ATTITUDE OF FARMERS TOWARDS ORGANIC CULTIVATION OF HYV OF RICE

BY

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CERTIFICATE

This is to certify that the thesis entitled, **"ATTITUDE OF FARMERS TOWARDS ORGANIC CULTIVATION OF HYV OF RICE"** submitted to the Faculty of Agriculture, Sher-e-Bangla Agricultural University, Dhaka, in partial fulfillment of the requirements for the degree of **MASTER OF SCIENCE IN AGRICULTURAL EXTENSION** embodies the result of a piece of bona fide research work carried out by **MOHAMMED RAZAUL KARIM BHUIYAN**, Registration No. **27589/00744** under my supervision and guidance. No part of this thesis has been submitted for any other degree or diploma.

I further certify that any help or sources of information, as has been availed of during the course of this investigation has been duly acknowledged by him.

Dated:

Place: Dhaka, Bangladesh

(Professor Md. Shadat Ulla)
Supervisor

Dedicated to
My Beloved Parents
& Grandmother

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ABSTRACT

The main objectives of this study were to determine the attitude of farmers towards organic cultivation of HYVs of rice and to explore the relationship of the selected characteristics of farmers with their attitude towards organic cultivation of HYVs of rice. Besides, attempts were made to ascertain the problems faced by the farmers in practicing organic cultivation of HYVs of rice. The study was conducted with randomly selected 100 farmers of two villages namely North Jashpur at Mohamaya union and South Jashpur at Chhagalnaiya union of Chhagalnaiya upazila under Feni district. Attitude of the farmers towards organic cultivation of HYVs of rice was the dependent variable and measured by Likert type scale. Pearson's Product Moment Correlation Coefficient (r) was computed to explore the relationship of the characteristics of the respondents with their attitude towards organic cultivation of HYVs of rice. A pre-tested interview schedule was used to collect data from the respondents during 19 October to 15 November 2007.

Findings indicate that the highest proportion (62 percent) of the farmers had neutral attitude towards organic cultivation of HYVs of rice while 23 percent of them had unfavorable and 15 percent had favorable attitude towards organic cultivation of HYVs of rice. Their average attitude score was 48.87 where the maximum possible score could be 60. Thus, they had more or less favorable attitude towards organic cultivation of HYVs of rice. Among the characteristics, education, farm size, cosmopoliteness, extension media contact and training experience on organic cultivation practices had significant positive relationship with the attitude towards organic cultivation of HYVs of rice. Whereas age, family size and attitude towards use of agro-chemicals had significant and negative relationship with the attitude towards organic cultivation of HYVs of rice while rest of the characteristics, namely annual income and organizational participation did not show any significant relationship with the same. The major problems in practicing organic cultivation of HYVs of rice identified by the farmers were higher amount of insect pest and diseases, initial low yield, lack of livestock resources for organic manure, lack of training and knowledge, and low communication with extension workers.

Chapter I
Introduction

CHAPTER I

INTRODUCTION

1.1 General Background

The economy of Bangladesh is primarily dependent on agriculture. About 76.93 percent of the total population live in rural areas and are directly or indirectly engaged in a wide range of agricultural activities. Agriculture contributes about 21.75 percent to the country's GDP, about 57.13 percent of which is contributed by the crop sector alone. About 51.46 percent of the labor forces are employed in agriculture with about 57 percent being employed in the crop sector (BBS, 2004).

Bangladesh, a small country burdened with a huge population is always under pressure from the time being to feed her large population. This population pressure led her to undertake high input agriculture which especially can be recognized by the introduction of HYVs back in 60s. This made a revolution in agriculture popularly known as "Green Revolution" which resulted in a sudden boom in yield of grain crops especially in rice. This brought a revolutionary change in farmers' attitude and led the farmers towards profit motive. High input agriculture has produced great increase in crop yields but social and environmental costs have been high. Cultivation of HYVs has made her land exhausted to an extreme. This continued until early 90s without raising any voice against this. Until mid 80s the impact left by the high input agriculture remained unfelt.

The high input agriculture otherwise known as the "Green Revolution" came into Bangladesh as a package deal consisting of high yielding seeds, chemical fertilizers, different types of pesticides, mechanized plow and irrigation. And because the term "HYV" spells a "miracle" boom of production, the government conducted a massive campaign promoting the HYV technology among the

farmers, believing that this could be the cure that would address food insufficiency in Bangladesh. Consequently, the farmers of Bangladesh have been using fertilizers extensively. Comparing figures from the Statistical Pocket Book of Bangladesh 1981 and the Statistical Yearbook of 1990, the cropping area in the country (1972-73) 29,039,000 acres has grown into 34,883,000 acres in 1986-87, which means 20 percent increase in cropping area over a period of 15 years. Yet, during the same period also, the use of fertilizers had dramatically increased by 334 percent. Use of pesticides increased by 50.26 percent within six years starting from 1994 to 2000 (BBS, 2004). Although these technologies have contributed to an overall increase in the country, overall food production, it has also occurred main food problems. These are decrease in soil fertility, loss of biodiversity, increase rate of human and animal health hazard.

Over the past decades sustainability becomes more and more a guiding principle in agriculture. In this context organic cultivation became recognized by farmers, policy makers and consumers as one of the possibilities for the farm in a more sustainable way (Cock, 2005). In such stage organic cultivation may be the timely and permanent solution for overcoming the impact of conventional agriculture. Organic cultivation is one in which environmental and social costs are considered along with productivity. Organic farming is still under the experimental stage but slowly gaining wide acceptance called Sustainable Agriculture, combining modern science with the indigenous knowledge of the people through organic agriculture and adopting an integrated farming system for pest control that is pro-people and environment-friendly. Organic cultivation as a conscious rejection of modern agro-chemical techniques had its origin in the 1930s, when Sir Albert Howard, a British agricultural scientist, introduced a system of holistic and natural animal and plant husbandry in which town wastes were returned to the soil for utilization as nutrient material. The practice has been employed in portions of every continent (Encyclopedia Britannica, 2005).

Need for undertaking organic cultivation as a policy in agriculture remain unfelt until 80s. In the changing context different Non Government Organizations

(NGOs), such as Unnayan Bikalper Nitinirdharani Gabeshona (UBINIG), Proshika Manabik Unayan Kendra (PMUK), Shabalambi Unnayan Shamity (SUS), Community Development Association (CDA), Kazi and Kazi, Forum for Regenerative Agricultural Movement (FORAM) and many others have been trying to implement organic cultivation practices among the farmers. In this regard, organic cultivation is one of the essential approaches to triumph over the agricultural problems. Organic cultivation has the potential to provide benefits in terms of environmental protection, conservation of non-renewable resources improved food quality and the reorientation of agriculture towards areas of market and demand (Lampkin, 1990).

1.2 Organic Cultivation: Bangladesh Perspective

Organic cultivation is a system of farming practices which is different from conventional farming that is heavily dependent on the use of synthetic fertilizers and pesticides. Organic farming is currently termed as ecological farming based solely on organic inputs. Ecological or organic farming systems have the potentials to reduce some of the negative impacts of conventional agriculture on the environment. The reduction or non-use of synthetic chemicals with organic farming system can decrease the environmental hazards and possible adverse effects on wildlife. Organic materials improve the physical, chemical and biological properties of soil in contrast to synthetic fertilizers. Use of organic materials is, therefore, necessary to sustain the productivity of soils as well as soil heath. The most common organic materials which are currently used throughout the world are biofertilizers, humate fertilizers, crop residues, green manure, bone meals, compost, farmyard manure, fish meal, fish wastes, liquid manure, sewage sludge, slurry, etc.

Before the advent of chemical fertilizers the agriculture of Bangladesh was completely dependent on the use of organic materials. Three major sources of organic materials were animal manure, crop residues and domestic wastes. But agricultural practices without chemical fertilizers seem to be impractical because

the country demands more production to keep pace with increasing population rather than quality products. In Bangladesh, approximately 13 percent of the total cropped area is triple cropped, 50 percent double cropped and the remaining 37 percent areas are single cropped, settlement and water bodies. These soils are mainly used for Boro, Aman and Rabi crops. Some of the farmers are using chemical fertilizers, some are using chemical and organic fertilizers and some of them are using only organic manure. Manure includes oil cake, household wastes, farm manure, farmyard manure and water hyacinth. Thus overall farming system of Bangladesh is very complex (Banglapedia, 2006).

Continuous application of synthetic fertilizer and other chemicals has already created adverse effects on soil properties and as a consequence yield stagnation or even yield decline has resulted. Hence the use of organic materials is a must to restore natural productivity of the soil. Moreover, organic farming can also be extended for the production of vegetables and horticultural crops.

1.3 Statement of the Problem

In Bangladesh most of the cultivated soils have less than 1.5 percent organic matter while a good agricultural soil should contain at leas 2% organic matter. Soil organic matter is a key factor for sustainable soil fertility and crop productivity. Organic matter undergoes mineralization with the release of substantial quantities of N, P and S. and smaller amounts of micronutrients. Easily decomposable part of the soil organic matter undergoes quick mineralization and becomes a part of soil humus, a small portion of which may remain in soil for thousands of years. The importance of organic manure as a source of humus and plant nutrients to increase the fertility level of soils has been well recognized. In most cases, the farmers use imbalanced fertilizers in this agricultural land. As a result the soils are becoming barren and continuous use of imbalanced chemical fertilizers decreases organic matter content leading to destroy the physical structure of the soil.

Organic cultivation has already been adopted partly or fully as changed agricultural policy in the developed countries those were the pioneer of conventional agriculture. This practice has been identified as growing agribusiness sector in European countries and has got a wide ground there. On the contrary the case in Bangladesh is not a pleasant one. It is still in a very beginning stage. The concept of organic farming has introduced in Bangladesh during early 90s. But yet it has got no such acceptance to the farmers due to lack of proper policy planning and cooperation of government functionaries.

Government of Bangladesh has emphasized sustainable agriculture recently through the Ministry of Agriculture (MOA). But they provided the concept of attaining sustainability avoiding organic farming which seems to be imaginary. In order to realize the objectives and targets of the Five Fiscal Year Planning (FFYP) (1997-2002), the MOA is determined to make the country self-sufficient in food production and ensure dependable food security for all (MOA, 2005). To attain self sufficiency in grain food, monoculture of rice and other grain crops has increased tremendously leaving a continuous pressure on the soil which is being degrading gradually. In such a context organic farming has become the demand of time. The new agricultural extension policy (NAEP) is currently under implementation with the objective of promoting sustainable technology for a gradual development of the improved crop production system (MOA, 2005).

Organic cultivation of HYVs of rice now can be the exciting means of healthy agriculture and its sustainable development. But the constraints and prospect of organic cultivation of HYVs of rice in Bangladesh condition is yet to be explored. To find out the ins and outs of the attitude of farmers towards organic cultivation of HYVs of rice the researcher has taken this as the study object. The study attempts to answer the following questions:

i. To what extent the farmers hold favorable or unfavorable attitude towards organic cultivation of HYVs of rice?

ii. What are the farmers' individual characteristics that affect their attitude towards organic cultivation of HYVs of rice?

iii. What type of relationship prevails between the selected characteristics of the farmers and their attitude towards organic cultivation of HYVs rice?

iv. What are the problems of the farmers towards organic cultivation of HYV of rice?

1.4 Specific Objectives of the Study

The study has been conducted considering the following objectives:

1. To determine the extent of attitude of farmers towards organic cultivation of HYVs of rice.
2. To determine and discribe the selected characteristics of the farmers. The selected characteristics were as follows:
    i) Age
    ii) Education
    iii) Family size
    iv) Farm size
    v) Annual income
    vi) Cosmopoliteness
    vii) Organizational participation
    viii) Extension media contact
    ix) Knowledge on organic cultivation practices
    x) Training experience on organic practices
    xi) Attitude towards use of agro-chemicals
3. To explore the relationships between the selected characteristics of farmers and their attitude towards organic cultivation of HYVs of rice.
4. To find out the problems face by the farmers in practicing organic cultivation of HYVs of rice.

1.5 Justification of the Study

Today, rural Bangladesh that was once labled as the "Land of Gold" has been, ironically, turned into a "Land of Misery" with a clear picture of barren, degraded soil, the ultimate result of high input agriculture for year after year to meet the growing demand of food. To meet this demand we have destroyed our biodiversity. To come out from such a situation, the Europeans started organic farming in early 80's though it has originated there back in early 30's. Organic farming has gained a high ground in many countries in Europe, in America, Japan, Australia, Canada and many other countries. Organic farming is gaining a hopeful response from the farmers. The organic farmers are getting a higher benefit than most other conventional farming in those countries by selling their crops at a lucrative price. Moreover they are producing healthier and safer foods for their people.

In Bangladesh, many NGOs are working for initiating organic farming. We have a lot of possibilities to initiate organic farming here. We can export organic foods with trust in countries having high demand of organic foods and thus it can help a lot to give a lift in the fate of poor farmers in Bangladesh. But, we are yet to know the orientation, attitude of our farmers towards organic Cultivation. Still we need in-depth research works to find out both the possibilities and problems of the farmers regarding practicing organic farming in Bangladesh. To bring about desirable changes among the farmers regarding organic cultivation, attitude is a crucial factor. To know much about attitude of the farmers and other related variables no such effort has been taken yet. Rice is the staple food of Bangladeshi people and it is the main crop in this country. Besides, the farmers mostly cultivate the HYVs of rice. Therefore, attitude of the farmers towards organic cultivation practices of HYVs of rice has been made the main focus of the present study.

1.6 Scope of the Study

The extent of favorable or unfavorable attitude of the farmers towards organic cultivation of HYVs of rice varies greatly from place to place and even within the same place. No matter what the attitude, it plays significant role in the nation building which is economically viable, environmentally sound and socially acceptable. Moreover, organic cultivation is a burning issue in nowadays. It was a key focus of this study. However, Attitude of the farmers towards organic cultivation of HYVs of rice was the major empirical part of this research. Findings of the study would be useful to the extension planners, policy makers and NGOs in designing extension strategies for farmers to increase their intensive, qualitative and functional participation in the farming activities for the development of their own and of the country.

1.7 Assumptions of the Study

The researcher considered the following assumptions in conducting the study:

i) The respondents were skilled enough to comprehend the questionnaire easily and provided the proper responses to the questions set in the interview schedule.

ii) Views and opinions provided by the respondents from the sample were representative of the whole population of the study area.

iii) The responses provided by the respondents were valid and reliable.

iv) The collected data were free from biasness by the researcher.

v) The items included in the interview schedule to measure attitude were satisfactory to reflect the attitude of the farmers towards organic cultivation of HYVs of rice.

1.8 Limitations of the Study

Considering the necessary time and resources needed for conducting the research and to make the research meaningful the researcher had to entail certain limitations as follows:

i) The study was limited to only two villages in two unions of Chhagalnaiya upazila namely Mohamaya and Chhagalnaiya.

ii) The study considered only nine characteristics of the farmers leaving the others characteristics unconsidered in the study.

iii) For information the researcher had to depend on the response made by the farmers which always may not reflect the actual situations of them.

iv) The study was conducted by using twenty statements for measuring attitude towards organic cultivation of HYVs of rice leaving many other probable statements.

1.9 Definitions of Key Terms

Particular terms used throughout the study are put to an effort to define hereby:

Age: Age of a farmer has been defined as the period of time from his birth to the time of interview.

Annual income: Income was defined as the total financial return per year of a family from farm (crops, livestock, poultry and fish) and non-farm sources (service, business, selling labor, bank interests, remittance, financial help from relatives, etc.).

Attitude towards organic cultivation: Attitude is the mental and neural readiness, organized through experience, exerting a directive or dynamic influence upon the individual's response to all objects and situations with which it is related. It is the degree of positive or negative affect associated with some psychological object. In this study attitude towards organic cultivation indicates the extent of positive or negative affect of the farmers towards organic

cultivation of HYVs of rice that has developed in them through accumulation of knowledge, belief and experience.

Attitude towards use of agro-chemicals: Attitude refers to the positive (favorable) or negative (unfavorable) feeling associated with a specific psychological object. Attitude towards use of agro-chemicals referred to the positive or negative feelings of the respondents towards the use of agro-chemicals in agricultural practices.

Cosmopoliteness: It is referred to the degree to which an individual's orientation is external to his own social system.

Education: Education is the process of changing knowledge, skill and attitude of an individual to the desired dimension. It was measured in terms of years of schooling completed by an individual at the time of interview.

Extension media contact: It is considered as the individual's exposure to or communication with different sources of information both agencies and persons who are known to disseminating information and technologies to the farmers.

Family size: Family size of household was defined as the number of individuals in the family including family head and other dependent members who lived and ate together.

Farm size: It referred to the area of land owned by a farmer or his wife on which farming activities are carried out. A respondent was considered to have full benefit from cultivated area either owned by himself or obtained on borga system, the area being estimated in terms of full benefit to the farmer. The right of a farmer on the land taken on lease or sharecropping from others was regarded as ownership in estimating the farm size.

Knowledge on organic cultivation of rice: Knowledge on organic cultivation of rice is the sum of the farmers' body of information regarding organic cultivation of rice which reflects their understanding, applying, analyzing, evaluation and creating in regards to organic cultivation.

Organic cultivation: Organic cultivation is a system of crop cultivation employing biological methods of fertilization and pest control as substitutes for chemical fertilizers and pesticides; the latter products are regarded by proponents of organic methods as injurious to health and the environment and unnecessary for successful cultivation.

Organizational participation: Organizational participation of a farmer refers to his involvement in different organization as an ordinary member, executive committee member or executive officer for a certain period of time.

Problem confrontation: Problem confrontation indicates the difficulties and constraints of the respondents regarding practicing organic cultivation of HYVs of rice which retard them to adopt organic cultivation easily and that need careful attention to mitigate.

Training Experience: Training experience refers to organized instruction aimed at improving knowledge, skill, and attitude of an individual so that he/she can perform his/her functions and responsibility more effectively. Training exposure referred to number of times the farmers received training in different aspects of organic cultivation.

Chapter II
Review of Literature

CHAPTER II

REVIEW OF LITERATURE

The literatures pertinent to the attitude of the farmers towards organic cultivation of HYVs of rice have been cited in this Chapter.

2.1 Concept, Components and Formation of Attitude

2.1.1 Concept of attitude

Attitude is personal view of something, an opinion or general feeling about something. Attitude can be inferred from human behaviour. Attitude is relatively enduring belief or opinion that predisposes people to respond in a positive, negative, or ambivalent way to a person, object, or idea (Microsoft Encarta, 2006).

Attitude is a predisposition to classify objects and events and to react to them with some degree of evaluative consistency. Attitudes logically are hypothetical constructs (i.e., they are inferred but not objectively observable), they are manifested in conscious experience, verbal reports, gross behaviour, and physiological symptoms (Encyclopedia Britannica, 2005).

Rogers and Shoemaker (1971) defined attitude as a relatively enduring organization of an individual's beliefs about an object that predisposes his actions. In developing a favourable or unfavourable attitude toward the innovation, the individual may mentally apply the new idea to his present or anticipated future situation before deciding whether or not to try it and this might be thought of as a vicarious trial.

Triandis (1971) defined attitude as an idea charged with emotion, which predisposes a class of actions to a particular class of social situations.

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

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

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

Anastasi (1956) defined attitude as a tendency to react in a certain way towards a designated class of stimuli and it cannot be directly observed, but must be inferred from overt behaviour, both verbal and non-verbal. In more objective terms, the concept of attitude may said to can't response consistency with regard to certain categories of stimuli. But in actual practice, the term "attitude" has been most frequently associated with social stimuli and with emotionally tuned responses.

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

Newcomb (1953) defined attitude as the individual's organization of psychological processes, as inferred form his behaviour with respect to some aspect of 'the world' which he distinguished from other aspects. It represents the residue of his previous experience with which he approaches any subsequent situation including that aspect and together with the contemporary influences in such a situation. Attitudes are enduring in the sense that such residues are carried over to new situations, but they change in so far as new residues are acquired through experience in new situations.

Goode (1945) in his dictionary of education defined the term as state of mental and emotional readiness to react to situation, persons or things, in harmony with a habitual pattern of response previously conditioned to or associated with these stimuli.

According to Allport (1935) attitude is that disposition to act which is built up by the integration of numerous specific responses of a similar type, but which exists as a general neutral set when activated by a specific stimulus. It results in behaviour that is more obviously a function of the disposition than of the stimulus.

According to Lapiere (1934), a social attitude is a behaviour pattern, anticipatory set or tendency, predisposition to specific adjustment to designated social situations, or more simply, a conditioned response to social stimuli.

Warren (1934) referred attitude as a specific mental disposition towards an incoming or arising experience, whereby that experience is modified; or in other words, it is a condition of readiness for a certain type of activity. Thurstone (1929) defined an attitude as the effect for or against a psychological object.

2.1.2 Components of attitude

According to Triandis (1971) attitude has three components. They are:

a) Cognitive component: The *idea* which is generally some category used by human in thinking.

b) Affective component: The *emotion* that changes the idea.

c) Behavioural component: The *predisposition* to action, such as farming manuring, etc.

According to Islam *et al.* (2000) person's attitude towards some object, event, person, situation, policy or action has three distinct components:

- Cognitive component,
- Feeling component,
- Action component.

2.1.3 Formation of attitude

According to Sarnoff (1962) attitudes are formed in the process of making tension-reducing responses to various classes of objects. In other words, an individual's attitude towards a class of objects is determined by the particular role to those objects have come to play in facilitating responses that reduce tension of particular motives and the resolve particular conflicts among motives. Doob's (1948) analysis of attitude formation takes into account the following factors:

(1) *Goal response* - the response pattern or patterns which one anticipates.
(2) *Perception* - the drive orienting the individual to pay attention of the stimulus pattern evoking the attitude.
(3) *Afferent* - habit strength - the strength of the bond between the existing attitudes and the evoking stimulus patterns, including the gradients of generalization and discrimination.
(4) *Efferent* - habit strength - the strength of the bond between the existing attitudes and the evoked responses including overt ones.
(5) *Dive* - strength of the stimuli.
(6) *Interaction* - the strength of the other attitudes, drives etc.
(7) *Social significance* - the evaluation in the society of the attitude along with its direction (e.g. positive, negative, neutral, etc.)

2.2 Review of Literature on Attitude towards Different Aspects

Haque (2006) revealed that most (72 percent) of the farmers had a highly favourable attitude towards organic farming followed by favourable (28 percent) attitude towards organic farming. None was found to have moderately favourable and unfavourable attitude. Most of the farmers in conventional farming were in moderately favourable (56 percent) to favourable (36 percent) category. The proportion of highly favourable and unfavourable was the same (4 percent). Highest proportion of organic farmers showed highly favourable attitude where the highest portion of conventional farmers showed moderately favourable attitude towards organic farming.

Ahmed (2006) observed that the overwhelming majority (87 percent) of the shrimp farmers had favourable attitude towards shrimp farming compared to 7 percent having neutral and only 6 percent had unfavourable attitude.

Chowdhury (2003) reported that majority of the farmers in progressive village held moderately favorable attitude compared to farmers of traditional village of whom 43 percent held moderately favourable and 29 percent held moderately unfavourable attitude towards crop diversification. Overall, 61 percent of the farmers of the study area had moderately favourable to highly favourable attitude towards crop diversification.

Haque (2003) observed that majority (41.88 percent) of the farmers possessed moderately favourable attitude towards extension activities of DAE while 32.48 percent of them had moderately unfavourable attitude towards the some. Again, 14.53percent farmers were found to possess strongly unfavourable attitude towards extension activities of DAE while 6.84 percent respondents possessed strongly favourable attitude towards the same. Only 42.7 percent of the farmers had neutral attitude towards extension activities of DAE. The mean value indicated that overall attitude of the farmers was slightly favourable towards DAE.

Afrad's (2002) study revealed that majority (59.1 percent) of the farmers had favourable attitude towards vegetable cultivation while 40.9 percent had moderately favourable attitude towards vegetable cultivation.

Ali (2002) conducted a study on attitude of Block Supervisors (BSs) towards the activities of Non-Government Organizations (NGOs) and found that a vast majority (82 percent) of the BSs had moderately unfavourable attitude towards the NGO activities at the grassroots level. While 13 percent of the respondents had highly unfavourable, 3 percent were moderately favourable and only 1 percent had neutral attitude towards the activities of NGOs. The important finding of the study was only 1 percent of the BSs had highly favourable attitude towards the NGO activities.

Haque's (2002) study on attitude of rural women towards homestead agriculture in a selected area of Panchagarh district found that the highest percentage of the rural women had moderately favourable attitude in each of the five selected activities. These were 85 percent in poultry raising, 83 percent in goat rearing, 78 percent in fish cultivation, 72 percent in tree plantation and 70 percent in vegetable cultivation.

Khan (2002) found that more than half (58 percent) of Proshika beneficiaries had moderately favourable attitude, while about 20 percent had highly favourable attitude towards its social forestry programme. The proportion of the beneficiaries having moderately unfavourable attitude was 19 percent. The attitude of 4 percent of the beneficiaries was neutral. Thus, a great majority, about 77.5 percent of the beneficiaries possessed favourable attitude towards social forestry programme of Proshika.

Sarker's (2002) study revealed that 62.37 percent of rice growers had moderately unfavourable attitude towards the use of Diammonium phosphate (DAP) while

26.73 percent having moderately favourable attitude and 5.94 percent fell in highly favourable and only 4.95 percent fell in highly unfavourable attitude towards the use of DAP.

Sadat (2002) in his research found that majority (72 percent) of the Proshika beneficiaries possessed a highly favourable attitude towards Proshika, while 20 percent of them possessed a moderately favourable attitude and only few beneficiaries had unfavourable attitude towards Proshika. For the non-beneficiaries of Proshika the majority (32 percent) possessed moderately favourable attitude towards Proshika which was followed by 26.67 percent had moderately unfavourable attitude, 21.33 percent had highly attitude, 13.33 percent had highly unfavourable attitude and 6.67 percent had neutral attitude.

Siddique (2002) in his study on attitude of farmers towards improved winter vegetable production found that majority (64.35 percent) of the vegetables growers had moderately favourable attitude towards improved winter vegetable production while 25.74 percent had slightly favourable attitude and only 9.90 percent fell in the highly favourable attitude category. He also found that the majority (about 74 percent) of the vegetable growers showed medium to high favourable attitude.

Akanda (2001) found in his study that 66 percent and 22 percent of farmers had moderate and slightly favourable attitude towards rice fish programme of CARE. On the other hand, only 12 percent farmers had slightly favourable attitude towards rice-fish programme.

Islam (1998) studied the attitude of farmers towards Binashail–a rice variety developed by BINA. The study revealed that 35 percent farmers held medium attitude and the rest 65 percent held high level of attitude towards Binashail.

Parveen (1993) studied the attitude of rural women towards homestead agricultural production. The result of the study showed that more than 50 percent women of modern village had highly favourable attitude while the 14 percent in case of traditional village. Further two third (66 percent) of respondents of traditional village had moderately favourable attitude and 20 percent had less favourable attitude where the proportion was 42 percent and 1 percent in case of modern village.

2.3 Review of Literature on Selected Characteristics of the Farmers and Their Attitude

2.3.1 Age and attitude

Haque (2006) stated that there was no significant relationship between age of the organic farmers and their attitude towards organic farming but negative significant relationship in case of conventional farmers.

Ahmed (2006) observed that the age of the shrimp farmers in Khulna district had no significant relationship with the attitude towards shrimp farming.

Chowdhury (2003) conducted a study on farmer's attitude towards crop diversification. The study revealed that age of the farmers had no significant relationship with farmer's attitude towards crop diversification.

Mannan (2001) found that the age of beneficiaries of the Proshika had positive relationship with the attitude towards ecological agriculture.

Sarker (2001) reported that the age of the world vision farmers had no significant relationship with their attitude towards organic homestead gardening programme. Similar results were obtained by Bari (2000), Nurzaman (2000), Islam and Kashem (1997), Noor (1995) in their research works.

Parveen (1993) found that the age of the modern village women had positive relationship with their attitude towards homestead agricultural production. He

found no significant relationship with the age of women of traditional village and their attitude towards homestead agricultural production.

Verma and Kumar (1991) found that there was positive relationship between age and attitude of the farmers towards buffalo management in case of adopted village and no significant relationship between age and attitude of the farmers in the non-adopted village.

Kaur and Singh (1991) conducted a research on attitude towards smokeless "chula" that revealed no relationship between the age and the attitude of the respondents.

Kashem (1987) conducted a research on attitude towards community of the farmers that revealed there is no relationship with age and attitude of the farmers towards community of the farmers.

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

2.3.2 Education and attitude

Haque (2006) found that there was significant positive relationship between the educational qualification of farmers and their attitude towards organic farming.

Ahmed (2006) observed that educational level of the farmers had no significant relationship with attitude of the farmers towards shrimp cultivation.

Chowdhury (2003) conducted a study on farmer's attitude towards crop diversification. The study revealed that educational level of the farmers had significant positive relationship with farmer's attitude towards crop diversification.

Khan (2002) reported that education of PROSHIKA beneficiaries had positive significant relationship with their attitude towards Social Forestry Programmes of the same. Sadat (2002), Haque (2002), Mannan (2001), Paul (2000), Kashem (1987), Singh and Kunzroo (1985) also found similar results in their respective studies.

Sarker (2001) reported that educational level of the farmers had significant positive relationship with their attitude towards organic homestead gardening programme.

Parveen (1993) conducted a study on attitude towards homestead agricultural production. The study discovered that education had no relationship with the attitude of the women towards homestead agricultural production. Similar results were obtained by Rahman (2001) Rashid (2001) Islam (1993) in their respective studies.

Verma and Kumar (1991) found that there was a positive and significant relation between education and attitude of the farmers towards buffalo management in non-adopted village but the relation was found non-significant in adopted village.

Rani (1979) conducted a study that revealed the respondents had a favourable attitude towards National Adult Education Programme. It also revealed that participants and non-participants did not differ in their attitude towards the programme and education had no influence on attitude.

Wahab (1975) reported that there was positive and significant relationship between education and attitude towards the use of Phosphorus and Potash fertilizers while the relationship was insignificant in case of attitude towards the use of urea and their education.

Rogers and Leuthold (1962) conducted a study on farmer demonstrator and found that the farmers' demonstrator who had received formal education for more years showed more favorable attitude towards fertilizer.

2.3.3 Family size and attitude

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

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

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

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

Haque (2002) conducted a study on attitude of rural women towards homestead agriculture which revealed that there no significant relationship between the attitude of rural women towards homestead agriculture and family size. Similar results were obtained by Khan (2002), Siddique (2002), Ali (2002), Sarker (2001) in their respective studies.

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

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

2.3.4 Farm size and attitude

Haque (2006) found that there was no significant relationship between the farm size of farmers and their attitude towards organic farming.

Ahmed (2006) reported that farm size had no significant and negative relationship with their attitude towards shrimp cultivation. Sarker (2001) had observed the same result in his study.

Chowdhury (2003) had conducted a study on farmer's attitude towards crop diversification. The study revealed that farm size of the farmers had significant and positive relationship with farmer's attitude towards crop diversification.

Haque (2003) found that farm size of the farmers had positive relationship with their attitude towards extension activities of the DAE.

Sadat (2002) found in his study that farm size had positive significant relationship with attitude of both PROSHIKA beneficiaries and non beneficiaries towards PROSHIKA. Afrad (2002), Siddique (2002) Mannan (2001) found similar results in their respective studies.

Noor (1995) reported that there was no significant relationship between the farm size and attitude of the farmers towards the cultivation of HYV potato. Similar findings were obtained by Rahman (2001), Habib (2000), Nurzaman (2000) in their respective studies.

Parveen (1993) carried out a research work on attitude of rural women towards homestead agricultural production. The study established no relationship

between farm size and attitude towards homestead agricultural production in modern village and while found significant relationship in case of traditional villages.

Verma and Kumar (1991) reported farm size and attitude of farmers towards buffalo management had showed a positive and significant relationship in non-adopted village while it showed non-significant relationship in case of adopted village.

2.3.5 Annual income and attitude

Haque (2006) concluded that attitude of the farmers towards organic farming was not significantly correlated with their annual household income.

Ahmed (2006) conducted a study on attitude of the farmers towards shrimp farming that revealed that annual income had no significant and negative relationship with their attitude towards shrimp farming.

Chowdhury (2003) found that annual farm income had positive and significant relationship with attitude of the farmers towards crop diversification.

Siddique (2002) conducted a study on attitude of farmers towards the improved winter vegetable cultivation. He found that annual income had no significant relationship with the attitude of farmers towards improved winter vegetable cultivation. Nurzaman (2000), Kashem (1987) found the same results in their respective studies.

Paul (2000) found that annual family income had positive relationship with attitude of farmers towards the Urea Super Granule. Similar results were obtained by Haque (2002), Mannan (2001), Ali (1995) in their respective studies.

Habib (2000) conducted a study on attitude towards use of agro-chemicals that showed annual income had a negative relationship with attitude towards use of agro-chemicals. Bari (2000) got a similar result.

Parveen (1993) reported that annual income had no relationship with the attitude of women towards homestead agricultural production in case of modern village while annual income in traditional villages showed significant positive relationship.

Puttaswamy (1977) conducted a study and found that the small farmers in general had favourable attitude towards mixed farming. However, small farmers borrowers tended to have more favourable attitude than non borrowers.

2.3.6 Cosmopoliteness and attitude

Siddique (2002) reported that cosmopoliteness had positive significant relationship with the attitude of farmers towards winter vegetable production. Sarker (2002) also found positive significant relationship between cosmopoliteness and farmers attitude towards BIRRI dhan 29. The study of Paul (2000), Afrad (2002), Islam and Kashem (1987), Noor (1995), Vidyashanker (1992), Wahab (1975) also explored this type of relationship between cosmopoliteness and attitude of client system.

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

Sarker (2001) found significant negative relationship between cosmopoliteness and attitude of farmers towards organic homestead gardening. Similar result was obtained by Bari (2000) in his study.

Nurzamman (2000) found no relationship between cosmopoliteness and attitude of farmers towards IPM. Similar kind of result was obtained by Habib (2000) in his respective study.

Parveen (1993) observed significant positive relationship between cosmopoliteness and attitude of rural women towards homestead agriculture production in modern village. She observed no relation between these two variables in case of traditional village.

2.3.7 Organizational participation and attitude

Haque (2006) revealed that organizational participation of the organic farmers had significant positive relationship with their attitude towards organic farming but in case of conventional farmers, there was no significant relationship between their organizational participation and attitude towards organic farming.

Sarker (2001) conducted a study that revealed organizational participation of farmers had no significant relationship with attitude towards organic homestead gardening programme.

Habib (2000) conducted a study on attitude towards the use of agro-chemicals that revealed organizational participation had no relationship with attitude towards the use of agro-chemicals.

Nurzaman (2000) conducted a study on attitude on IPM that revealed organizational participation had positive relationship with attitude on IPM.

Islam and Kashem (1997) reported that organizational participation had negative relationship with attitude towards agro-chemicals.

Noor (1995) found that annual income had positive relationship with attitude towards the cultivation of HYV potato.

2.3.8 Extension media contact and attitude

Haque (2006) depicted that extension media contact of the organic farmers had significant positive relationship with their attitude towards organic farming but in case of conventional farmers, there was no significant relationship between their organizational participation and attitude towards organic farming.

Ahmed (2006) found that extension media contact had positive and significant relationship with farmers' attitude towards shrimp farming.

Chowdhury (2003) conducted a study on farmers' attitude towards crop diversification and found that extension media contact had no significant relationship with farmers' attitude towards crop diversification.

Siddique (2002) reported that extension media contact had significant positive relationship with the attitude of farmers towards winter vegetables production. Similar results were obtained by Ali (2002), Khan (2002), Paul (2000), Noor (1995) and Verma and Kumar (1991) in their respective studies.

Nurzaman (2000) observed extension media contact of the FFS farmers was positive with their attitude towards IPM while it showed no significant relationship with their attitude towards IPM in case of non-FFS farmers.

Bari (2000) found no significant relationship between extension media contact and attitude towards hybrid rice ALOK 6201. Similar result was found by Habib (2000) in his study.

Parveen (1993) reported that individual contact of women was positively related with their attitude towards homestead agricultural production in modern village while women in traditional village didn't hold such relationship. The researcher also found that mass contact of women farmers had significant relationship with their attitude towards homestead agricultural production.

2.3.9 Knowledge and attitude

Haque (2006) found that there was significant positive relationship between the knowledge of farmers and their attitude towards organic farming.

Ahmed (2006) reported that farmers' knowledge on shrimp cultivation had positive and significant relationship with their attitude towards shrimp farming.

Chowdhury (2003) conducted a study on farmers' attitude towards crop diversification which revealed knowledge on crop diversification significant positive relationship with farmers' attitude towards crop diversification.

Siddique (2002) conducted a study on farmer's attitude towards improved winter vegetable production. He reported that agricultural knowledge had positive relationship with attitude towards improved winter vegetable production. Similar results were obtained by Afrad (2002), Haque (2002), Paul (2000), Nurzaman (2000) and Sarker (2001) in their respective studies.

Mannan (2001) found that agricultural knowledge had positive relationship with attitude of farmers towards ecological agriculture programme of PROSHIKA.

Bari (2000) reported that agricultural knowledge had no relationship with attitude of farmers towards hybrid ALOK 6201.

Parveen (1993) found that Knowledge on homestead agricultural production had positive and significant relationship with their attitude towards homestead agricultural production in both the case of modern and traditional villages.

2.3.10 Training experience and attitude

Sarker (2002) reported that training experience of farmers had a positive significant relationship with their attitude towards the activities of BAUEC.

Habib (2000) also revealed in his study that training experience of the BSs had a positive significant relationship with their attitude towards agrochemicals. Paul (2000), Bari (2000) and Mannan (2001) also found the similar result in their their study.

Sadat (2002) revealed in his study that training exposure had no relationship with the attitude of both PROSHIKA beneficiaries and non-beneficiaries towards PROSHIKA. Similar findings were found by Sarker (2001), Hussain (2001) in their respective studies.

2.3.11 Attitude towards use of agro-chemicals and attitude

Sarker (2001) conducted a study on the farmers' attitude towards organic homestead gardening programme of World Vision and concluded that attitude towards use of agro-chemicals of the farmers had significant negative relationship with their attitude towards organic homestead gardening.

2.4 Conceptual Framework of the Study

Most of our land is degraded due to practicing high input agriculture consecutive for a long time. This left a harmful effect on our resources and environment. This ultimately affected the livelihood of our people especially the rural people. From the study of different reviews, related to organic cultivation it is evident that it is the possible way for us to retrieve our soil from the present condition.

The findings stated above on organic cultivation revealed that the socio-economic conditions and constraints of practicing organic cultivation are two important factors that need to be considered for investigating the attitude of the farmers towards organic cultivation. In this context, attitude of farmers towards organic cultivation of HYVs of rice was considered as dependent variable and their eleven personal characteristics were considered as independent variables for investigation in the present study. Different problems faced by the

respondents were also an important focus of the study. In the light of the foregoing discussion, a conceptual framework has been developed for this study, which is diagrammatically shown in Figure 2.1.

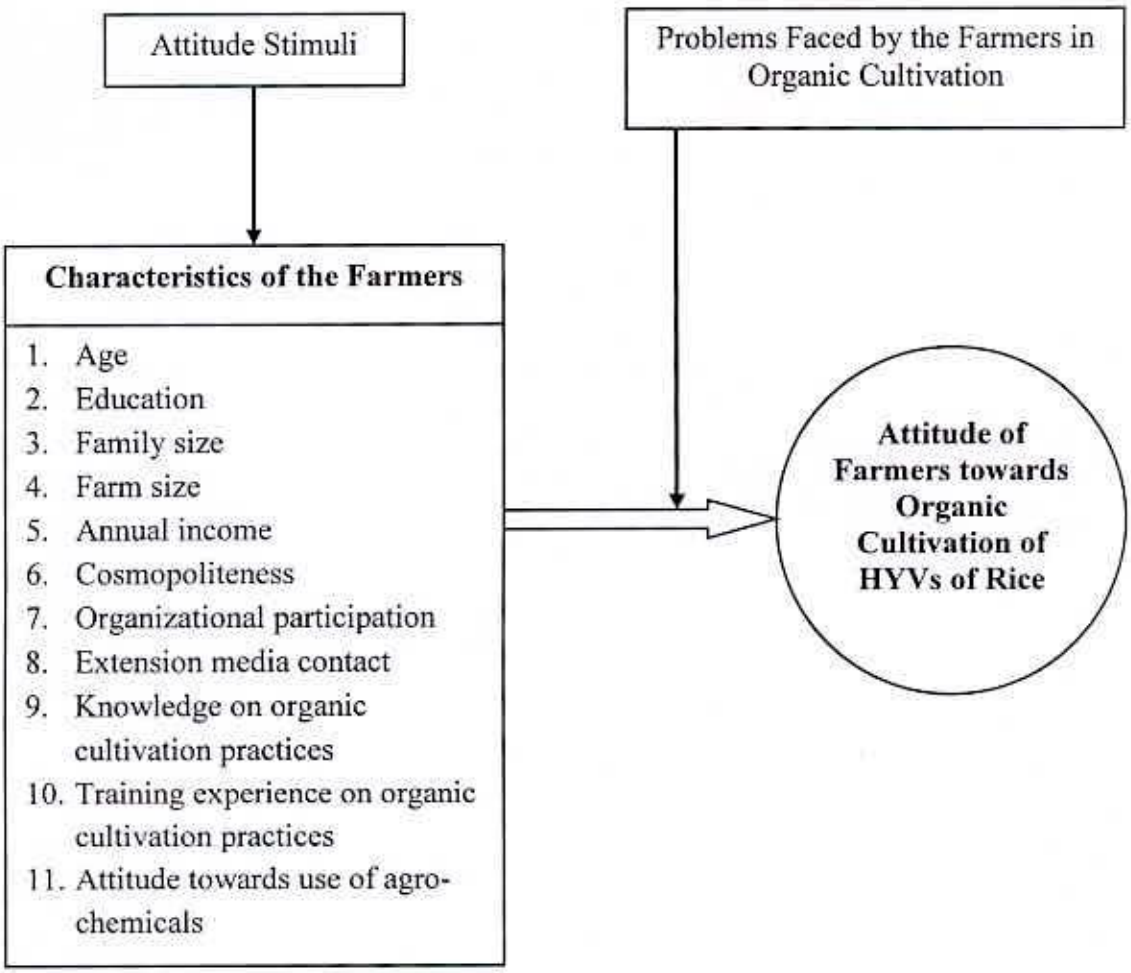


Figure 2.1 A conceptual framework of the study

Chapter III
Methodology

CHAPTER III

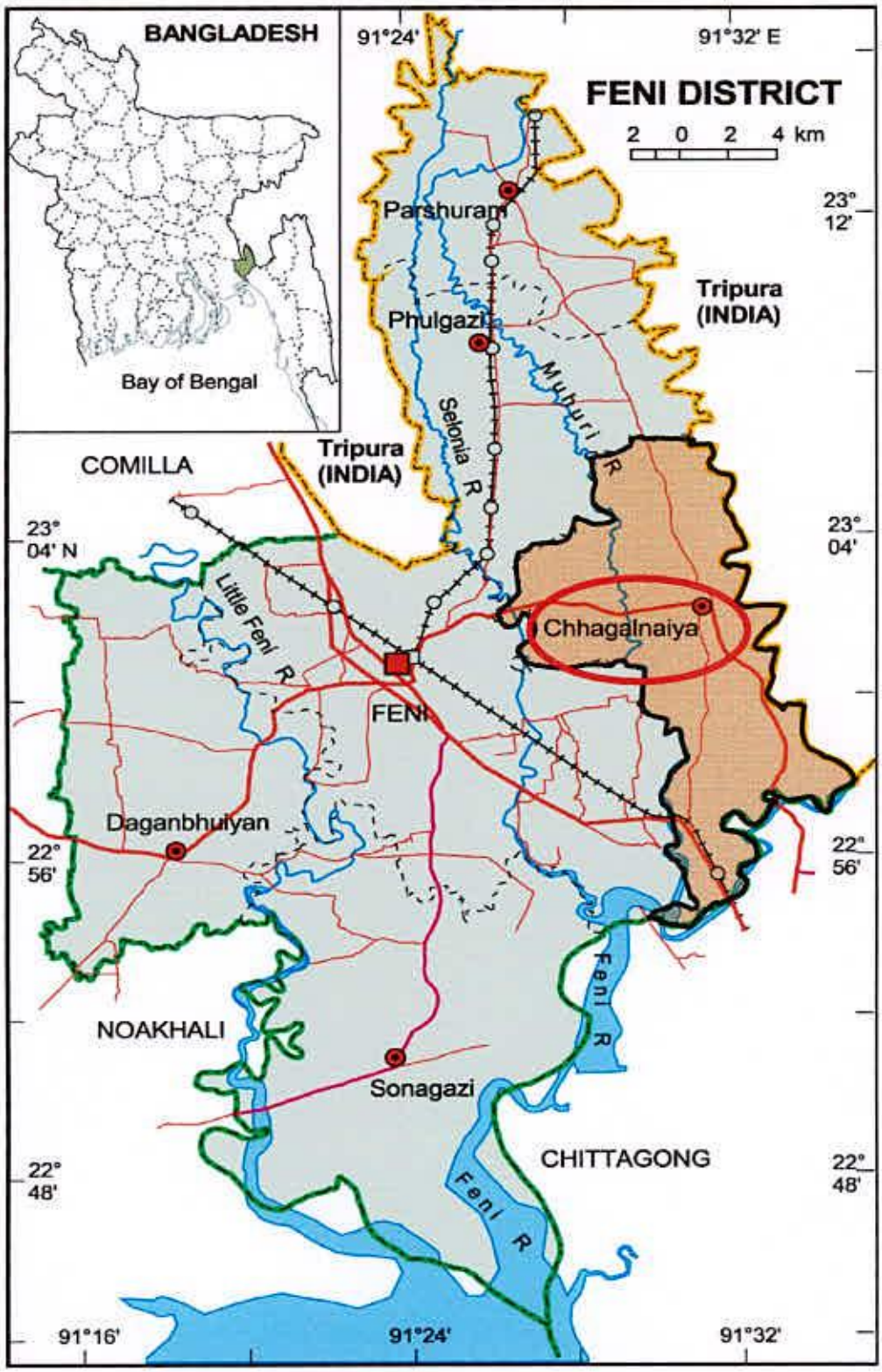
METHODOLOGY

Methodology plays an important role in any scientific research. Appropriate methodology enables the researcher to collect valid and reliable data and analyze the information purposively in order to arrive at a meaningful conclusion.

Various methods, tools and techniques were used during different stages of research work for collection and compilation of data. An interview schedule having both closed and open-ended questions were used to collect reliable information. However, this Chapter is for describing the methods and procedure followed to fulfill the objectives of the present study.

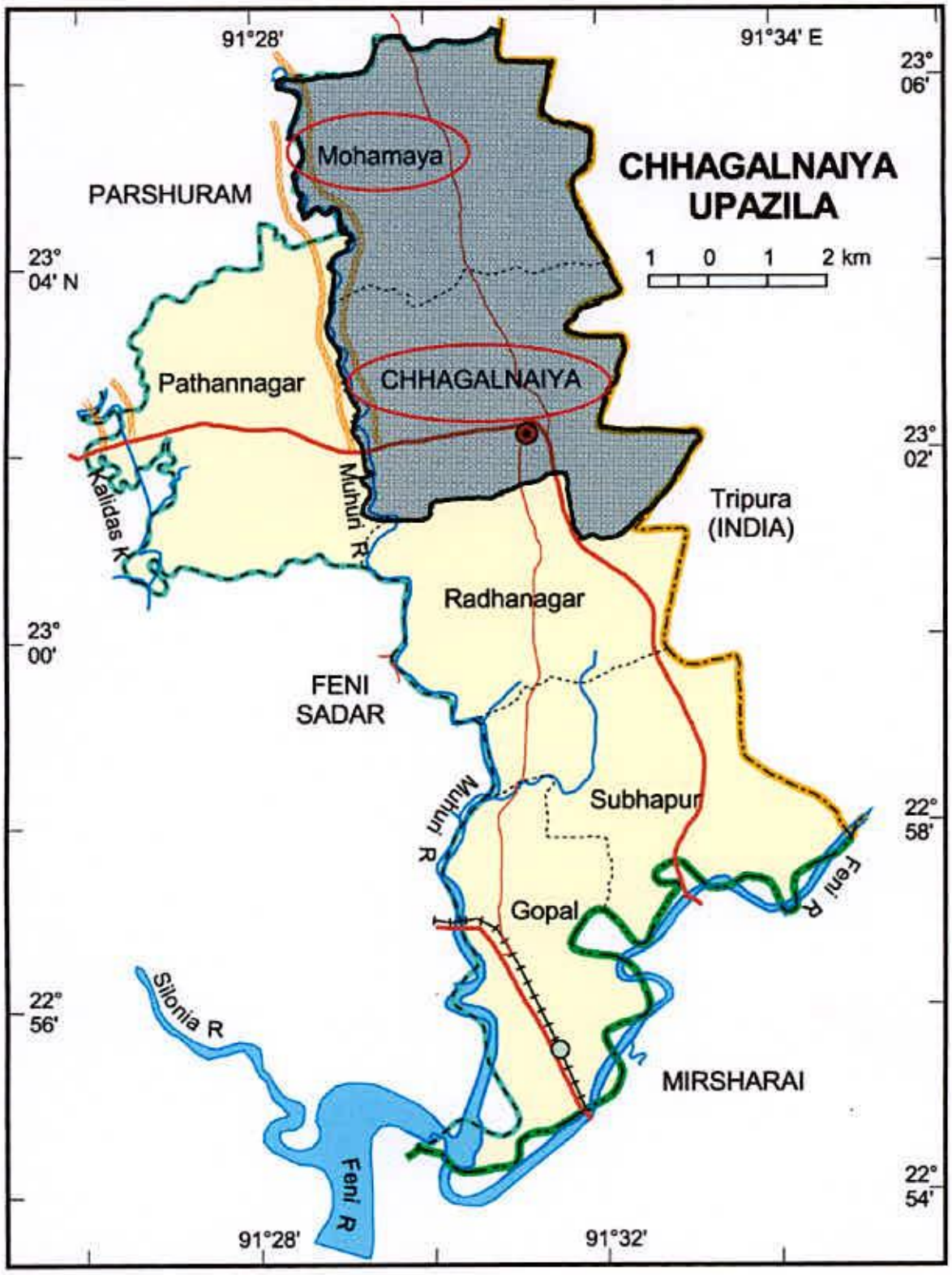
3.1 Locale of the Study

The study was conducted in two villages of Mohamaya and Chhagalnaiya unions of Chhagalnaiya upazila under Feni district because HYVs (High Yielding Varieties) of rice are the major crops of these areas. Chhagalnaiya upazila with an area of 133.49 sq km, is bounded by Parshuram upazila on the north, Mirsharai upazila on the south, Indian State of Tripura on the east and Feni Sadar upazila on the west. The upazila consists of 6 union parishads, 54 mouzas and 63 villages. Population is about 1,54,116 where male 49.79 percent and female 50.21 percent. Average literacy rage is 43.10 percent where male 51.3 percent and female 36.6 percent. (Banglapedia, 2006). For clear understanding of the study areas, maps of Feni district and Chhagalnaiya upazilla have been shown in Figure 3.1 and 3.2.



Source: Banglapedia, 2006

Figure 3.1 A map of Feni district showing Chhagalnaiya upazila



Source: Banglapedia, 2006

Figure 3.2 A map of Chhagalnaiya upazila under Feni district showing Chhagalnaiya and Mohamaya unions

3.2 Population and Sample

The present study was carried out to investigate the attitude of the farmers towards organic cultivation of HYVs of rice and the study location was in two villages in Mohamaya and Chhagalnaiya unions of Chhagalnaiya upazila. Therefore, all the farmers of these two villages who had been cultivating HYVs of rice were the population of this study. One village from each of the selected unions was randomly selected. The selected villages were North Jashpur of Mohamaya union and South Jashpur of Chhagalnaiya union. In this context, a list of the farmers was collected from the respective Union Parishad Office. There were 437 and 456 farmers cultivating HYVs of rice at North Jashpur and South Jashpur villages respectively. A total of 100 farmers (50 farmers from each village) were randomly selected as the respondents of the present study. Thus, the sample size stood as 100.

3.3 Variables and Measurement Techniques

3.3.1 Measurement of independent variables

Ten socio-economic characteristics of the respondents were selected as independent variables for the study. The procedures used in measuring these selected characteristics have been described in the following sub-sections.

3.3.1.1 Age

The age of a respondent was measured in terms of years from his birth to the time of interview on the basis of his response. A unit score was assigned for each year of one's age (Akter, 2003). This variable appears in question no. 1 of the interview schedule (Appendix-A).

3.3.1.2 Education

Level of education of a respondent was measured by the number of years of schooling. A score of one was assigned for each year of formal schooling completed by a respondent (Sharmin, 2005). For example, if the respondent

passed the SSC examination, he was given a score of 10. Besides, 0.5 score was given to the respondents who could only sign their names and 0 score for the illiterate farmers. This variable has been shown in the question no. 2 of the interview schedule.

3.3.1.3 Family size

The family size of a respondent was measured by the total number of his family members including herself, his husband, children and other dependents eating and staying together. This variable has been presented in the question no. 3 of the interview schedule (Appendix-A).

3.3.1.4 Farm size

The farm size of a respondent included the areas of homestead, crop land, areas given and/or taken on lease, share-cropping etc. which could give full benefit to the family and it was expressed in terms of hectares. Total farm size was computed through using the following formula (Hasan, 2006):

Total farm size = $a + b + \frac{1}{2}(c + d) + e$

Where, a = Homestead (including pond)
b = Own land under own cultivation
c = Land taken as share cropping
d = Land given as share cropping
e = Land taken on lease

The data were first recorded in local unit and then converted to hectare (item no. 4 in Appendix-A).

3.3.1.5 Annual income

The annual income of a respondent was measured on the basis of total yearly earning both from farm and non-farm sources (business, job, day labor etc.)

earned by the respondent himself and by other family members (item no. 5 in Appendix-A). The income from farm and other sources of a respondent were added together to obtain his total annul family income. Annual family income of a respondent was expressed in '000' taka.

3.3.1.6 Cosmopoliteness

It was defined as one's frequency of visiting different places per unit time. This variable was measured on the basis of the responses of the subjects against 4-point rating scale rated as not at all, rarely, sometimes and regularly (item no. 6, Appendix-A). The assigned score was given as 0 for 'not at all', 1 for 'rarely', 2 for 'occasionally' and 3 for 'regularly' (Alam, 2004). Cosmopoliteness score was, therefore, determined by adding the total responses against 6 selected visiting places. The scores could range from 0 to 18, where 0 indicated no cosmopoliteness and 18 indicated very high cosmopoliteness.

3.3.1.7 Organizational participation

Organizational participation of a respondent was measured on the basis of the nature of his involvement and duration of participation in different organizations. Organizational participation was operationalized by using the following formula (Hossain, 2000):

Organizational affiliation score = $\Sigma (A \times D)$

Where,

A= Nature of involvement/ participation score;

D= Duration score

Nature of involvement/ participation score were assigned in the following manner:

Nature of participation	Scores assigned
No participation	0
Ordinary member	1
Executive committee member	2
Executive committee officer/ President / Secretary/ Treasurer	3

Duration scores were assigned in the following manner

Duration of participation	Scores assigned
No participation	0
Participation up to 3 years	1
Participated from 4-6 years	2
Participated above 6 years	3

For the measurement of organizational participation, twelve organizations were taken into consideration.

Organizational participation score of a respondent was obtained by summing scores of these twelve organizations according to the above mentioned formula. Thus, organizational participation score of a respondent ranged from '0' to '108' where '0' indicated no organizational participation and '108' indicated very high organizational participation. The variable appears in the question no. 7 of the interview schedule (Appendix-A).

3.3.1.8 Extension media contact

Extension media contact referred to the extent of contact of a respondent with different communication media. Extension media contact score was computed for each respondent on the basis of his extent of contact with 16 selected information sources which have been shown in item no. 8 of the interview schedule (Appendix-A). Each respondent was asked to indicate the frequency of his contact with each of the selected media. Score was assigned against each of the responses as 0 for not at all, 1 for rarely, 2 for sometimes and 3 for regularly (Hasan, 2006). Extension media contact score of a respondent was determined by summing up the scores obtained for all the information sources. The extension media contact score could theoretically range from '0' to '48' where '0' indicated no contact and '48' indicated very high extent contact.

3.3.1.9 Knowledge on organic cultivation practices

For measuring knowledge of the respondents on organic cultivation practices, 25 multiple choice questions on different aspects of organic cultivation were asked and score was assigned for correct responses of different questions. Correct answer of a respondent for each of the questions was marked as one (Karmakar, 2004) and 0 zero for incorrect answer. In this way, scores of knowledge on organic cultivation practices of the respondents could range from 0 to 25, 0 indicating no knowledge and 25 indicating very high knowledge on organic cultivation. This variable appears in the item no. 9 in interview schedule (Appendix-A).

3.3.1.10 Training experience on organic cultivation practices

Training experience on organic cultivation practices was computed by total number of participation by a respondent in different training programs on organic cultivation practices. Scores were assigned as follows:

Number of participation	Score
≥10 times	4
6-9 times	3
3-5 times	2
1-2 times	1
0 times	0

Therefore, the possible range for training experience could be 0-4.

This variable has been shown in the item no. 6 of the interview schedule (Appendix-A).

3.3.1.11 Attitude towards use of agro-chemicals

Attitude of the farmers towards use of agro-chemicals was measured with a five-point Likert type of scale scored as "strongly agree", "agree", "no opinion", "disagree" and "strongly disagree". In case of a positive statement a score of four (4) was assigned if the answer was "strongly agree", three (3) for "agree", two (2) for "no opinion", one (1) for "disagree" and zero (0) for "strongly disagree". It was reverse in order in case of a negative statement i.e. one for "strongly agree" and five for "strongly disagree". Twelve statements (6 positive and 6 negative) were developed to measure the attitude of the respondents. The respondents were asked to answer each statement with reference to the five-point scale. The score for attitude towards use of agro-chemicals was calculated by summing the scores of each statement. The highest possible score could be 48 and the lowest 0. The highest score would indicate the most favorable attitude and the lowest would indicate the most unfavorable attitude towards use of agro-

chemicals. Statements on this item appear in question no. 11 in the interview schedule presented in Appendix-A.

3.3.2 Measurement of dependent variable

Attitude towards organic cultivation of high yielding varieties (HYVs) of rice was undertaken as the dependent variable. Farmers' attitude was considered as the knowledge, belief and action towards the organic cultivation. To assess farmers' attitude towards organic cultivation of HYVs of rice 20 statements were considered of which 10 were positive and the rest 10 were negative. The statements were carefully constructed so that they reveal the knowledge, belief and action of the respondents precisely. The statements were randomly arranged to avoid the biasness of the respondents. A five-point Likert type of scale was used to measure the attitude of the farmers and scored as follows (Ray and Mondal, 2004):

Extent of opinion	Score assigned	
	Positive statement	Negative statement
Strongly disagree	0	4
Disagree	1	3
Undecided	2	2
Agree	3	1
Strongly agree	4	0

The respondents were asked to answer each statement with reference to the five-point scale. The score for attitude towards organic farming was calculated by summing the scores of each statement. The highest possible score could be 80 and the lowest be 0. The highest score will indicate the most favorable attitude towards organic cultivation of HYVs of rice and the lowest will indicate the most unfavorable attitude. Statements on this item appear in question no. 12 in the interview schedule presented in Appendix-A.

3.4 Measurement of Problems Faced by the Farmers

Problems faced by the farmers in practicing organic cultivation of HYVsf of rice open type questions were asked. The answers were noted down in the interview schedule. The problems were ranked according to the descending order of the number of citation (Khatun, 2007). At the same time the possible solutions of the problems were also sought out from the respondents and their suggestions were traced back in the interview schedule as well.

3.5 Hypotheses of the Study

3.5.1 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 be seen contrary to, or in accord with common sense. It may prove to be correct or incorrect in any event, however, it leads to an empirical test.

3.5.2 Research hypothesis

The following hypothesis was formulated for empirical verification:

" There are relationships between each of the 11 selected characteristics of the farmers and their attitude towards organic cultivation of HYVs of rice. The selected characteristics of the farmers were – age, education, family size, farm size, annual income, cosmopoliteness, organizational participation, extension media contact, knowledge on organic cultivation practices, training experience on orgnic practices, attitude towards use of agro-chemical".

3.5.3 Null hypothesis

For statistical testing of the research hypothesis, they were converted into null form. The following null hypothesis was formulated to examine the relationships

between the selected characteristics of the farmers and their attitude towards organic cultivation of HYVs of rice.

H_0: "There are no relationships between each of the 11 selected characteristics of the farmers and their attitude towards organic cultivation of HYVs of rice. The selected characteristics of the farmers were – age, education, family size, farm size, annual income, cosmopoliteness, organizational participation, extension media contact, knowledge on organic cultivation practices, training experience on orgnic practices, attitude towards use of agro-chemical".

3.6 Instrument for Data Collection

In order to collect data from the farmers, an interview schedule was prepared. The schedule was prepared according to the objectives of the study. The interview schedule contained both open and closed form questions. Simple and direct questions, scales and statements were included in the interview schedule to obtain essential information regarding organic cultivation of HYVs of rice. Suitable scales were developed to handle different variables of the study. The draft interview schedule was pre-tested with 10 respondents during 14 to 16 September 2007. This pre-test result provided opportunity to the researcher to determine the appropriateness of different questions and statements in general. On the basis of pretest result, corrections and modifications were done in the interview schedule. The English version of the interview schedule has been included in Appendix-A.

3.7 Collection of Data

Data were collected from the sampled farmers by the researcher himself through personal interview during 19 October to 15 November 2007. During interviewing he first established rapport with the respondents and explained the objectives of the study clearly by using local dialect as far as possible. No serious difficulty was faced in collecting data. Excellent cooperation was

received from the respondents, local leaders and elites in various manners such as appointment for interview, locating houses etc.

3.8 Data Processing and Statistical Test

At the end of data collection, data were coded, compiled, tabulated and analyzed in accordance with the objectives of the study. Qualitative data were converted to quantitative data by means of suitable scoring techniques and local units were converted to standard units.

Descriptive statistical tests such as number, percentage distribution, range and standard deviation were used. Pearson's Product Moment Correlation Coefficient (r) was computed to explore the relationships between dependent and independent variables (Ray and Mondal, 2004). SPSS (Statistical Package for Social Sciences) computer program was used to analyze data. At least 5 percent level of significance was considered to reject a null hypothesis throughout the study.

Chapter IV
Findings & Discussion

CHAPTER IV

FINDINGS AND DISCUSSION

In this Chapter the findings and related interpretations have been presented.

4.1 Characteristics of the Farmers

There were several characteristics of the farmers that influenced their attitude towards organic cultivation of HYVs of rice. In the present study, eleven characteristics of the farmers were selected as independent variables, which included age, education, family size, farm size, annual income, Cosmopoliteness, organizational participation, extension media contact, knowledge on organic cultivation practices, training experience on organic cultivation practices and attitude towards the use of agro-chemicals. The characteristics of the farmers have been stated in the following subsections.

4.1.1 Age

Age of the respondent farmers ranged from 24 to 78 years with a mean of 46.09 years and standard deviation of 14.24. However, based on their age the farmers were classified into three categories as young, middle-aged and old aged (Table 4.1).

Table 4.1 Distribution of the respondents according to their age (n = 100)

Range		Respondents		Mean	SD
Possible	Observed	Category	Percent		
Unknown	24-78	Young (≤30)	16	46.09	14.24
		Middle-aged (31-45)	34		
		Old (>45)	50		
		Total	**100**		

Half of the farmers (50 percent) were old, 34 percent of them were middle-aged and the rest 16 percent were young. The findings indicate that majority of the

farmers were old. In the study area, it was observed that most of the families were joint family. Their family heads were old-aged. During selection of the respondents the senior most farmers from the families were selected. Hence the findings seem to be logical.

4.1.2 Education

The level of education of the farmers ranged from 0-14 years of schooling, the average being 3.35 with a standard deviation of 4.33. Among the farmers, 24 percent were illiterate, 40 percent could sign their name only, 2 percent had education at primary level, 27 percent had education at secondary level and 7 percent had education at above secondary level (Table 4.2).

Table 4.2 Distribution of the respondents according to their education (n =100)

Range		Respondents		Mean	SD
Possible	Observed	Category	Percent		
Unknown	0-14	Illiterate (0)	24	3.35	4.33
		Can sign only (0.5)	40		
		Primary (1-5)	02		
		Secondary (6-10)	27		
		Above secondary (>10)	07		
		Total	**100**		

Findings reveal that about two-thirds (64 percent) of the respondents of the study area did not attend any school for education. This reflects the real situation of rural Bangladesh. Though the education qualification of the farmers is not satisfactory, education is must for understanding various aspects of organic cultivation practices.

4.1.3 Family size

The number of family members of the respondents ranged from 3-20. The mean was 6.97 and standard deviation was 2.84 (Table 4.3). Computed data indicate that 23 percent of the farmers had small family size, 29 percent of them had medium family size and 48 percent had large family size.

Table 4.3 Distribution of the respondents according to their family size (n = 100)

Range		Respondents		Mean	SD
Possible	Observed	Category	Percent		
Unknown	3-20	Small (≤4)	23	6.97	2.84
		Medium (5-6)	29		
		Large (>6)	48		
		Total	**100**		

Most of the families of the respondent farmers were joint family. This is why the average is above 6 indicating large family of the farmers. Large family is helpful for diversified farming activities regarding organic cultivation. The females can prepare compost, farm yard manure and the males can perform different phases of organic cultivation of HYVs of rice.

4.1.4 Farm size

Farm size of the farmers ranged from 0.1-3.04 hectares having an average of 0.90 hectares and standard deviation of 0.66. On the basis of farm size of the farmers, they were classified into the following four categories.

Table 4.4 Distribution of the respondents according to their farm size (n = 100)

Range		Respondents		Mean	SD
Possible	Observed	Category	Percent		
Unknown	0.1-3.04	Marginal (0.02-0.2)	03	0.90	0.66
		Small (0.21-1)	73		
		Medium (1.1-3)	22		
		Large (>3)	02		
		Total	**100**		

Data presented in Table 4.4 show that the highest proportion (73 percent) of the farmers had small farm size while 22 percent, 3 percent and 2 percent of them had medium, marginal and large farm size respectively.

In rural Bangladesh, the land size is being gradually decreased due to fragmentation of land among the ever increasing descendants. The study area was not an exception to this fact. Therefore, most of the farmers had small farm size.

4.1.5 Annual income

Annual income of the farmers ranged from 42.5 to 496 thousand taka with a mean of 121.80 and standard deviation of 84.32 (Table 4.5). On the basis of annual family income, the respondents were divided into three categories.

Table 4.5 Distribution of the respondents according to their annual income (n =100)

Range		Respondents		Mean	SD
Possible	Observed	Category	Percent		
Unknown	42.5-496	Low (≤50)	02	121.80	84.32
		Medium (51-100)	55		
		High (>100)	43		
		Total	**100**		

Table 4.5 shows that the highest proportion (55 percent) of the farmers had medium annual income while 43 percent and 2 percent of them had high and low annual respectively. These findings were so, because the respondents having low annual income did not show interest in organic cultivation of HYVs of rice. They think that initial production through organic cultivation is low which is not adequate to feed their family members. Therefore, they did not take the risk of initial low yield from organic cultivation.

4.1.6 Cosmopoliteness

Scores of cosmopoliteness of the farmers ranged from 4 to 18 against a possible range of 0 to 18 (Table 4.6). Among the farmers, 63 percent were moderately cosmopolite while 27 percent and 10 percent of them were highly and less cosmopolite respectively.

Table 4.6 Distribution of the respondents according to cosmopoliteness (n = 100)

Range		Respondents		Mean	SD
Possible	Observed	Category	Percent		
0-18	4-18	Less (≤6)	10	10.98	2.79
		Moderate (7-12)	63		
		High (>12)	27		
		Total	**100**		

The rural people are not accustomed to visit the areas outside their own upazila but they are used to visit other villages. Thus, their cosmopoliteness became mostly moderate.

4.1.7 Organizational participation

The observed scores of organizational participation of the farmers ranged from 0 to 58 with a mean and standard deviation of 18.71 and 13.46 respectively. On the basis of their organizational participation, the farmers were classified into three categories as shown in Table 4.7.

Table 4.7 Distribution of the respondents according to their organizational participation (n = 100)

Range		Respondents		Mean	SD
Possible	Observed	Category	Percent		
Unknown	0-58	Low (≤20)	69	18.71	13.46
		Medium (21-40)	22		
		High (>40)	09		
		Total	**100**		

Among the farmers majority (69 percent) had low organizational participation while 22 percent and 9 percent of them had medium and high organizational participation respectively. The respondents were mostly illiterate and affiliated with mainly different non-government organizations (NGOs). Therefore, most of the respondents were in low category of organizational participation.

4.1.8 Extension media contact

The observed score of extension media contact of the farmers ranged from 8 to 36 against a possible range of 0 to 48. The average score was 18.41 with a standard deviation of 6.34. Among the farmers, more than half (55 percent) had medium contact, 41 percent of them had low contact and the rest 4 percent had high contact with different extension media (Table 4.8).

Table 4.8 Distribution of the respondents according to their extension media contact (n = 100)

Range		Respondents		Mean	SD
Possible	Observed	Category	Percent		
0-48	8-36	Low (≤16)	41	18.41	6.34
		Medium (17-32)	55		
		High (>32)	04		
		Total	**100**		

The respondents were mostly illiterate and they could not obtain information from printed materials like newspaper, leaflet etc. They mainly communicated with their neighbors, relatives, fertilizer dealer rather than other extension media like Upazila Agriculture Officer, group meeting, demonstration etc. Thus, almost all (96 percent) of the farmers had low to medium contact with different extension communication media.

4.1.9 Knowledge on organic cultivation practices

Scores of knowledge on organic cultivation practices of the respondents ranged from 6 to 25 against the possible range of 0 to 25, having the average score of 14.66 and standard deviation of 3.54. Based on score of knowledge on organic cultivation practices the respondents were classified into three categories which have been shown in (Table 4.9). The highest proportion (75 percent) of the respondents had fair knowledge; while 22 percent had good and only 3 percent of them poor extent of knowledge on organic cultivation practices.

Table 4.9 Distribution of the respondents according to their knowledge on organic cultivation practices (n = 100)

Range		Respondents		Mean	SD
Possible	Observed	Category	Percent		
0-25	6-25	Poor (≤8)	03	14.66	3.54
		Fair (9-16)	75		
		Good (>16)	22		
		Total	**100**		

The respondents of the present study were relatively aged and they knew the general agricultural matters. They faced difficulty only to some of the technical questions. As their general agricultural knowledge was satisfactory, their overall knowledge on organic cultivation practices was fair.

4.1.10 Training experience on organic cultivation practices

Scores of training experience on organic cultivation practices of the respondents ranged from 0 to 4 against the possible range of 0 to 4, having the average score of 1.85 and standard deviation of 1.43. Based on score of training experience on organic cultivation practices the respondents were classified into five categories which have been shown in (Table 4.10). Among the farmers 23 percent did not attend any training program, 21 percent had low, 24 percent had medium, 12 percent had high and the rest 20 percent had great extent of training experience on organic cultivation practices.

Table 4.10 Distribution of the respondents according to their training experience on organic cultivation practices (n = 100)

Range		Respondents		Mean	SD
Possible	Observed	Category	Percent		
0-4	0-4	Not at all (0)	23	1.85	1.43
		Low (1)	21		
		Medium (2)	24		
		High (3)	12		
		Great (4)	20		
		Total	**100**		

Training facilities are inadequate in rural areas. When the farmers get any opportunity of training they tend to participate. About one-fourth of the respondents did not get such opportunity of training, so they could not attend any training program on organic cultivation practices.

4.1.11 Attitude towards use of agro-chemicals

Scores of attitude towards use of agro-chemicals of the respondents ranged from 20 to 39 against the possible range of 0 to 48, having the average score of 30.48 and standard deviation of 3.80 (Table 4.11). The highest proportions (74 percent) of the respondents were slightly favorable attitude towards use of agro-chemicals. However, 15 percent of the farmers had slightly unfavorable attitude and only 11 percent of them had moderately favorable attitude towards use of agro-chemicals.

Table 4.11 Distribution of the respondents according to their attitude towards use of agro-chemicals (n = 100)

Range		Respondents		Mean	SD
Possible	Observed	Category	Percent		
0-48	20-39	Slightly unfavorable (≤23)	15	30.48	3.80
		Slightly favorable (24-31)	74		
		Moderately favorable (≥32)	11		
		Total	**100**		

Agro-chemicals are dangerous for human health, bio-diversity and environmental balance. These are the potential causes of environmental pollution. The rural people are not adequately conscious of this fact. They use agro-chemicals in crop production for protecting them from insect pest and diseases. Minimum educational background is required to be aware of environmental degradation through agro-chemicals. Most the farmers were illiterate and accordingly they were neutral about the use of agro-chemicals.

4.2 Attitude of the Farmers towards Organic Cultivation of HYVs of Rice

In the present study, attitude of the farmers towards organic cultivation of HYVs of rice was the only dependent variable. It was measured with 20 statements on Likert type scale. The possible range of score for this dependent variable was 0 to 80 while the observed score varied from 37 to 59 (Table 4.12). The average score was 48.87 with a standard deviation of 5.19.

Table 4.12 Distribution of the farmers according to their attitude towards organic cultivation of HYV of rice (n = 100)

Range of score		Respondents		Mean	SD
Possible	Observed	Category	Percent		
0-80	37-59	Slightly unfavorable (≤39)	23	48.87	5.19
		Slightly favorable (40-53)	62		
		Moderately favorable (≥54)	15		
Total			**100**		

Among the farmers, the majority (62 percent) were in slightly favorable attitude towards organic cultivation of HYVs of rice. About one-fourth (23 percent) of the farmers had slightly unfavorable attitude and only 15 percent of them had moderately favorable attitude towards organic cultivation of HYVs of rice.

Findings indicate that 77 percent of the respondent did not show unfavorable attitude towards organic cultivation of HYVs of rice. But, there were still 23 percent of the farmers holding slightly unfavorable attitude towards organic cultivation of HYVs of rice. This portion of the farmers did not get any training on organic cultivation and they were not educated. Adoption of any technology is followed by attitude of the adopters towards it. From the present findings it can be inferred that the status of organic cultivation of HYVs of rice was not satisfactory at least in the study area.

4.2.1 Analysis of opinion for individual attitude statement

To observe the respondents' nature of responding towards individual attitude statement, attitude statement analysis has done as shown in Table 4.13. For each statement, numbers of the respondents for any five options were multiplied by their respective weights.

Table 4.13 Analysis of opinion for individual attitude statement

Sl. No.	Statements	Number of respondents					Total Score	Mean Value
		SA	A	NO	D	SD		
1 +	Organic cultivation of HYV of rice preserves environment and biodiversity	27	47	16	7	3	288	2
2 -	It is difficult to apply the knowledge and skill of organic cultivation of HYV of rice	3	20	34	33	10	227	14
3 +	Organic cultivation of HYV of rice helps preserve beneficial insects, fish, frog, earth worm and soil fertility	13	63	10	7	7	268	10
4 -	Yield of HYV of rice is low for only use of organic manure; this is why farmers do not adopt organic cultivation of HYV of rice	10	23	33	27	7	198	18
5 +	It is urgent to practice organic cultivation of HYV of rice to create awareness among farmers regarding the harmful effects of agro-chemicals	7	70	13	7	3	271	9
6 -	Organic manure and pesticide are not available; for these reason use of these organic manure and pesticide are not increasing	13	57	17	10	3	133	20
7 +	Quality of rice is better if produced through organic cultivation	20	53	17	7	3	280	6
8 -	It is not right that all farmers are not adopting organic cultivation	3	10	34	42	11	248	11
9 +	There is no harmful effects on the crops produced through organic cultivation; therefore those are not harmful for health	7	70	17	3	3	275	7
10 -	Crop yield is low in organic cultivation	3	10	34	50	3	240	12

Sl. No.	Statements	Number of respondents					Total Score	Mean Value
		SA	A	NO	D	SD		
11 +	Cost of organic cultivation of HYV of rice is low	27	40	17	13	3	275	8
12 -	Organic cultivation of HYV of rice is harmful for environment	6	7	10	52	25	283	4
13 +	Organic cultivation of HYV of rice reduces environmental pollution; therefore outbreak of diseases is minimized	23	50	21	3	3	287	3
14 -	Organic cultivation of HYV of rice hampers other activities of the farmers	14	52	10	17	7	151	19
15 +	There is low attack of insect pest and diseases in organic cultivation of HYV of rice	22	54	11	10	3	282	5
16 -	There is low probability of success in organic cultivation for illiterate farmers	7	17	30	43	3	218	16
17 +	I am interested in organic cultivation of HYV of rice because it is less risky for the farmers	10	47	23	10	10	237	13
18 -	Hard labor is needed to grow crop through organic cultivation	7	20	26	40	7	220	15
19 +	It is necessary to practice organic cultivation to preserve environment and natural balance	13	73	8	3	3	290	1
20 -	I am not interested in organic cultivation of HYV of rice because it is less profitable than inorganic cultivation	7	13	40	37	3	216	17

Note: SA = Strongly agree; A= Agree; NO = No opinion; D = Disagree; and SD = Strongly disagree

Table 4.13 signifies that statement number 19 got the highest score which means that it is necessary to practice organic cultivation to preserve environment and natural balance. The second highest scored statement was first statement that is organic cultivation of HYV of rice preserves environment and biodiversity. The farmers agreed that organic cultivation of HYV of rice reduces environmental pollution; therefore outbreak of diseases is minimized and accordingly this statement has been placed in third rank. However, attitude of the farmers towards

organic cultivation of HYVs of rice has been clearly illustrated with the statements used in the interview schedule. The higher scores of the statements with reference to their maximum possible value of 400 indicate favorable attitude of the farmers towards organic cultivation of HYVs of rice.

4.3 Relationships between the Selected Characteristics of Farmers and Their Attitude towards Organic Cultivation of HYVs of Rice

Pearson's Product Moment Coefficient of Correlation (r) was computed in order to explore the relationships between the selected characteristics of the farmers and their attitude towards organic cultivation of HYVs of rice. The coefficient of correlation (r) was used to test the null hypothesis regarding the relationship between two concerned variables. The null hypothesis was formulated as H_0: There is no relationship between each of the selected characteristics of the farmers and their attitude towards organic cultivation of HYVs of rice. The relationships between the dependent and independent variables has been presented in Table 4.14. However, the correlation matrix of dependent and independent variables of the study has been presented in Appendix-B.

Table 4.14 Relationships between the dependent and independent variables

Selected characteristics of the farmers as independent variables	'r' values with attitude towards organic cultivation of HYVs of rice
Age	-0.324**
Education	0.271**
Family size	-0.276**
Farm size	0.255*
Annual income	-0.114^{NS}
Cosmopoliteness	0.428**
Organizational participation	-0.145^{NS}
Extension media contact	0.272**
Knowledge on organic cultivation practices	0.251*
Training experience on organic cultivation	0.212*
Attitude towards use of agro-chemicals	-0.232*

N = 100, Degrees of freedom = 98
Table value at 5 percent level = 0.197

Table value at 1 percent level= 0.257

^{NS} = Non-significant
* Correlation is significant at 0.05 level of probability
** Correlation is significant at 0.01 level of probability

4.3.1 Age and attitude

Relationship between age of the farmers and their attitude towards organic cultivation of HYVs of rice was examined by testing the following null hypothesis "There is no relationship between age of the farmers and their attitude towards organic cultivation of HYVs of rice". The correlation coefficient (r) between the concerned variables was computed and found to be -0.324**, which led to the following observation.

a) The computed value of 'r' (-0.324) was found to be greater than the tabulated value of 'r' (± 0.257) with 98 degrees of freedom at 0.01 level of probability.
b) The relationship showed a negative direction between the concerened variables.
c) The relationship between two concerned variables was significant.

Hence, the concerned null hypothesis was rejected. Therefore, the researcher concluded that age of the farmers had negatively significant relationship with their attitude towards organic cultivation of HYVs of rice. Thus, it could be said that, at least for the present study, age of farmers played significant role on the formation of their attitude towards organic cultivation of rice.

Singh and Kunzroo (1985) found similar findings in his study.

The old farmers show the tendency to be adhered to the traditional cultivation practices. They would not like to adopt any new technology. On the other hand, the young have a curiosity about newness to their existing farm practices. Therefore, the attitude towards organic cultivation practices became unfavorable with the increase of age of the farmers.

4.3.2 Education and attitude

Relationship between education of the farmers and their attitude towards organic cultivation of HYVs of rice was examined by testing the following null hypothesis "There is no relationship between education of the farmers and their attitude

towards organic cultivation of HYVs of rice". The correlation coefficient (r) between the concerned variables was computed and found to be 0.271**, which led to the following observation.

a) The computed value of 'r' (0.271) was found to be greater than the tabulated value of 'r' (± 0.257) with 98 degrees of freedom at 0.01 level of probability.
b) The relationship showed a positive direction between the concerened variables.
c) The relationship between two concerned variables was significant.

Hence, the concerned null hypothesis was rejected. Therefore, it was concluded that education of the farmers greatly influenced their attitude towards organic cultivation of HYVs of rice.

Haque (2006), Chowdhury (2003), Khan (2002), Sadat (2002), Haque (2002), Mannan (2001), Sarker (2001) and Paul (2000) observed similar relationships in their respective studies.

Thus, in the present study, education of the farmers played significant role on their attitude towards organic cultivation of rice. This means that the farmers with more educational qualification possessed more favorable attitude towards organic cultivation of HYVs of rice. The educated farmers are more logical and get suitable information solving their various problems regarding organic cultivation of rice through reading agricultural magazines, booklets, leaflets, newspaper and other printed materials that definitely help to form their positive attitude towards organic cultivation of HYVs of rice.

4.3.3 Family size and attitude

Relationship between family size of the farmers and their attitude towards organic cultivation of HYVs of rice was examined by testing the following null hypothesis "There is no relationship between family size of the farmers and their attitude towards organic cultivation of HYVs of rice". The correlation coefficient (r)

between the concerned variables was computed and found to be -0.276**, which led to the following observation.

a) The computed value of 'r' (-0.276) was found to be greater than the tabulated value of 'r' (± 0.257) with 98 degrees of freedom at 0.01 level of probability.
b) The relationship showed a negative direction between the concerened variables.
c) The relationship between two concerned variables was significant.

Hence, the concerned null hypothesis was rejected. Therefore, the researcher concluded that family size of the farmers had negatively significant relationship with their attitude towards organic cultivation of HYVs of rice.

Most of the respondent farmers had small farm size but large family. They needed more yield from their limited small farm. They had a myth that without chemical pesticide and fertilizers it is not possible to harvest better yield. Therefore, a negative attitude was formed with themselves. Thus, with the increase of family size the attitude towards organic cultivation of HYVs of rice tends to be unfavorable.

4.3.4 Farm size and attitude

Relationship between farm size of the farmers and their attitude towards organic cultivation of HYVs of rice was examined by testing the following null hypothesis "There is no relationship between farm size of the farmers and their attitude towards organic cultivation of HYVs of rice". The correlation coefficient (r) between the concerned variables was computed and found to be 0.255*, which led to the following observation.

a) The computed value of 'r' (0.255) was found to be greater than the tabulated value of 'r' (± 0.197) with 98 degrees of freedom at 0.05 level of probability.
b) The relationship showed a positive direction between the concerened variables.
c) The relationship between two concerned variables was significant.

Hence, the concerned null hypothesis was rejected. Therefore, the researcher concluded that farm size of the farmers had positively significant relationship with their attitude towards organic cultivation of HYVs of rice.

Chowdhury (2003), Haue (2003), Sadat (2002), Afrad (2002), Siddique (2002) and Mannan (2001) observed similar findings in their respective studies.

Farm is essential for any farming activities and cultivation practices. The yield from organic cultivation may be low for first few seasons. Farmers having larger farm size can take this risk of initial low yield through organic cultivation. Therefore, farmers having smaller farm size possessed unfavorable attitude towards organic cultivation of HYVs of rice and relatively larger farmers hold favorable attitude towards organic cultivation of HYVs of rice.

4.3.5 Annual income and attitude

Relationship between annual income of the farmers and their attitude towards organic cultivation of HYVs of rice was examined by testing the following null hypothesis - "There is no relationship between annual income of the farmers and their attitude towards organic cultivation of HYVs of rice". The correlation coefficient (r) between the concerned variables was computed and found to be -0.114, which led to the following observation.

a) The computed value of 'r' (-0.114) was found to be smaller than the tabulated value of 'r' (± 0.197) with 98 degrees of freedom at 0.05 level of probability.
b) The relationship showed a negative direction between the concerened variables.
c) The relationship between two concerned variables was not significant.

Hence, the concerned null hypothesis could not be rejected. Therefore, it was concluded that annual income of the farmers did not play important role on their attitude towards organic cultivation of HYVs of rice.

Haque (2006), Ahmed (2006), Siddique (2002) and Nurzaman (2000) supported these findings.

Annual income is one of the important socio-economic characteristics of the farmers but income source is confined to agriculture only. The farmers earn their livings from diversified income sources. Therefore, attitude of the farmers was not significantly dependent on their annual income.

4.3.6 Cosmopoliteness and attitude

Relationship between cosmopoliteness of the farmers and their attitude towards organic cultivation of HYVs of rice was examined by testing the following null hypothesis - "There is no relationship between cosmopoliteness of the farmers and their attitude towards organic cultivation of HYVs of rice". The correlation coefficient (r) between the concerned variables was computed and found to be - 0.428**, which led to the following observation.

a) The computed value of 'r' (0.428) was found to be greater than the tabulated value of 'r' (± 0.257) with 98 degrees of freedom at 0.01 level of probability.
b) The relationship showed a positive direction between the concerened variables.
c) The relationship between two concerned variables was significant.

Hence, the concerned null hypothesis was rejected. Therefore, the researcher concluded that cosmopoliteness of the farmers had positively significant relationship with their attitude towards organic cultivation of HYVs of rice.

Siddique (2002), Sarker (2002), Afrad (2002), Sarker (2001), Bari (2000), Paul (2000) and Noor (1995) found similar relationships in their respective studies.

Hence, from the aforesaid findings, it can be said that with the increase of cosmopoliteness, their attitude towards organic cultivation of rice has also increased. Because, greater cosmopolite nature favors to communicate with larger people which ultimately helps to get necessary information regarding organic

cultivation of HYVs of rice. In this way higher cosmopoliteness of the respondents was helpful for the formation of more favorable attitude towards organic cultivation of HYVs of rice.

4.3.7 Organizational participation and attitude

Relationship between organizational participation of the farmers and their attitude towards organic cultivation of HYVs of rice was examined by testing the following null hypothesis - "There is no relationship between organizational participation of the farmers and their attitude towards organic cultivation of HYVs of rice". The correlation coefficient (r) between the concerned variables was computed and found to be -0.145, which led to the following observation.

a) The computed value of 'r' (-0.145) was found to be smaller than the tabulated value of 'r' (± 0.197) with 98 degrees of freedom at 0.05 level of probability.
b) The relationship showed a negative direction between the concerened variables.
c) The relationship between two concerned variables was not significant.

Hence, the concerned null hypothesis was rejected. Therefore, it was concluded that organizational participation of the farmers did not play important role on their attitude towards organic cultivation of rice.

Sarker (2001) and Habib (2000) also found the similar findings in their respective studies.

Most of the farmers had low organizational participation category. The farmers having higher organizational participation were affiliated mostly with the NGOs working with micro-credit but not with the organic cultivation. Therefore, the farmers did not get required information concerning organic cultivation of rice from those organizations. Thus, organizational participation of the farmers were not significantly related with their attitude towards organic cultivation of HYVs of rice.

4.3.8 Extension media contact and attitude

Relationship between extension media contact of the farmers and their attitude towards organic cultivation of HYVs of rice was examined by testing the following null hypothesis - "There is no relationship between extension media contact of the farmers and their attitude towards organic cultivation of HYVs of rice". The correlation coefficient (r) between the concerned variables was computed and found to be 0.272**, which led to the following observation.

a) The computed value of 'r' (0.272) was found to be greater than the tabulated value of 'r' (± 0.257) with 98 degrees of freedom at 0.01 level of probability.
b) The relationship showed a positive direction between the concerened variables.
c) The relationship between two concerned variables was significant.

Hence, the concerned null hypothesis was rejected. Therefore, it was concluded that extension media contact of the respondents greatly influenced their attitude towards organic cultivation of rice.

Ahmed (2006), Siddique (2002), Ali (2002), Khan (2002), Sarker (2001) and Paul (2000) found similar relationships in their respective studies.

The findings mean that farmers with more extension media contact possessed more favorable attitude towards organic cultivation of HYVs of rice. Farmers may get information about organic cultivation through extension media contact that helps the formation of positive attitude of the farmers towards organic cultivation of rice. Thus, the findings seem to be quite logical.

4.3.9 Knowledge on organic cultivation practices and attitude

Relationship between knowledge on organic cultivation practices of the farmers and their attitude towards organic cultivation of HYVs of rice was examined by testing the following null hypothesis - "There is no relationship between knowledge on organic cultivation practices of the farmers and their attitude towards organic cultivation of HYVs of rice". The correlation coefficient (r) between the concerned

variables was computed and found to be 0.251*, which led to the following observation.

a) The computed value of 'r' (0.251) was found to be greater than the tabulated value of 'r' (± 0.197) with 98 degrees of freedom at 0.05 level of probability.
b) The relationship showed a positive direction between the concerened variables.
c) The relationship between two concerned variables was significant.

Hence, the concerned null hypothesis was rejected. Therefore, attitude towards organic cultivation of rice of the farmers was highly affected by their knowledge on organic cultivation practices.

Haque (2006), Ahmed (2006), Siddique (2002), Afrad (2002), Haue (2002), Paul (2000), Nurzaman (2000) and Sarker (2001) stated similar findings in their respective studies.

Knowledge and attitude is very closely related. Knowledge comes first and then it is followed by attitude. No doubt, organic cultivation is necessary to protect environment, preserve bio-diversity and replenish soil productivity. When the farmers achieved knowledge about these issues their attitude normally becomes favorable towards organic cultivation of HYVs of rice. In this way, the findings are quite rational.

4.3.10 Training experience on organic cultivation practices and attitude

Relationship between training experience on organic cultivation practices of the farmers and their attitude towards organic cultivation of HYVs of rice was examined by testing the following null hypothesis - "There is no relationship between training experience on organic cultivation practices of the farmers and their attitude towards organic cultivation of HYVs of rice". The correlation coefficient (r) between the concerned variables was computed and found to be 0.212*, which led to the following observation.

a) The computed value of 'r' (0.212) was found to be greater than the tabulated value of 'r' (± 0.197) with 98 degrees of freedom at 0.05 level of probability.
b) The relationship showed a positive direction between the concerened variables.
c) The relationship between two concerned variables was significant.

Hence, the concerned null hypothesis was rejected. Therefore, the researcher concluded that training experience of the farmers on organic cultivation practices is positively correlated with their attitude towards organic cultivation of HYVs of rice.

Sarker (2002), Mannan (2001), Habib (2000), Paul (2000) and Bari (2000) also found similar relationships in their respective studies.

Training improves skill, knowledge and attitude of the trainees. The farmers attending more number of training on organic cultivation practices know more than those attending less number of training. Knowledge and attitude are interrelated. Good knowledge on beneficial technology obviously fetches favorable attitude towards that technology. Thus, the findings indicate this very analogy.

4.3.11 Attitude towards use of agro-chemicals and attitude

Relationship between attitude towards use of agro-chemicals of the farmers and their attitude towards organic cultivation of HYVs of rice was examined by testing the following null hypothesis - "There is no relationship between attitude towards use of agro-chemicals of the farmers and their attitude towards organic cultivation of HYVs of rice". The correlation coefficient (r) between the concerned variables was computed and found to be -0.232*, which led to the following observation.

a) The computed value of 'r' (-0.232) was found to be greater than the tabulated value of 'r' (± 0.197) with 98 degrees of freedom at 0.05 level of probability.
b) The relationship showed a negative direction between the concerened variables.
c) The relationship between two concerned variables was significant.

Hence, the concerned null hypothesis was rejected. Thus, it was concluded that attitude towards use of agro-chemicals played significant role on their attitude towards organic cultivation of rice. Use of agro-chemicals and organic cultivation are two contradictory concepts. The farmers holding favorable attitude towards use of agro-chemicals possess unfavorable attitude towards organic cultivation of rice and vice versa. This simple analogy has been reflected in the present findings.

Rahman (2001) found similar relationship in his study.

4.4 Problem Confrontation in Practicing Organic Cultivation of HYVs of Rice

There was an open question in the interview schedule about the problems faced by the farmers in practicing organic cultivation of HYVs of rice. From the responses of the respondents the following problems have been identified (Table 4.15). The problems have been ranked according to the descending order of the number of farmers who mentioned the respective problems.

Table 4.15 Ranking of the problems in practicing organic cultivation of rice

Problems	Number of citation	Rank order
Higher amount of insect pest and diseases	67	1
Initial low yield	64	2
Lack of livestock resources for organic manure	55	3
Lack of training and knowledge	53	4
Low communication with extension workers	42	5
Lack of personal interest	36	6
Low accessibility on land due to sharecropping	24	7
Lack of employing labor and time in organic cultivation	18	8

The farmers identified eight major problems in practicing organic cultivation of HYVs of rice. The most important problem is higher amount of insect pest and diseases in organically produced crops. This may be a problem when surrounding crop fields are treated with chemical pesticides. Another important problem is the initial low yield from organic cultivation and it was ranked in the second position.

The land has been degraded due to imbalanced use of fertilizers and other agro-chemical as well as for monocropping. This is why crop yield may be lower through organic cultivation than that of through traditional fertilizer and agro-chemical based farming system. Organic cultivation requires organic sources of nutrients, such as compost, cowdung, farm yard manure etc. which come from livestock animals. But the farmers do not have adequate amount of livestock. So it was third most important problems. However, lack of training and knowledge on organic cultivation, low communication with extension workers, lack of personal interest, low accessibility of land due to sharecropping and lack of employing labor and time in organic cultivation were some other important problems identified by the farmers.

Probable solutions of the identified problems:

The farmers were also asked for the suggestions regarding probable solutions of the identified problems. Their suggestions were traced back in the interview schedules which were as follows:

- Developing organic pesticide company through private and government initiatives;
- Advising the farmers effectively by the extension workers about replenishment of soils through organic means;
- Improving credit facilities with low interest for the farmers to develop their livestock resources which would help to provide compost, cowdung etc.;
- Arranging need based effective training program on organic cultivation practices to enhance knowledge and skill of the farmers regarding organic cultivation;
- Providing sufficient extension services for motivating the farmers in organic cultivation practices;

- Initiating government support for land tenure system for the farmers so as to enable themselves about decision making regarding organic cultivation practices of the land they take as share cropping, lease and mortgage; and
- Providing campaign for organic farming through national printed and electronic media.

Chapter V

Summary, Conclusions & Recommendations

CHAPTER V

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of the Findings

The major findings of the study have been summarized in the following sections.

5.1.1 Characteristics of the farmers

5.1.1.1 Age

Age of the respondent farmers ranged from 24 to 78 years with a mean of 46.09 years and standard deviation of 14.24. Half of the farmers (50 percent) were old, 34 percent of them were middle-aged and the rest 16 percent were young. The findings indicate that majority of the farmers were old.

5.1.1.2 Education

The level of education of the farmers ranged from 0-14 years of schooling, the average being 3.35 with a standard deviation of 4.33. Among the farmers, 24 percent were illiterate, 40 percent could sign their name only, 2 percent had education at primary level, 27 percent had education at secondary level and 7 percent had education at above secondary level.

5.1.1.3 Family size

The number of family members of the respondents ranged from 3-20. The mean was 6.97 and standard deviation was 2.84. Computed data indicate that 23 percent of the farmers had small family size, 29 percent of them had medium family size and 48 percent had large family size.

5.1.1.4 Farm size

Farm size of the farmers ranged from 0.1-3.04 hectares having an average of 0.90 hectares and standard deviation of 0.66. The highest proportion (73 percent) of the farmers had small farm size while 22 percent, 3 percent and 2 percent of them had medium, marginal and large farm size respectively.

5.1.1.5 Annual income

Annual income of the farmers ranged from 42.5 to 496 thousand taka with a mean of 121.80 and standard deviation of 84.32. The highest proportion (55 percent) of the farmers had medium annual income while 43 percent and 2 percent of them had high and low annual income respectively.

5.1.1.6 Cosmopoliteness

Scores of cosmopoliteness of the farmers ranged from 4 to 18 against a possible range of 0 to 18. Among the farmers, 63 percent were moderately cosmopolite while 27 percent and 10 percent of them were highly and less cosmopolite respectively.

5.1.1.7 Organizational participation

The observed scores of organizational participation of the farmers ranged from 0 to 58 with a mean and standard deviation of 18.71 and 13.46 respectively. Among the farmers majority (69 percent) had low organizational participation while 22 percent and 9 percent of them had medium and high organizational participation respectively.

5.1.1.8 Extension media contact

The observed score of extension media contact of the farmers ranged from 8 to 36 against a possible range of 0 to 48. The average score was 18.41 with a standard deviation of 6.34. Among the farmers, more than half (55 percent) had medium contact, 41 percent of them had low contact and the rest 4 percent had high contact with different extension media contact.

5.1.1.9 Knowledge on organic cultivation practices

Scores of knowledge on organic cultivation practices of the respondents ranged from 6 to 25 against the possible range of 0 to 25, having the average score of 14.66 and standard deviation of 3.54. The highest proportion (75 percent) of the respondents had fair knowledge; while 22 percent had good and only 3 percent of them poor extent of knowledge on organic cultivation practices.

5.1.1.10 Training experience on organic cultivation practices

Scores of training experience on organic cultivation practices of the respondents ranged from 0 to 4 against the possible range of 0 to 4, having the average score of 1.85 and standard deviation of 1.43. Among the farmers 23 percent did not received any training, while 21 percent of them had low, 24 percent had medium, 12 percent had high and the rest 20 percent had great extent of training experience on organic cultivation practices.

5.1.1.11 Attitude towards use of agro-chemicals

Scores of attitude towards use of agro-chemicals of the respondents ranged from 20 to 39 against the possible range of 0 to 48, having the average score of 30.48 and standard deviation of 3.80. The highest proportions (74 percent) of the respondents were slightly favorable attitude towards use of agro-chemicals. However, 15 percent of the farmers had slightly unfavorable attitude and only 11 percent of them had moderately favorable attitude towards use of agro-chemicals.

5.1.2 Attitude of the farmers towards organic cultivation of HYVs of rice

The possible range of scores of attitude towards organic cultivation of HYVs of rice was 0 to 80 while the observed score varied from 37 to 59. The average score was 48.87 with a standard deviation of 5.19. Among the farmers, the majority (62 percent) were in slightly favorable attitude towards organic cultivation of HYVs of rice. About one-fourth (23 percent) of the farmers had slightly unfavorable attitude and only 15 percent of them had moderately favorable attitude towards organic cultivation of HYVs of rice.

5.1.3 Relationships between the selected characteristics of farmers and their attitude towards organic cultivation of HYVs of rice

Eleven selected characteristics of the farmers were considered as the independent variables of the study and their attitude towards organic cultivation of HYVs of rice constituted the dependent variables. Among the characteristics education, farm size, cosmopoliteness, extension media contact and training experience on organic cultivation practices were significantly and positively correlated with the attitude towards organic cultivation of HYVs of rice. Whereas age, family size and attitude towards use of agro-chemicals had significant and negative relationship with the attitude towards organic cultivation of HYVs of rice while rest of the characteristics namely annual income and organizational participation did not show any significant relationship with the same.

5.1.4 Problem confrontation in practicing organic cultivation of rice

The major problems in practicing organic cultivation of HYVs of rice identified by the farmers were higher amount of insect pest and diseases, initial low yield, lack of livestock resources for organic manure, lack of training and knowledge, low communication with extension workers, lack of personal interest, low accessibility on land due to sharecropping and lack of employing labor and time in organic cultivation.

5.2 Conclusions

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

1. Findings indicate that 77 percent of the respondent did not show unfavorable attitude towards organic cultivation of HYVs of rice. This is a positive figure, but there were still 23 percent of the farmers holding slightly unfavorable attitude. This portion of the farmers did not get any training on organic cultivation and they were not educated. Thus there is ample scope to improve their attitude towards organic cultivation of HYVs of rice.

2. Most of the farmers were illiterate and with the increase of education attitude of the farmers towards organic cultivation of rice tended to be more favorable. Therefore, education is very important for their attitude towards organic cultivation of HYVs of rice.

3. The farmers had mostly medium to large family and family size had negative significant relationship with their attitude towards organic cultivation of HYVs of rice. So farmers having small family size had more favorable attitude towards organic cultivation of HYVs of rice.

4. Farm size of the respondents had significant positive relationship with their attitude towards organic cultivation of HYVs of rice. Majority of the farmers had small to medium farm size. Thus farm size has become an important consideration for developing favorable attitude of the farmers towards organic cultivation of rice.

5. Cosmopoliteness of the farmers bears great significance for forming positive attitude among them as it had significant and positive relationship with their attitude towards organic cultivation of HYVs of rice. Since most the farmers were moderately cosmopolite, there is an opportunity to improve their cosmopolite nature in order to make their attitude favorable towards organic cultivation of HYVs of rice.

6. Majority of the farmers had low to medium extension media contact and it had significant positive relationship with their attitude towards organic cultivation of rice. Thus, it could be concluded that extension media contact of the farmers had significant influence on their attitude towards organic cultivation of HYVs of rice.

7. Knowledge and training experience of the farmers were low to medium. These are crucially important for the attitude of the farmers towards organic cultivation of HYVs of rice, because they had significant positive correlation with their attitude towards organic cultivation of HYVs of rice.

8. Most of the farmers had slightly unfavorable to slightly favorable attitude towards the use of agro-chemicals and it was negatively correlated with their attitude towards organic cultivation of HYVs of rice. This is a hopeful situation. This might help to popularize the organic cultivation practices of HYVs of rice among the farmers.

5.3 Recommendations

5.3.1 Recommendations for policy implication

Based on the findings and conclusions of the study, the following recommendations could be made:

1. Adult education program is needed to be implemented for the farmers so as to enable themselves to read agricultural magazines, newspapers, leaflets, booklets etc. for proper practicing of organic cultivation of HYVs of rice.

2. Small and medium sized families need immediate attention as they had relatively unfavorable attitude towards organic cultivation of HYVs of rice. Extension workers should concentrate their responsibilities to these sections of the farm families.

3. Small farmers cannot make decisions regarding the crop production because of their landlords from whom they take lands for cultivation. Government should

empower these farmers with law so that they may perform organic cultivation practices freely.

4. Government and non-government extension agencies should strengthen their responsibilities. They may arrange demonstrations, field days, rally etc. relating to organic cultivation practices. Thus communication of the farmers with extension media as well as their cosmopoliteness would be improved. Booklets and leaflets containing important information about organic farming may be distributed among the farmers in this regard.

5. Need based effective training program for the farmers concerning organic cultivation practices should be arranged by government an non-government extension organizations in order to improve their skill, knowledge as well as to develop an unfavorable attitude towards use of agro-chemicals. They should be properly informed about the harmful effect of agro-chemicals on the environment, human health, bio-diversity and soil productivity.

6. The identified problems in practicing organic cultivation of HYVs of rice need to be minimized as much as possible by the collaborative effort of government and non-government organizations.

5.3.2 Recommendations for further research

The researcher conducted a small piece of study which could not make available all information for the proper understanding of attitude of the farmers towards organic cultivation of HYVs of rice. Therefore, the following recommendations were made for further research works:

1. The present study was conducted in two villages one from each of two unions namely Mohamaya and Chhagalnaiya of Chhagalnaiya upazila of Feni district. Similar studies may be conducted in other parts of the country to generalize the findings.

2. The study was undertaken to explore the relationships of eleven selected characteristics of the farmers with their attitude towards organic cultivation

of HYVs of rice as dependent variable. Therefore, it was recommended that further studies should be conducted with other independent and dependent variables.

3. In the present study, annual income and organizational participation of the respondents had no significant relationship with their attitude towards organic cultivation of HYVs of rice. Hence, further studies are necessary to find out the relationships between the concerned variables to verify the results.

4. The present study was exclusively confined to determine the attitude of the farmers towards organic cultivation of HYVs of rice. Further studies should be conducted to determine various aspects of attitude towards organic cultivation practices concerning diversified crop enterprises.

5. Research should be undertaken particularly to identify the further factors causing hindrance to perform organic cultivation and to explore the potentialities of the farmers to overcome the hindrances.

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Appendix - A

(English version of interview schedule)

Department of Agricultural Extension & Information System
Sher-e-Bangla Agricultural University, Dhaka-1207

An interview schedule on

"Attitude of Farmers towards Organic Cultivation of HYV of Rice"

Name : ..... Sample no. .....

Village: ..... Date: .....

Union : .....

Upazila: .....

District: .....

Please answer the following questions.

1. Age: What is your present age? ..... Years

2. Education: What is your educational qualification?

a) Cannot read and write

b) Can sign only

c) Read up to class .....

d) Passed SSC /HSC /Degree /Honours /Masters

3. Family size: How many family members do you have? ..... Nos.

4. Farm size: Please mention your farm size under the following categories.

Sl. No.	Nature of land	Land size	
		Local unit	Hectare
1	Homestead (including pond)		
2	Own land under own cultivation		
3	Land taken as share cropping		
4	Land given as share cropping		
5	Land taken on lease		
6	Land given on lease		
	Total		

5. Annual income: Please mention your annual income from the following sources.

Sources of income	Income in '000' Tk.
A. Farm source	
1) Crop	
a) Rice	
(i) Aus	
(ii) Aman	
(iii) Boro	
b) Jute	
c) Wheat	
d) Sugarcane	
e) Vegetables	
f) Others (if any)	
2) Livestock	
3) Poultry	
4) Fisheries	
B. Non-farm sources	
1) Job	
2) Business	
3) Laborer	
4) Others	
Total	

6. Cosmopoliteness: Please mention the extent to which you visit the following places.

Visiting places	Extent of visit			
	Regularly	Sometimes	Rarely	Not at all
Other villages (friends/relatives/market)	8-10 times/year	4-7 times/year	1-3 times/year	0 times/year
Union parishad office	12-18 times/year	6-11 times/year	1-5 times/year	0 times/year
Own upazila sadar	8-10 times/year	4-7 times/year	1-3 times/year	0 times/year
Own district sadar	6-9 times/year	3-5 times/year	1-2 times/year	0 times/year
Other upazila/ district sadar	4-6 times/year	2-3 times/year	1 times/year	0 times/year
Capital (Dhaka)	3 times/year	2 times/year	1 times/year	0 times/year

7. Organization participation

How and how long have you been involved with the following organizations?

Sl. No.	Organization	Not involved	Years of involvement		
			General member	Executive member	Executive officer
1	Union parishad				
2	Youth development institution				
3	Village cooperatives				
4	Farmer cooperatives				
5	NGOs				
6	Cultural organization				
7	Political organization				
8	School committee				
9	Madrasa committee				
10	Masque committee				
11	Bazaar committee				
12	Village defense committee				

8. Extension media contact

Please mention the extent to which you communicate with the following extension communication media.

Communication media	Extent of contact			
	Regularly	Sometimes	Rarely	Not at all
A. Personal media				
Upazila Agriculture Officer	1 time /month	1 time /2 months	1 time /4 months	0 time /month
Additional Agriculture Officer	1 time /month	1 time /2 months	1 time /4 months	0 time /month
Agricultural Extension Officer	2 times /month	1 time /month	1 time /4 months	0 time /month
Sub-Assistant Agriculture Officer	4 times /month	1 time /month	1 time /4 months	0 time /month
Local leader	10-12 times /month	4 times /month	1 time /month	0 time /month
NGO worker	4 times /month	2 times /month	1 time /month	0 time /month
Pesticide dealer	8 times /month	2 times /month	1 time /month	0 time /month
B. Group media				
Result demonstration	1 time /year	1 time /2 years	1 time /4 years	0 time /year
Group discussion	1 time /year	1 time /2 years	1 time /4 years	0 time /year

Field day	1 time /year	1 time /2 years	1 time /4 years	0 time /year
C. Mass media				
Reading newspaper	>20 times /month	15 times /month	4 times /month	0 time /month
Reading krishikotha/ krishibarta	1 time /month	1 time /2 months	1 times /4 months	0 time /month
Agricultural fair	1 time /year	1 time /2 years	1 times /4 years	0 time /year
Reading leaflet	1 time /month	1 time /2 months	1 times /4 months	0 time /month
Listening to the radio	>20 times /month	15 times /month	4 times /month	0 time /month
Watching television	>20 times /month	15 times /month	4 times /month	0 time /month

9. Knowledge on organic cultivation practices: Please answer the following questions.

1) What is organic cultivation?

   a. Use of organic and inorganic fertilizers
   b. Use of only organic manures
   c. Use of organic manure and pesticides
   d. None of the above

2) What do you mean by organic manure?

   a. Fertilizer manufactured in industry
   b. Fertilizer prepared from organic components
   c. Fertilizer prepared from chemical compounds
   d. None of the above

3) Which of the followings is organic manure?

   a. Cowdung
   b. Compost
   c. Green manure
   d. All of the above

4) What is the benefit of organic cultivation?

   a. Soil fertility is increased and insect and pathogen attack is decreased
   b. Crop quality is improved
   c. Environmental balance and biodiversity can be preserved
   d. All of the above

5) What is the component of farm yard manure?

   a. Livestock urine and bedding materials
   b. Fleshy green plants
   c. Chemical components
   d. All of the above

6) When cowdung is applied to soil?

a. After complete decomposition
b. Raw cowdung
c. After slight decomposition
d. Immediately after collection

7) What is green manure?

a. Manure produced through mixing green plants into the soil before they are matured
b. Excreta of animals
c. Farm wastage
d. None of the above

8) What is objective of green manuring?

a. Addition of organic matter to soil
b. Supply of nitrogen to soil
c. Supply of potassium to soil
d. Supply of phosphorus to soil

9) Which is green manure?

a. Dhaincha
b. Paddy
c. Wheat
d. Jute

10) What is the usefulness of green manuring?

a. Addition of organic matter to soil
b. Preservation of soil quality
c. Supply of nutrient elements to soil
d. All of the above

11) What harmful effects of chemical fertilizers can be found unless manure is not applied to soil?

a. Soil nutrient is gradually decreased
b. Soil texture is damaged
c. Soil fertility is decreased
d. All of the above

12) What if chemical pesticides are inappropriately applied?

a. Human may be affected
b. Beneficial insects may be died
c. Livestock animals may be died
d. All of the above

13) Which is organic pesticide?

a. Diazinon
b. Juice of neem leaf
c. Basudin
d. Malathion

14) Which is beneficial insect?

a. Brown plant hopper
b. Rice hispa
c. Spider
d. Gall midge

15) Which is rice pest?

a. Hispa
b. Leaf cutting caterpillar
c. Aphid
d. None of the above

16) Which is harmful insect of rice?

a. Rice hispa
b. Rice bug
c. Ear cutting caterpillar
d. All of the above

17) Which is beneficial insect of rice?

a. Rice hispa
b. Grasshopper
c. Leaf cutting caterpillar
d. Leaf roller

18) Which animal helps control insect pests?

a. Predator
b. Spider
c. Bird and frog
d. All of the above

19) Which is HYV of rice?

a. Dharial
b. BRRI dhan 29
c. Kotoktara
d. Nigershail

20) Which is a rice disease?

a. Tungru
b. Brown streak
c. Ufra
d. All of the above

21) Which is the harmful effect of chemical pesticides?

a. Harmful insects regenerate due to beneficial insects become died
b. Harmful effect on food is found
c. Environmental pollution e.g. air pollution, water pollution etc. may happen
d. All of the above

22) Which organic manure can be used as substitute of urea?

a. Cowdung
b. Ash
c. Bone meal
d. All of the above

23) Which HYV of rice can be grown in all seasons?

a. BR 3
b. BR 9
c. BR 11
d. BRRI dhan 32

24) How does ploughing help control insect pests?

a. After ploughing insect pests come on the surface of the soil which become weak for sunshine and eaten by birds
b. Through preserving beneficial insects
c. Insect can be controlled through flood irrigation
d. Land ploughing do not help control insect pests

25) How can you control insect pest without pesticides?

a. Posting bamboo stick in the field for bird sitting
b. Using light trap
c. Using hand net
d. All of the above

10. Training experience on organic cultivation practices

Did you participate in any training program on organic cultivation on HYV rice?

Yes ..... No .....

If yes, how much times did you participate?

Number of participation	Score
≥10 times	4
6-9 times	3
3-5 times	2
1-2 times	1
0 times	0

11. Attitude towards use of agro-chemicals

Please express your opinion regarding the following statements.

Sl. No.	Statements	Opinion				
		Strongly agree	Agree	No opinion	Disagree	Strongly disagree
1 -	Soil fertility is not hampered due to using only chemical fertilizer for long time					
2 +	Chemical fertilizers destroy earth worm like beneficial soil microbes					
3 +	Use of excessive nitrogen makes the plants more susceptible to insect pests and diseases					
4 -	There is no alternative of chemical fertilizers for higher yield					
5 -	Production cost increase through using chemical fertilizers					
6 +	Aquatic animals become threatened through extensive application of chemical pesticides					
7 +	Many birds and other natural predator animals are getting extinct due use of agro-chemicals					
8 -	Pesticide is not harmful to earth worm					
9 -	It is essential to use chemical pesticide to get higher yield					
10 +	Pesticide application is harmful for the person who applies					
11 +	Chemical fertilizers deteriorate taste and flavor of fruits and crops					
12 -	Soil fertility is decreased for the use of pesticides					

12. Attitude towards organic cultivation of HYVs of rice

Please express your opinion regarding the following statements.

Sl. No.	Statements	Opinion				
		Strongly agree	Agree	No opinion	Disagree	Strongly disagree
1 +	Organic cultivation of HYVs of rice preserves environment and biodiversity					
2 -	It is difficult to apply the knowledge and skill of organic cultivation of HYVs of rice					
3 +	Organic cultivation of HYVs of rice helps preserve beneficial insects, fish, frog, earth worm and soil fertility					
4 -	Yield of HYVs of rice is low for only use of organic manure; this is why farmers do not adopt organic cultivation of HYVs of rice					
5 +	It is urgent to practice organic cultivation of HYVs of rice to create awareness among farmers regarding the harmful effects of agro-chemicals					
6 -	Organic manure and pesticide are not available; for these reason use of these organic manure and pesticide are not increasing					
7 +	Quality of rice is better if produced through organic cultivation					
8 -	It is not right that all farmers are not adopting organic cultivation					
9 +	There is no harmful effects on the crops produced through organic cultivation; therefore those are not harmful for health					

Sl. No.	Statements	Opinion				
		Strongly agree	Agree	No opinion	Disagree	Strongly disagree
10 -	Crop yield is low in organic cultivation					
11 +	Cost of organic cultivation of HYVs of rice is low					
12 -	Organic cultivation of HYVs of rice is harmful for environment					
13 +	Organic cultivation of HYVs of rice reduces environmental pollution; therefore outbreak of diseases is minimized					
14 -	Organic cultivation of HYVs of rice hampers other activities of the farmers					
15 +	There is low attack of insect pest and diseases in organic cultivation of HYVs of rice					
16 -	There is low probability of success in organic cultivation for illiterate farmers					
17 +	I am interested in organic cultivation of HYVs of rice because it is less risky for the farmers					
18 -	Hard labor is needed to grow crop through organic cultivation					
19 +	It is necessary to practice organic cultivation to preserve environment and natural balance					
20 -	I am not interested in organic cultivation of HYVs of rice because it is less profitable than inorganic cultivation					

13. Problem confrontation

What are the problems you face in practicing organic cultivation of HYVs of rice?

1)

2)

3)

4)

5)

14. Suggestions of overcome the problems

What are your suggestions to overcome the problems of practicing organic cultivation of HYVs of rice?

1)

2)

3)

4)

5)

Thank you for your kind cooperation.

Signature of the interviewer
Date: .....

Appendix - B

Correlation matrix of the dependent and independent variables

Variables	Age	Education	Family size	Farm size	Annual income	Cosmopoliteness	Organizational participation	Extension media contact	Knowledge on organic cultivation practices	Training experience on organic cultivation practices	Attitude towards use of agro-chemicals	Attitude towards organic cultivation of HYVs of rice
Age	1	-0.451**	0.556**	-0.047	0.377**	-0.308**	0.235*	-0.243*	-0.082	0.109	0.185	-0.324**
Education	-0.451**	1	-0.200*	0.395**	0.062	0.265**	0.072	0.432**	0.434**	-0.159	-0.237*	0.271**
Family size	0.556**	-0.200*	1	0.137	0.613**	-0.068	-0.020	-0.060	0.032	0.026	0.357**	-0.276**
Farm size	-0.047	0.395**	0.137	1	0.438**	0.144	0.066	0.369**	0.342**	-0.051	0.034	0.255*
Annual income	0.377**	0.062	0.613**	0.438**	1	0.050	0.066	0.196	0.206*	-0.045	0.151	-0.114
Cosmopoliteness	-0.308**	0.265**	-0.068	0.144	0.050	1	-0.056	0.485**	0.112	0.128	-0.298**	0.428**
Organizational participation	0.235*	0.072	-0.020	0.066	0.066	-0.056	1	0.307**	0.215*	-0.110	0.082	-0.145
Extension media contact	-0.243*	0.432**	-0.060	0.369**	0.196	0.485**	0.307**	1	0.460**	0.001	-0.169	0.272**
Knowledge on organic cultivation practices	-0.082	0.434**	0.032	0.342**	0.206*	0.112	0.215*	0.460**	1	0.012	-0.265**	0.251*
Training experience on organic cultivation practices	0.109	-0.159	0.026	-0.051	-0.045	0.128	-0.110	0.001	0.012	1	-0.310**	0.212*
Attitude towards use of agro-chemicals	0.185	-0.237*	0.357**	0.034	0.151	-0.298**	0.082	-0.169	-0.265**	-0.310**	1	-0.232*
Attitude towards organic cultivation of HYVs of rice	-0.324**	0.271**	-0.276**	0.255*	-0.114	0.428**	-0.145	0.272**	0.251*	0.212*	-0.232*	1

N =100, Degrees of freedom = 98
Table value at 5 percent level = 0.197
Table value at 1 percent level = 0.257

* Correlation is significant at 0.05 level of probability
* * Correlation is significant at 0.01 level of probability