KNOWLEDGE AND ATTITUDE OF THE FARMERS TOWARDS MAIZE CULTIVATION IN SELECTED AREA OF GAIBANDHA DISTRICT

RAJIB ROY SHING

DEPARTMENT OF AGRICULTURAL EXTENSION AND INFORMATION SYSTEM

SHER-E-BANGLA AGRICULTURAL UNIVERSITY

SHER-E-BANGLA NAGOR, DHAKA-1207

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BY

RAJIB ROY SHING

REG. NO- 12-04910

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APPROVED BY:

Prof. Md. Abul Bashar
Supervisor
Dept. of Agricultural Extension and Information System
Sher-e-Bangla Agricultural University

Prof. M. Zahidul Haque
Co-Supervisor
Dept. of Agricultural Extension and Information System
Sher-e-Bangla Agricultural University

Dr. Muhammad Humayun Kabir
Professor &Chairman
Dept. of Agricultural Extension and Information system
Sher-e-Bangla Agricultural University

DEPARTMENT OF AGRICULTURAL EXTENSION AND INFORMATION SYSTEM
Sher-e-Bangla Agricultural University
Sher-e-Bangla Nagar, Dhaka-1207

Memo No: SAU/AEIS

CERTIFICATE

*This is to certify that the thesis entitled "**Knowledge and Attitude of the Farmers towards Maize Cultivation in Selected Area of Gaibandha 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 **RAJIB ROY SHING** , Registration No. **12-04910** under my supervision and guidance. No part of the thesis has been submitted for any other degree or diploma.*

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

Dated:
Dhaka, Bangladesh

Prof. Md. Abul Bashar
Supervisor
Dept. of Agricultural Extension and Information System
Sher-e-Bangla Agricultural University

DEDICATED

TO MY

BELOVED PARENTS

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ACRONYMS AND ABBREVIATIONS

Ag. Ext. and Info. Sys.	Agricultural Extension and Information System
AIS	Agriculture Information Service
BAU	Bangladesh Agricultural University
BBS	Bangladesh Bureau of Statistics
BRRI	Bangladesh Rice Research Institute
DAE	Department of Agriculture Extension
DAE	Department of Agricultural Extension
et. al	All Others
etc.	et cetera, and the other
FAO	Food and Agriculture Organization
IFPRI	International Food Policy Research Institute
MoYS	Ministry of Youth and Sports
SAAO	Sub-Assistant Agriculture Officer
SAU	Sher-E-Bangla Agricultural University

KNOWLEDGE AND ATTITUDE OF THE FARMERS TOWARDS MAIZE CULTIVATION IN SELECTED AREA OF GAIBANDHA DISTRICT

ABSTRACT

The major purpose of this research study was to determine farmers' knowledge and attitude towards maize cultivation and also to explore the relationships between each of nine selected characteristics of the farmers and their knowledge and attitude towards maize cultivation. The study was conducted in 4 villages of Gaibandha Sadar and Fulsari upazila under Gaibandha district. The populations of maize farmers in four villages were 173 and sample size was 78 (45% of total population, using random sampling method). An interview schedule was used for data collection. The data were collected during 11 January to 11 February 2019. Scales were developed in order to measure the variables. Majority of the farmers (78.2%) had medium to high knowledge on maize cultivation and 21.8 percent of the farmers possessed low knowledge on maize cultivation. Regarding attitude, the study showed that about 55.1% of the respondents had high favorable attitude, 25.6% of the respondents had unfavorable attitude and 19.2% of the respondents had neutral attitude towards maize cultivation. Age, level of education, annual family income, organizational participation, cosmopolitess and extension media contact of the maize farmers had significant positive relationship and problem faced by the maize farmer had negative significant relationship with their knowledge on maize cultivation, while farm size and income from maize had no significant relationship with their knowledge on maize cultivation. In case of attitude age, level of education, annual family income, income from maize, organization participation and extension media contact of the farmers had significant positive relationship with their attitude towards maize cultivation and problem faced by the maize farmer had negative significant relationship with their attitude towards maize cultivation, while farm size and cosmopoliteness of the farmers had no significant relationship with their attitude towards maize cultivation.

CHAPTER-I

INTRODUCTION

1.1 General Background

Bangladesh is an agricultural country. The most of her rural inhabitants directly or indirectly are involved in agricultural activities for their livelihood. Agriculture has a great contribution to the Gross Domestic Product (GDP) of the country. Earlier more than 50% of GDP came from this sector. When industrialization was started, the activities of the population got diversification towards different sectors. As a result, the contribution of the agriculture sector is slowly reducing and now (2017-18) has reached 14.75% of GDP (BBS). Still agriculture plays vital role and is contributing as the most important sector of Bangladesh economy.

Bangladesh possesses very fertile land in which year round diversified crops are grown easily. Various types of crops are produced in this country. Maize (*Zea mays* L.) is one of the most important of the cash crops in Bangladesh which has the potential to pull farmers out of poverty.

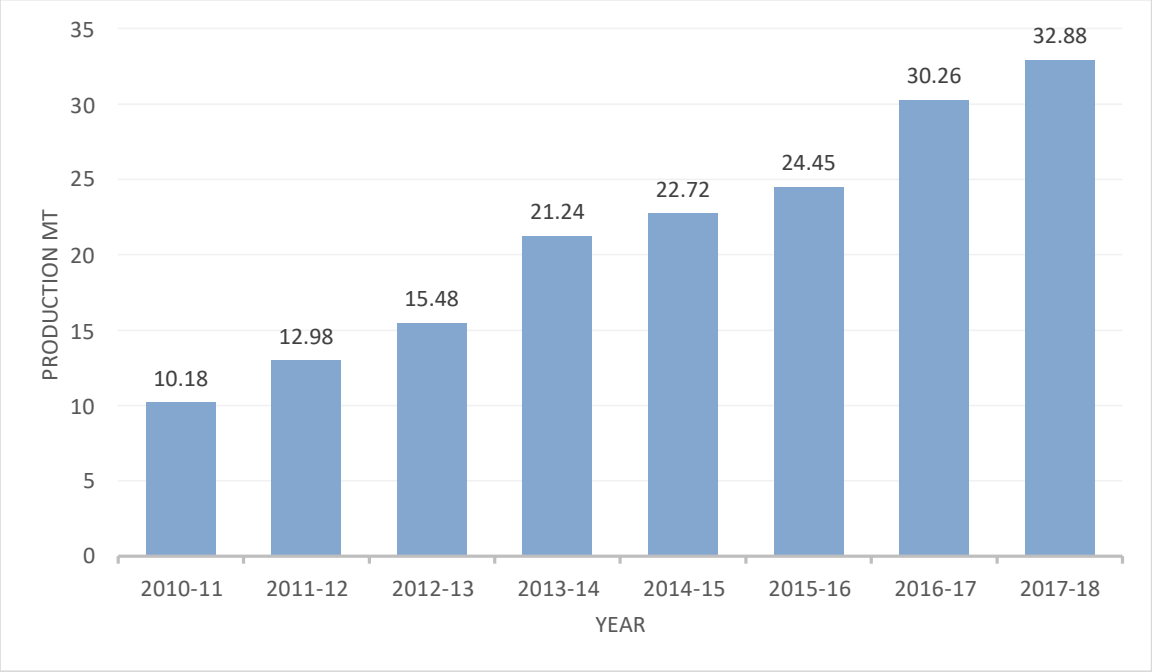
Major shift in global cereal demand is underway: by 2020, demand for maize in developing countries will surpass the demand for both wheat and rice. This shift will be reflected in a 50 per cent increase in global maize demand from its 1995 level of 558 million tons to 837 million tons by 2020. Maize requirements in the developing world alone will increase from 282 million tons in 1995 to 504 million tons in 2020 (IFPRI 2000). The challenge of meeting this unprecedented demand for maize is daunting, especially for the developing world and its poor and subsistence farmers.

Raising income in most of the developing world and the consequent growth in meat and poultry consumption has resulted in a rapid increase in the demand for maize as livestock feed (especially for poultry). This trends is particularly evident in East and Southeast Asia, where maize requirements are projected to rise from 150 million tons in 1995 to 280 million tons in 2020 (IFPRI 2000). Meanwhile, in the least developed parts of the world, unabated population growth and the persistence of poverty have maintained upward pressure on the demand for food maize; this is the case in Sub-Saharan Africa, Central America, and parts of south Asia.

Relative to its 1995 level, annual maize demand in Sub-Saharan Africa is expected to double to 52 million tons by 2020. In many maize consuming countries viz. Latin America, where the culture and diet have been bound to maize for centuries, food maize demand has remained high even as income have risen.

Maize is a versatile crop due to its multifarious uses as feeds, food and industrial raw material. Every part of the maize plant is useful. Green cobs of maize are used as food after cooked by roasting or boiling in water. The top green portion of the plant after harvest of the cob is fed to cattle as fodder, and the dry portion of the stem along with fibrous roots are used as fuel. The greatest advantage of maize over rice and wheat is its high bio-mass potential. Maize grain, full or broken, is used in hotchpotch, gruel often mixed with pulses. Popcorn is consumed as snacks. Grains are the principal ingredients for poultry and cattle feed. Industries make use of maize for corn oil, starch, adhesives, medicines and in the manufacture of various food products like corn flakes, chips etc. Maize is more nutritious than rice in terms of protein, phosphorus and carotene content. Fats and mineral contents are also higher. It is rich in Vitamin B and trace elements. Also, its price is lower than rice.

Maize is the third grain crop in Bangladesh. It can be grown in all the three seasons of the year. Winter maize is, however, found to be predominant with a share of 84% of the country's total maize area. About the timing of the maize plantation, it is planted at any time during October to February covering five months of the year depending on the land suitability and the cropping practice. Among different districts, Dinajpur, Gaibandha, Chuadanga, Takurgaon, Lalmonirhat, Rajshahi, Kushtia, Rangpur and Bogra are noted to be more progressive in maize production with higher rates of growth. Both composite and hybrid maize are grown well in the loam and sandy-loam soils of the country (with three to four irrigations). Since 2010 to 2018, maize production showed progressive result .In 2017-18 , maize production was 32,88,000 metric tons from 990,000 ha of land (Figure 1.) Hybrid maize has a greater yield with 2.4 tons/acre (5.4 tons per ha), which is higher by one-third over composite maize (1.47 tons/acre or 3.63 tons/hectare).



Sourse: BBS (2018)

Figure 1.1. Production of maize in Bangladesh

The Gaibandha district is familiar to the people of other parts of the country and the globe as maize production district. Maize cultivation is getting popular day by day in this district. Favorable soil, climatic and topographic conditions encourage the farmers to grow large scale maize cultivation even on the char land. In 2017-18, maize production was 88643 metric tons (BBS, 2018) According to DAE, a total of 12,000 hectare of land of the district has brought under maize cultivation. Of the total, some 1,680 hectares of land are cultivated in Sadar, 850 hectares in Sadullapur, 770 hectares in Palashbari, 2,400 hectares in Gobindaganj, 1,400 hectares in Sundarganj, 600 hectares in Shaghata and 4,300 hectares of land in Fulchhari upazila.

The agro-climatic conditions of Bangladesh are favourable for maize cultivation. Pest and disease infestations are low in this crop. Its water requirement is less compared to rice and wheat. It has also a great scope for diversified use. So, there is ample scope for expansion of maize areas in Bangladesh (Islam and Kaul, 1986). Farmers of Bangladesh were not experienced in commercial cultivation of maize. But now-a-days they have been influencing by a number of GOs and NGOs to adopt modern maize cultivation technologies. Maize can and will play an important role along with other cereals in meeting future need of growing population. Besides, maize has other additional benefits as follows:

- Low production cost especially for less irrigation/rain fed condition,
- High farm return
- Increase employment opportunity in rural areas
- Scope for strengthening flour and biscuit industry
- Supply poultry feed and industrial raw materials
- Higher yield or increased production for increased population

The exploding demand for maize presents an urgent challenge for most developing countries. Although increased maize import is anticipated, especially in the higher income in the developing countries, it should be remembered that the international trade traditionally has supplied less than 10 percent of the developing world's maize requirements.

Knowledge means the factual understanding of an issue that effects human attitude reflected in behavior. Attitude means opinion, action of knowing of a person or a group of people. It is recognized that in order to expand the area of this crop as well as to fit this crop in the farmers cropping system, studies are needed to ascertain the knowledge and attitude of the farmers.

Little study on knowledge and attitude towards maize cultivation has so far been conducted. Majority of the respondents conducted studies for their own requirements and very few common studies could be found, which is not enough to assess the overall farmers' knowledge and attitude towards maize cultivation.

Based on the above consideration, the researcher felt necessity to conduct the research on "**Knowledge and Attitude of the Farmers towards Maize Cultivation in Selected Area of Gaibandha District**"

1.2 Justification of the study

The major focus of the study is to assess the knowledge and attitude of the farmers regarding cultivation of maize. Nowadays, maize cultivation has been found becoming popular in our country for its business prospect. Its profit is approximately double than its cultivation cost. But due to lack of adequate knowledge and information, unfavorable attitude, farmers are not so interested in maize cultivation. The production of maize has been reduced due to reduction of cultivation area. Most of the cultivation area has been captured by Aus rice to meet the demand of food for the ever increasing people. That's why farmers' attitude towards maize cultivation is not up the mark. There is an ample scope for expansion of maize areas in Bangladesh. So, evaluation of knowledge and attitude of the concerned farmers is necessary for the further development of maize cultivation in Bangladesh.

Considering the above fact, the researcher became interested to undertake a study to determine knowledge and attitude of the farmers regarding maize cultivation.

1.3 Statement of the Problem

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

- ✓ What were the characteristics of the maize farmers?
- ✓ What was the extent of knowledge and attitude of farmers regarding maize cultivation?
- ✓ Is there any relationship of the farmers' selected characteristics on their knowledge and attitude regarding maize cultivation?

1.4 Specific Objectives

The following specific objectives were formulated in order to give proper direction of the study.

1. To assess the extent of farmers' knowledge and attitude of maize cultivation.
2. To assess the following selected characteristics of the farmers:
    - Age,
    - Education,
    - Farm size,
    - Annual family income,

- Income from maize,
- Organizational participation,
- Cosmopoliteness,
- Extension media contact,
- Problem faced by the farmers in maize cultivation

3. To explore the relationship of the farmers' selected characteristics on their Knowledge and attitude towards maize cultivation.

1.5 Assumption of the Study

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

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

1.6 Limitation of the Study

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

- ✓ The study was confined to two unions (chor area) of Fulsori and Gaibandha sadar Upazila under Gaibandha district.
- ✓ The characteristics of the respondents farmers in the study area were many and varied but only 09 characteristics were selected for examining their relationship on their knowledge and attitude regarding maize cultivation.
- ✓ The researcher relied on the data furnished by the maize farmers' from their memory during interview.

- ✓ For some cases, the researcher faced unexpected interference from the over interested side-talkers while collecting data from the target populations. However, the researcher tried to overcome the problem as far as possible with sufficient tact and skill.
- ✓ Various problems in maize cultivations likely to be faced by the farmers. However, only 14 problems have been considered for investigation in this study.

1.7 Definition of Related Terms

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

Respondents

People who answer questions asked by an interviewer for a social survey. They are the general population from whom a social researcher normally gets most information required for his examination. In this examination the respondents were the village level maize farmers.

Farmers

The people who were engaged with cultivating exercises are called farmers. They took an interest in various homestead and network level exercises like harvests, animals, fisheries, other cultivating exercises and so forth. In this examination maize cultivators were treated as farmers.

Age

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

Education

Instruction alluded to the improvement of attractive change in information, expertise, mentality and capacity in a person through perusing, composing, working, watching and other related exercises. It was estimated based on classes a farmer has gone from a formal instructive establishment.

Farm size

Farm size refers to the cultivated area either possessed by the farmers or got from others on borga framework, the area being evaluated as far as full advantage and half advantage to the farmer individually. Oneself developed claimed land and developed territory taken as rent or

home loan from others was perceived as full advantage. In this investigation, farm size was estimated in hectare.

Annual family income

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

Extension media contact

It refers to an individual's (farmer) exposure to or contact with different communication media, source and personalities being used for dissemination of new technologies. Example: contact with AEO, watching TV, listening radio, attending group meeting etc.

Problem faced on maize cultivation

Problem referred to a difficult situation about which something to be done. It referred to the extent of problems faced by a respondent in maize cultivation in terms of social, technical, economical, marketing problems.

Knowledge on maize cultivation

Knowledge referred to the extent of facts or information about an idea, object or persons knows. Knowledge occurs when an individual is exposed to technologies existence and gain some understanding of how it functions (Rogers, 1995). Knowledge on maize cultivation refers to the various parts of its development for example soil condition, seed rate, appropriate time for development, manures, infections, fungicides, reaping time and so on.

Attitude towards maize cultivation

An attitude is a learned predisposition to respond in a favorable or unfavorable manner towards people, an object, an idea or a situation **(**Martin Fishbein, 1980). Attitude towards the maize development refers to one's inclination towards the development of maize in different perspectives.

CHAPTER 2
REVIEW OF LITERATURE

This section manages the audits of past works that identifies with the present examination straightforwardly or in a roundabout way. The scientist seriously sought websites, articles, journals and pieces of literature from various wellsprings of home and abroad. It may be relevant here to mention that a good number of research activities concerning farmers' knowledge and attitude have been made in many countries of the world.

However, the literatures have been organized into the following four sections to set the context of the study:

- First section : Concept of Knowledge and Attitude.
- Second section : Relationships between selected characteristics of the respondents and their knowledge on maize cultivation.
- Third section : Relationships between selected characteristics of the respondents and their attitude towards maize cultivation.
- Fourth section : Conceptual framework of the study.

Concept of Knowledge and Attitude

2.1.1 Concept of knowledge

According to Wikipedia "Knowledge is a familiarity, awareness or understanding of someone or something, such as facts, information, descriptions, or skills, which is acquired through experience or education by perceiving, discovering, or learning. It can refer to a theoretical or practical understanding of a subject. It can be implicit (as with practical skill or expertise) or explicit (as with the theoretical understanding of a subject); it can be more or less formal or systematic."

As indicated by Oxford lexicon "certainties, data, and aptitudes obtained through involvement or training; the hypothetical or pragmatic comprehension of a subject."

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

Boudreau (1995) indicated “Human faculty resulting from interpreted information; understanding that germinates from combination of data, information, experience, and individual interpretation. Variously defined as, “things that are held to be true in a given context and that drive us to action if there were no impediments.”

2.1.2 Concept of attitude

Attitude, in social brain science, is an inclination to group articles and vents and to respond them with some level of evaluative consistency while attitude coherently is a theoretical develops (i.e., they are induced yet not dispassionately recognizable), they are showed in cognizant experience, verbal reports, net conduct and physiological manifestations (Encyclopedia Britannica, 1968).

The idea of attitude emerges from endeavor to represent watched regularities in the conduct of individual people. The quality of one’s attitudes is judged from the observable, evaluative responses that are made.

Different persons have defined attitude in different words. Some of these are mentioned below:

According to Bhuiyan (2012) “Attitude may be thought of as a person’s perspective toward a specific target and way of predisposition to act, perceive, think and feel in relation to something. It is expressed as one’s views regarding an object as positive or negative, favorable or unfavorable, like or dislike etc. with varying degrees”

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

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

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

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

Doob (1948) stated that attitude affects behavior since an implicit, drive producing response considered socially significant in the individual society. If this definition is broken down typographically into phases and clauses, an attitude implies the following.

- It is an implicit response.
- It is both (a) anticipatory and (b) mediating reference to pattern of covert responses.
- It is evoked by (a) a variety of stimulus patterns (b) as a result of previous learning, or of gradients of generalization and discrimination.
- It is itself a cue and drive producing.
- It is considered socially significant in the individual's society.

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

2.1.3 Past related research on knowledge

Rahman(2017) found that, majority (62.4 %) of the farmers possessed ‘high knowledge’ while 5.5 and 32.2 percent of the farmers possessed ‘low’ to ‘medium knowledge’ respectively in tobacco cultivation.

Mandal (2016) found that, majority (64.3 %) of the farmers possessed 'medium knowledge' while 20.7 and 15.0 percent of the farmers possessed 'low' to 'high knowledge' respectively in watermelon cultivation.

Rahman (2015) studied on knowledge of Salt Tolerant Variety (BRRI dhan 47) of rice and found that majority (81 %) of the farmers had Medium level of knowledge and 5 % of the farmer had low level of knowledge and 22 % percent of the farmers possessed relatively high level of knowledge.

Mondal (2014) studied on knowledge of Strawberry Cultivation and found that majority (54 %) of the farmers had Medium level of knowledge and 27.4 % of the farmer had low level of knowledge and 14.6 % of the farmers possessed relatively high level of knowledge.

Monalesa (2014) studied on knowledge of Summer Tomato cultivation and found that majority (52.4 %) of the farmers had high level of knowledge and 42.6 % of the farmer had medium level of knowledge and 5 % of the farmers possessed relatively high level of knowledge.

Azad (2014) found that, 56 percent of the respondents belong to medium knowledge category followed by 35.8 percent in high and only 8.3 percent in low knowledge category on postharvest practices of vegetables.

Abdullah (2013) found that, the majority (44.6 percent) of the pond farmers' possessed medium knowledge, where as 25.7 percent possessed high knowledge and only 16.8 percent had low knowledge and 12.9 percent of the farmers possessed very high knowledge.

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

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

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

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

Rahman (2001) found in his study that the highest proportion (62.22 percent) of the respondents had medium knowledge compared to 25.56 percent having low knowledge and only 12.22 percent had high knowledge on HYV boro rice cultivation practices.

Satyavarthy, (2001) found that the majority of the sugarcane farmers had medium level of knowledge regarding sustainable cultivation practices of sugarcane.

Vedpathak (2001) revealed that the highest percentage of marginal (42.64%) and small (63.46%) farmers had medium and high knowledge respectively about high yielding varieties. Whereas, majority of marginal (73.33%) and small (61.78%) farmers had no knowledge about seed treatment in rice.

Desai et al. (2000) reported that majority (69.17%) of the farmers possessed knowledge about recommended cotton production technology of NHH-44 cotton variety.

Chapke (2000) reported that most of the farmers possessed average (56.21%) knowledge about bio-control practices.

2.1.4 Past related research on Attitude

Rahman (2017) found that, majority (42.4 %) of the farmers possessed 'Favorable Attitude' while 18.39 and 39.41 percent of the farmers possessed 'Neutral' and 'Unfavorable Attitude' respectively in tobacco cultivation.

Rahman (2015) found that overwhelming majority (77.78 %) of the Salt Tolerant Variety (BRRI dhan 47) of Rice had high favorable attitude, where as 22.22 % had low favorable attitude towards BRRI dhan 47 cultivation.

Kaliba et al, (2000), Abebaw and Belay, 2001; Hintze et al., (2003), Rogers (2003) found that attitude influenced the production traits and marketability of improved maize, enhanced the knowledge how to apply the technology and the role of extension in dissemination of improved technology.

Mondal (2014) found that majority (51.3 %) of the Strawberry growers had medium favorable attitude and 40.7 % had low favorable attitude towards Strawberry cultivation. Only 5.3 % of them possessed highly favorable attitude towards Strawberry cultivation. Where as only 0.9 % had unfavorable attitude towards Strawberry cultivation.

Monalesa (2014) found that majority (49.5 %) of the Summer Tomato Cultivators had favorable attitude and 37.6 % had unfavorable attitude and 12.9 % of them possessed neutral attitude toward Summer Tomato Cultivation.

Sarker (2002) found that majority (62 percent) of the rice growers had unfavorable attitude and 27 percent had favorable attitude towards the use of DAP in rice field. Only 11 percent of them possessed highly favorable attitude towards the use of DAP in rice field.

Mannan (2001) conducted a study on attitude of Proshika farmers towards the ecological agricultural programme (EAP) and found that majority of the Proshika farmers (57.3 percent) had moderately favorable attitude towards the EAP while 12.7 percent and 30 percent had slightly and highly favorable attitude towards EAP respectively.

Sarker (2001) in his study found that 64 percent farmers showed moderately favorable attitude towards Organic Homestead Gardening Programme (OHGP) of World Vision. Further 20 percent and 16 percent held slightly and highly favorable attitude towards OHGP respectively.

Akanda (2001) found in his study that 66 percent and 22 percent of farmer had moderate and slightly favorable attitude towards Rice-Fish Program of CARE. On the other hand, only 12 percent farmers had highly favorable attitude towards rice-fish program.

Tiwari and Lall (1998) investigated that social participation had positive and significant relationship with scientific attitude of sugarcane growers.

2.2 Relationship between selected characteristics of the Farmers and their Knowledge

2.2.1 Age and knowledge

Rahman (2015) , Mondal (2014) , Monalesa (2014) , Saha (2003), Sana (2003), Sarker (2002), Saha (2001), Rahman (2001), Hossain (2000) found no relationship between age and knowledge in their studies.

As per Roy (2006) age of the farmer had no significant association with their knowledge on boro rice cultivation. Comparative outcomes were seen by Khan (2005), Islam (2005) and Rahman (2004) in their individual examinations.

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

Amin (2001) saw in his study that period of PETRRA and non-PETRRA recipients had negative significant connection with their knowledge on organic cocoon and skills on production, processing, storing of seeds.

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

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

Rahman et al. (1988), Chandargi (1980) discovered positive significant connection amongst age and knowledge in their research.

2.2.2 Level of Education and knowledge

Rahman (2017), Rahman (2015), Mondal (2014), Saha (2003), Sana (2003), Sarker (2002), Saha (2001), Hossain (2000) found that education of the farmers was positively and significantly related with their knowledge in their research work.

Azad (2014) in his study concluded that level of education of the farmers had significant relationship with their knowledge on postharvest practices of vegetables.

Abdullah (2013) in his study concluded that level of education of the farmers had no significant relationship with their knowledge on pond fish culture.

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

Amin (2001) saw in his examination that period of PETRRA and non-PETRRA recipients had negative significant connection with their knowledge on organic cocoon and skills on production, processing, storing of seeds.

Alam (1997) watched that the level of education of the farmers had a positive and noteworthy relationship with the use of enhance cultivate rehearses.

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

2.2.3 Farm size and knowledge

Rahman (2017), Rahman (2015), Mondal (2014), Monalesa (2014), Sana (2003), Hossain (2000) observed that farm size of the farmers had no relationship with their knowledge.

Azad (2014) in his study concluded that farm size of the farmers had no significant relationship with their knowledge on postharvest practices of vegetables.

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

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

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

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

2.2.4 Annual family income and knowledge

Mandal (2016) in his study concluded that annual family income of the farmers had significant relationship with their knowledge on watermelon cultivation.

Rahman (2015), Mondal (2014), Monalesa (2014) observed that Annual family income of the farmers had possitive relationship with their knowledge.

Azad (2014) in his study concluded that annual family income of the farmers had no significant relationship with their knowledge on postharvest practices of vegetables.

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

Nurzzaman (2000) found that incomes of the rural women farmers had no relationships with their knowledge of the FFS and non-FFS farmers.

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

2.2.5 Income from maize cultivation and knowledge

Mandal (2016) in his study concluded that income from watermelon cultivation of the farmers had significant relationship with their knowledge on watermelon cultivation.

Abdullah (2013) in his study concluded that income from fish farming of the farmers had no significant relationship with their knowledge on pond fish culture.

Azad (2013) found that there was Income from vegetable cultivation had a positive and no significant relationship with knowledge on postharvest practices of vegetables.

Islam (2002) found that there was Income from vegetable cultivation had a positive and substantial significant relationship with knowledge on vegetables production activities by women members in homestead area under world vision project.

2.2.6 Extension contact and knowledge

Rahman (2017), Rahman (2015), Mondal (2014) , , Monalesa (2014) , Saha (2003), Sana (2003), Sarker (2002), Saha (2001), Rahman (2001), Hossain (2000) found in their study that media exposure of farmers were highly positive significant relationships with their knowledge.

Abdullah (2013) in his study concluded that extension contact of the farmers had no significant relationship with their knowledge on pond fish culture.

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

2.2.7 Problem faced on maize cultivation and knowledge

Rahman (2017) in his study concluded that problem faced in tobacco cultivation of the farmers had negatively significant relationship with their knowledge on tobacco cultivation.

Mandal (2016) in his study concluded that problem faced in watermelon cultivation of the farmers had negatively significant relationship with their knowledge on watermelon cultivation.

Rahman (2015), Mondal (2014), Monalesa (2014) found in their study that Problem faced of farmers were positive significant relationships with their knowledge.

Azad (2014) in his study concluded that problem faced in vegetable cultivation of the farmers had negatively significant relationship with their knowledge on postharvest practices of vegetables.

Abdullah (2013) in his study found that problem faced of the farmers had negatively significant relationship with their knowledge on pond fish culture.

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

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

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

2.3 Relationship between selected characteristics of the Farmers and their Attitude

2.3.1 Age and attitude

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

Tarannum (2013) found that age of the farmers' had positive significant relationship with their attitude towards improved agricultural implements.

Noor-E-Alam (2010) found in his study on farmers attitude towards modern jute cultivation that age had no relationship with attitude. Bhuiyan (2008), Zahan (2008), Islam (2007) and Chowdhury (2003) found similar result in their study.

Bhuiyan (2008) found that age of the farmers' had negative significant relationship with their attitude towards organic cultivation of HYV of rice. Ali (2002) found similar result in his study.

Both Chowdhury (2003) and Sarker (2002) found in their study that there is no relationship between age and attitude.
Chowdhury (2003) found that age of farmers' had no significant relationship with their attitude towards crop diversification.

Sarker (2002) found that age of the World Vision farmers had no significant relationship with their attitude towards organic homestead gardening practices.

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

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

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

2.3.2 Level of education and attitude

Rahman (2017) found that level of education of the respondents had positive relationship with their attitude towards tobacco cultivation.

Rahman (2015), Mondal (2014), Monalesa (2014) ,Chowdhury (2003), Shehrawat (2002), Khan (2002), Kumari (1988), Sulakshna (1988) and Kashem (1987) found that education of the farmers had a positive significant relationship with their attitude.

Bhuiyan (2008) and Zahan (2008) found a positive significant relationship between education and attitude. Chowdhury (2003) revealed similar result intheir study.

Noor-E-Alam (2010),Tarannum (2013) and Islam (2007) revealed that education of farmers' had no significant relationship with their attitude.

Shehrawat (2002) reported in his article a significant and positive relationship between education and attitude of farmers towards diversification of farming.

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

Khan (2002) in a study revealed that education of PROSHIKA beneficiaries hold positive significant relationship with their attitude towards in Social Forestry Programmes.

2.3.4 Annual family income and attitude

Rahman (2017) found that Annual family income of the respondents had positive relationship with their attitude towards tobacco cultivation.

Rahman (2015), Mondal (2014), Monalesa (2014) and Rabby (2014) reported that family income of farmers had positive significant relationship with their attitude.

Tarannum (2013) reported that annual income had no significant relationship with the attitude of farmers towards improved agricultural implements. Bhuiyan (2008) and Siddique (2002) also found similar result in their study.

Also Chowdhury (2003), Shehrawat (2002) and Das (1963) reported that family income of farmers had positive significant relationship with their attitude.

Siddique (2002) and Parveen (1993) revealed that annual income had no significant relationship with the attitude of farmers in their studies.

Mannan (2001) observed in his study that there was positive significant relationship between the family annual income and their attitude towards the Ecological Agriculture Programmes.

Paul (2000) reported that annual family income of the farmers had positively significant relationship with their attitude towards use of USG.

Kashem (1987) also found that income of the small farmers had no significant relationship with their attitude towards community of the farmers.

2.3.5 Income from maize cultivation and attitude

Rahman (2017) found that income from maize cultivation had positive significant relationship with their attitude.

Rahman (2015) found that income from rice cultivation had positive significant relationship with their attitude.

Mondal (2014) found that income from strawberry cultivation had positive significant relationship with their attitude.

2.3.6 Extension contact and attitude

Rahman (2017) found that extension contact had positive significant relationship with their attitude.

Rabby (2014) **,** Shehrawat (2002), Sadat (2002) and Siddique (2002) reported in their studies that there was a significant and positive relationship between extension contact and attitude of farmers.

Bhuiyan (2008) reported a significant and positive relationship between extension contact and attitude.
Islam (2007) found in the study of attitude of farmers' towards modern jute cultivation that there was negative significant relationship between extension media contact and attitude.

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

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

2.3.7 Problem faced on maize cultivation and attitude

Rahman (2015), Mondal (2014), Monalesa (2014) and Rabby(2014) uncovered that Problem looked by the ranchers" had negative noteworthy association with their frame of mind towards ranchers data need appraisal.

Bhuiyan (2008) uncovered that Problem looked by the farmers‟ had negative noteworthy association with their frame of mind towards rancher's data need appraisal.

Karim et al. (1997) found that issues of the ranchers had a huge association with their frame of mind. Also, comparative outcome discovered Muttaleb (1998) in his examination.

2.4 Conceptual Framework of the study

In light of the above audits of writing the present examination is made to investigate farmers' information and disposition towards maize development. Subsequently the information and disposition were the principle focal point of the investigation and nine (9) chosen attributes of the farmers' were considered as those might have association with learning and frame of mind. Farmers' information and mentality towards maize development might be impacted and influenced through connecting powers of numerous autonomous elements. It is beyond the realm of imagination to expect to manage every one of the components in a solitary report. Hence, it was important to restrict the components, which included age, education, farm size, annual family income, income from maize, organizational participation, cosmopoliteness, extension media contact and problem faced in maize cultivation. The applied structure of the examination has been introduced in Fig. 2.1

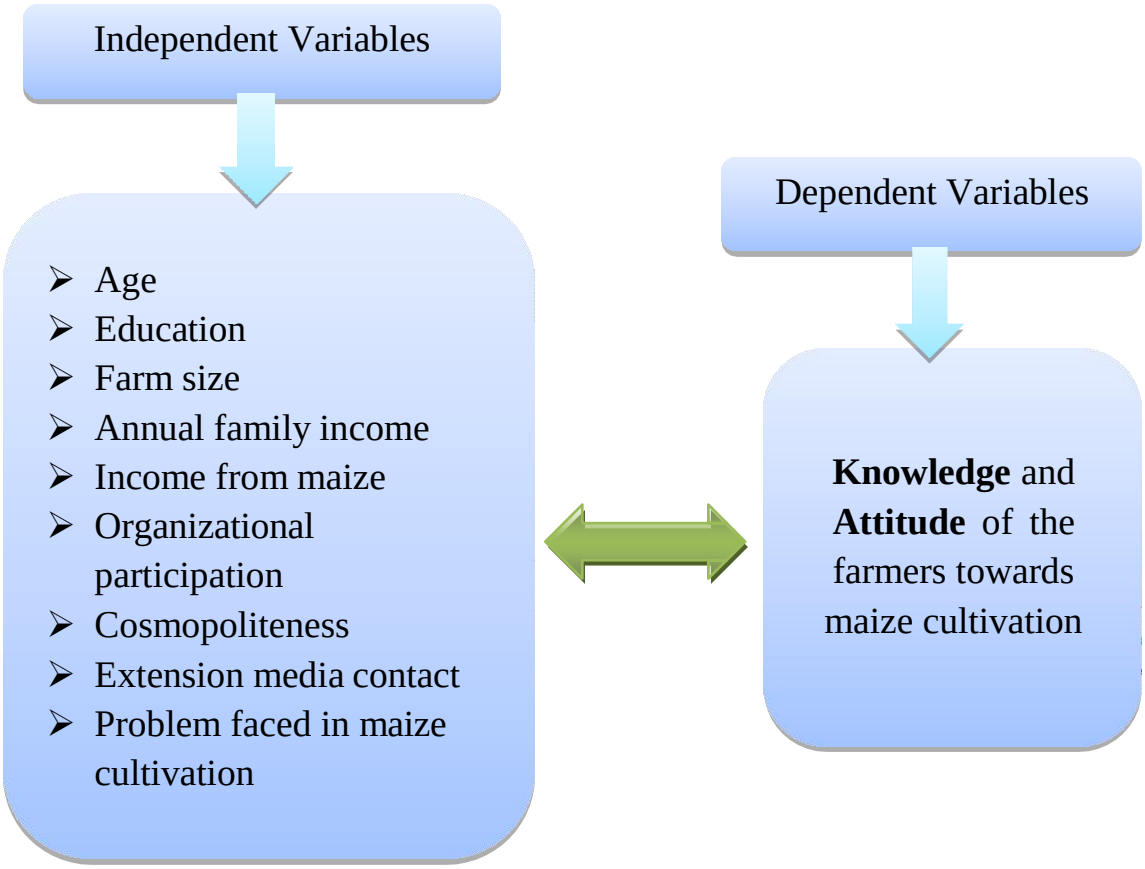


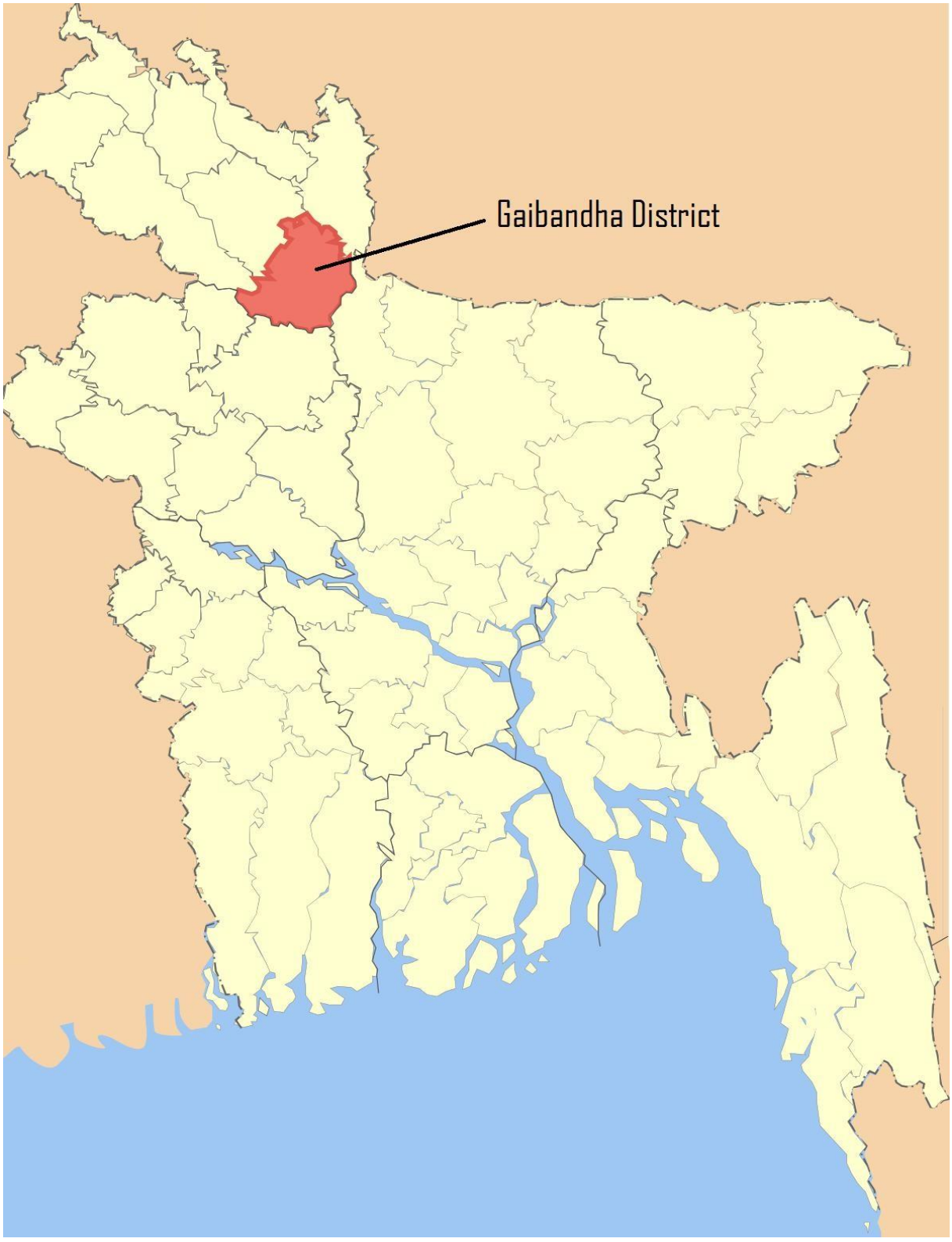
Figure 2.1 The Conceptual Framework of the Study

CHAPTER 3
MATERIALS AND METHODS

The methodology used in conducting any research is critically important and deserves careful consideration. Appropriate methodology empowers the scientist to gather substantial and solid data as far as theory or research instrument and to break down the data legitimately to touch base at legitimate outcomes. The techniques and operational methods followed in directing this examination have been talked about in this part.

3.1 The Locale of the Study

The study was conducted in Kanchipara and Gidari unions under Fulsori and Gaibandha sadar upazilla of Gaibandha district. After consulting with Upazila Agriculture Officer (UAO) of Gaibandha, Kanchipara and Gidari were selected as the study area. These unions have 27 villages. Out of 27, four were purposively selected. This was because maize is grown more in this area than other area. The selected villages were Rosulpur, Bhasarpara , Dhutichora and Dangirpar. A map of Gaibnadha districted showing the study area has been presented in Figure.3.1, 3.2 respectively.



Figure#3.1. A map of Bangladesh showing Gaibandha district

Figure#3.2. A map of Gaibandha district showing Gaibandha Sadar and Fulsori upazila

3.2 Population and Respondent

The maize farmers under selected four villages were considered as the population of the study. A list of maize farmers who are currently cultivating maize was prepared with the help of DAE. The number of maize farmers was 173 which constituted the population of the study. About 45 percent of the population was selected proportionally from the selected villages as the sample by following random sampling method. Thus, the total sample size stood at 78. Moreover, a reserved list of 10 maize farmers was prepared for use when the maize farmers under sample were not available during data collection. The distribution of the selected maize farmers with reserve (5%) list of the selected villages is shown in the table 3.1

Table 3.1 Distribution of the sampled farmers in the study area

Name of village	Total no. of maize farmers	Sample size (45%)	Reserve List (5%)
Rosulpur	62	28	3
Bhasarpara	39	17	2
Dhutichora	49	22	3
Dangirpar	23	11	2
Total	**173**	**78**	**10**

3.3 Instrument for Data Collection

In a social research, interview schedule is the instrument for data accumulation. For social research think about, preparation of interview schedule for accumulation of information requires an exceptionally careful consideration. In this way, an organized interview schedule was prepared for gathering of relevant data for the examination. Both closed and open structure questions were incorporated into the schedule. Straightforward and direct inquiries were also included to ascertain the conclusion of the farmers regarding various aspects. The draft interview schedule was prepared as per the destinations of the study. The interview schedule was pre-tested with 10 farmers from the list of respondents which were excluded during

interview. Necessary adjustments, additions and modification were made in the interview schedule based on the pretest results. The changed and rectified interview schedule was then imprinted in final structure and increased as required. An English rendition of this interview schedule is displayed in Appendix-A.

3.4 Selection of Dependent and Independent Variables

The success of a research depends on successful selection of variables. Inappropriate and inconsistent selection of variables may lead to faulty results. The researcher employed adequate care in selecting the variables of the study. Considering personal, economic, social and psychological factors of the rural community, time and resources availability to research, reviewing relevant literature and discussing with relevant expert, the researcher selected the variables for the study. Farmers' knowledge & attitude regarding maize cultivation were the main focus of this study and it was considered as the dependent variables. The researcher selected nine (9) causal variables. Characteristics of the farmers like age, education, farm size, annual family income, income from maize, organizational participation ,cosmopoliteness, extension media contact, problem faced for maize cultivation were selected as the independent variables.

3.5 Data Collecting Procedure

For the purpose of data collection, a semi-structured interview schedule was used. It was prepared keeping the objectives of the study in mind. The interview schedule contained both open and closed form questions. Direct and simple questions and statements were included in the schedule to collect data on the selected dependent and independent variables.

Data were collected through personal interviewing by the researcher herself through face to face interview. The study was purposively conducted in the Gaibandha district of Bangladesh. Before starting collection of data, the researchers met with DAE agent of the respective blocks in order to explain the objectives of the study and requested them to provide necessary help and co-operation in collection of data. The local leaders of the area were also approached to render essential help. As a result, there was no problem to collect data. The researcher made all possible efforts to establish rapport with the respondents so that they could feel comfortable to

the questions which contained in the schedule. All possible efforts were made to explain the purpose of the study to the respondents and their answers were recorded sincerely. Collection of data took 20 days from 11 January to 11 February 2019.

3.6 Measurement of Variables

The different characteristics of the maize farmers might have impact on their knowledge and attitude towards maize cultivation. These characteristics were age, education, and farm size, annual family income, Income from maize, organizational participation, cosmo-politeness, extension contact, problem faced for maize cultivation. The knowledge and attitude of maize farmers towards maize cultivation were the main center of the study. Measurement of all the factors of the maize farmers and their knowledge and attitude towards maize cultivation are discussed in the following sub sections:

3.6.1 Age

Age of a respondent was measured in terms of years from birth to the time of interview which was found on the basis of response (Rahman, 2017). A score of one (1) was assigned for each year of age. Question regarding this variable appears in item no. 1 in the interview schedule (Appendix-A).

3.6.2 Education

The education of maize farmers was measured by the number of years of schooling completed in an educational institution. A score of one (1) was given for each year of schooling completed. If maize farmers did not know how to read and write, his education score was zero (0), while a score of 0.5 was given to maize farmers who could sign his name only. If a maize farmer did not go to school but studied at home or adult learning center, his knowledge status was considered as the equivalent to a formal school student (Adnan, 2016 & Rahman, 2017).

3.6.3 Farm size

The farm size of a farmer referred to the total area of land on which his/her family carried out farming operations, the area being in terms of full benefit to his/her family (DAE, 1999). Data

obtained from asking direct question. The farm size was measured in hectares for each farmer using the following formula:

$$\text{Farm size} = A1 + A2 + 1/2\ (A3+A4) + A5+A6$$

Where,

Al = Homestead area

A2= Own land under own cultivation

A3= Land given to others on borga system

A4= Land taken from others on borga system

A5= Land taken from others on lease

A6= Others

3.6.4 Annual family income

Annual family income of maize farmers was measured in Thousand Taka. The total yearly earning from agricultural (field crops, vegetables, fruits, spices, livestock and fisheries) and non-agricultural sources (service, business, and others) by the respondent himself/herself and other members of his family was determined. Thus, yearly earning from agricultural and non-agricultural sources were added together to obtain annual family income of a maize farmers. A score of one was given for each Tk. 1,000 to compute the annual income scores of the respondents.

3.6.5 Income from maize cultivation

Annual income from maize cultivation of a farmer was measured in Thousand Taka. It refers to the earning of the respondent from selling of maize and its products and by products. A score of one was given for each Tk. 1,000 to compute the annual income scores of the respondents.

3.6.6 Organizational participation

Organizational participation of a respondent was measured by the nature of his involvement and duration of participation in different organization. The score of a respondent was computed as follows:

Score according to nature of involvement

No participation = 0

Ordinary member = 1

Executive member = 2

Executive officer = 3

The score according to nature of involvement for each organization was multiplied by the duration (years) of his participation in the respective organization. Finally total scores of all organizations were added together to obtain his total score of organizational participation.

3.6.7 Cosmopoliteness

Cosmopoliteness of a respondent referred to frequency of visit to different places outside from her own village. The following scale was used for computing cosmopoliteness score of a respondent. Each respondent was asked to indicate the extent of his Cosmopoliteness. With five (5) alternative responses as “Regularly”, “Frequently”, “Occasionally”, “Rarely”, “Not at all” basis and weights were assigned as 4, 3, 2, 1 and 0 respectively. Scores obtained for visit to each of the above six categories of places were added together to get the cosmopoliteness score of a respondent. The range of cosmopoliteness score could be from ‘0’ to ‘24’, where ‘0’ indicates ‘no cosmopoliteness’ and ‘24’ indicates ‘very high cosmopoliteness’.

3.6.8 Extension media contact

This variable was measured by computing an extension contact score on the basis of a maize farmer extent of contact with 10 selected media as obtained in response to item no.8 of the interview schedule (Appendix A). Each respondent was asked to indicate the extent of his contact with each of the selected media. With five (5) alternative responses as „regularly“, “Frequently” , “occasionally”, “rarely” and “not at all ” basis and weights were assigned as 4, 3, 2, 1 and 0 respectively. The extension contact score of a respondent was determined by summing up his/her scores for contact with all the selected media. Thus possible extension contact score can vary from zero (0) to 40, where zero (0) indicated no extension contact and 40 indicated the highest level of extension contact.

3.6.9 Problem faced in maize cultivation

This variable was measured by computing the extent of various problems of the respondents with 14 selected problems as obtained in response to item no. 9 of the interview schedule (Appendix A). Each respondent was asked to indicate the extent of his/her problem as “high”, “medium”, “low” and “not at all” problem and score was assigned as 3, 2, 1 and 0 respectively. The problem faced score of a respondent was determined by summing up his/her scores for all the problems. Thus, possible score could vary from zero (0) to 42, where Zero (0) indicated no problem and 42 indicated the highest level of problem.

3.6.10. Knowledge on maize cultivation

After through consultation with relevant experts and reviewing of related literature, 17 questions regarding maize cultivation were selected and those were asked to the respondents to determine their knowledge on maize cultivation. Two (2) score was assigned for each correct answer and zero (0) for wrong or no answer. Partial score was assigned for partially correct answer. Thus the knowledge on maize cultivation score of the respondent could range from 0 to 34, where zero (0) indicating very poor knowledge and 34 indicate the very high knowledge on maize cultivation.

3.6.11 Attitude towards maize cultivation

An attitude may be defined as predisposition to act towards an object in a certain manner. Attitude of a farmer towards maize cultivation was used to refer to his belief, feelings and action towards the various aspects maize cultivation. It was measured by constituting 12 statements (six positive and six negative). A statement was considered positive if it possessed an idea favorable towards the maize cultivation. On the other hand, a statement was considered negative if it was unfavorable towards maize cultivation. The respondents were asked to express their opinion in the form of “strongly agree” or “agree” or “undecided” or “disagree” or “strongly disagree”. A score of 5 was given to “strongly agreed”, 4 to “agreed”, 3 to “undecided”, 2 to “disagreed” and 1 to “strongly disagreed”, if the statement was positive. A reverse scoring method was followed in case of statements considered negative. Attitude score of a respondent was determined by summing the scores obtained by him for all the items in the

scale. The index scores of respondents could range from 12 to 60 where “12” indicating highest unfavorable and “60” for highest favorable attitude towards maize cultivation.

3.7 Statement of Hypothesis

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

3.7.1 Research hypothesis

Research hypothesis states a possible relationship between the variables being studied or a difference between experimental treatments that the researcher expects to emerge. The following research hypothesis was put forward to know the relationships between each of the 9 selected characteristics of the maize farmers and their i) knowledge and ii) attitude towards maize cultivation. “Each of the 9 selected characteristics of the maize farmers will have significant relationship with their i) knowledge and ii) attitude towards maize cultivation.”

3.7.2 Null hypothesis

A null hypothesis states that there is no relationship between the concerned variables. The following null hypothesis was undertaken for the present study “There is no relationship between the selected characteristics of maize farmers and their i) knowledge and ii) attitude towards maize cultivation.” “The selected characteristics were age, education, farm size, annual family income, Income from maize , Organizational participation ,Cosmopoliteness, Extension contact, problem faced for maize cultivation”

3.8 Data Processing

After completion of field survey, all the data were coded, compiled and tabulated according to the objectives of the study. Local units were converted into standard units. All the individual responses to questions of the interview schedule were transferred in to a Microsoft Office excel

shit to facilitate tabulation, categorization and organization. In case of qualitative data, appropriate scoring technique was followed to convert the data into quantitative form.

3.9 Statistical Procedures

The data were analyzed in accordance with the objectives of the study. Qualitative data were converted into quantitative data by means of suitable scoring technique wherever necessary. The statistical measures such as range, means, standard deviation, number and percentage distribution were used to describe the variables. Initially, Pearson's Product Moment Coefficient of Correlation (r) was used in order to explore the relationships between the concerned variables. One percent (0.01) level of probability and five percent (0.05) level of probability were the basis for rejecting any null hypothesis throughout the study. The SPSS computer package was used to perform all these process.

CHAPTER 4
RESULTS AND DISCUSSION

A sequential and detailed discussion on the findings of the study has been presented in this Chapter. The Chapter is divided into three sections:

- ✓ First section: Selected characteristics of the respondents
- ✓ Second section: Knowledge & Attitude of the farmers regarding maize cultivation.
- ✓ Third section: relationships between the selected characteristics of the maize farmers on their knowledge & attitude regarding maize cultivation.

4.1 Selected characteristics of the farmers

Man possesses various interrelated and constitutional characteristics and those form his/her personality. It is expressed behavior or the sum totality of individual characteristics and ways of behaving which determines his unique adjustment to his environment. It includes the individual behavior, appearance, beliefs, attitude, values, motives, emotional reactivity, expressing capacity, experience and individual modes of adjustment. It was therefore, assumed that attitude towards maize cultivation would be influenced by various characteristics of the farmers. Nine characteristics of the respondents were selected to find out their relationship with knowledge & attitude towards maize cultivation. This has been discussed in the final section of this chapter. The selected characteristics included age, education, farm size, annual family income, income from maize, organizational participation, cosmopoliteness, extension media contact, problem faced for maize cultivation. The salient features of the nine (9) characteristics of the farmers are presented in Table 4.1.

Table 4.1 Salient features of the selected characteristics of the farmers (n=78)

Sl. no	Characteristics	Unit of measurement	Possible range	Observed range	Mean	SD
1	**Age**	Year	unknown	24-78	38.30	8.25
2	**Level of education**	Level of schooling	unknown	0.00-12	5.85	3.14
3	**Farm size**	Hectare	unknown	0.09-3.20	1.03	0.75
4	**Annual family income**	"000" Taka	unknown	55-350	230.36	70.89
5	**Income from maize**	"000" Taka	unknown	25-240	76.23	51.35
6	**Organizational participation**	Scores	0-24	15-24	19.79	2.18
7	**Cosmopoliteness**	Scores	0-24	5-22	16.35	3.55
8	**Extension contact**	Scores	0-40	25-40	33.78	3.63
9	**Maize cultivation problem**	Scores	0-42	25-42	31.41	4.04
10	**Maize cultivation knowledge**	Scores	0-34	19-34	25.98	4.31
11	**Attitude towards maize**	Scores	12-60	24-55	37.48	9.81

4.1.1 Age

Age of the respondents ranged from 24 to 78 years, the average being 38.30 years and the standard deviation was 8.25. On the basis of age, the farmers were arranged into three categories: “young aged” (up to 35), “middle aged” (36-50) and “old aged” (above 50 years). Table 4.2 contains the appropriation of the respondents according to their age.

Table 4.2 Distribution of the maize farmers concurring to their age

Categories	Basis of categorization (year)	Respondents		Mean	SD
		Numbers	Percent		
Young	Up to 35	30	38.5	38.30	8.25
Middle	36-50	45	57.7		
Old	Above 50	3	3.8		
Total		**78**	**100**		

Data presented in Table 4.2 indicated that the highest proportion (57.7 percent) of the respondents found in the middle aged category thought about to 38.5 percent young and 3.8 percent old aged category. The overwhelming majority (96.20 percent) of the maize farmers were young to middle aged. This means that maize cultivation in the study area is being managed by comparatively younger maize farmers.

4.1.2 Level of Education

The education score of the maize farmers run from 0-12, with an average of 5.85 and standard deviation 3.14. Based on their education scores, maize farmers were arranged into five categories namely illiterate (0), can sign only (0.5), primary education (1-5), secondary education (6-10) and above secondary (above 10). The distribution of the maize farmers according to their education is shown in Table 4.3.

Table.4.3. Distribution of the maize farmers concurring to their education

Categories	Basis of categorization (Level of schooling)	Respondents		Mean	SD
		Numbers	Percent		
Illiterate	0	5	6.4	5.85	3.14
Can sign only	0.5	4	5.1		
Primary level	1-5	25	32.1		
Secondary level	6-10	41	52.6		
Higher Secondary level	Above 10	3	3.8		
Total		**78**	**100**		

Data presented in table 4.3 indicated the most of the farmers (32.1%) belong to the Primary level category, 6.4% of the farmers had no education, 5.1% of them can sign only, 52.6% of them belong to the Secondary level and only 3.8% of the farmers had higher secondary qualification. Education increases the power of observation, analysis, integration, understanding, decision making and alteration to new situation of an individual. Educated farmers may get useful information through reading leaflets, booklets, books and other printed materials. Moreover they possess desire for new and newer information related to their farming operations. Education broadens the power of understanding and develops the abilities of analyzing facts and situation in order to take correct choices.

4.1.3 Farm size

Farm size varied from 0.09 to 3.20 hectares with an average of 1.03 hectares and standard deviation of 0.75. Based on their farm size the farmers were arranged into three categories as proposed by DAE (1999) which shown in Table 4.4.

Table 4.4 Distribution of the farmers concurring to their farm size

Categories	Basis of categorization (Hectare)	Respondents		Mean	SD
		Numbers	Percent		
Small	0.2 - <1	58	74.4	1.03	0.75
Medium	1 - <3	16	20.5		
Large	Above 3	4	5.1		
Total		**78**	**100**		

The data in the Table 4.4 revealed that majority of the respondents (74.4 percent) had small sized farm while 20.5 percent had medium sized farm and 5.1 percent had large farm. The average farm size of the farmers of the study area (.862 hectares) was higher than that of national average (0.60 hectare) of Bangladesh (BBS, 2004). In Bangladesh most of the farmers live on below a subsistence level and this in one of the vital reasons for not adopting improved farming practices in their farm as well as having lower knowledge on maize cultivation.

4.1.4 Annual family income

Annual family income of the maize farmers ranged from Taka 55-350 thousand, the mean being 230.36 thousand taka and standard deviation of 70.89. On the basis of their annual income scores, the maize farmers were divided three categories- “low income” “medium income” and “high income”. The distribution of the maize farmers concurring to their annual family income is shown in Table 4.5.

Table 4.5 Distribution of the farmers concurring to their Annual family income

Categories	Basis of categorization (“000” Taka)	Respondents		Mean	SD
		Numbers	Percent		
Low income	Upto 180	15	19.2	230.36	70.89
Medium income	181-260	45	57.7		
High income	Above 260	18	23.1		
Total		**78**	**100**		

Data presented in table 4.5 indicated the lion's share (57.7 percent) of the maize farmers had medium income and 19.2 percent of maize farmer had low income and 23.1 percent high income. It was observed that greater portion of the farmers belong to medium income group.

The respondents of the study area were not engaged only in agriculture. Many of them had other income sources such as service, business, and other farm economic activities.

4.1.5 Income from maize

Income from maize cultivation of the maize farmers ranged from Taka 25-240 thousand, the mean being 76.23 thousand taka and standard deviation 51.35. On the basis of their annual income scores, the maize farmers were divided three categories-“low income” “medium income” and “high income”. The distribution of the maize farmers concurring to their income from maize cultivation is shown in Table 4.6.

Table 4.6 Distribution of the farmers concurring to their income from maize

Categories	Basis of categorization (“000” Taka)	Respondents		Mean	SD
		Numbers	Percent		
Low income	Upto 60	44	56.4	76.23	51.35
Medium income	61-130	23	29.5		
High income	Above 130	11	14.1		
Total		**78**	**100**		

Data presented in table 4.6 , the lion's share (56.4 percent) of the maize farmers had low income compared to 29.5 percent medium income and 14.1 percent high income from maize cultivation. Thus, the overwhelming majority (85.9 percent) of the farmers had low to medium annual income from maize cultivation. Farm size is very much related with the income. As farm sizes of the farmers in the study area are small, so naturally the income is low.

4.1.6 Organizational participation

Organizational participation observed scores ranged from 15 to 24 with the mean of 19.79 and standard deviation of 2.18. The respondents were classified into three categories which are shown in Table 4.7.

Table 4.7 Distribution of the farmers concurring to their organizational participation

Categories	Basis of categorization (year)	Respondents		Mean	SD
		Numbers	Percent		
Low	Upto 15	18	23.1	19.79	2.18
Medium	16 – 20	52	66.7		
High	Above 21	8	10.3		
Total		**78**	**100**		

Data furnished in Table 4.7 indicate that the highest proportion (66.7%) of the respondents felt in the "medium" category and 23.1% felt in "low" category. And 10.3% felt in high category. More participation in organizational activities could create attitude to adopt improved production technology. The farmers with more organizational participation scores are expected in introducing new techniques in maize cultivation.

4.1.7 Cosmopoliteness

The observed cosmopoliteness scores of the maize farmers ranged from 5 to 22 with an average of 16.35 and a standard deviation of 3.55 against the possible range of 0 to 24. On the basis of their cosmopoliteness scores, the maize farmers were classified into three categories: "low cosmopoliteness", "medium cosmopoliteness" and "high cosmopoliteness". The distribution of the maize farmer according to their cosmopoliteness is shown in Table 4.8.

Table 4.8 Distribution of maize farmer concurring to cosmopoliteness

Categories	Basis of categorization (Score's)	Respondents		Mean	SD
		Numbers	Percent		
Low cosmopoliteness	Upto 12	10	12.8	16.35	3.55
Medium cosmopoliteness	13– 19	61	78.2		
High cosmopoliteness	Above 20	7	9		
Total		**78**	**100**		

The finding (table 4.8) showed that the majority 78.2 percent of the maize farmers had medium cosmopoliteness compared to 12.8 and 9 percent having low and high cosmopoliteness respectively. From the picture this could be said that farmers of the study area were more or less cosmopolite than the locality. Cosmopoliteness influences much in increasing knowledge and forming favorable attitude.

4.1.8 Extension media contact

The observed extension contact scores of the maize farmers ranged from 25 to 40 against the possible range from 0 to 40, the mean and standard deviation were 33.53 and 3.63 respectively. According to this score, the maize farmers were classified into three categories:

Table 4.9 Distribution of the farmers concurring to their Extension media contact

Categories	Basis of categorization (Score's)	Respondents		Mean	SD
		Numbers	Percent		
Low	Upto 30	14	17.9	33.53	3.63
Medium	31 – 35	48	61.5		
High	Above 36	16	20.5		
Total		**78**	**100**		

A proportion of 61.5 percent of the maize farmers had medium extension contact compared to 17.9 percent of them having low extension contact and 20.5 percent of the maize farmers had high contact. Extension contact is a very effective and powerful source of receiving information about various new and modern technologies. The status of no or having low and medium contacts might have significant impacts on the knowledge and attitude of maize farmers.

4.1.9 Problem faced in maize cultivation

The problem faced score of the maize farmers ranged observed from 25 to 42 against the possible score of 0-42 with a mean of 31.41 and standard deviation of 4.04. Based on the problem faced scores, the maize farmers were classified into three categories: "low problem", "medium problem" and "high problem" .The distribution of the maize farmers according to their problem faced is presented in Table 4.10.

Table 4.10 Distribution of the farmers concurring to their problem faced in maize cultivation

Categories	Basis of categorization (Score's)	Respondents		Mean	SD
		Numbers	Percent		
Low	Upto 27	7	9	31.41	4.04
Medium	28 – 35	58	74.4		
High	Above 36	13	16.7		
Total		**78**	**100**		

In table 4.10, about 74.4 percent of the maize farmers had medium problem compared to 9 percent of them having low problem and 16.7 percent having high problem. Thus, the vast majority (83.4 percent) of the maize farmers had low to medium problem. Farmers facing no or low problem in maize farming, help to go for more cultivation and for that reason it helps to gain more knowledge. That means if a farmer faces no or low problem in maize cultivation, it will encourage him/her to go for more maize production.

4.1.10 Knowledge on maize cultivation

Maize farmers' knowledge scores could theoretically range from 0 to 34. But their observed knowledge scores ranged from 19 to 34, the mean being 25.98 and standard deviation 4.31. Based on the theoretical scores, the farmers were classified into three categories as: "low knowledge", "medium knowledge" and "high knowledge". The distribution of the farmers according to their knowledge level is shown in Table 4.11.

Table 4.11 Distribution of the maize farmers concurring to their knowledge on maize cultivation

Categories	Basis of categorization (Score's)	Respondents		Mean	SD
		Numbers	Percent		
Low	Upto 21	17	21.8	25.98	4.31
Medium	22 – 29	42	53.8		
High	Above 30	19	24.4		
Total		**78**	**100**		

Majority (53.8%) of the farmers possessed medium knowledge and 21.8% and 24.4% of the farmers possessed low and high knowledge on maize cultivation respectively. Thus in general, the maize cultivation knowledge level of the farmers of the study area was satisfactory. Knowledge is to be considered as vision of an explanation in any aspect of the situation regarding maize cultivation. It is a act or state of understanding; clear perception of fact or truth, that helps an individual to foresee the consequence he may have to face in future. It makes individuals to become rational and conscious about related field. To perform optimum production, maize growers should have adequate knowledge on different aspects of maize cultivation.

4.1.11 Attitude towards maize cultivation

Farmers' attitude towards maize cultivation score ranged from 24 to 55 against the possible range of 1 to 60. The average was 37.48 with a standard deviation of 9.81. Based on the observed attitude scores, the farmers were classified into three categories as shown in Table 4.12

Table 4.12 Distribution of the farmers' concurring to their attitude towards maize cultivation

Categories	Basis of categorization (Score's)	Respondents		Mean	SD
		Numbers	Percent		
Unfavorable attitude	below 30	20	25.6	37.48	9.81
Neutral attitude	exactly 30	15	19.2		
Favorable attitude	Above 30	43	55.1		
Total		**78**	**100**		

Data contained in Table 4.12 indicated that majority (55.1 percent) of the respondent had favorable attitude towards maize cultivation as compared to 25.3 percent had unfavorable attitude and 19.2 percent had neutral attitude towards maize cultivation. Most likely, it may be the cause for the presence of more number of young and educated farmers. Frequent extension media contact and knowledge help the farmers to form favorable attitude towards maize cultivation. To develop the maize cultivation activities, a favorable attitude of the farmers is necessary.

4.2 Relationship between the selected characteristics of the respondents and their knowledge on maize cultivation

The purpose of this section is to explore the relationships of the selected characteristics of the maize farmers with their knowledge on maize cultivation. Pearson's Product Moment co-efficient of correlation (r) was used to test a null hypothesis concerning the relation between any two variables. Five percent (0.05) and one percent (0.0l) level of probability was used as the basis for rejection of a null hypothesis. Results of the test of co-efficient of correlation between each of the selected characteristics of the farmers and their knowledge on farming are shown in table 4.13.

4.13 The Pearson's correlation showing relationship between dependent (Knowledge of the farmers on maize cultivation) and independent variables

Dependent Variable	Independent Variable	Value of Co-efficient Correlation	Table Value Significant at 76df	
			0.05% level	0.01% level
Knowledge of the farmers towards maize cultivation	Age	0.294**	0.223	0.290
	Education	0.789**		
	Farm size	-.008		
	Annual income	0.268*		
	Income from maize	0.154		
	Organizational participation	0.274*		
	Cosmopoliteness	0.246*		
	Extension media contact	0.299**		
	Problem faced for maize cultivation	-0.242*		

* Significant at 0.05 level
** Significant at 0.01 level

4.2.1 Relationship between age and knowledge of the farmers on maize cultivation

Computed value of the co-efficient of correlation between age of the farmers and their knowledge on maize cultivation was found to be 0.294** (table 4.13). The following observations were recorded regarding the relationship between the two variables under consideration:

- The computed value of "r" (0.294**) was found larger than that of the tabulated value (0.290) with 76 df at 0.01 level of probability.
- The relationship between the concerned variables was positively significant.
- The null hypothesis was rejected.

The findings indicated that the age of the maize farmers was significant. So, there is positive significant relationship of age of the farmers with their knowledge on maize cultivation. Middle or younger farmers are more energetic, prompt and enthusiastic to gather knowledge than older. That's why different agricultural organizations involved in technology transfer should emphasis in choosing young or middle aged farmers.

4.2.2 Relationship between education level and knowledge of the farmers on maize cultivation

Computed value of the co-efficient of correlation between education level of the farmers and their knowledge on maize cultivation was found to be 0.789**(table 4.13). The following observation was recorded on the basis of correlation coefficient:

- The computed value of "r" (0.789**) was found larger than that of the tabulated value (0.290) with 76 df at 0.01 level of probability.
- The relationship between the concerned variables was positively significant.
- The null hypothesis was rejected.

Based on the above findings, it can be concluded that education of the maize farmers was positively significant. So, there is a positive relationship of education of the farmers with their knowledge on maize cultivation. Education helps the maize growers to gain knowledge on the improved methods of cultivation by reading books, leaflets, bulletins and other printed materials. Thus, farming community in the study area may be motivated to cultivate maize in huge area of land. Similar result was observed by Rahman (2015) and Monalesa (2014) in their respective studies.

4.2.3 Relationship between farm size and knowledge of the farmers on maize cultivation

Computed value of the co-efficient of correlation between farm size of the farmers and their knowledge on maize cultivation was found to be -.008 (table 4.13). The following observation was recorded on the basis of correlation coefficient:

- The computed value of "r" (-0.008) was found smaller than that of the tabulated value (0.223) with 76 df at 0.05 level of probability.
- The relationship between the concerned variables was insignificant.
- The null hypothesis was accepted.

Based on the above findings, it can be concluded that farm size of the maize farmers was insignificant. This indicates that farm size of the respondent in this study area was not so important factor for gathering knowledge.

4.2.4 Relationship between annual income and knowledge of the farmers on maize cultivation

Computed value of the co-efficient of correlation between annual income of the farmers and their knowledge on maize cultivation was found to be 0.268* (table 4.13). The following observation was recorded on the basis of correlation coefficient:

- The computed value of "r" (0.268*) was found larger than that of the tabulated value (0.223) with 76 df at 0.05 level of probability.
- The relationship between the concerned variables was positively significant.
- The null hypothesis was rejected.

Based on the above findings, it can be concluded that annual income of the maize farmers was positively significant. High annual family income makes strong economic base of family and contributes to the performance in maize production more efficiently which ultimately help in gaining knowledge by the farmers.

4.2.5 Relationship between income from maize and knowledge of the farmers on maize cultivation

Computed value of the co-efficient of correlation between income from maize of the farmers and their knowledge on maize cultivation was found to be 0.154 (table 4.13). The following observations were recorded regarding the relationship between the two variables under consideration:

- The computed value of "r" (0.154) was found smaller than that of the tabulated value (0.223) with 76 df at 0.05 level of probability.
- The relationship between the concerned variables was insignificant.
- The null hypothesis was accepted.

The findings indicated that the income from maize of the maize farmers was insignificant. So, there is no relationship of income from maize of the farmers with their knowledge on maize cultivation. Farmer acquire knowledge through training, education, life experience, and deep analytical thought. So, income from maize had no effect with the increase or decrease of knowledge towards maize cultivation. Similar result was observed by Rahman (2015).

4.2.6 Relationship between organizational participation and knowledge of the farmers on maize cultivation

Computed value of the co-efficient of correlation between organization participation of the farmers and their knowledge on maize cultivation was found to be 0.274*(table 4.13). The following observations were recorded regarding the relationship between the two variables under consideration:

- The computed value of "r" (0.274*) was found larger than that of the tabulated value (0.223) with 76 df at 0.05 level of probability.
- The relationship between the concerned variables was positively significant.
- The null hypothesis was rejected.

The findings indicated that the organization participation of the maize farmers was significant. So, there is positive significant relationship of organization participation of the farmers with their knowledge on maize cultivation.

4.2.7 Relationship between cosmopoliteness and knowledge of the farmers on maize cultivation

Computed value of the co-efficient of correlation between cosmopoliteness of the farmers and their knowledge on maize cultivation was found to be 0.246* (table 4.13). The following observations were recorded regarding the relationship between the two variables under consideration:

- The computed value of "r" (0.246*) was found larger than that of the tabulated value (0.223) with 76 df at 0.05 level of probability.
- The relationship between the concerned variables was significant.
- The null hypothesis was rejected.

The findings indicated that the cosmopoliteness of the maize farmers was significant. So, there is positive relationship of cosmopoliteness of the farmers with their knowledge on maize cultivation. It implies that a cosmopolite farmer is more mobile than a localite, when a farmer goes frequently to place other than his locality, the possibility are that comes in more contact with more and many progressive farmers and get opportunity to acquire more knowledge on maize cultivation.

4.2.8 Relationship between extension media contact and knowledge of the farmers on maize cultivation

Computed value of the co-efficient of correlation between extension media contact of the farmers and their knowledge on maize cultivation was found to be 0.299**(table 4.13). The following observations were recorded regarding the relationship between the two variables under consideration:

- The computed value of "r" (0.299**) was found larger than that of the tabulated value (0.290) with 76 df at 0.01 level of probability.

- The relationship between the concerned variables was significant.
- The null hypothesis was rejected.

The findings indicated that the extension media contact of the maize farmers was significant. So, there is positive significant relationship of extension media contact of the farmers with their knowledge on maize cultivation. The respondents with higher contact with extension media possess higher knowledge on maize cultivation. Different communication media may help them to understand different kinds of information relating to cognitive, affective, psychomotor nature. Thus in this study, it was possible to gain more knowledge by the increased contact with the various information media

4.2.9 Relation between problems faced for maize cultivation and knowledge of the farmers on maize cultivation

Computed value of the co-efficient of correlation problem faced for maize cultivation of the farmers and their knowledge on maize cultivation was found to be -0.242*(table 4.13). The following observations were recorded regarding the relationship between the two variables under consideration:

- The computed value of "r" (-0.242*) was found smaller than that of the tabulated value (0.223) with 76 df at 0.05 level of probability.
- The relationship between the concerned variables was negatively significant.
- The null hypothesis was rejected.

The findings indicated that problem faced for maize cultivation of the maize farmers was negatively significant. So, there is negative relationship of problem faced for maize cultivation of the farmers with their knowledge on maize cultivation. Similar result was observed by Rahman (2015) and Monalesa (2014) in their respective studies.

4.3 Relationship between the selected characteristics of the respondents and their attitude towards maize cultivation

To examine the relationship of the nine selected characteristics of the respondents with their attitude towards maize cultivation was the purpose of this section. The nine selected

characteristics were: age, education, farm size, annual family income, Income from maize, Organizational participation, Cosmopoliteness, Extension contact, problem faced for maize cultivation. These nine selected characteristics were the independent variables while attitude towards maize cultivation was the dependent variable of this study.

Pearsons product moment correlation co-efficient (r) has been used to explore the relationships between the selected characteristics of the respondents with their attitude towards maize cultivation. Five percent (0.05%) and one percent (0.0l %) level of probability was used as the basis for rejection of a null hypothesis. Results of the test of co-efficient of correlation between each of the selected characteristics of the farmers and their attitude towards maize cultivation are shown in table 4.14.

4.14 The Pearson's correlation showing relationship between dependent (attitude towards maize cultivation) and independent variables

Dependent Variable	Independent Variable	Value of Co-efficient Correlation	Table Value Significant at 76df	
			0.05% level	0.01% level
Attitude towards maize cultivation	Age	0.500**	0.223	0.290
	Education	0.372**		
	Farm size	0.152		
	Annual income	0.281*		
	Income from maize	0.307**		
	Organizational participation	0.312**		
	Cosmopoliteness	0.072		
	Extension media contact	0.251*		
	Problem faced for maize cultivation	-0.343**		

* Significant at 0.05 level
** Significant at 0.01 level

4.3.1 Relation between age and attitude of the farmers towards maize cultivation

Computed value of the co-efficient of correlation between age of the farmers and their attitude towards maize cultivation was found to be 0.500** (table 4.14). The following observations were recorded regarding the relationship between the two variables under consideration:

- The computed value of "r" (0.500**) was found largerer than that of the tabulated value (0.290) with 76df at 0.01 level of probability.
- The relationship between the concerned variables was significant.
- The null hypothesis was rejected.

The findings indicated that the age of the maize farmers was significant. So, there is positive relationship of age of the farmers with their attitude towards maize cultivation.

4.3.2 Relation between education and attitude of the farmers towards maize cultivation

Computed value of the co-efficient of correlation between education of the farmers and their attitude towards maize cultivation was found to be 0.372** (table 4.14). The following observations were recorded regarding the relationship between the two variables under consideration:

- The computed value of "r" (0.372**) was found larger than that of the tabulated value (0.290) with 76df at 0.01 level of probability.
- The relationship between the concerned variables was positively significant.
- The null hypothesis was rejected.

The findings indicated that the education of the maize farmers was positively significant. So, there is positive relationship of education of the farmers with their attitude towards maize cultivation. Similar result was observed by Rahman (2015) in his study.

4.3.3 Relationship between farm size and attitude of the farmers towards maize cultivation

Computed value of the co-efficient of correlation between farm size of the farmers and their attitude towards maize cultivation was found to be 0.152 (table 4.14). The following observations were recorded regarding the relationship between the two variables under consideration:

- The computed value of "r" (0.152) was found smaller than that of the tabulated value (0.223) with 76df at 0.05 level of probability.
- The relationship between the concerned variables was insignificant.
- The null hypothesis was accepted .

The findings indicated that the farm size of the maize farmers was insignificant. So, there is no relationship of farm size of the farmers with their attitude towards maize cultivation.

4.3.4 Relationship between annual income and attitude of the farmers towards maize cultivation

Computed value of the co-efficient of correlation between annual income of the farmers and their attitude towards maize cultivation was found to be 0.281* (table 4.14). The following observations were recorded regarding the relationship between the two variables under consideration:

- The computed value of "r" (0.281*) was found larger than that of the tabulated value (0.223) with 76df at 0.05 level of probability.
- The relationship between the concerned variables was positively significant.
- The null hypothesis was rejected.

The findings indicated that the annual income of the maize farmers was positively significant. So, there is positive relationship of annual income of the farmers with their attitude towards maize cultivation. Similar result was observed by Rabby (2014) & Amin (2006) in their respective studies.

4.3.5 Relationship between income from maize and attitude of the farmers towards maize cultivation

Computed value of the co-efficient of correlation between income from maize of the farmers and their attitude towards maize cultivation was found to be 0.307** (table 4.14). The following observations were recorded regarding the relationship between the two variables under consideration:

- The computed value of "r" (0.307**) was found larger than that of the tabulated value (0.290) with 76df at 0.01 level of probability.
- The relationship between the concerned variables was positively significant.
- The null hypothesis was rejected.

The findings indicated that the income from maize of the maize farmers was positively significant. So, there is positive relationship of income from maize of the farmers with their attitude towards maize cultivation. Similar result was observed by Rahman (2015) in his study.

4.3.6 Relationship between organizational participation and attitude of the farmers towards maize cultivation

Computed value of the co-efficient of correlation between organization participation of the farmers and their attitude towards maize cultivation was found to be 0.312** (table 4.14). The following observations were recorded regarding the relationship between the two variables under consideration:

- The computed value of "r" (0.312**) was found larger than that of the tabulated value (0.290) with 76df at 0.01 level of probability.
- The relationship between the concerned variables was positively significant.
- The null hypothesis was rejected.

The findings indicated that the organization participation of the maize farmers was positively significant. So, there is positive relationship of organization participation of the farmers with their attitude towards maize cultivation.

4.3.7 Relationship between cosmopoliteness and attitude of the farmers towards maize cultivation

Computed value of the co-efficient of correlation between cosmopoliteness of the farmers and their attitude towards maize cultivation was found to be 0.072 (table 4.14). The following observations were recorded regarding the relationship between the two variables under consideration:

- The computed value of "r" (0.072) was found smaller than that of the tabulated value (0.223) with 76df at 0.05 level of probability.
- The relationship between the concerned variables was insignificant.
- The null hypothesis was accepted .

The findings indicated that the cosmopoliteness of the maize farmers was insignificant. So, there is no relationship of cosmopoliteness of the farmers with their attitude towards maize cultivation.

4.3.8 Relationship between extension contact and attitude of the farmers towards maize cultivation

Computed value of the co-efficient of correlation between extension media contact of the farmers and their attitude towards maize cultivation was found to be 0.251* (table 4.14). The following observations were recorded regarding the relationship between the two variables under consideration:

- The computed value of "r" (0.251*) was found larger than that of the tabulated value (0.223) with 76df at 0.05 level of probability.
- The relationship between the concerned variables was positively significant.
- The null hypothesis was rejected.

The findings indicated that the extension media contact of the maize farmers was positively significant. So, there is positive relationship of extension media contact of the farmers with their attitude towards maize cultivation. Similar result was observed by Rabby (2014) & Rahman (2015) in their respective studies.

4.3.9 Relationship problems faced for maize cultivation and attitude of the farmers towards maize cultivation

Computed value of the co-efficient of correlation between problems faced for maize cultivation of the farmers and their attitude towards maize cultivation was found to be -0.343** (table 4.14). The following observations were recorded regarding the relationship between the two variables under consideration:

- The computed value of "r" (-0.343**) was found smaller than that of the tabulated value (0.290) with 76df at 0.01 level of probability.
- The relationship between the concerned variables was negatively significant.
- The null hypothesis was rejected.

The findings indicated that the problems faced for maize cultivation of the maize farmers was negatively significant. So, there is negative relationship of problems faced for maize cultivation of the farmers with their attitude towards maize cultivation. Problem is a situation, matter, or person that presents perplexity or difficulty. It is a negative situation that a farmer faces in his farming. Higher the problem faced by the farmers lower the attitude towards maize cultivation. That means if a farmer face low problem in maize cultivation it will enhance his/her attitude to go for more maize production.

CHAPTER 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of the Findings

The major findings of the study are summarized below:

5.1.1 Selected characteristics of the maize farmers

Age: The highest proportion (57.7 percent) of the respondents fell in the middle aged category compared to 38.5 percent young and 3.8 percent old aged category.

Level of education: A large proportion (52.6 percent) of the respondents felt under the category of "secondary education" compared to 6.4 percent "illiterate", 5.1 percent having "can sign only", 32.1 percent having "primary education" and 3.8 percent having "higher secondary education".

Farm size: More than half of the respondent (74.4 percent) had small sized farm, 20.5 percent had medium sized farm, and 5.1 percent had large farm. The average farm size of the farmers of the study area was 1.03 hectares.

Annual family income: The majority (57.7 percent) of the maize farmers had medium income compared to 19.2 percent low income and 23.1 percent having high income. Its indicating that maize cultivation is usually practiced by the farmers of comparatively lower economic standings.

Income from maize cultivation: The majority (56.4 percent) of the maize farmers had low income compared to 29.5 percent medium income and 14.1 percent high income from maize cultivation.

Organizational participation: Highest proportion (66.7%) of the respondents felt in the "medium" category and 10.3% felt in "high" category. And 23.1% felt in "low" category. Its indicating that maize cultivation is usually practiced by the farmers who have comparatively medium organizational participation.

Cosmopoliteness: The majority (78.2 percent) of the maize farmers had medium cosmopoliteness compared to 12.8 and 9.0 percent having low and high cosmopoliteness respectively. It was observed that the maize farmer with medium cosmopoliteness, they are very interest in maize cultivation.

Extension media contact: A proportion of 61.5 percent of the maize farmers had medium extension contact compared to 17.9 percent of them having low extension contact. 20.5 percent of the maize farmers had high contact. Extension contact is a very effective and powerful source of receiving information about various new and modem technologies. Its indicating that maize cultivation is usually practiced by the farmers who have comparatively medium extension media contact.

Problem faced in maize cultivation: About 74.4 percent of the maize farmers had medium problem compared to 9 percent of them having low problem and 16.7 percent having high problem.

Knowledge on maize cultivation: Majority (53.8%) of the farmers possessed medium knowledge and 21.8% and 24.4% of the farmers possessed low and high knowledge on maize cultivation respectively. It means that overwhelming majority (78.2%) of the farmers had medium to high knowledge. But to perform better in maize cultivation, farmers should have adequate knowledge on different aspects of maize cultivation.

Attitude towards maize cultivation: Majority (55.1 percent) of the respondent had favorable attitude towards maize cultivation as compared to 25.6 percent had unfavorable attitude and 19.2 percent had neutral attitude towards maize cultivation. So, it indicates almost half of total farmer have favorable attitude towards maize cultivation.

5.1.2 Result of hypothesis testing

For knowledge : Out of nine selected characteristics of the farmers-Age, education, annual income, organizational participation, cosmopoliteness and extension media contact of the farmers had significant positive relationship with their knowledge on maize cultivation, while Problem faced in maize cultivation by the farmers had significant negative relationship with

their knowledge on maize cultivation. Rest two characteristics i.e. farm size and income from maize had no significant relationship with their knowledge on maize cultivation.

For attitude : Out of nine selected characteristics of the farmers- Age, education, annual income, income from maize, organization participation and extension contact of the farmers had significant positive relationship with their attitude towards maize cultivation, while Problem faced in maize cultivation by the farmers had significant negative relationship with their attitude on maize cultivation. Rest characteristics i.e. farm size and cosmopoliteness had no significant relationship with their attitude on maize cultivation.

5.2 Conclusions

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

1. The findings of the study revealed that vast majority of the farmers (78.2%) had medium to high knowledge on maize cultivation. Knowledge of the farmers had significant positive relationship with their age, education, annual income, organizational participation, cosmopoliteness and extension media contact. While knowledge of the farmers had negatively significant with their maize cultivation problem. Therefore, it may be concluded that it would be a wiseful thinking to improve the overall situation of knowledge by taking care of the factors related to the increase of knowledge among the farmers.

2. Attitude of the farmers towards maize cultivation is not up to mark. A proportion of 55.1 percent of the farmers had high favorable attitude towards various aspects of maize cultivation. It may be concluded that the cultivation of maize will not be possible to improve to a significant extent unless the concerned authorities (Government, GOs, NGOs) take proper steps to improve farmer's attitude towards maize cultivation.

3. Education of the farmers had significant positive relationship with their knowledge and attitude towards maize cultivation. Therefore it may be concluded that the farmers

having more education had more favorable knowledge and attitude towards maize cultivation.

4. Annual family income of the farmers had significant positive relationship with their knowledge and attitude towards maize cultivation. It was thus proved that farmers' knowledge and attitude are dependent with their annual family income. And it indicates that farmers having more family income had more knowledge and attitude towards maize cultivation.

5. Income from maize of the farmers had significant positive relationship with their attitude towards maize cultivation. It was thus proved that farmers' attitude is dependent with their income from maize. Therefore it may be concluded that the farmers having more income from maize cultivation had more favorable attitude towards maize cultivation.

6. Organization participation of the farmers had significant positive relationship with their knowledge and attitude towards maize cultivation. It was thus proved that farmers' knowledge and attitude is dependent with their organization participation.

7. Cosmopoliteness of the farmers had significant positive relationship with their knowledge towards maize cultivation. It was thus proved that farmers' knowledge is dependent with their cosmopoliteness.

8. Extension media contact of the farmers had significant positive relationship with their knowledge and attitude towards maize cultivation. It was thus proved that farmers' knowledge and attitude are dependent with their extension contact. Therefore it may be concluded that the farmers having more extension contact had more knowledge and more favorable attitude towards maize cultivation.

9. Problem faced by the farmers had significant and negative relationship with their knowledge and attitude on maize cultivation. It may be concluded that farmers' knowledge and attitude is dependent with their problem faced.

5.3 Recommendations

On the basis of experience, observation and conclusions drawn from the findings of the study following recommendations are made:

5.3.1 Recommendations for policy implication

1. It is observed that 78.2 percent of the farmers had medium to high knowledge on various aspects of maize cultivation. So, it is strongly recommended that adequate technical support and training facilities (by Department of Agricultural Extension and other extension providers) should be extended to improve the knowledge of maize farmers.

2. It is observed that 44.8 percent farmers' showed unfavorable to neutral attitude towards maize cultivation. Therefore, it may be recommended that the farmers may be encouraged by the DAE, agricultural input dealers and other concerned organization's personnel to form favorable attitude and to motivate other farmers who had unfavorable towards maize cultivation.

3. The farmers' literacy rate was high and it related to their knowledge gain. It is therefore, recommended that farmers can take advantage of different printed materials i.e. book, booklets, leaflets, posters, newspapers, etc. so that they can get more knowledge easily and can increase positive attitude. It is, therefore, recommended that arrangement should be made by the concerned authorities to undertake more educational activities for increasing the education level of the farmers.

4. Extension contact has positive relationship with knowledge and attitude. The use of result demonstration and method demonstration could be more effective than mass media. But the fact that no such demonstration was found in the study area. So concerned authorities (DAE, GOs, NGOs) should increase result demonstration and method demonstration.

5. Maize farmers faced considerable amount of problems on maize cultivation. It is therefore, recommended that concerned authorities (DAE, GOs, NGOs) should give due attention to the solution of the problems as soon as possible.

5.3.2 Recommendations for further study

A small and limited research work cannot provide unique and universal information related to actual impact of improving socio-economic status of the farmers. Further studies should be undertaken on related matters.

On the basis of scope and limitations of the present study and observations made by the researcher, the following recommendations are made for further study:

1. The study was conducted in limited areas of Gaibandha district. Findings of the study need verification by the similar research in other part of the country.

2. Eleven characteristics of the farmers were considered as the experimental variable of the study. Therefore, it is recommended that further studies should be conducted with other variables.

3. Further research is necessary to find out the effective ways and means which would contribute in maize cultivation.

4. This study was conducted knowledge and attitude towards maize cultivation. Similar study may be undertaken on the knowledge and attitude towards other crops of Bangladesh.

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APPENDIX-A

Department of Agricultural Extension and Information System

Sher-e-Bangla Agricultural University

Dhaka-1207

An Interview Schedule for the Study Entitled

"KNOWLEDGE AND ATTITUDE OF THE FARMERS TOWARDS MAIZE CULTIVATION IN SELECTED AREA OF GAIBANDHA DISTRICT"

Serial no.

Name of the respondent…….

Village: …… Union:…… Upazila:…….. District:……

Please answer the following questions

1. **Age**
   How old are you ? .....years
2. **Level of education**
   (Please mention your level of education)

   a) Cannot read and write _____
   b) Can sign only _____
   c) I have studied up to class _____
      I. class five
      II. class six to ten
      III. class ten to twelve
      IV. above class twelve

3. **Farm size**
   (Please mention the area of your land according to use)

Sl. no.	Types of land use	Area of land
F1	Homestead land (including pond and orchard)	
F2	Land under own cultivatio	
F3	Land given to others	
F4	Land taken from others	
F5	Land taken from others on lease	
F6	Others	
Total farm size = F1+F2+1/2(F3+F4)+F5+F6		

4. Annual family income

a) Agricultural sources

SL. No.	Crop Name	Amount of income(in TK.)
1	Rice	
2	Tobacco	
3	Jute	
4	Potato	
5	Maize	
6	Pulse crop	
7	Oil crop	
8	Spice crop	
9	Vegetables	
10	Fruits	
11	Cow,goat,ram,bafellow	
12	Fish resources	
13	Poultry	
Total		

b) Non-Agricultural sources

SL. No.	Income resources	Amount of income(in TK.)
1	Service	
2	Business	
3	Day labor	
4	Other family members	
5	Others income source	
Total		

5. Income from maize

What is your annual income from maize during last year? ..... TK

6. Organizational participation

Please mention the nature of your participation in the following organizations

Sl. No.	Name of Organizations	Nature of Participation			
		Not involved (0)	Ordinary member (1)	Executive member(2)	Executive officer(3)
1	Farmers' cooperatives				
2	School committee				
3	Bazar committee				
4	Agricultural club (IPM, Krishi club)				
5	Local NGO (BRAC, ASA)				
6	Union parishad				
7	Village club				
8	Others				

7. Cosmopoliteness

(Please mention the extent of your visit the following place)

SL. No.	Places of visit	Extent of Visits				
		Regularly (4)	Frequently (3)	Occasionally (2)	Rarely (1)	Not at all (0)
1	Visit of market near your own village	10 or more times/month ( )	5-9 times / month( )	2-4 times /month ( )	Once / month ( )	Not even once ( )
2	Visit of relatives/ friends	6 or more time /month ( )	4-5 times / month ( )	2-3 times / month ( )	Once/month ( )	Not even once ( )
3	Visit to upazila sadar	6 or more time / month ( )	4-5 times / month( )	2-3times / month ( )	Once / month( )	Not even once ( )
4	Visit to other upazila sadar	4 or more time / month ( )	2-3 times / 2 month ( )	1-2 times/ 3month( )	Once / 6 month( )	Not even once ( )
5	Visit to upazila agricultural officer	1 or more time / month ( )	2-3 times / 4 month ( )	1-2 times/ 6 month( )	Once/ 6 month( )	Not even once ( )
6	Visit to upazila/district agricultural fair	1 or more time / year ( )	1-2 times / 3 year ( )	2-3 times/ 6 year ( )	Once / 6 year( )	Not even once ( )

8. Extension media contact

(Please mention the extent of your extension contact)

SL. No.	Contact with the persons	Extent of contact				
		Regularly (4)	**Frequently (3)**	**Occasionally (2)**	**Rarely (1)**	**Not at all (0)**
1	Contact with AEO/AO	6 or more times/ year ( )	4-5 times/ year ( )	2-3 times /year( )	Once /year ( )	Not even once ( )
2	Going to upazila agriculture officer	2 or more times/month ( )	1-2 times/ 2 month ( )	1-2 times / 3 month (	Once /6 month( )	Not even once ( )
3	Contact with NGO workers	3 times or more /month ( )	1-2 times/month ( )	1-2 times /3 month (	1 time / 6 month ( )	Not even once ( )
4	Participation in agricultural training	2 or more times/year ( )	1 time/year ( )	1 time/2 year ( )	1time /4 year ( )	Not even once ( )
5	Contact with seed dealers	3 or more times/year ( )	2 times / year ( )	1 times / year ( )	1 times / 2 year ( )	Not even once ( )
6	Conducted result demonstration	6 or more time in life ( )	4-5 time in life( )	2-3 time in life( )	Once in life( )	Not even once ( )
7	Listening krishi radio programme	4 or more times/ month ( )	3 times/ month ( )	2 times / month ( )	Once / month ( )	Not even once ( )
8.	Watching Mati-O-Manush TV programme	4 or more times/ month ( )	3 times/ month ( )	2 times / month ( )	Once / month ( )	Not even once ( )
9.	Attend agricultural group meeting	4 or more times/ year ( )	3 times/ year ( )	1-2 times /year( )	Once /year( )	Not even once ( )
10.	Read krishi katha, krishi magazine, leaflet, booklet, bulletin etc.	10 or more times/ year ( )	6-9 times/ year ( )	3-5 times/ year ( )	1-2 times/ year ( )	Not even once ( )

9. Please mention the extent of problem faced for maize cultivation:

Sl. No.	Problems	Extent of Problem			
		High	**Medium**	**Low**	**Not at all**
1	Shortage of quality seeds in time				
2	High Price of maize seeds				
3	Non-availability of credit in time				
4	Lack of training on maize cultivation				
5	Lack of marketing facilities				
6	Lack of proper knowledge in seed storage at farmers' level				
7	Unavailability of pesticides timely				
8	Transport problem				
9	High price of fertilizer				
10	Less irrigation facilities				
11	Lack of co-operation from extension providers				
12	Lack of knowledge on using balanced fertilizers for maize cultivation				
13	Shortage of maize cultivation land				
14	Lack of proper storage capacity				

10. Maize cultivation knowledge

Please answer the following questions

SL. No.	Questions	Assigned score	Obtained marks
1	Name of two modern varieties of maize that you cultivated	2	
2	Mention two major insects of maize	2	
3	How many times irrigation is required for cultivating maize?	2	
4	What type of soil is suitable for maize cultivation?	2	
5	Name two major diseases of maize	2	
6	Mention two harmful weeds of maize	2	
7	What precautions should be followed at the time of pesticide application?	2	
8	Mention two important crops which can be used in intercropping with maize	2	
9	Mention the rate of fertilizer per bigha is needed in maize cultivation?	2	
10	Mention the intercultural operations in maize cultivation	2	
11	Mention fertilizer doses in maize cultivation(Urea, TSP and MP)	2	
12	What is the proper sowing time of maize?	2	
13	What is the number of seed per hill sowing of maize?	2	
14	What is the ideal plant spacing for modem maize cultivation?	2	
15	Mention the maturity period of maize cob	2	
16	Mention the use of maize (as Human food/Animal feed)	2	
17	How long does it take for maize fruit to be harvested?	2	
Total		**34**	

11. Attitude towards maize cultivation

Indicate the degree of agreement against the following statements

SL. No.	Statement	Nature of opinion				
		Strongly agree	**Agree**	**Neutral**	**Disagree**	**Strongly disagree**
1	Modern maize cultivation is profitable than other crops					
2	Modern maize cultivation requires higher technical knowledge					
3	Maize cultivation requires less amount of chemical fertilizers					
4	Maize is more disease resistant than other crops					
5	Does not require extra cost in maize cultivation					
6	Most of the pest can be controlled by clean cultivation during pest infestation					
7	Less insect attack					
8	More irrigation is required for maize cultivation					
9	Maize cultivation is more laborious					
10	Maize has storage problem					
11	Intercropping reduces yield of maize					
12	Soil of maize field is depleted at faster rate than other crop field					

Thanks for your cooperation

(…….)

APPENDIX – B

Correlation matrix of the dependent and independent variables (N= 78)

	A	B	C	D	E	F	G	H	I	J	K
A	1										
B	.295**	1									
C	.288*	.130	1								
D	.039	.323**	.110	1							
E	.165	.286*	.418**	.273*	1						
F	.008	.316**	-.094	.596**	-.029	1					
G	-..088	.311**	.019	.510**	-.004	.638**	1				
H	.042	.296**	-.048	.686**	..008	.752**	.743**	1			
I	-.093	-.199	-.008	-.607**	.013	-.712**	-.504**	-.745**	1		
J	.294**	.786**	-.008	.268**	.154	.274*	.246*	.299**	-.242*	1	
K	.500**	.372**	.152	.281*	.307**	.312**	.072	.251*	-.343**	.348**	1

* Significant at 0.05 level
** Significant at 0.01 level

A= Age
B= Education
C= Farm Size
D= Annual Farm Income
E= Income from Maize
F= Organization Participation
G= Cosmopoliteness
H= Extension Contact
I = Problem
J= Knowledge
K= Attitude