of the farmers were classified into suitable categories for description and interpretation in relation to use of brinjal production technologies (Table 4.1).

4.1.1 Age

According to Zope and Smith (1970) an individual's age is one of the most important factors pertaining to his personality makeup, since his need and the way in which he thinks and behaves are all closely related to the number of years he has lived. It is a norm in Bangladeshi traditional cultures that people respect the elder people, seek

advice from them and obey their decisions. The elders are important in many ways they have long experience in many spheres of life.

Table 4.1 Distribution of the respondents according to their age

Range (Year)		Categories	Basis of categorization (Year)	Respondents		Mean	SD
Possible	Observed			Frequency	Percent		
Unknown	23-58	Young aged	≤35	18	20.2	42.47	8.52
		Middle aged	36-50	53	59.6		
		Old aged	>50	18	20.2		
			Total	89	100		

The age of the farmers ranged from 23 to 58, the mean being 42.47 and the standard deviation was 8.51. According to age the farmers were classified into three categories are ‘young aged’ (≤35), ‘middle aged’ (36-50) and ‘old aged’ (>50) as shown in Table 4.1.

Data contained in Table 4.1 reveals that about three fifth (59.6 percent) of the respondents were middle aged compared to 20.2 percent of the respondents belonged to the young aged categories and 20.2 percent were in the old aged category. These findings indicated that the majority of the farmers were middle aged. Young and middle aged peoples are generally become more innovative, energetic and can take any decision easily. They have broader outlook and might have much social participation as well as communication regarding technology.

4.1.2 Level of education

Level of education helps the farmers to broaden their outlook and expand their horizon of knowledge. Consequently an educated farmer can be considered as rational

in his thinking and evaluation. Hence, it is expected that level of education is one of the most important determining factors in using technologies. Exposure to formal education is very important for shaping-up the behavior of an individual. Education compels an individual to seek, accumulate as well as assimilate knowledge for appropriate uses.

The level of education scores of the farmers ranged from 0 to 15, the mean being 6.88 and standard deviation 4.31. Based on level of education scores the respondents were classified into five categories such as illiterate (0), can sign only (0.5), primary level (1-5), secondary level (6-10) and above secondary level (>10) as presented in Table 4.2.

Table 4.2 Distribution of the respondents according to their level of education

Range (Schooling year)		Categories	Basis of categorization (Score)	Respondents		Mean	SD
Possible	Observed			Frequency	Percent		
Unknown	0-15	Illiterate	0	12	13.5	6.88	4.31
		Can sign only	0.5	9	10.1		
		Primary level	1-5	6	6.7		
		Secondary level	6-10	48	53.9		
		Above secondary level	>10	14	15.7		
Total				89	100		

Data presented in Table 4.2 indicate that highest proportion (53.9 percent) of the farmers had secondary education, 13.5 percent were illiterate, 10.1 percent could sign their name only, 6.7 percent had primary education and 15.7 percent of the farmers had above secondary education level. The study revealed that the literacy rate of the farmers was 86.5 percent which is above the national literacy rate (57.82 percent) of Bangladesh (BBS, 2014). Similar result was found in the study of Muhammad (2014).

4.1.3 Family Size

High population density was a normal feature in Bangladesh, but at present the large families are going to be broken and small families getting priority. The family size scores of the farmers ranged from2 to 9. The average family member was 5.62 with a standard deviation of 1.87. The respondents were classified into three categories like 'small' (≤3), 'medium' (4-7) and 'large' (>7) as presented in Table 4.3.

Table 4.3 Distribution of the respondents according to their family members

Range (Member)		Categories	Basis of categorization (Score)	Respondents		Mean	SD
Possible	Observed			Frequency	Percent		
Unknown	2-9	Small	≤ 3	14	15.7	5.62	1.87
		Medium	4-7	57	64		
		Large	>7	18	20.2		
			Total	89	100		

The data furnished in the Table 4.3 revealed that three third (64.0 percent) of the respondents had medium family size while 15.7 percent had small family members and 20.2 percent had large family size. The national average family size in Bangladesh is 4.85 (BBS, 2014) which is lower the mean value of the present study (5.62). Almost similar result was found in the study of Muhammad (2014) and Akanda (2005).

4.1.4 Crop farming area

The most important production factor of farming is the land which is a scarce resource in Bangladesh. The crop farming area is the main indicator of holding farming status by the farmers. The crop farming area scores of the farmers ranged from 0.50 to 5.00 hectare, the average being 2.08 and standard deviation of 1.25. The farmers were classified into three categories as small up to 1.0, medium (1.01-3.0) and large (>3.0) as shown in Table 4.4.

Table 4.4 Distribution of the respondents according to their crop farming area

Range (Hectare)		Categories	Basis of categorization (Score)	Respondents		Mean	SD
Possible	Observed			Frequency	Percent		
Unknown	0.50-5.00	Small	Unto 1.0	21	23.6	2.08	1.25
		Medium	1.01-3.0	52	58.4		
		Large	>3.0	16	18.0		
Total				89	100		

Data presented in Table 4.4 showed that majority (58.4 percent) of the respondents had medium crop farming area while18.0 percent had large crop farming area and 23.6 percent had small crop farming area. The findings have similarity with the findings of Talukder (2013). The findings is not consistent with the national average such as 88.48 percent marginal to small, 10.34 percent medium and 1.18 percent large (BBS, 2012). This means that overall farm size of the farmers of the study area was higher compared to the farmers of other areas of Bangladesh. It might be an indication that the medium farm holders were more interested to use modern brinjal production technologies. Moreover, it enriches their perception towards improved farming practices and enlightens power of understanding and abilities to consider facts and situations to make appropriate decisions on farming activities.

4.1.5 Annual family income

The subsistence farmers do not consider farming as a business. As their farms are not commercial in nature, they do not seriously think about profit and loss. Existence farming is labor intensive and the farmers usually invest their own labor throughout the year. At the end of the season they are happy if they have some surplus products.

The annual family income scores (taka in thousands) of the farmers ranged from 74.75

to 565 with a mean of 250.15 and standard deviation of 141.32. Based on the annual family income the farmers were classified into three categories such as low income (<108.83), medium income (108.84-391.49), high income (>391.49) as shown in Table 4.5.

Table 4.5 Distribution of the respondents according to their annual family income

Range ('000' Tk)		Categories	Basis of categorization (000 taka)	Respondents		Mean	SD
Possible	Observed			Frequency	Percent		
Unknown	74.75-565	Low income	<108.83	14	15.7	250.15	141.32
		Medium income	108.84-391.49	57	64.0		
		High income	>391.49	18	20.2		
Total				89	100		

Data furnished in Table 4.5 indicate that about two third (64.0 percent) of the farmers had medium annual family income compared to 15.7 percent low and only 20.2 percent high annual family income. An almost similar result was found by Talukder (2013).

4.1.6 Brinjal farming experience

The brinjal farming experience scores (number of years) of the farmers ranged from 2 to 23 with the mean and standard deviation of 9.02 and 6.05 respectively. On the basis of the scores of brinjal farming experience, the respondents were classified into three categories such as 'low' (≤3), 'medium' (4-15) and 'high' (>15) as shown in Table 4.6.

Table 4.6 Distribution of the respondents according to their brinjal farming experience

Range (Years)		Categories	Basis of categorization (year)	Respondents		Mean	SD
Possible	Observed			Frequency	Percent		
Unknown	2-23	low	≤3	8	9.0	9.02	6.05
		Medium	4-15	67	75.3		
		High	>15	14	15.7		
Total				89	100		

Data obtained from Table 4.6 indicated that majority (75.3 percent) of the farmers had medium brinjal farming experience, 9 percent had low and 15.7 percent had high brinjal farming experience. The findings of the study revealed that overwhelming majority (91.0 percent) of the farmers had medium to high brinjal farming experience. Therefore, the experience of the farmers was satisfactory in the study area. However, these farmers may be helped to improve their outlook towards use of brinjal production technologies.

4.1.7 Agricultural training exposure

Agricultural training exposure refers to the activities imparted by various GOs and NGOs to improve the knowledge and skill of an individual for doing agricultural activities. On the other view, Agricultural training exposure means participation of the respondents in different training program by which they get an opportunity to gather knowledge and skills of various aspects of modern farming activities.

The agricultural training exposure score of the respondents ranged from 0 to 12, the average being 3.57 and standard deviation of 3.81. Based on agricultural training exposure score, the respondents were classified into four categories: 'no training' (0), 'short' (≤ 2), 'medium' (3-5) and 'long' (>5) as shown in Table 4.7.

Table 4.7 Distribution of the respondents according to their agricultural training exposure

Range		Categories	Basis of categorization (day)	Respondents		Mean	SD
Possible	Observed			Frequency	Percent		
Unknown	0-12	No training	0	22	24.7	3.57	3.81
		Short	≤2	23	25.8		
		Medium	3-5	24	27.0		
		Long	>5	20	22.5		
Total				89	100		

Data contained in Table 4.7 shows the highest proportion of the respondent (27.0 percent) had medium training while24.7 percent had no training, 25.8 percent had short duration training and 22.5 percent had long duration training. The results had similarity with Khatun (2014).

4.1.8 Extension media contact

Extension media contact refers to an individual's contact with different extension communication media for receiving modern agricultural information. The extension media contact scores of the farmers ranged from 12 to 25, against the possible score 0 to 33. The mean and standard deviation were 18.89 and 4.14 respectively. The respondents were classified into three categories based on their extension media contact as 'low' (≤15), 'medium' (16-23) and 'high' (>23) as shown in Table 4.8.

Table 4.8 Distribution of the respondents according to their extension media contact

Range		Categories	Basis of categorization (Score)	Respondents		Mean	SD
Possible	Observed			Frequency	Percent		
0-33	12-25	**Low**	≤15	31	34.8	18.89	4.14
		Medium	16-23	51	57.3		
		High	>23	7	7.9		
Total				89	100		

Data presented in Table 4.8 shows that majority (57.3 percent) of the farmers had medium extension media contact, 34.8 percent had low extension media contact and only 7.9 percent had high extension media contact. The findings indicate that over whelming majority (92.1 percent) of the farmers had low to medium extension media contact.

4.1.9 Brinjal cultivation knowledge

The brinjal cultivation knowledge have been considered to be one of the primary inputs of improve farming as well as getting better yield. It is considered as a key factor of decision making. So, possession of brinjal cultivation knowledge by an individual is a crucial factor for decision making process on various aspects of farming activities. It can be assumed that the brinjal cultivation knowledge may have an influence to use brinjal production technologies.

The brinjal cultivation knowledge scores of the respondents ranged from 5 to 12 against a possible range of 0 to 12 with a mean and standard deviation of 7.71 and 2.01 respectively. Based on brinjal cultivation knowledge scores, the respondents

were classified into three categories namely poor, moderate, and satisfactory is shown in Table 4.9.

Table 4.9 Distribution of the respondents according to their brinjal cultivation knowledge

Range		Categories	Basis of categorization (Score)	Respondents		Mean	SD
Possible	Observed			Frequency	Percent		
0-12	5-12	Poor	≤ 6	25	28.1	7.71	2.01
		Moderate	7-10	60	67.4		
		Satisfactory	>10	4	4.5		
Total				89	100		

Data indicates that highest proportion of the respondents (67.4 percent) had Moderate brinjal cultivation knowledge, 28.1 percent had poor and 4.5 percent had satisfactory brinjal cultivation knowledge. Such findings are quite logical because of the respondents are closely attached with farming activities and these experience increase their knowledge. Besides, people especially in rural areas gather knowledge from their ancestor and surrounding environment where they live.

4.1.10 Problem faced

Farmers may face several problems that hinder smooth cultivation of Brinjal. The problem faced scores of the farmers ranged from 6 to 20, against the possible score 0 to 30. The mean and standard deviation were 12.91 and 3.76 respectively. The respondents were classified into three categories based on their problem faced as low, medium and high as shown in Table 4.10.

Table 4.10 Distribution of the respondents according to their problem faced in brinjal cultivation

Range		Categories	Basis of categorization (Score)	Respondents		Mean	SD
Possible	Observed			Frequency	Percent		
0-30	6-20	Low	≤9	20	22.5	12.91	3.76
		Medium	10-15	52	58.4		
		High	>15	17	19.1		
Total				89	100		

Data presented in Table 4.11 shows that majority (58.4percent) of the farmers faced medium problems, 22.5 percent low problems and 19.1 percent faced high problems in use and application of brinjal production technologies. The findings indicate that more than three-fourths (77.5 percent) of the farmers had medium to high problems in brinjal cultivation.

To determine the problem faced index the number of farmers ‘problems of each of the categories was converted to percentage. The problem Faced Index (PFI) of different problems ranged from 83.2 to 213.6 against the possible range 0 to 300. The rank order of each of the problems was made on the basis of PFI value (Table 4.10).

Table 4.11Problem Faced Index (PFI) in brinjal cultivation with rank order

Sl. No.	Problems	Percentage of farmers				PFI	Rank order
		Not at all	Low	Medium	High		
1.	High rate of fertilizer	38.2	40.4	21.4	0	83.2	10
2.	High rate of seeds	40.4	29.2	20.2	10.2	100.2	7
3.	Unable to store brinjal for longtime	40.4	40.4	10.2	9	87.8	9
4.	Natural calamities	28.1	41.6	21.3	9	111.2	6
5.	Lack of quality seeds in time	20.2	22.5	39.3	18	155.1	3
6.	Pest attack in brinjal field	13.5	24.7	48.3	13.5	161.8	2
7.	Lower market price of brinjal in	6.7	19.1	28.1	46.1	213.6	1
8.	High price of agricultural labour in season	33.7	40.4	19.2	6.7	98.9	8
9.	Lack of proper knowledge about	14.6	37.1	29.2	19.1	152.8	4
10.	Lack of co-operation from extension	33.7	19.1	33.7	13.5	127	5

The data in table 4.10 revealed that the highest problem during use and application of brinjal production technologies was found on ‘lower market price of brinjal in production season’ followed by ‘pest attack in brinjal field’, ‘lack of quality seeds in time’ and so on. ‘High rate of fertilizer’ was observed as the lowest problem in use and application of brinjal production technologies.

4.2 Use of Brinjal Production Technologies

The use of brinjal production technologies by the farmers was the dependent variable of this study. An attempt was made to determine the use of brinjal production technologies by the respondents on the 11 selected technologies of brinjal production.

The farmers had used selected brinjal production technologies in varying degrees in their field. Farmers were classified into four categories on the basis of their use of brinjal production technologies such as, ‘frequently’, ‘occasionally’, ‘rarely’ and ‘not at all’. The number of farmers’ use of brinjal production technologies of each of the

categories was converted to percentage. The brinjal production technology use index (BPTUI) of different technologies ranged from 119.1 to 243.8 against the possible range 0 to 300. The rank order of each of the technologies was made on the basis of BPTUI value (Table 4.11).

Table 4.12 Distribution of the farmers according to their use of brinjal production technologies

Sl. No.	Name of the technologies	Percentage of farmers				BPTUI	Rank order
		Frequ-ently	Occasio-nally	Rarely	Not at all		
1.	Proper land preparation	14.6	49.4	30.3	5.7	172.9	5
2.	Use of balanced fertilizer in brinjal cultivation	40.4	40.4	19.2	0.0	221.2	2
3.	Use of modern brinjal varieties	5.1	32.1	5.1	57.7	84.6	9
4.	Use of quality seedling of proper age	12.1	40.1	20.1	27.7	136.6	8
5.	Use of proper management practices for brinjal cultivation	9.0	53.9	37.1	0.0	171.9	6
6.	Use of IPM in brinjal field	57.3	29.2	13.5	0	243.8	1
7.	Use of sex pheromone	3.1	30.2	4.4	62.3	74.1	10
8.	Proper irrigation and drainage	29.2	50.6	20.2	0	209.0	3
9.	Proper intercultural operation for clean cultivation	10.1	59.6	30.3	0	179.8	4
10.	Use of mulching in brinjal field	2.1	9.4	37.3	51.2	62.4	11
11.	Sorting and grading of harvested brinjal	0.0	59.4	40.6	0.0	159.4	7

Data obtained in Table 4.11 revealed that the highest proportion of farmers use technology named ‘use of IPM in brinjal field’ (BPTUI=243.8). The result may be due to that brinjal is highly affected by insects and pests and the farmers were very sincere about the control measure of these using all kinds of control measure.

The second highest ranked technology used was found on ‘use of balanced fertilizer in

brinjal cultivation' (BPTUI=221.2). The findings might be due to that brinjal is very sensitive to proper nutrition, so farmers' use of balanced fertilizer in brinjal cultivation.

The lowest use of technology was observed on 'use of mulching in brinjal field' (BPTUI=62.4). The result might be due to that although sex pheromone is a very good technology but the farmers were not familiar about the use of sex pheromone.

4.2.1 Overall use of brinjal production technologies

The use of brinjal production technologies was examined by computing the use scores. The use of brinjal production technologies scores of the farmers ranged from 10 to 22 against the possible range of 0 to 33. The mean and standard deviation were 17.75 and 1.99 respectively. The farmers were classified into three categories namely 'low use' (up to 15), 'medium use' (16 to 19) and 'high use' (above 19) on the basis of their use of brinjal production technologies scores (Table 4.12).

Table 4.13 Distribution of the farmers according to their overall use of brinjal production technologies

Range		Categories	Basis of categorization (Score)	Respondents		Mean	SD
Possible	Observed			Frequency	Percent		
0-33	10-22	Low use	Up to 15	15	16.9	17.15	1.99
		Medium use	16-19	64	71.9		
		High use	>19	10	11.2		
Total				89	100		

The finding indicates that near about three fourths (71.9 percent) of the farmers had medium use of brinjal production technologies, while 16.9 percent had low use and 11.2 percent had high use of brinjal production technologies. The finding implies that over whelming majority of the farmers (87.8 percent) had low to medium use of brinjal production technologies. This means that there use of brinjal production technologies by the farmers.

4.3 Contribution of the Selected Characteristics of the brinjal farmers on their use of brinjal production technologies

For this study ten characteristics of the respondent were selected and each of the characteristics was treated as independent variable. The selected characteristics were age (X_1), level of education(X_2), family size(X_3), crop farming area(X_4), annual family income(X_5), brinjal farming experience(X_6), agricultural training exposure(X_7), extension media contact(X_8), brinjal cultivation knowledge(X_9) and problem faced(X_{10}). Use of brinjal production technologies was the dependent variable (Y) of the study.

Pearson product moment correlation was initially done to find out the relationship between each of the selected characteristics of the farmers and their use of brinjal production technologies. It was observed that among the variables crop farming area, annual family income, brinjal farming experience, agricultural training exposure, extension media contact and brinjal cultivation knowledge of the farmers showed positive significant relationship with their use of brinjal production technologies while problem faced in brinjal cultivation showed negative significant relationship with use of brinjal production technologies. Other variable like's age, education, family size had no significant relationship with the use of brinjal production technologies. The result has been shown in appendix B.

Full model regression analysis was initially run with the 10 independent variables. But it was observed that the full model regression results were misleading due to the existence of interrelationships among the independent variables. Therefore, in order to avoid the misleading results and to determine the best explanatory variables, the method of step-wise multiple regressions was administrated and 3 independent variables were fitted together instep-wise multiple regression analysis. Table 4.14 shows the summarized results of step- wise multiple regression analysis with 10 independent variables on use of brinjal production technologies. It was observed that out of 10 variables only 3 independent variables namely brinjal farming experience, annual family income and agricultural training exposure were entered into the

regression equation. The other seven variables were not entered into regression equation. The regression equation so obtained is presented below:

$\mathbf{Y}$=15.173 +0.071X_6+0.004X_5+0.126X_7

Table 4.14 Summary of stepwise multiple regression analysis showing the contribution of selected characteristics of the on use of brinjal production technologies

Variables entered	Standardized Partial 'b' Coefficients	Value of't' (with probability level)	Adjusted R^2	Increase in R^2	Variation explained in percent
Brinjal farming experience(X_6)	0.071	2.157(0.034)	0.082	0.082	8.2
Annual family income(X_5)	0.004	2.571(0.012)	0.133	0.051	5.1
Agricultural training	0.126	2.437(0.017)	0.180	0.047	4.7
Total				0.180	18.0

Multiple R= 0.456
R-square = 0.208
Adjusted R-square = 0.180
F-ratio = 7.457
Standard error of estimate = 1.803
Constant = 15.173

The multiple R and R2 values were found 0.456 and 0.208 respectively and the corresponding F-ratio was 7.457which were significant at 0.000 levels. For determining unique contribution of each of the three variables the increase in R2 value was determined on use of brinjal production technologies. These three variables combined explained 18.8 41 percent of the total variation in use of brinjal production technologies. Brinjal farming experience alone contribute 8.2 percent of the variation followed by annual family income (5.1 percent) and agricultural training exposure (5.5 percent) variation in use of brinjal production technologies by the farmers.

Brinjal farming experience

Stepwise multiple regressions showed that brinjal farming experience had highest contribution on use of brinjal production technologies. Correlation matrix also showed that brinjal farming experience of the respondents had significant positive relationship with use of brinjal production technologies (Appendix-B).

Brinjal farming experience is a major way of gathering knowledge, information and experience, which components of brinjal cultivation. A respondent are having more brinjal farming experience may have more efficiency in using technologies. More experience makes more working spirit among farmers.

Agricultural training exposure

From stepwise multiple regressions, it was found that agricultural training exposure of the respondent had 2nd highest contribution to use of brinjal production technologies. Correlation matrix also showed that agricultural training exposure of the respondents had significant positive relationship with use of brinjal production technologies (Appendix-B).

The above findings indicated that the respondents having more agricultural training exposure make capable of being more confident. More confidence makes more working spirit among people and thus them able to use more brinjal production technologies.

Annual family income

From stepwise multiple regressions, it was found that annual family income of the farmers had the 3rd highest contribution in use of brinjal production technologies. Correlation matrix also showed that annual family income of the farmers had significant positive relationship with use of brinjal production technologies (Appendix-B). A respondent having higher annual family income can buy different modern agricultural implements for using in brinjal field and may use more brinjal production technologies.

CHAPTER 5

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of the Findings

The study was undertaken to determine and describe the selected characteristics of the farmers, to determine the use of brinjal production technologies, to explore the contribution of the selected characteristics of the farmers on their use of brinjal production technologies. The study was carried out in two unions of Kashiani upazila of Gopalganj District. Eighty nine farmers were selected as sample from an updated list of 1176 farmers involved brinjal cultivation. Data were collected by a pre-tested interview schedule during 15 December 2015 to 17 January 2016. A summary of the major findings is given in the subsequent sections.

5.1.1 Selected characteristics of the farmers

Age

About three fifth (59.6 percent) of the respondents were middle aged compared to 20.2 percent of the respondents belonged to the young aged categories and 20.2 percent were in the old aged category.

Level of education

Highest proportion (53.9 percent) of the farmers had secondary education, 13.5 percent were illiterate, 10.1 percent were can sign only, 6.7 percent had primary education and 15.7 percent of the farmers had above secondary education level.

Family size

About two third (64.0 percent) of the respondents had medium family members while 15.7 percent had small family members and 20.2 percent had large family members.

Crop farming area

The crop farming area scores of the farmers ranged from 0.50 to 5.00, the average being 2.08 and standard deviation 1.25. More than half (58.4 percent) of the respondents had medium crop farming area while 18.0 percent had large crop farming area and 23.6 percent had small crop farming area.

Annual family income

The annual family income scores (taka in thousands) of the farmers ranged from 74.75 to 565 with a mean of 250.15 and standard deviation of 141.32. About two third (64.0 percent) of the farmers had medium annual family income compared to 15.7 percent under low and only 20.2 percent under high income group.

Brinjal farming experience

The brinjal farming experience scores (number of years) of the farmers ranged from 2 to 23 with the mean and standard deviation of 9.02 and 6.04 respectively. Majority (75.3 percent) of the farmers had medium brinjal farming experience, 9 percent had

low and 15.7 percent had high brinjal farming experience. The findings of the study revealed that overwhelming majority (91.0 percent) of the farmers had medium to high brinjal farming experience.

Agricultural training exposure

The agricultural training exposure score of the respondents ranged from 0 to 12, the average being 3.57 and standard deviation of 3.81. Highest proportion of the respondent (27.0 percent) had medium training while 24.7 percent had no training, 25.8 percent had short duration training and 22.5 percent had long duration training.

Extension media contact

The extension media contact scores of the farmers ranged from 12 to 25, against the possible score 0 to 33. The mean and standard deviation were 18.89 and 4.14 respectively. Majority (57.3 percent) of the farmers had medium extension media contact, 34.8 percent had low extension media contact and only 7.9 percent had high extension media contact.

Brinjal cultivation knowledge

The brinjal cultivation knowledge scores of the respondents ranged from 5 to 12 against a possible range of 0 to 12 with a mean and standard deviation of 7.71 and 2.01 respectively. Data indicates that highest proportion of the respondents (67.4 percent) had fair brinjal cultivation knowledge, 28.1 percent had poor and 4.5 percent had satisfactory brinjal cultivation knowledge.

Problem faced

Majority (58.4 percent) of the farmers faced medium problems, 22.5 percent low problems and 19.1 percent faced high problems in use and application of brinjal production technologies.

5.1.2 Use of brinjal production technologies

The finding indicates that near about three fourths (71.9 percent) of the farmers had medium use of brinjal production technologies, while 16.9 percent had low use and

11.2 percent had high use of brinjal production technologies. The brinjal production technology use index (BPTUI) of different technologies ranged from 62.4 to 243.8 against the possible range 0 to 300. Highest proportion of farmers use technology named 'use of IPM in brinjal field' (BPTUI=243.8) and the lowest use of technology was observed on 'use of mulching in brinjal field' (BPTUI=62.4).

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5.1.3 Contribution of the Selected Characteristics of the farmers on their use of brinjal production technologies

Step wise multiple regressions shows that out of 10 independent variables only 3 independent variables namely brinjal farming experience, annual family income and agricultural training exposure of the farmers had significant contribution on their use of brinjal production technologies. The standardized partial 'b' co-efficient of the 3 independent variables formed the equation contributing to 18.00 percent of the total variation on use of brinjal production technologies.

5.2 Conclusions

Based on the findings and their logical interpretations in the light of relevant facts the researcher has drawn the following conclusions:

1. The findings revealed that near about three fourths (71.9 percent) of the farmers had medium use of brinjal production technologies. These facts lead to conclude that farmers had a satisfactory level of use of brinjal cultivation technologies.
2. The findings revealed that brinjal farming experience of the farmers had highest contribution on their use of brinjal production technologies. It may be conclude that a farmer having more brinjal farming experience might have more efficiency in using brinjal production technologies and more experience makes more working spirit among farmers.
3. Annual family income of the farmers had the 2nd highest contribution on their use of brinjal production technologies. A farmer having higher annual family

income might be able to buy different modern agricultural implements for using in brinjal field and use more brinjal production technologies.

4. Agricultural training exposure of the farmers had 3rd highest contribution on their use of brinjal production technologies. The farmers having more agricultural training exposure could make them capable of being more confident and more confidence makes more working spirit among people and thus they were able to use more brinjal production technologies.

5.3 Recommendations

5.3.1 Recommendations for policy implications

The following recommendations were made on the basis of the findings and conclusions of the study:

1. The level of use of brinjal production technologies by the farmers in brinjal production was encouraging. There is a need of efforts for wide use of brinjal production technologies by the brinjal producing farmers.
2. Brinjal farming experience of the respondents had highest contribution on their use of brinjal production technologies. Therefore, it may be recommended that the authority should provide technical support to the farmers especially to the lower and middle experienced farmers for increasing their use of brinjal production technologies.
3. Annual family income of the farmers had 2nd highest contribution on their use of brinjal production technologies. Therefore it may be recommended thatattempts should be taken to involve farmers in various income generating activities for increasing the use of brinjal production technologies by the farmers.
4. Agricultural training exposure of the farmers had 3rd highest contribution on their use of brinjal production technologies. Therefore it may be

recommended that attempts should be taken for brinjal growers to arrange necessary training on brinjal production technologies by providing detail use of brinjal production technologies.

5.3.2 Recommendations for further study

The present study mainly highlights some aspects of particular dimensions (use of brinjal production technologies) of agricultural development, So it is suggested that concerned agencies should undertake further studies in order to have a deeper insight into the various aspects of the use of brinjal production technologies for brinjal production. The aspects for future study are presented below:

1. The present investigation explored the contribution of 10 selected characteristics of the brinjal growers on their use of brinjal production technologies. Further research may be conducted by taking other characteristics to observe relationships with their use of brinjal production technologies for brinjal production.
2. The present study was conducted in two unions of Kashianiupazila under Gopalganj district. So, similar studies may be undertaken in other parts of the country to verify the findings of the present study.
3. The present study was concern only with the use of brinjal production technologies. It is therefore, suggested that future studies should include innovations, adoption, practice, knowledge and attitude toward brinjal production technologies and so on.
4. Brinjal farming experience, annual family income and agricultural training exposure showed significant contribution with on their use of brinjal production technologies. Hence, further investigation is necessary to find out such contributions to authentic the present study.
5. The present study was conducted to find out the use of brinjal production technologies. Farther investigations are necessary to other crops of Bangladesh.

REFERENCES

Akanda, M. G. R. 2005. Technological Gap in Modern Rice Production at Farmers Level. Ph.D. Thesis, Department of Agricultural Extension Education, Bangladesh Agricultural University (BAU), Mymensingh.

Alam, M. F. 1996. Farmers Awareness Regarding the Subsequences of Homestead Deforestation in Two Selected Areas Under Madhupur Thana of Tangail District. M.S. Thesis, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Ali, M. H. 2014. Use of Communication Media by the Farmers in Receiving Agricultural Information. M.S. Thesis, Department of Agronomy and Agricultural Extension,

Rajshahi University, Rajshahi.

Ateng, B. 1998. Comparative Advantage and Crop Diversification in Bangladesh, Dhaka. The University Press.

Aurangozeb, M. K. 2002. Adoption of Integrated Homestead Farming Technologies by the Rural Women in RDRS. *M.S. Thesis,* Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Bajaj, K. L, G. Kaur, and M. L. Chadha. 1979. Glycoalkaloid content and other chemical constituents of the fruits of some eggplant (*Solanum melongena L*.) varieties. Journal of Plant Foods 3(3): 163-168.

Bajaj, K. L, G. Kaur, M. L. Chadha and B. P. Singh. 1981. Polyphenol oxidase and other chemical constituents in fruits of eggplant (*S. melongena* L) varieties. Vegetable Sciences, 8:37-44

Baruah, M. J. and A. K. Singha. 2011. Farmers' Adoption Behaviour in Rice Technology: An Analysis of Adoption Behaviour of Farmers in Rice Technology under Different Farming Systems in Assam. *Journal of Human Ecology*, 35(3): 167-172.

BBS. 2012. Statistical Year Book of Bangladesh .Bangladesh Bureau of Statistics, Ministry of Planning, Government of the People's Republic of Bangladesh.

BBS. 2014. Statistical Year Book of Bangladesh. Bangladesh Bureau of Statistics, Ministry of Planning, Government of the People's Republic of Bangladesh.

Bangladesh Economic Review. 2015. Bangladesh Economic Survey 2015. Economic Division, Ministry of Finance, Government of the People's Republic of Bangladesh, Dhaka.

Borgmann, A. 2006. Technology as a Cultural Force: For Alena and Griffin. The Canadian Journal of Sociology, 31 (3):351-360.

Chander, M. and N. Akila. 2012. Adoption Behaviour of the Farmers Towards Draught Bullocks in South India. *Indian Research Journal of Extension Education.* 12 (3), September, 2012.

Chouhan, S. and S. K. R. Singh. 2013. Adoption Dynamics of Improved Sugarcane Cultivation in Madhya Pradesh. *Indian Research Journal of Extension Education.* 13 (2).

Choudhury, A K. M. Z. (1996. Factors Affecting Adoption Behavior of Bora Rice Growers:

A Case Study on Farmers Attitude and Accepted Practices in Nawabganj. Dhaka. M.S Thesis. Department of Agricultural Extension Education, IPSA. Salna, Gazipur.

Devi, G. L. 2013. Adoption of Dairy Farming Technologies by Livestock Farmers. *Indian Research Journal of Extension Education*. 13 (2), May, 2013.

Deshmukh, G. and M. Bariya. 2014. Adoption of Recommended Practices of *Kharif* Groundnut Growers in Saurashtra Zone of Gujarat. *Indian Research Journal of Extension Education*. 14 (3), September, 2014.

FAO. 2010. Agricultural and Development Economics Division (June 2008). Food Security (2). Retrieved at April 8, 2013.

Ghosh, R. K. and N. J. Maitra. 2008. Adoption Behaviour of the Dairy Farmers in Co-Operative Farming System. *Indian Research Journal of Extension Education*. 8 (1), Jannuary, 2008.

Haider, M R, A. Halim, and M . A. Kashem . 2001. Adoption oflmproved Package of Practices for Transplanting Aman Rice Cultivation. *Bangladesh Joumal ofNuclear Agriculture*, Vol. (16 & 17): 77-84.

Haque, M. M. 2003. Farmer's Adoption of Modern Maize Cultivation Technologies. *M.S. Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Hasan, M. M. 2003. Adoption of Recommended Potato Cultivation Practices by the Farmers in Some Selected Area of Rajshahi District. *M.S. Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Hasan, G. M. 2006. Adoption of Improved Practices in Litchi Cultivation by the Litchi Growers in Dinajpur Sadar Upazila. *M.S. Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Hoque, M. M. 1993. Adoption of Improved Practices in Sugarcane Cultivation by the Sugarcane Growers in Sreepur thana under Gazipur District. *M.S. Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Hossain, M. D. 1981. Relationships of the Selected Characteristics of the Jute Farmers with their Adoption of Improved Practices of Jute Cultivation. *M.S. Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Hossain, M. A. 1983. Relationship of the Farmer's Characteristics with their Adoption of HYV as Transplanted Aman and other related Aspects in Bhabakhali Union of Mymensingh District. *M.S. Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Islam, M. S. 2002. Adoption of Modern Agricultural Technologies by the Farmers of Sanduip. *M.S. Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Islam, M.M. 2003. Farmers Use of Indigenous Technical Knowledge (ITK) in the Context of Sustainable Agricultural Development. *M.S. Thesis,* Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Islam, M.S. 2008. Farmers' Perception of the Harmful Effects on Using Agro-Chemicals in Crop Production with Regarding to Environmental Pollution. Ph.D. Thesis Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Kashem, M. A and M. A. Hossain. 1992. Adoption Behaviour of Sugarcane Farmers. Indian Journal of Extension Education, 28 (1 & 4) : 92-96.

Kerlinger, F.N. 1973. *Foundations of Behavioral Research*. New York: Holt, Rinehart and Winston Inc.

Khan, P.M. 2004. *Terminology of Extension Education.* Udaipur: Agrotech Publishing Academy.

Khatun, M. 2014. Use of Communication Channel by the Women Beneficiaries of BRAC in Income Generating Activities. M.S. Thesis, Department of Agricultural Extension, HSTU, Dinajpur.

Kumbhare, N. V. and K. Singh. 2011. Adoption Behaviour and Constraints in Wheat and Paddy Production Technologies. *Indian Research Journal of Extension Education*. 11 (3), September, 2011.

Meherunnahar, M. and D. N. R. Paul. 2009.Bt Brinjal: Introducing Genetically Modified Brinjal Eggplant/Aubergine) in Bangladesh.Bangladesh Development Research Center.

Mehta, B. M. and M. Sonawane. 2012. Entrepreneurial Behaviour of Mango Growers of Valsad District of Gujarat State. *Indian Research Journal of Extension Education*. 12

(1).

Muhammad, A. 1974. A Study on the Farmers Adoption of Insect Control Measures and Related Aspects. *M.S. Thesis,* Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Muhammad , N. 2014. Effectiveness of Union Information and Service center in Utilization of Farm Information. M.S. Thesis, Department of Agricultural Extension, HSTU, Dinajpur.

Nande, M. P. and V. K. Basunathe. 2009. Adoption of Improved Dairy Cattle Management Practices Under Vidarbha Development Programme Package. *Indian Research Journal of Extension Education*. 9 (2).

NIN. 2007. National Institute of Nutrition.

Prasad, A. and D. Ram. 2010. Adoption of Improved Wheat Cultivation Technologies in Unnao District of Uttar Pradesh. *Indian Research Journal of Extension Education*. 10 (2).

Rahman, M. L. 1995. Farmers' knowledge on improved practices of potato cultivation. *M.S. Thesis,* Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Rahman, M. M. 2003. Adoption of Intercropping in Pineapple Cultivation in Three Selected Village. *M.S. Thesis,* Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Rao, D. U. M. and M. K. Singh. 2014. Adoption of Pineapple Cultivation Practices by the Farmers in Manipur State. *Indian Research Journal of Extension Education*. 14 (1), January, 2014.

Rosenberg, M. and C. I. Hovland, 1960. Research on Communication and Attitude coated in Triandis, H.C. 1971. *Attitude and Attitude Change.* John Wiley Publisher, New York.

Sarker, S. 1995. Communication Media used by the Small Farmers in Receiving Agricultural Information. *M.S. Thesis,* Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Sarkar, D. C. 1997. Correlates of Selected Characteristics of Potato Growers with their Adoption of Improved Potato Cultivation Practices in five villages of Camilla District. *M.S. Thesis,* Department of Agricultural Extension Education, Bangladesh

Agricultural University, Mymensingh.

Shahabuddin, Q. and P. Dorosh. 2002. Comparative Advantage in Bangladesh Crop Production. International Food Policy Research Institute, USA. Discussion Paper No. 47.

Singh, B. K. 2010. Adoption Behaviour of Commercial Potato Growers in District Ghaziabad (Uttar Pradesh). *Indian Research Journal of Extension Education*. 10 (3).

Singh, P. K. and K. K. Barman. 2011. Adoption Behaviour of Vegetable Growers Towards Improved Technologies. *Indian Research Journal of Extension Education*. 11 (1).

Talukder, M.N. 2013. Use of Union Information and Service Center by the Farmers in Receiving Agricultural Information. M.S. Thesis, Department of Agricultural Extension, HSTU, Dinajpur.

Verma, T. V. Jain and S. Devi. 1989. A Study on Gain in Knowledge and ChangeIn Attitude Through Training on Improved Homemaking Task. Indian Journal of Extension Education. 25(1&2): 75.

Wikipedia, 2015. https://en.wikipedia.org/wiki/Bt_brinjal

Yadav, V. K. and A. Kumar. 2006. Knowledge and Adoption of Scientific Wheat Cultivation Practices in Bihar and Haryana. *Indian Research Journal of Extension Education*. 6 (3).

Yadaw, K. N. and M. L. Sharma. 2012. Adoption and Adoption Gap of Goat Keepers Towards Recommended Goat Rearing Practices. *Indian Research Journal of Extension Education*. 12 (2).

Ziauddin, G. and B. Goswami. 2010. Adoption Behaviour of Fish Farmers in Relation to Scientific Fish Culture Practices in West Bengal. *Indian Research Journal of Extension Education*. 10 (1).

Zope, P.E. and Smith, J.E. 1970. *Principles of Inductive Rural Sociology*. Philadelphia: F.A. Devis Co.

Appendix A

An English Version of the Interview Schedule

Department of Agricultural Extension and Information System

Sher-e-Bangla Agricultural University, Dhaka-1207

Interview schedule for the research entitled

"USE OF BRINJAL PRODUCTION TECHNOLOGIES BY THE FARMERS OF KASHIANI UPAZILA UNDER GOPALGANJ DISTRICT"

Name of the farmer	:…….	Sl. No:…….
Father's Name	:……	Date:…….……..
Village	:……	Union:……..…
Upazila	:……	District:……..…….

Please answer the following questions

1. Age

What is your present Age?.....Years.

2. Level of Education

a) Can not read and write:…….

b) Can sign only: ……

c) I passed: ……class

3. Family Members……Persons

4. Crop farming area

Please indicate the area on which you operate your crop farming

SI. NO.	Use of land	Farm size	
		Local unit	Hectare
1.	Brinjal		

2.	Others crops		
	Total		

5. Annual Family Income

Please state the income from different sources during the last one year

A. Income from Agricultural crops

Sl. No.	Sources of income	Total production (kg/unit)	Price per kg/unit (Tk)	Total price(Tk)
1.	Brinjal			
2.	Others vegetables			
3.	Rice			
4.	Jute			
5.	Wheat			
6.	Pulse crop			
7.	Oil crops			
8.	Other crops			
	Sub Total (a)			

B. Income from Livestock & Fisheries

SI NO	Sources of income	Total Production (kg/unit)	Price per Kg/unit (Tk)	Total Price(Tk)
1.	Livestock			
2.	Poultry			
3.	Fisheries			
4.	Others (if any)			
	Sub Total (b)			

C. Income from Non-Agricultural Sources

Sl. No.	**Source of Income**	**Income**	
		Monthly income(Tk)	**Annual Income(Tk)**
1.	Services		
2.	Business		
3.	Daily Labour		
4.	Others		
	Sub-total (c)		

Grand Total= a+ b+ c =……Tk.

6. Brinjal farming experience

How long you have been involved in farming directly?……years

7. Agricultural training exposure

Do you have participated any training?

Yes……No……

If yes, mention the following information

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

8. Extension media contact

Please indicate the extent of your contact with the following information sources

A. Personal contact

SI. No.	Information source	Extent of contact			
		Regularly (3)	Occasionally (2)	Rarely (1)	Not at all (0)
1.	Opinion leader/Relatives	>5 times/ Year	3-4 times/ year	1-2 times/ year	Not at all (0)
2.	SAAO	>5 times/ Month	3-4 times/ month	1-2 times/ month	Not at all (0)
3.	NGO worker	>5 times/ Year	3-4 times/ year	1-2 times/ year	Not at all (0)
4.	Upazila level agri-officers	>5 times/ Month	3-4 times/ month	1-2 times/ month	Not at all (0)

B. Group contact

SI. No.	Information source	Extension contact			
		Regularly (3)	Occasionally (2)	Rarely (1)	Not at all (0)
1.	Participation in group Meeting	>5 times/ Year	3-4 times/ year	1-2 times/ year	Not at all (0)
2.	Participation Result demonstration/meeting	>5 times/ Year	3-4 times/ year	1-2 times/ month	Not at all (0)

3.	Participation in Field day	>5 times/ Year	3-4 times/ year	1-2 times/ year	Not at all (0)

C. Mass contact

SI. No.	Information source	Extension contact			
		Regularly (3)	Occasionally (2)	Rarely (1)	Not at all (0)
1.	Newspaper Reading (Agriculture)	>5 times/ Week	3-4 times/ week	1-2 times/ week	Not at all (0)
2.	Radio listening (Agriculture)	>5 times/ Week	3-4 times/ week	1-2 times/ week	Not at all (0)
3.	Television watching (Agriculture)	>5 times/ Month	3-4 times/ month	1-2 times/ month	Not at all (0)
4.	Visit agricultural fair	>5 times/ Year	3-4 times/ year	1-2 times/ year	Not at all (0)

9. Brinjal cultivation knowledge

Please answer the following questions

Sl. No.	Questions	Full marks	Marks obtained
1.	Mention two qualities of good brinjal seeds.	1	
2.	Mention two disease of brinjal.	1	
3.	Mention two insect of Brinjal	1	
4.	How do you control Brinjal Fruit and Shoot borer of your brinjal field?	1	
5.	How do you control Mealy bug insect of your brinjal field?	1	
6.	Mention harmful effect of using pesticide.	1	
7.	What is IPM?	1	
8.	What do you mean by resistant variety?	1	
9.	Mention two disadvantages of using over dose of chemical fertilizer.	1	
10.	Mention the dose of urea for brinjal cultivation.	1	
11.	Mention the dose of TSP for brinjal cultivation.	1	
12.	Mention the dose of MoP for brinjal cultivation.	1	

10. Problem faced

Please mention the extent of problem that you faced during use and application of brinjal production technologies

Sl. No.	Problems	Extent of problem faced			
		Not at all	Low	Medium	High
1.	High rate of fertilizer				
2.	High rate of seeds				
3.	Unable to store brinjal for long time				
4.	Natural calamities				
5.	Lack of quality seeds in time				
6.	Pest attack in brinjal field				
7.	Lower market price of brinjal in production season				
8.	High price of agricultural labour in season				
9.	Lack of proper knowledge about improved brinjal cultivation practices				
10.	Lack of co-operation from extension agent				

11. Use of brinjal production technologies

Please mention the use of following technologies

Sl. No.	Name of the technologies	Extent of use			
		Frequently (3)	Occasionally	Rarely (1)	Not at all (0)
1.	Proper land preparation				
2.	Use of balanced fertilizer in brinjal cultivation				
3.	Use of modern brinjal varieties				
4.	Use of quality seedling of proper age				
5.	Use of proper management practices				
6.	Use of IPM in brinjal field				
7.	Use of sex pheromone				
8.	Proper irrigation and drainage				
9.	Proper intercultural operation for clean cultivation				
10.	Use of mulching in brinjal field				
11.	Sorting and grading of harvested brinjal				

Thanks for your kind co-operation

Date: …… ……

Name of the enumerator

APPENDIX-B

Correlation Matrix of the Dependent and Independent Variables

	Age (X_1)	Level of education (X_2)	Family members (X_3)	Crop farming area (X_4)	Annual family income (X_5)	Brinjal farming experience (X_6)	Agricultural training exposure (X_7)	Extension media contact (X_8)	Brinjal cultivation knowledge (X_9)
Age (X_1)	1								
Level of Education (X_2)	-.005 ^{NS}	1							
Family members (X_3)	.053 ^{NS}	.025 ^{NS}	1						
Crop farming area (X_4)	-.015 ^{NS}	.143 ^{NS}	.332**	1					
Annual family income (X_5)	.047 ^{NS}	-.043 ^{NS}	.274**	.656**	1				
Brinjal farming experience (X_6)	.016 ^{NS}	.015 ^{NS}	-.049 ^{NS}	.009 ^{NS}	.126 ^{NS}	1			
Agricultural training exposure (X_7)	-.189 ^{NS}	.039 ^{NS}	.026 ^{NS}	-.057 ^{NS}	.024 ^{NS}	.233*	1		
Extension media contact (X_8)	-.035 ^{NS}	.082 ^{NS}	.021 ^{NS}	.022 ^{NS}	.081 ^{NS}	.185 ^{NS}	.193 ^{NS}	1	
Brinjal cultivation knowledge (X_9)	.028 ^{NS}	.217*	.044 ^{NS}	-.148 ^{NS}	-.053 ^{NS}	.102 ^{NS}	.569**	.112 ^{NS}	1
Problem faced (X_{10})	.006 ^{NS}	-.105 ^{NS}	-.034 ^{NS}	.045 ^{NS}	-.043 ^{NS}	.126 ^{NS}	-.043 ^{NS}	-.179 ^{NS}	-.460**
Use of brinjal production technologies (Y)	-.120 ^{NS}	-.038 ^{NS}	.116 ^{NS}	.243*	.283**	.303**	.298**	.233*	.234*

NS = Not significant

*. Correlation is significant at the 0.05 level ,

**. Correlation is significant at the 0.01 level