

**PERCEPTION OF FARMERS ABOUT ORGANIC FARMING
PRACTICES IN DINAJPUR DISTRICT**

A Thesis
By

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MASTER OF SCIENCE
IN
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Department of Agricultural Extension
Hajee Mohammad Danesh Science and Technology University
Dinajpur

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Student No. 1805305
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TABLE OF CONTENTS

Chapter	Contents	Page
	ACKNOWLEDGEMENTS	iv
	TABLE OF CONTENTS	v
	LIST OF TABLES	viii
	LIST OF FIGURES	ix
	LIST OF APPENDICES	ix
	ABSTRACT	x
1	INTRODUCTION	1
1.1	General Background	1
1.2	Statement of the Problem	2
1.3	Objectives of the Study	3
1.4	Importance of the Study	4
1.5	Assumptions of the Study	4
1.6	Scope of the Study	5
1.7	Limitations of the Study	5
1.8	Definition of Important Terms	6
2	REVIEW OF LITERATURE	7
2.1	Concept and Meaning about Important Terms	7
2.1.1	Perception	7
2.1.2	Definition of perception	8
2.1.3	Factors influencing perception	8
2.1.4	Organic farming	9
2.1.5	Organic agriculture	9
2.2	General Review on Perception of Farmers about Organic Farming Practices	10
2.3	Reviews on Relationship between the Selected Characteristics of the Farmers and their Perception	12
2.3.1	Age and perception	12
2.3.2	Education and perception	13
2.3.3	Farm size and perception	14
2.3.4	Farming experience and perception	14
2.3.5	Annual income and perception	15
2.3.6	Training experience and perception	15
2.3.7	Extension media contact and perception	16
2.3.8	Risk orientation and perception	16
2.3.9	Innovativeness and perception	16
2.4	Conceptual Framework of the Study	16

TABLE OF CONTENTS (Contd.)

Chapter	Contents	Page
3	METHODOLOGY	19
3.1	Locale of the Study	19
3.2	Population and Sample of the Study	19
3.3	Research Instrument	22
3.4	Measurements of the Selected Characteristics and the Focus Issue	22
3.4.1	Measurement of selected characteristics	22
3.4.1.1	Age	22
3.4.1.2	Education	22
3.4.1.3	Farm size	23
3.4.1.4	Farming experience	23
3.4.1.5	Annual income	23
3.4.1.6	Training experience	23
3.4.1.7	Extension media contact	24
3.4.1.8	Risk orientation	24
3.4.1.9	Innovativeness	24
3.4.2	Measurement of focus issue	25
3.5	Problem Confrontation Index	25
3.6	Collection of Data	26
3.7	Data Processing	26
3.8	Statement of Hypothesis	26
3.8.1	Research hypothesis	26
3.8.2	Null hypothesis	27
3.9	Statistical Procedures	27
4	RESULTS AND DISCUSSION	28
4.1	Perception of Farmers about Organic Farming Practices	28
4.1.1	Individual item wise perception of farmers	28
4.1.2	Overall perception of farmers about organic farming practices	29
4.2	Selected Characteristics of the Farmers	30
4.2.1	Age	30

TABLE OF CONTENTS (Contd.)

Chapter	Contents	Page
4.2.2	Education	32
4.2.3	Farm size	32
4.2.4	Farming experience	32
4.2.5	Annual income	33
4.2.6	Training experience	33
4.2.7	Extension media contact	34
4.2.8	Risk orientation	34
4.2.9	Innovativeness	34
4.3	Relationships between the Selected Characteristics of the Farmers and their Perception about Organic Farming Practices	35
4.3.1	Age and perception	35
4.3.2	Education and perception	36
4.3.3	Farm size and perception	36
4.3.4	Farming experience and perception	36
4.3.5	Annual income and perception	37
4.3.6	Training experience and perception	37
4.3.7	Extension media contact and perception	37
4.3.8	Risk orientation and perception	38
4.3.9	Innovativeness and perception	38
4.4	Problem Confrontation by the Farmers in Organic Farming	38
4.4.1	Overall problems faced by the farmers	38
4.4.2	Individual problem wise distribution of the farmers	39
5	SUMMARY, CONCLUSIONS AND RECOMMENDATIONS	41
5.1	Summary of the Findings	41
5.1.1	Perception of farmers about organic farming practices	41
5.1.2	Selected characteristics of the farmers	41
5.1.3	Relationships between selected characteristics of the farmers and their perception about organic farming practices	42
5.1.4	Problems faced by the farmers about organic farming practices	42
5.2	Conclusions	42
5.3	Recommendations	43

TABLE OF CONTENTS (Contd.)

Chapter	Contents	Page
5.3.1	Recommendations for policy implications	43
5.3.2	Recommendations for further study	44
REFERENCES		45
APPENDICES		50

LIST OF TABLES

Table No.	Table Titles	Page
3.1	Village wise distribution of the population and sample	19
4.1	Statement wise perception about organic farming practices	28
4.2	Distribution of the respondents according to their overall perception of organic farming	29
4.3	Selected characteristics of the farmers (n=98)	31
4.4	Relationships between the selected characteristics and focus issue	35
4.5	Categorization of the farmers according to their problems faced in organic farming practices	39
4.6	Rank order of problems faced by the farmers in organic farming practices (n=98)	39

LIST OF FIGURES		
Figure No.	Figure Titles	Page
2.1	Conceptual framework of the study	18
3.1	Map of Dinajpur district including its upazilas (Bangladesh inset)	20
3.2	Map of Birganj upazila showing the study area	21

LIST OF APPENDICES		
Sl. No.	APPENDIX	Page
A	An interview schedule	50
B	Correlation matrix of the focus issue and selected characteristics of the farmers	55

ABSTRACT

The purposes of the study were to know the perception of farmers about organic farming practices, to determine the relationships between the selected characteristics of the farmers and their perception about organic farming practices and to determine the problems faced by the farmers about organic farming practices. Random sampling technique was used for this study. A sample of 98 farmers from a population of 979 from two selected villages of Birganj upazila under Dinajpur district were selected. Data were collected during 1 September to 30 September 2019 by using pre-tested structured interview schedule. Nine characteristics of the farmers were selected for this study, while the perception of farmers about organic farming practices was the focus issue. Different standard statistical techniques were used to measure the selected characteristics and rating scale was used to measure the focus issue. Eighteen statements on organic farming practices were used for the focus issue. There were four options to response a statement, namely 'high', 'moderate', 'somewhat' and 'not at all' with a corresponding score of 3, 2, 1 and 0, respectively. The result indicated that 57.14 percent of the farmers had medium perception while 27.55 percent of them had low perception and 15.31 percent had high perception about organic farming practices. In contrast to individual statements it is evident that out of 18 statements 'health consciousness among people will enhance the demand of organic products' ranked 1st and 'organic foods are completely safe to eat' had the last ranked. Education, farm size, training experience, extension media contact, risk orientation and innovativeness of the farmers showed positively significant relationships with perception about organic farming practices while age, farming experience and annual income fail to show any relationships with perception about organic farming practices. The most serious problem faced by the farmers was 'management of pest and insect damage is difficult in organic farming' while the second problem faced by them was 'improper community movement for the promotion of organic farming' and the last one was 'poor contact of extension workers with farmers'.

CHAPTER 1

INTRODUCTION

1.1 General Background

Organic farming is an approach for maintaining sustainable production through balanced utilization of natural resources. Organic farming is a modern and a sustainable form of agriculture that provides consumers fresh natural farm products. It emphasizes the usage of renewable natural resources and their recycling (Emsley, 2001). The farmers of Bangladesh are mostly dependent on pesticides in the endeavor to control the pests. Use of pesticides is not only expensive but also leads to a number of consequences like elimination of natural defenders, out breaks of resistant pests against pesticides, resulting the increase of crop loses (Saha *et al.*, 1997). Organic agriculture offers an exclusive amalgamation of environment-friendly practices, which require low external inputs, thereby contributing to increased food availability. Organic farming has a very positive influence especially on birds, insects, weeds, wildlife, and soil flora and fauna.

Organic farming has engrossed much attention in current decades as a way to maintain farming production. At the same time, it has played an important role in dealing with the environmental harms rooted in traditional agricultural techniques. Organic farming not only produces fine and healthy food products but also improves the fertility and quality of soil (Isaacs, 2012). Funtilana has described organic agriculture as: “Organic Agriculture is giving back to the environment what was taken from it” (Singh *et al.*, 2012). Organic food is grown and processed without using any synthetic fertilizers or pesticides (insecticides, herbicides, and/or fungicides), plant growth regulators, such as hormones, livestock antibiotics and GM organisms, and human sewage sludge (John, 2011).

Organic farming is one of the options to improve the natural resources and even improving of the degraded land. As the natural resources of any country the national treasures should take under consideration, we need to proper planning to make best use of them. Therefore, suitable management practices are urgently needed to preserve the production potential of agricultural lands (Patel *et al.*, 2015).

Bangladesh is an agrarian country in South-East Asia with a population of around 163.65 million, of which 24.3 percent live below the poverty line (BER, 2019). The major source of livelihood is agriculture. The agriculture sector of Bangladesh is the most important

sector in terms of sustaining growth and reducing poverty. However, a lack of adequate nutrient supply, the depletion of organic matter in soils, and the soil erosion is major obstacle to the sustainable improvements in agricultural production (MOA, 2008). The use of pesticides increased from 7,350 metric tons in 1991 to 16,200 metric tons in 2001 (MOA, 2005), more than doubling over the course of a decade. Among this huge amount of pesticides, insecticides accounted for about 90 percent, and are generally used for vegetables and *boro* rice (UNDP, 2006). This huge consumption of chemical fertilizers and pesticides applied to 7.32 million hectares of cultivated land (BBS, 2008) represents an over-use of agro-chemicals and a waste of foreign currency reserves, as the country imports most of the applied agro-chemicals, except for urea fertilizers.

Organic farming is one such concept that can reduce the harmful impacts of agro-chemicals, and is considered by many scientists to be the best form of agriculture in terms of maximizing cost-effectiveness and minimizing pollution (Christian *et al.*, 2005). In Bangladesh the conventional farming is capital intensive, which requires more manufactured inputs and energy as compared to knowledge and labor-intensive organic farming. Organic agriculture uses energy more competently than conventional agriculture. As compared to conventional agriculture, organic farming produces cost effective food products, free of synthetic fertilizers and pesticides. It also provides employment opportunities and economic benefits to local communities. Farmers are also practicing organic farming individual level. PROSHIKA a renowned NGO in Bangladesh is promoting organic agriculture as a part of its mission to develop a sustainable alternative agro-system and popularize organic agricultural practices. In 1978 PROSHIKA commenced an action research to produce safe and poison-free food and encourage its group members and other interested people to adopt organic agricultural practices (Sarker and Itohara, 2009). Rahman and Mikuni (1999) showed that farmers possessed favorable perception towards sustainable agriculture issues in Bangladesh.

1.2 Statement of the Problem

During the last decade organic farming has gained international recognition as a viable option to conventional farming. Farmers practice organic farming by default or in absence of resources in many parts of the country. The organic farming movement is spreading gradually in almost all states of the country. In spite of these growing opportunities in this

field there have been little efforts in research front to reorient the research agenda to create database on various aspects of organic farming. In organic farming, the foremost challenges are management of nutrients and increase of yield

Progress of organic farming practices has been very slow in many regions of Bangladesh, even though the country has great potential in this regard because of surplus labour, huge crop diversity and considerable investment by Proshika and other NGOs since the 1980s (Sarker and Itohara, 2009). Thus, the present study was carried out to know the “Perception of farmers about organic farming practices in Dinajpur district.” Considering the above facts the following research questions were put forward:

1. What is the perception of farmers about organic farming practices?
2. Is there any relationship between the farmers selected characteristics with their perception about organic farming practices?
3. What are the problems that faced by the farmers about organic farming practices?

1.3 Objectives of the Study

The overall objective of the present study is to determine farmers’ perception about organic farming practices. To fulfill the overall objectives, the following specific objectives will be addressed:

1. To know the perception of farmers about organic farming practices.
2. To determine the relationships between the selected characteristics of the farmers and their perception about organic farming practices. The selected characteristics are:
 - i. Age
 - ii. Education
 - iii. Farm size
 - iv. Farming experience
 - v. Annual income
 - vi. Training experience
 - vii. Extension media contact
 - viii. Risk orientation, and
 - ix. Innovativeness
3. To determine the problems faced by the farmers about organic farming practices.

1.4 Importance of the Study

Socio-economic condition of the farmers has been a matter of concern from last few decades. It has been reported that many farmers willing to quite farming. But now a day Bangladesh is one of the agricultural based nations with the majority of the population pertaining to agricultural sector. The Government of Bangladesh (GOB) is committed to meeting the Sustainable Development Goals (SDGs) by halving the level of extreme poverty, protecting the environment, and promoting a global partnership in development by 2015. Organic production is a holistic system designed to optimize the productivity and fitness of diverse communities within the agro-ecosystem, including soil organisms, plants, livestock and people. Organic farming is sustainable practice to empower farmers and upgrade their socio-economic condition which is more or less depending on their productivity and profitability too. The aims of organic farming are to protect the environment, by using organic management practices that do not have the adverse effects of conventional practices and the health of consumers, by the provision of organic products. Therefore, this study was carried to know the perception of farmers about organic farming practices.

1.5 Assumptions of the Study

According to Hasan *et al.* (2018) assumptions are the ideas considered as the true, somewhat out of the research control but if disappear, the study would become irrelevant. In this study, the following assumptions were taken into consideration while undertaking this study.

1. The respondents selected for this study were competent enough to provide proper responses to the questions included in the interview schedule.
2. The views and opinions furnished by the respondents were the representative views and opinion of all the farmers of the study area.
3. The responses furnished by the respondents were valid and reliable.
4. The researcher acting as the interviewer was well adjusted to the society and environment of the study area. Hence, the data collected from the respondents were free from any bias.
5. The findings of the study will have general implications to other parts of the country with similar personal, socio-economic and cultural conditions of the study area.
6. Data were normally and independently distributed.

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

1.6 Scope of the Study

The present study is an effort to bring out a clear picture of the existing situation with respect to perception and practices followed in organic farming. Therefore, the results of the present study would be of at most importance to the planners, policy makers and extension workers to take stock of the situation and to design that would be in line with the existing needs of the farmers and at the same time protecting the environment.

1.7 Limitations of the Study

The present study was conducted to have an understanding on perception of farmers about organic farming practices. But considering time, money and necessary resources available, the study was conducted with the following limitations:

1. The study was confined in two villages of Nijpara union of Birganj upazila under Dinajpur district.
2. Characteristics of farmers were many and varied but in the present study, only nine characteristics were selected for investigation.
3. The study was confined mainly to farmers' perception about organic farming practices.
4. The investigator depends on the data furnished by the selected farmers during their interview.
5. Complete findings of the study are based on past experiences, memories and verbally expressed opinions of the farmers.
6. The study was carried on limited number (98) of farmers.
7. In some cases, the researcher faced unexpected interference from the over interested side talkers while collecting data from target respondents. However, the researcher tried to overcome the problems as far as possible with sufficient tact, skill and humour.
8. All necessary efforts were made to select and use of standardized tools and techniques of data collection and analysis of data, yet their accuracy may not guaranteed.

1.8 Definition of Important Terms

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

Respondents: Randomly selected people considered to be representative of the population are known as respondents. They are the people from whom a social research worker usually gets most data required for his research. In this study the respondents were the farmers.

Age: Age of a respondent defined as the span of his life and is measured by the number of years from his birth to the time of interviewing.

Educational qualification: Educational qualification referred to the development of desirable knowledge, skill and attitude in an individual through the experience of reading, writing, observation and relative activities.

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

Farming experience: It refers to the total number of years that a respondent had received training in his entire life from any organizations under different training programs.

Annual income: Annual income refers to the cumulative earnings of a respondent and family members debited from farming, business, services etc. in a year.

Training experience: Training experience as participating days in training on various aspects of activities organized by the extension agencies till to interviewing.

Risk orientation: Risk orientation has been described the degree to which a farmer is oriented towards encountering risk and uncertainty in adopting new ideas.

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

Innovativeness: It is the degree to which an individual or other unit of adoption is relatively earlier in adopting new ideas than other members of a social system (Rogers, 2003).

CHAPTER 2

REVIEW OF LITERATURE

Research is a continuous process. For any scientific investigation previous findings provide basis to the research. The review of literature is one of the important aspects in the research process. It helps the researcher to keep his work going in right and appropriate direction. In this Chapter, reviews of the related literature to the past studies conducted by different researchers related to the present study are presented. The reviews are conveniently presented based on the objectives of the study. Review of literature helps to know the previous research work done in that area and acts as a torch for the new researchers. The researcher intensively searched internet, journals and thesis from different sources of home and abroad. However, an attempt has been made to review the literature, which are meaningful and have relevance to this study.

2.1 Concept and Meaning about Important Terms

2.1.1 Perception

Our basic awareness, experience and interpretation of the world depend on perception. The reason for studying perception may be divided into two broad categories (Bornstein, 1984). The first is that, even on causal introspection, our everyday experience raises a series of curious about perception. How to properties or objects or events come to be perceived as stable amidst continuous environmental flux, and how to they come to be invested with meaning. The second reason is epistemological, impelled by the question of the origins of human knowledge. Again the extreme views have been put forward by empiricists, who assert that all knowledge comes through the senses and grows by ways of experience, and by nativities, who reason that some kinds of knowledge could not possible rely on experience or be learned, and thus human enter the world with a sensory apparatus equipped to order and organize rudimentary knowledge.

Perceptual study, promises to reveal how much and what kind of knowledge is inborn in humans, how much and what kind of knowledge has to be learned. Perception is the necessary first step in information gathering about the environment; understanding

perception is therefore important even from the easily stage of life. However, the concept and related issues of perception are mentioned below:

2.1.2 Definition of perception

Several experts defined perception in different ways these are as follows:

According to McGraw-Hill (2004) perception is the process of registering sensory stimuli as meaningful experience. The differences between sensation and perception have varied according to how the terms are defined. A common distinction is that sensations are simple sensory experiences, while perceptions are complex constructions of simple elements joined through association. Another thing is that perception is more subject to the influence of learning. Though hearing, smell, touch, and taste perceptions have all been explored, vision has received the most attention. In philosophy, psychology, and cognitive science, perception is the process of attaining awareness or understanding of sensory information.

2.1.3 Factors influencing perception

An individual perception is influenced by several factors. Morgan (1956) told several factors by which perception is influenced, some of these are given below:

- We perceived best what we attended to.
- In general, the larger the stimulus and the more intense it is, the more it commands attention and the better it is perceived.
- Perception also tends to fill in gaps, so that a person can see the whole object when some of its parts are missing.
- When the objects of perception are ambiguous, the perceived trend to give them more meaning. What he perceived may be determined to some extent by his own needs and personal values.
- Motivation affects perception. We trend to perceive that we expect to perceive and what we want to perceive.
- It is selective, so that we attend at any part of sensory stimulation. Individuals perceive only the characteristics or qualities of the objects that satisfy their needs and values.
- Both learning and innate factors contribute to our abilities to perceive. Perceptions are also modified greatly by learning.
- The perception is a stimulus is more effective than a stationary stimulus presented only once.

- An object takes new meaning in experience. These meanings affect perceptions. Society and culture indirectly affect perception by fashioning our motives, prejudices and social values.
- Perceptions frequently involve the co-operation of different senses.

On the contrary, Mohiuddin (1993) mentioned several factors that influenced the perception of an individual. These are selectivity, feeling, past experience, influence of suggestion, expectation, response deposition, interest, emotion, and situation.

2.1.4 Organic farming

Organic farming is a production management system excluding of all synthetic off-farm inputs but rely upon on-farm agronomic, biological and mechanical methods like crop rotations, crop residues, animal manures, off-farm organic waste, mineral grade rock additives and biological system of nutrient mobilization and plant protection, etc which promotes and enhances biodiversity, biological cycles and agro-ecosystem health.

Modern agriculture depends on high input of chemical fertilizer and pesticides for crop production. Although such technology-based agricultural practice has increased agricultural productivity and abundance, the resulting ecological and economical impacts have not always been positive. Environmental pollution and food safety due to chemical contamination have become a great concern worldwide. In order to cope with this problem, the Food and Agriculture Organization (FAO, 1999) proposed ‘The World Food Summit Plan of Action (1999)’ in recognition of the importance of developing alternative sustainable agriculture practices such as organic farming. The goal of the Action Plan was to reduce environmental degradation while creating income from the farming operation.

2.1.5 Organic agriculture

Organic agriculture has its root in traditional farming practices developed over the millennia all over the world. The modern approach to organic agriculture emerged in the late 1960s, when farmer and consumers began to recognize that the enormous amount of chemicals being used in both crop and animal production could have dire consequences for the earth and its people (FAO, 2003). Organic agriculture is an integrated farming system which involves both technical aspects (soil, agronomy, weed, and pest management) and economic aspects (input, output, and marketing) as well as human health.

IFOAM interpret the term ‘Organic’ with ‘of plant or animal origin’. It also refers to the organizational aspect of organism. Organic farming follows the principle of sustainability.

Sustainability in agriculture refers to successful resource management that maintain natural resources and environment quality and assures food security and satisfaction of human needs (Eyhorn *et al.*, 2002).

In organic agriculture a wide variety of organic resources are used. Organic resources include: farm wastes, animal manure compost and green manure, residues from processing of plant and animal products, town waste and soil inoculants e.g. living microorganisms, effective microorganisms. Common crop residues and animal manures are utilized as organic resources. Large quantities of crop residues and animal manure are applied as fixed carbon to soils in many organic systems. The release of the nutrient from the organic matter and thus nutrient availability for plant plays a major role in these systems (IFA, 1996-2004).

2.2 General Review on Perception of Farmers about Organic Farming Practices

Ali (2018) reported that almost three-fifths (61.10 percent) of the farmers had medium perception while 20.00 percent of them had low perception and 18.90 percent had high perception of maize as a potential crop for climate change adaption.

Oyedele *et al.* (2018) in their study observed that majority of the farmers had favorable perception towards organic farming in the study area the study also showed that the respondents practiced integrated organic farming with 76.7 percent while only 23.3 percent of the farmers practiced pure organic farming.

Philip and Sivaraj (2018) in their study found that half (50.55 percent) of the certified organic farmers had high level of perception on eco-friendly conservation practices followed by low (26.11 percent) and medium (23.34 percent). More than half (53.33 percent) of the certified organic farmers had medium level of perception on use of organic manures followed by high (31.67 percent) and low (15.00 percent) levels of perception on use of organic manures. Majority (59.44 percent) of the certified organic farmers had medium level of perception on profitability of organic farming, followed by high (23.89 percent) and low (16.67 percent) level of perception on profitability of organic farming. Majority of the certified organic farmers had medium level of perception on environmental degradation followed by high (29.45 percent) and only 10.00 percent of the certified organic farmers fell under low level category.

Prajapati *et al.* (2018) in their study observed that majority of the respondents were having medium level of perception of organic farming. Majority of the respondents perceived that

future scope of sustainable agriculture will depend on organic farming and increased health consciousness among people will enhance the demand of organic farming and consumer may prefer to pay higher prices for organic products.

Rahman (2018) reported that highest proportion (61.90 percent) of the respondents had medium perception while 25.72 percent had low perception and only 12.38 percent had high perception about climate change.

Iyagba and Ekpete (2017) reported that majority (72.5 percent) of the teachers have been in the teaching profession for less than 10 years and most of them grew up in the semi urban/ urban setting, 40 percent aware of organic farming, 10 percent and 52.5 percent of the respondents agreed having high and moderate perception of organic farming respectively and seldom practice it. A greater percentage (85.9 percent) of the teachers agreed to practice organic farming, most planted crop in the schools is cassava (38.8 percent), majorly practiced intercropping and 31.2 percent of the respondents unwilling to inform their co-teachers of the benefits of organic farming. The respondents also accepted the need for elaborate knowledge and in-service training on organic farming, inadequate agricultural science curriculum to teach organic farming as well as better facilities and teaching methods.

Ashari *et al.* (2016) in their study found that the perceived usefulness, environmental concern, and attitude positively and significantly affect intention to adopt rice organic farming from both of semi and conventional farmers. Meanwhile, the perceived risk influences negatively on intention to adopt organic rice farming merely for conventional farmers. It is concluded that the perceptions and attitude have significant effect on intention. Therefore, efforts should be undertaken to raise positive farmers' perception and attitude. Farmers also need supports from several parties to encourage them to involve in organic rice farming.

Berhane *et al.* (2015) in their study found that out of the total respondents practicing organic farming, (24) preferred organic farming; whereas (14) of those who practice conventional farming preferred organic farming and the remaining (11) preferred the conventional farming system. In most of the attributes, organic and conventional farming respondents have the same perception on organic farming, that is, they agreed that organic farms resist shortage of rain fall, store more moisture in the soil, are good habitat for soil

macro organisms and, organic straw is preferred by animals for feed as compared to that of the conventional farming system.

Patidar and Patidar (2015) in their study revealed that 67 percent of respondents have positive perception towards organic farming. On the other hand, 5 out of 9 variables selected, affects respondents perception towards organic farming.

Pinthukas (2015) conducted a study on farmers' perception in organic vegetable production for sustainable livelihood in Chiang Mai Province and found that many of the farmers have good practices like soil management, using trap methods for controlling pests, sequential cropping etc. but in some important cases, farmers do not use good practice such as using biological insects for predation on other insect pests, intercropping or mixed cropping, using irrigation systems, and rouging to obtain good yields.

Gido *et al.* (2013) in their study reported that application of green manure and cultivation of legume crops were perceived to improve soil fertility and soil structure. Further, agrochemicals were perceived to have a negative effect on both human and animal health and their over-application leads to development of pest resistance to pesticides.

Osei *et al.* (2013) in their study reported that 90.80 percent of the respondents preferred organic to conventional products. The primary reason for the preference was the belief that organic products are healthier while 73.52 percent said the healthiness was attributable to the fact that organic foods had little or no chemical residues.

2.3 Reviews on Relationship between the Selected Characteristics of the Farmers and their Perception

2.3.1 Age and perception

Murmu (2019) reported that age of the farmers did not show any significant relationship with their perception on vermicompost.

Rahman (2018) revealed that age was fail to show any relationship with perception of climate change of the farmers.

Parganiha (2016) concluded that age was positively significant with perception of farmers about climate change.

Pinthukas (2015) reported that age significantly contributed to farmers' perception on organic vegetable production.

Patidar and Patidar (2015) reported that age significantly contributed to perception of farmers towards organic farming.

Sultana (2015) observed that age of the farmers had positive and significant correlation with their perception regarding climate change.

Islam (2014) concluded that the age of the respondents did not show any significant relationship with their perception.

Gido *et al.* (2013) reported that age had significantly contributed to perception of maize farmers towards organic soil management practices.

Adeola (2012) reported that age of the farmers had significant influence with their perception.

Ullah (2011) mentioned that there was no significant relationship between the age of the farmers and their perception of one house one farm approach.

2.3.2 Education and perception

Murmu (2019) concluded that educational qualification showed significant and positive relationship with farmers' perception on vermicompost.

Rahman (2018) reported that educational qualification showed significant and positive relationship with farmers' perception of climate change.

Parganiha (2016) concluded that educational qualification was positively significant with perception of farmers about climate change.

Pinthukas (2015) reported that education level significantly contributed to farmers' perception on organic vegetable production.

Patidar and Patidar (2015) reported that educational qualification significantly contributed to perception of farmers towards organic farming.

Sultana (2015) observed that level of education of the farmers had positive and significant correlation with their perception regarding climate change.

Islam (2014) concluded that education of the farmer had significant positive relationship with their perception on the effect of IPM practices.

Gido *et al.* (2013) reported that educational qualification had significantly contributed to perception of maize farmers towards organic soil management practices.

Adeola (2012) revealed that education had a significant influence on the farmers' perception.

Kabir and Rainis (2012) found that education had a significant influence on the farmers' perception

Islam (2011) concluded that education of the farmer had significant positive relationship with their perception of sustainable agriculture.

Ullah (2011) observed that there was significant positive relationship between education and farmers' perception in this regard.

2.3.3 Farm size and perception

Rahman (2018) revealed that farm size was fail to show any relationship with perception of climate change of the farmers.

Parganiha (2016) concluded that farm size was positively significant with perception of farmers about climate change.

Sultana (2015) observed that farm size of the farmers had positively significant correlation with their perception regarding climate change.

Patidar and Patidar (2015) reported that farm size was significantly contributed to perception of farmers towards organic farming.

Islam (2014) concluded that farm size of the farmers had positively significant relationship with their perception on the effect of IPM practices.

Adeola (2012) revealed that household size had a non-significant influence on the farmers' perception.

Roy (2009) stated that farm size had negatively significant relationship with farmers perception.

2.3.4 Farming experience and perception

Rahman (2018) revealed that farming experience was fail to show any relationship with perception of climate change of the farmers.

Parganiha (2016) concluded that farming experience was positively significant with perception of farmers about climate change.

Pinthukas (2015) reported that experience visit significantly contributed to farmers' perception on organic vegetable production.

Sultana (2015) observed that that there was no significant relationship between farming experience of the farmers and their perception regarding climate change.

Kabir and Rainis (2012) found that experience of farmers had a significant influence on the farmers' perception.

2.3.5 Annual income and perception

Murmu (2019) revealed that annual income was fail to show any relationship with perception on vermicompost of the farmers.

Rahman (2018) revealed that annual income was fail to show any relationship with perception of climate change of the farmers.

Parganiha (2016) concluded that annual income was positively significant with perception of farmers about climate change.

Pinthukas (2015) reported that farm income significantly contributed to farmers' perception on organic vegetable production.

Sultana (2015) observed that annual family income of the farmers had positive and significant correlation with their perception regarding climate change.

Islam (2014) concluded that annual family income of the farmers had significant positive relationship with their perception on the effect of IPM practices.

Ullah (2011) mentioned that there was no significant relationship between the annual income of the farmers and their perception of one house one farm approach.

Karim (2009) revealed that annual family income of the fish farmers had significant positive relationship with their perception towards flood coping mechanism.

Pal (2009) showed that annual family income had no significant relationship with farmer's perception.

2.3.6 Training experience and perception

Rahman (2018) reported that agricultural training received showed significant relationship with farmers' perception of climate change.

Sultana (2015) observed that training received of the farmers had positive and significant correlation with their perception regarding climate change.

Islam (2014) concluded that training received of the farmers had significant positive relationship with their perception on the effect of IPM practices.

Gido *et al.* (2013) reported that training experience had significantly contributed to perception of maize farmers towards organic soil management practices.

Kabir and Rainis (2012) found that training had a significant influence on the farmers' perception.

Karim (2009) reported that training received of the fish farmers had significant positive relationship with their perception towards flood coping mechanism.

2.3.7 Extension media contact and perception

Murmu (2019) revealed that extension media contact of the farmers had significant positive relationship with their perception on vermicompost.

Pinthukas (2015) reported that extension visit significantly contributed to farmers' perception on organic vegetable production.

Gido *et al.* (2013) reported that extension media contact had significantly contributed to perception of maize farmers towards organic soil management practices.

Islam (2011) concluded that source of information of the farmer had significant positive relationship with their perception of sustainable agriculture.

Oyesola *et al.* (2011) observed that sources of information of the respondents showed significant positive relationship with their perception of organic farming.

Ullah (2011) observed that there was significant relationship between extension media contact and farmers' perception and followed a positive trend.

2.3.8 Risk orientation and perception

Murmu (2019) revealed that there was positive significant relationship between risk orientations of the farmers with their perception.

Zinzala and Bhatt (2018) reported that there was non-significant relationship between risk orientations of the farmers with their perception.

2.3.9 Innovativeness and perception

Murmu (2019) revealed that there was no significant relationship between innovativeness of the farmers with their perception.

Rahman (2018) reported that innovativeness showed significant and positive relationship with farmers' perception of climate change.

Parganiha (2016) concluded that innovativeness was positively significant with perception of farmers about climate change.

2.4 Conceptual Framework of the Study

Perception is the mental process by which a person becomes aware of the world around him. In this process through the sensory inputs, a person is able to give meaning and interpreting. The object and events through psychologist hold that perceptual constancy is

common for all normal individuals, yet individuals may vary in perceiving a particular object or event due to the difference in their demographic, socio-economic and socio-psychological characteristics.

Conceptual model is a diagrammatically representation out lining the dominant elements of a system and their inter relationship with respect to criterion variable. In this study the researcher attempted to highlight two concepts namely; farmers' selected characteristics and perception of farmers about organic farming practices. An individual's perception may be influenced by his personal characteristics and through other interacting forces in his surroundings. As it is quite impossible to deal with all the forces and characteristics in a single study, it was, therefore, needed to be confined with some selected characteristics which were age, education, farm size, farming experience, annual income, training experience, extension media contact, risk orientation and innovativeness. However, relating other situational factors with farmers' perception was not considered in this study. The solid one-way arrows indicate the cause-effect relationships which have been investigated and the broken one-way arrows indicate the relationships which have not been investigated in the present research work. On the basis of above discussion and review of literature, the conceptual framework of this study has been structured as shown in Figure 2.1.

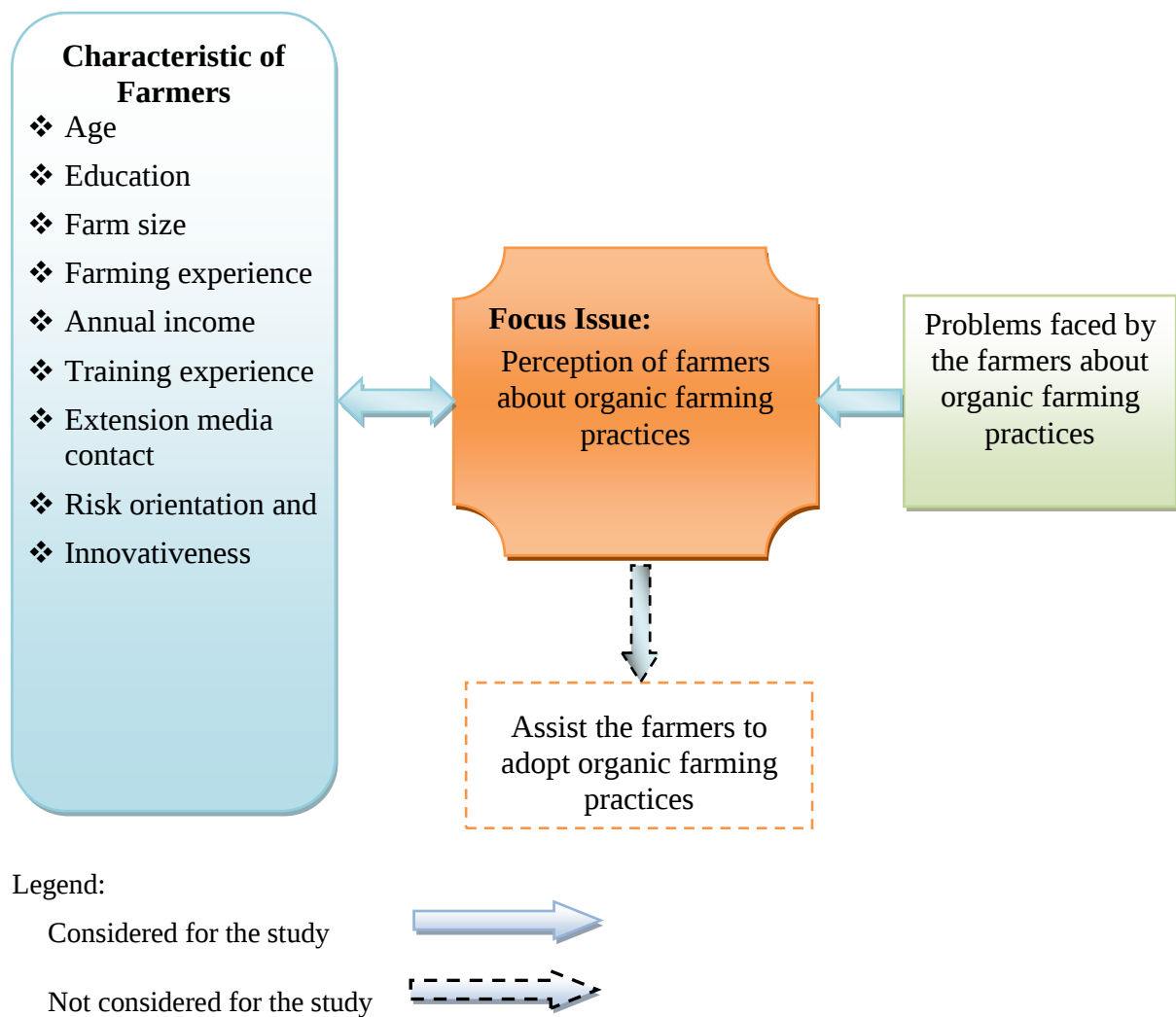


Figure 2.1 Conceptual framework of the study

CHAPTER 3

METHODOLOGY

This Chapter deals with the methods and procedures used for the study and conducting research need very careful consideration. Methodology enables the researcher to collect valid information and to analyze the same properly to arrive at correct decisions. The different steps that were undertaken are listed below and the details under each step are explained in the succeeding part of the Chapter. The methods and procedures followed in conducting this research are being described below:

3.1 Locale of the Study

The study was conducted at Nijpara union of Birganj upazila under Dinajpur district, where involvement in organic farming practices by the farmers were higher than the other areas. Data were collected from a sample of the farmers from two villages under Nijpara union in Birganj upazila of Dinajpur district. A map of Dinajpur district including its upazilas as well as Bangladesh (inset) and a map of Birganj upazila of Dinajpur district have been presented in Figure 3.1 and 3.2, respectively.

3.2 Population and Sample of the Study

Multi-stage random sampling procedure was followed in this study. At first Birganj upazila of Dinajpur district was selected purposively. Nijpara union was selected by using random sampling procedure out of 11 unions from the selected upazila. The selected union consists of 14 villages, out of which people of two villages were selected by random sampling for this study. An up-to-date list of farmers was prepared with the help of Upazila Agriculture Office, Birganj, Dinajpur. Data were collected from 98 farmers as a sample (10 percent) of the total population (979 farmers) of this study following random sampling procedure. Simultaneously a reserved list of 10 farmers was made in order to use in case of non-availability of sampled farmers. The detailed distribution of population and sample are shown in Table 3.1.

Table 3.1 Village wise distribution of the population and sample

Name of the village	Population	Sample	Reserve list
Sayedpur Kalyani	632	63	6
Nokhapara	347	35	4
Total	979	98	10



Figure: 3.1 Map of Dinajpur district including its upazilas (Bangladesh inset)



Figure 3.2 Map of Birganj upazila showing the study area

3.3 Research Instrument

In order to collect data for this study, a structured interview schedule was prepared keeping the objectives in mind. The schedule was prepared both close and open form questions. The questions and statements contained in the schedule were simple, direct and easily understandable by the farmers. The schedule was translated in Bengali for clarification to the respondents. On the basis of pre-test, necessary corrections, alterations and modifications were made before finalizing the interview schedule. The interview schedule was then printed in its final form for collection of data. The English version of interview schedule has been attached to *Appendix A*.

3.4 Measurements of the Selected Characteristics and the Focus Issue

The successful selection of variables results in success of a research. Inappropriate and inconsistent selection of variables may lead to faulty results. The researcher employed adequate care in selecting the variables of the study. Considering personal, economic, social and psychological factors of the rural community, time and resources availability to research, reviewing relevant literature and discussing with relevant expert, the researcher selected the variables for the study.

Perception of farmers about organic farming practices was the main focus of this study. The researcher selected nine characteristics of the farmers namely; age, education, farm size, farming experience, annual income, training experience, extension media contact, risk orientation and innovativeness.

3.4.1 Measurement of selected characteristics

3.4.1.1 Age

Age of the farmers was measured in terms of years from his birth to the time of interview which was found on the basis of response. A unit score was assigned for each year of one's age. The characteristic appears in the item number 1 in the interview schedule (*Appendix A*).

3.4.1.2 Education

Education of the respondents was measured in terms of one's year of schooling. One score was given for passing each level in an educational institution (Ara, 2019). For example, if a respondent passed the final examination of class V his education score was taken as '5'. If a respondent did not know how to read and write, his education score was

given as '0'. A score of '0.5' was given to that respondent who could sign his name only. The characteristic appears in the item number 2 in the interview schedule (*Appendix A*).

3.4.1.3 Farm size

The farm size was measured by the area of the raised land in which the household of the respondent had its entire dwelling unit including homestead, area under cultivation (Rahman, 2018). It was expressed in hectare. The total areas of land thus obtained have been considered as farm size of the respondent. This characteristic appears in item number 3 in the interview schedule (*Appendix A*). It was measured using the following formula:

$$\text{Farm size} = A+B+C+\frac{1}{2}(D+E)+F$$

Where,

A= Homestead area (including garden and fallow land)

B= Own land under own cultivation

C= Area of land taken from others on lease

D= Area of land given to others as *borga*

E= Area of land taken from others as *borga*

F= Others (if any)

3.4.1.4 Farming experience

Farming experience of the farmers was measured in terms of years since he took the responsibility of farming for his family. This characteristic appears in item number 4 in the interview schedule (*Appendix A*).

3.4.1.5 Annual income

Annual income was measured on the basis of the total yearly earning by a respondent himself and his family members from agricultural and non-agricultural sources. A score of one was given for each Tk. 1,000 to compute the annual income scores of the respondents. The characteristic appears in the item number 5 in the interview schedule (*Appendix A*).

3.4.1.6 Training experience

Training experience of a farmer was measured by the total number of days he participated in different training programs. A score of one (1) was assigned for each day of training experience. This characteristic appears in item number 6 in interview schedule (*Appendix A*).

3.4.1.7 Extension media contact

Extension media contact was measured by computing an extension contact score on the basis of a respondent's extent of contact with selected media. Each respondent was asked to indicate the degree of his contact with each of the selected media with four alternative responses as 'frequently', 'occasionally' 'rarely', 'not at all', and scoring was done by assigning 3, 2, 1 and 0, respectively. The extension contact score of a respondent was measured by summing up his score which could range from 0 to 54, where '0' indicated no extension contact and '54' indicated the highest level of extension contact (Ara, 2019). This characteristic appears in item number 7 in the interview schedule (*Appendix A*).

3.4.1.8 Risk orientation

It is the degree to which farmers are oriented towards risk and uncertainty and courage to face the problem in farming. It was measured with the help of risk orientation scale developed by Supe (2007). This scale consisted of six statements with three positive and three negative statement. Score 3, 2 and 1 was assigned to agree, undecided and disagree responses, respectively for positive statements and vice versa in case of negative statements. The maximum and minimum possible scores were 18 and 6. The total score of each farmer was computed by summing up the scores of all the six statements. This characteristic appears in item number 8 in the interview schedule (*Appendix A*).

3.4.1.9 Innovativeness

Innovativeness of a respondent was measured by computing an innovativeness score on the basis of his adoption of 10 selected modern agricultural technologies. Scoring was assigned on the basis of time required by a farmer to adopt each of the particular technology. Innovativeness was measured according to the methodology followed by Murmu (2019) where score was given to the length of adoption or non-adoption of a new technology as follows:

Duration of adoption	Score assigned
Within 1 year of hearing	3
Within 1-2 year of hearing	2
Above 2 year of hearing	1
Do not use	0

The score assigned to each of the 10 technologies were added together to obtain the total innovativeness score of a respondent. Thus, the innovativeness scores of the respondents could range from 0 to 30, '0' indicated no innovativeness and '30' indicated very high

innovativeness. The characteristic appears in item number 9 in the interview schedule (*Appendix A*).

3.4.2 Measurement of focus issue

Perception of farmers about organic farming practices was the focus issue of this study. The farmers were asked to express their perception on the selected statements in accordance with their observation/experience on the past years. A respondent was asked to indicate his extent of agreement against 18 statements along 4-point rating scale: 'high', 'moderate', 'somewhat' and 'not at all' and weights assigned to these responses were 3, 2, 1, and 0, respectively (Ali, 2018). The perception of a respondent was therefore determined by adding the score against the 18 selected statements. Thus, the perception of a respondent could range from 0 to 54, where '0' indicated no perception and '54' indicated high perception.

On the other hand, mean score of statements were calculated and ranked accordingly (Prajapati *et al.*, 2018). This variable appears in item number 10 in the interview schedule (*Appendix A*).

3.5 Problem Confrontation Index (PCI)

In order to measure the problems regarding organic farming a pre-tested questionnaire was used. The purpose of this section was to have an understanding on the problems faced by the farmers in organic farming practices. Problem in each item has been presented with frequency of distribution of the farmers. Farmers had option to indicate each problem as 'high', 'medium', 'low' and 'no'. To get score of each problem four 'high problem', 'medium problem', 'low problem' and 'no' were assigned by 3, 2, 1 and 0, respectively. For getting total score the ten problems of the farmers, each item along with rank order was computed by using the following formula (Khan, 2012).

$$\text{Problem Confrontation Index (PCI)} = Ph \times 3 + Pm \times 2 + Pl \times 1 + Pn \times 0$$

Where,

Ph = Number of respondent with high problem

Pm = Number of respondent with medium problem

Pl = Number of respondent with low problem

Pn = Number of respondent with no problem

The problem confrontation score could range from 0 to 30 and the PCI score could range from 0 to 294. This variable appears in item number 11 in the interview schedule (*Appendix A*).

3.6 Collection of Data

The interview schedule was pretested before using the same for data collection. In the survey, data were collected personally by the researcher himself through face to face interview. Necessary correction, alterations and amendments were made in the interview schedule on the basis of results of the pretest. Rapport was established with the farmers prior to interview and the objectives were clearly explained by using local language as far as possible. Data were collected during the period of 1 September to 30 September 2019. Interview was concluded in farmers' house during their leisure time.

3.7 Data Processing

After completion of data collection through interview, all the data were coded, compiled and tabulated according to the objectives of the study. Local units were converted into standard units. Qualitative data were converted to quantitative data by means of suitable scoring to facilitate analysis and interpretation. All the individual responses to questions of the interview schedule were transferred into a master sheet to facilitate tabulation, categorization and organization. For describing different characteristics, the respondents were classified into several categories. These categories were developed by considering the nature of distribution of data, general understanding prevailing in the social system and possible scores system.

3.8 Statement of Hypothesis

According to Kerlinger (1973) a hypothesis is a conjectural statement of the relation between two or more variables. Hypothesis are always in declarative sentence form and they are related, either generally or specifically from variables to variables. In broad sense, hypothesis are divided into two categories: (a) Research hypothesis and (b) Null hypothesis.

3.8.1 Research hypothesis

The following research hypothesis was formulated: 'there were relationships between age, education, farm size, farming experience, annual income, training experience, extension media contact, risk orientation and innovativeness of the farmers with their perception about organic farming practices'.

3.8.2 Null hypothesis

The following null hypothesis was undertaken for the present study ‘there were no relationships between age, education, farm size, farming experience, annual income, training experience, extension media contact, risk orientation and innovativeness of the farmers with their perception about organic farming practices’.

3.9 Statistical Procedures

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

CHAPTER 4

RESULTS AND DISCUSSION

The findings of the study and interpretations of the results have been presented in this Chapter. This Chapter deals with four sections. First section deals with the perception of farmers about organic farming practices. Selected characteristics of the farmers have been presented in the second section while in the third section deals with the relationships between the selected characteristics of the farmers and their perception about organic farming practices. Problems faced by the farmers about organic farming practices have been presented in the fourth section.

4.1 Perception of Farmers about Organic Farming Practices

Perception of farmers about organic farming practices was the focus issue of the study. To measure the focus issue a total 18 statements were selected. However, the item wise perception about organic farming and overall perception analyzed and the results are given below:

4.1.1 Individual item wise perception of farmers

The statements indicating perception were enlisted on viz. 4-point rating scale: ‘high’, ‘moderate’, ‘somewhat’ and ‘not at all’ and weights assigned to these responses were 3, 2, 1, and 0, respectively. Then, mean score of statements were calculated and ranked accordingly. The data regarding farmers’ perception are presented in Table 4.1.

Table 4.1 Statement wise perception about organic farming practices

Sl. No.	Perception statements	Mean score	Rank
1.	Organic agriculture is environmentally friendly	2.02	9 th
2.	Pesticide is less demanded in organic farming	2.11	6 th
3.	Organic farming is useful to reduce surface runoff of farmland	1.62	15 th
4.	Organic agriculture helps to improve farmers’ income	1.65	13.5 th
5.	Organic foods are useful to prevent diseases	2.04	7 th
6.	Organic foods are completely safe to eat	1.41	18 th
7.	Organic agriculture is expensive	2.03	8 th
8.	Organic ingredient improve the nutritional quality of food	2.15	3.5 th
9.	Organic farming is beneficial only for large farmers	1.74	12 th
10.	Health consciousness among people will enhance the demand of organic products	2.50	1 st

Contd.

Sl. No.	Perception statements	Mean score	Rank
11.	Low input cost and high return may attract farmers toward organic agriculture	2.15	3.5 th
12.	Export opportunities for organic products will promote organic farming	1.65	13.5 th
13.	There may be possibility of adulteration in organic products	1.77	11 th
14.	The balance of organism is hampered by practicing organic farming	1.51	16 th
15.	Sustainable agriculture will depend on organic farming	2.49	2 nd
16.	Problems in conventional farming will lead farmers toward organic farming	2.14	5 th
17.	Consumers may prefer to pay higher prices for organic products	1.43	17 th
18.	Improving crop production using organic agriculture is the best thing to do	1.80	10 th

The data contained in Table 4.1 reveal that ‘health consciousness among people will enhance the demand of organic products’ ranked 1st and ‘Sustainable agriculture will depend on organic farming’ ranked 2nd. ‘Organic ingredient improve the nutritional quality of food’ and ‘low input cost and high return may attract farmers towards organic agriculture’ jointly ranked 3rd. ‘Problems in conventional farming will lead farmers toward organic farming’, ‘pesticide is less demanded in organic farming’ and ‘organic foods are useful to prevent diseases’ ranked 5th, 6th and 7th respectively.

4.1.2 Overall perception of farmers about organic farming practices

The observed of farmers about organic farming scores ranged from 30 to 40 against the possible range of 0 to 54 with an average of 34.22 and standard deviation of 2.23. Following mean plus-minus standard deviation the farmers were classified into three categories such as: ‘low’ (≤ 32), ‘medium’ (33-36) and ‘high’ (> 36). The distribution of the farmers according to their organic farming practices has been shown in Table 4.2.

Table 4.2 Distribution of the respondents according to their overall perception of organic farming

Categories	Farmers		Range	Mean	SD
	Number	Percent	Observed (Possible)		
Low (up to 32)	27	27.55	30-40 (0-54)	34.22	2.23
Medium (33-36)	56	57.14			
High (above 36)	15	15.31			
Total	98	100.00			

Data contained in Table 4.2 indicate that majority (57.14 percent) of the respondents were having medium level of perception while 27.55 percent low and only 15.31 percent respondents were found having high level of perception about organic farming. As from the result which indicates that most of the respondents (84.69 percent) were low to medium perception about organic farming practices. This may be due to the literacy rate of the respondents (38.77 percent of the farmers of the study area had secondary and above secondary level education). Hence, it may be said that there is enough scope for motivation of the farmers regarding formation of favorable perception about organic farming practices. Almost similar results were found by Amin (2018), Rahman (2018), Islam (2014) and Sayeed (2003) in their respective studies. On the other hand, Murmu (2019) in her study reported that a great majority (75.00 percent) of the respondents had medium perception, while 17.5 percent and 7.5 percent of them had low and high perception respectively, perception on vermicompost.

4.2 Selected Characteristics of the Farmers

Nine characteristics namely; age, education, farm size, farming experience, annual income, training experience, extension media contact, risk orientation and innovativeness of the farmers were selected to find out their relationships with perception about organic farming practices. These characteristics of the farmers are described in the following subsection.

4.2.1 Age

The observed age of the farmers ranged from 26 to 70 years having a mean of 45.90 years and standard deviation of 12.30 years. Based on the social standard, the farmers were classified into three categories such as: young (26-35), middle aged (36-50) and old (>50) as shown in Table 4.3 (DAE, 1999).

The results indicated that the highest proportions (48.98 percent) of the farmers were found middle aged, while 21.43 percent were young aged and 29.59 percent belonged to old aged category. Umale *et al.* (2014) found similar type of result in her study. It is concluded that majority (70.41 percent) of the farmers of the study area comprised young to middle aged categories. It can be inferred that organic farming entrepreneurs was mostly carried out by young and middle aged farmers. Usually the farmers of young to middle aged were enthusiastic and had more work efficiency than the older ones. The

young and middle farmers have a favorable new idea about organic farming practices, if necessary steps are taken to disseminate new technologies and practices by extension personnel.

Table 4.3 Selected characteristics of the farmers (n=98)

Characteristics	Scoring method	Range	Categories	Respondents		Mean	SD
		Observed (Possible)		No.	%		
Age	No. of year	26-70 (Unknown)	Young (up to 35)	21	21.43	45.90	12.30
			Middle aged (36-50)	48	48.98		
			Old (>50)	29	29.59		
Education	Year of Schooling	0-12 (Unknown)	Illiterate (0)	11	11.22	4.87	3.85
			Can sign only (0.5)	24	24.49		
			Primary (≤ 5)	22	22.45		
			Secondary (6-10)	34	34.69		
			Above secondary (>10)	4	4.08		
Farm size	Hectare	0.31-5.20 (Unknown)	Small farm (≤ 1.00)	53	54.08	1.22	0.84
			Medium farm (1.01-3.0)	39	39.80		
			Large farm (>3.00)	6	6.12		
Farming experience	No. of year	6-30 (Unknown)	One decade (≤ 10)	16	16.33	17.23	6.12
			Two decades (11-20)	56	57.14		
			Three decades (21-30)	26	26.53		
Annual income	('000' Tk.)	102-650 (Unknown)	Low (≤ 125)	12	12.24	279.26	132.09
			Medium (126-389)	66	67.35		
			High (>389)	20	20.41		
Training experience	No. of days	0-10 (Unknown)	No training (0)	35	35.71	2.38	2.68
			Short training (1 to 3)	38	38.78		
			Medium training (4-6)	17	17.35		
			Long training (>6)	8	8.16		
Extension media contact	Score	10-38 (0-54)	Low (≤ 18)	30	30.61	21.39	5.81
			Medium (19-36)	65	66.33		
			High (>36)	03	3.06		
Risk orientation	Score	8-18 (6-18)	Low (≤ 12)	74	75.51	11.04	2.31
			Medium (13-16)	20	20.41		
			High (≥ 16)	4	4.08		
Innovativeness	Score	7-22 (0-30)	Low (≤ 10)	42	42.86	12.09	3.81
			Medium (11-20)	51	52.04		
			High (>20)	5	5.10		

4.2.2 Education

Education compels an individual to seek, accumulate as well as assimilate knowledge for appropriate uses. Education always plays an important role for participation in decision-making process (Rahman, 2008). The education level of the farmers ranged from 0 to 12 years of schooling having a mean of 4.87 with standard deviation of 3.85. Based on educational qualification, the respondents were classified into five categories such as: illiterate (0), can sign only (0.5), primary (≤ 5), secondary (6-10), and above secondary (>10) as presented in Table 4.3.

The results indicated that the highest proportion (34.69 percent) of the farmers had secondary level education, 22.45 percent had primary, 4.08 percent above secondary, 24.49 percent can sign only, and 11.22 percent were illiterate. Chowdhury (2015) also found similar results. Therefore, efforts are needed to educate the people who can sign only and illiterates through adult education and functional literacy in villages to increase the level of education and educate the respondents to attend training program, so that they can build confidence about organic farming practices.

4.2.3 Farm size

The farm size is the main indicator of holding farming status of the farmers. The farm size scores of the farmers ranged from 0.31 to 5.20 with mean of 1.22 and standard deviation of 0.84. According to farm size the farmers were classified into three categories i.e. small (≤ 1.00 ha), medium (1.01-3.00 ha) and large (>3.00 ha) as shown in Table 4.3.

The results indicated that highest proportion (54.08 percent) of the respondents had small farm, 39.80 percent had medium and only 6.12 percent had large farm. Rana *et al.*, (2017) observed similar result in his study. The average farm size of the respondents is 1.22 ha which was higher than that of national average farm size of 0.51 ha (BBS, 2015). This may be due to location of this study and this is not the actual farmers' profile of Bangladesh.

4.2.4 Farming experience

The observed farming experience of the respondents ranged from 6-30 years having mean of 17.23 years with standard deviation of 6.12. Based on farming experience, the farmers were classified into three categories such as: one decade (≤ 10 years), two decades (11-20

years), and three decades (21-30 years). The distribution of the farmers according to their farming experience is presented in Table 4.3.

The results indicated that 57.14 percent of the respondents had two decades of farming experience, while 16.33 percent and 26.53 percent of them had one and three decades of farming experience respectively. Thus, a great majority of the farmers (73.47 percent) had farming experience from one to two decades.

4.2.5 Annual income

Annual income of the farmers ranged from 102 to 650 with mean of 279.26 and standard deviation of 132.09. On the basis of their observed annual income, the farmers were divided into three categories such as: low (≤ 125), medium (126-389) and high (>389). The distribution of the farmers according to their annual income is shown in Table 4.3.

Data shown in Table 4.3 indicated that majority (67.35 percent) of the farmers had medium income as compared to 20.41 percent of them had high income and only 12.24 percent had low income. Almost similar result was found by Talukder (2013). Thus, it is concluded that 79.59 percent of the farmers had low to medium income. The average annual income of the study area was found Tk. 279.26 thousand which is higher than that of national average family income in Bangladesh is Tk.195.20 thousand (BBS, 2015). The results may be due to the reason that average farm size of the farmers was found 1.22 ha, which is also greater than the national average farm size.

4.2.6 Training experience

The training experience scores of the farmers ranged from 0 to 10 years having mean of 2.38 days and standard deviation of 2.68. On the basis of their observed agricultural training received duration, the farmers were classified into four categories i.e., no training (0), short training (1-3), medium training (4-6) and long training (>6). The distribution of the farmers according to their training experience score is shown in Table 4.3.

Results presented in Table 4.3 demonstrate that near about one-thirds (38.78 percent) of the farmers had short duration of training experience, while 35.71 percent of them had no training experience, 17.35 percent had medium training experience and only 8.16 percent farmers had long duration of training. Training increase farmers' knowledge, develop skill and change perception in positive manner. It also assumed that there is always a positive relationship between training received and favorable perception towards modern

technologies. Thus, it should be concluded that the DAE and concern extension agencies (NGOs) should arrange training program for those farmers who had no training experience as well as who had low training experience.

4.2.7 Extension media contact

The observed score of extension media contact of the farmers ranged from 10 to 38 against the possible range of 0 to 54 with mean of 21.39 and standard deviation of 5.81. Based on equal distribution of the possible score, the farmers were classified into three categories such as: low (≤ 18), medium (19-36) and high (> 36). The distribution of the respondents according to their extension media contact is shown in Table 4.3.

It is clear from the results in Table 4.3 that majority (66.33 percent) of the farmers had medium extension media contact, as compared to 30.61 percent had low and only 3.06 percent had high extension media contact. It is found that majority (96.94 percent) of the farmers had low to medium extension media contact. Extension media contact is a very effective and powerful source in receiving information about modern agricultural technologies. The result of this study indicates that the farmers' extension media contact was moderately satisfactory.

4.2.8 Risk orientation

The risk taking ability of the respondents range from 8 to 18 against the possible range of 6 to 18, with mean of 11.04 and standard deviation of 2.31. Based on equal distribution of the possible score, the farmers were classified into three categories such as: low (≤ 12), medium (13-16) and high (≥ 16). The distribution of the respondents according to their risk orientation is shown in Table 4.3.

It is observed from the Table 4.3 indicate that three-fourths (75.51 percent) of the farmers had low risk orientation followed by 20.41 percent medium and only 4.08 percent having high risk orientation respectively. The individuals with higher perception about organic farming practices might have exhibited the organic farming entrepreneurs to take the risk at low level despite other threatening factors.

4.2.9 Innovativeness

The innovativeness score of the farmers ranged from 7 to 22 against the possible score of 0 to 30. The mean and standard deviation were 12.09 and 3.81, respectively. Following equal distribution of the possible score, the farmers were classified into three categories such as: low (≤ 10), medium (11-20), and high (≥ 20) as shown in Table 4.3.

The results indicated that little bit more than half (52.04 percent) of the farmers had medium innovativeness, while 42.86 percent had low and only 5.10 percent of the farmers had high innovativeness. This means that remarkable portion of the respondents of the study area were medium to low innovativeness about the improved organic farming practices.

4.3 Relationships between the Selected Characteristics of the Farmers and their Perception about Organic Farming Practices

The purpose of this section is to explore the relationships between each of the selected characteristics of the farmers and their perception about organic farming practices. Pearson's product moment correlation co-efficient 'r' was used to test the null hypothesis concerning the relationships between the selected characteristics and focus issue. The summary of the results of the correlation coefficient indicates the relationships between the selected characteristics and focus issue (Table 4.4). However, a correlation matrix for focus issue and selected characteristics were presented in *Appendix B* for understanding the relationship around the characteristics.

Table 4.4 Relationships between the selected characteristics and focus issue

Focus issue	Selected characteristics	Computed values of 'r' with 96 df	Tabulated value of 'r'	
			0.05 level	0.01 level
Perception of farmers about organic farming practices	Age	-0.011	±0.199	±0.259
	Education	0.240*		
	Farm size	0.397**		
	Farming experience	0.097		
	Annual income	0.138		
	Training experience	0.251*		
	Extension media contact	0.222*		
	Risk orientation	0.205*		
	Innovativeness	0.240*		

*Correlation is significant at the 0.05 level and **Correlation is significant at the 0.01 level

4.3.1 Age and perception

The computed value of correlation co-efficient between age of the farmers and their perception about organic farming practices is -0.011, which is less than tabulated value at 0.05 level of probability (Table 4.4). So, the concerned null hypothesis could be accepted.

Therefore, it can be concluded that age of the respondent had no significant relationship with perception about organic farming practices and followed a negative trend at 5% level of significance. Similar relationships were revealed by Rahman (2018) and Ullah (2011) in their respective studies. Thus, it could be said that age of the respondent of the study area does not play any significant role in their perception about organic farming practices.

4.3.2 Education and perception

The computed value of correlation co-efficient between educational qualification of the farmers and their perception about organic farming practices is 0.240*, which is positively significant at 0.05 level of probability (Table 4.4). So, the concerned null hypothesis could be rejected. Thus, it could be confirmed that there was positive significant relation between educational qualification of the farmers and their perception about organic farming practices. It indicates that the higher educational qualification of the farmers more would be the perception level. This reflects an impression that educated farmers would have better ability to acquire knowledge, understanding and favorable perception with their work. The findings had consistency with the findings of Ullah (2011) and Jakir (2010) in their respective studies.

4.3.3 Farm size and perception

The computed value of correlation co-efficient between farm size of the farmers and their perception about organic farming practices is 0.397**, which is positively significant at 0.01 level of probability (Table 4.4). So, the concerned null hypothesis could be rejected. Thus, it can be concluded that there was positive significant relation between farm size of the farmers and their perception about organic farming practices at 1% level of significance. The results indicate that farm size has positive influence on perception of farmers about organic farming practices.

4.3.4 Farming experience and perception

The computed value of correlation co-efficient between farming experience of the farmers and perception about organic farming practices is 0.097, which is less than the tabulated value at 0.05 level of probability (Table 4.4). Hence, the concerned null hypothesis could not be rejected. The findings indicated that farming experience of the farmers had no significant relationship with their perception about organic farming practices and the trend is positive. Thus, it can be concluded that farming experience had no impact on the perception of farmers about organic farming practices.

4.3.5 Annual income and perception

The computed value of correlation co-efficient between annual income of the farmers and perception about organic farming practices is 0.138, which is not significant at 0.05 level of probability (Table 4.4). Hence, the concerned null hypothesis could be accepted. Thus, it could be confirmed that there was no significant relationship between annual income of the farmers with their perception about organic farming practices and the trend is positive at 5% level of significance. So, it can be said that annual income had no influence on the perception of farmers about organic farming practices.

4.3.6 Training experience and perception

The computed value of correlation co-efficient between training experience of the farmers and perception about organic farming practices is 0.251*, which is positively significant at 0.05 level of probability (Table 4.4). Thus, the concerned null hypothesis could be rejected. The findings indicated that training experience of the farmers had positive significant relationship with their perception about organic farming practices at 5% level of significance. Thus, it could be concluded that training experience of the farmers' had positive influence on the perception of farmers' about organic farming practices. Training helps the farmer to improve knowledge on culture system. The findings had consistency with Rahman (2010) and Arefin (2011) in their respective studies.

4.3.7 Extension media contact and perception

The computed value of correlation co-efficient between extension media conduct of the farmers and perception about organic farming practices is 0.222*, which is positively significant at 0.05 level of probability (Table 4.4). Based on the above findings, the null hypothesis could be rejected and it was concluded that extension media contact of the farmers' had a significant relationship with perception on organic farming practices. The findings clearly indicated that there was a positive trend between extension media contact of the farmers and their perceptions on organic farming practices. Nowadays, farmers are more exposed to extension media than any other time before. Similar relationships were found by Hamid (2011) and Ullah (2011) in their respective studies.

4.3.8 Risk orientation and perception

The relationship between risk orientation of the farmers and perception about organic farming practices was examined by testing the null hypothesis: ‘there is significant positive relationship between risk orientation of the farmers and perceptions on organic farming practices. The observed value of the co-efficient of correlation between risk orientation of the farmers and their perception on organic farming practices is found to be ‘ $r = .205^*$ ’ as shown in Table 4.4. This value is greater than the tabulated value of ‘ r ’ (0.199) at 0.05 levels of probability. So, the null hypothesis could be rejected. Therefore, it can be concluded that the risk orientation of the respondent had significant relationship with their perception on organic farming practices and followed a positive relationship. Similar relationship was found by Akhter (2007) in her respective study.

4.3.9 Innovativeness and perception

The computed value of correlation co-efficient between innovativeness of the farmers and perception about organic farming practices is 0.240^* , which is positively significant at 0.05 level of probability (Table 4.4). Based on the above findings, the null hypothesis could be rejected and it was concluded that innovativeness of the farmers’ had a significant relationship with their perceptions on organic farming practices and the trend is positive at 5% level of significance. The results indicated that innovativeness has positive influence on the perception of farmers’ about organic farming practices. Innovativeness helps the respondents to adopt new ideas and practices on organic farming.

4.4 Problem Confrontation by the Farmers in Organic Farming

The problems faced by the farmers were measured in computing overall problem confrontation score and by calculating Problem Confrontation Index (PCI), which are given in the following sub-sections.

4.4.1 Overall problems faced by the farmers

The overall problem confrontation score of the farmers ranged from 13 to 24 against the possible range 0 to 30 with an average of 19.33 and standard deviation of 2.35. Based on mean plus minus standard deviation, the respondents were classified into three categories such as: ‘low’ (13-17), ‘medium’ (18-22) and ‘high’ (above 22) participation as shown in Table 4.5.

Table 4.5 Categorization of the farmers according to their problems faced in organic farming practices (n=98)

Categories	Respondents		Range	Mean	Standard deviation
	Number	Percent	Observed (Possible)		
Low (13-17)	21	21.43	13-24 (0-30)	19.33	2.35
Medium (18-22)	70	71.43			
High (>22)	7	7.14			
Total	98	100.00			

Data contained in Table 4.5 indicates that highest portion (71.43 percent) of the respondents had medium problem as compared to 21.43 percent had low and 7.14 percent had high problems faced by the farmers about organic farming practices.

4.4.2 Individual problem wise distribution of the farmers

Ten problems faced by the farmers about organic farming practices were considered in the present study. The ranking of the problems according to the Problem Confrontation Index (PCI) of the farmers ranged from 155-228 (Table 4.6).

Table 4.6 Rank order of problems faced by the farmers in organic farming practices (n=98)

Sl. No.	Problems	Frequency of opinion				PCI	Rank
		High	Medium	Low	No		
1.	Lack of reliable package of practices for organic farming	33	29	24	12	181	7 th
2.	Inadequate information related to organic farming technologies	49	27	14	8	215	3 rd
3.	Lack of interest to know about organic farming	33	35	17	13	186	6 th
4.	Improper community movement for the promotion of organic farming	53	26	11	8	222	2 nd
5.	Poor contact of extension workers with farmers	21	31	30	16	155	10 th
6.	Inadequate supply of organic agricultural inputs	43	26	13	16	194	4 th
7.	Management of pest and insect damage is difficult in organic farming	59	23	5	11	228	1 st
8.	There is no special incentive or awards for adopters of organic farming practices	30	23	21	24	157	9 th
9.	Lack of market facility for organic produced commodity	33	34	21	10	188	5 th
10.	Lack of awareness about price and availability of organic food in people	28	28	26	16	166	8 th

PCI=Problem Confrontation Index

Results from Table 4.6 indicate that the two major problems faced by the farmers are ‘management of pest and insect damage is difficult in organic farming’ (PCI=228) followed by ‘improper community movement for the promotion of organic farming’ (PCI=222). The lowest two problems faced by the farmers are ‘there is no special incentive or awards for adopters of organic farming practices’ (PCI=157) and ‘poor contact of extension workers with farmers’ (PCI=155). The major problem faced by the farmers was ‘management of pest and insect damage is difficult in organic farming’. It is due to that synthetic fertilizers or pesticides (insecticides, herbicides, and/or fungicides) are not used in organic farming.

CHAPTER 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of the Findings

The study was conducted to determine the extent of perception of farmers about organic farming practices, to determine the relationship between the selected characteristics of the farmers and their perception about organic farming practices, and to identify the problems faced by the farmers in organic farming practices. The research was done at Nijpara union in Birganj upazila under Dinajpur district. From an updated list of 979 farmers, 98 respondents were selected as sample using random sampling method. Data were collected from the study area during 1 September to 30 September 2019 using structured questionnaire. However, a summary of the major findings are given below:

5.1.1 Perception of farmers about organic farming practices

The results indicated that 57.14 percent of the respondents had medium level of perception while, 27.55 percent low level and only 15.31 percent respondents had high level of perception about organic farming. In contrast to individual statements it is evident that out of 18 statements 'Increased health consciousness among people will enhance the demand of organic products' has ranked first and 'Organic foods are completely safe to eat' has the last ranked.

5.1.2 Selected characteristics of the farmers

Age: About half (48.98 percent) of the farmers were middle aged category followed by 29.59 percent old and 21.43 percent young aged category.

Education: Almost one-thirds (34.69 percent) of the farmers had secondary level of education compared to 24.49 percent can sign only, 22.45 had primary, 11.22 percent illiterate and only 4.08 percent above secondary level.

Farm size: The highest proportion (54.08 percent) of the farmers had small farm size while 39.80 percent had medium and only 6.12 percent had large farm size.

Farming experience: The majority (57.14 percent) of the farmers had two decades of farming experience followed by 26.53 percent three decades and only 16.33 percent of them had one decades of farming experience respectively.

Annual income: Almost two-thirds (67.35 percent) of the farmers had medium income as compared to 20.41 percent had high income and only 12.24 percent had low income.

Training experience: About two-fifths (38.78 percent) of the farmers had short duration of training experience followed by 38.78 no training, while 17.35 percent having medium duration of training and only 8.16 percent had long duration of training experience.

Extension media contact: Two-thirds (66.33 percent) of the farmers had medium extension media contact as compared to 30.61 percent had low and only 3.06 percent had high extension media contact.

Risk orientation: Three-fourths (75.51 percent) of the farmers belonged to low risk orientation followed by 20.41 percent medium and only 4.08 percent had high risk orientation, respectively.

Innovativeness: Almost one-half (52.04 percent) of the farmers had medium innovativeness compared with 42.86 percent had low and 5.10 percent had high innovativeness.

5.1.3 Relationships between selected characteristics of the farmers and their perception about organic farming practices

Six out of nine selected characteristics (education, farm size, training experience, extension media contact, risk orientation and innovativeness) of the farmers showed positive relationship with their perception about organic farming practices while age, farming experience and annual income fail to show any relationship with perception about organic farming practices.

5.1.4 Problems faced by the farmers about organic farming practices

The most serious problem faced by the farmers was ‘management of pest and insect damage is difficult in organic farming’ while the second problem faced by them was ‘improper community movement for the promotion of organic farming’ and the last one was ‘poor contact of extension workers with farmers’.

5.2 Conclusions

On the basis of the findings of the present study and logical interpretations of their meaning in the light of other relevant facts, the researcher drew the following conclusions:

1. The majority (57.14 percent) of the farmers had medium perception about organic farming practices. Therefore, it can be concluded that there is a scope of increase the perception of farmers about organic farming practices.

2. The majority (66.33 percent) of the farmers fell in medium extension media contact. Thus, it may be concluded that the farmers with medium extension media contact showed moderately favorable perception about organic farming practices.
3. The study revealed that 34.69 percent of the respondents were educated up to secondary level. So, it may be concluded that the higher is the educational level; the better is the perception of the respondent on organic farming.
4. Education, farm size, training experience, extension media contact, risk orientation and innovativeness of the farmers showed significant positive relationship with their perception about organic farming practices. Thus it may be conclude that while take any program to improve the perception about organic farming of farmers these above characteristics should be considered.

5.3 Recommendations: Based on the findings and conclusion of the study, the following recommendations could be made.

5.3.1 Recommendation for policy implications

In view of the above findings and conclusion of the study, the following recommendations are made:

1. The highest proportion (57.14 percent) of the respondents had medium perception about organic farming practices. Therefore, DAE and other concerned NGOs working in the study area should take necessary steps to increase perception of the farmers about organic farming.
2. The results indicated that 81.63 percent of the respondents were in between can sign only to secondary level of education. Thus, it may be recommended that the government should give due emphasis to increase the level of education of the respondents and implement adult literacy program to develop their perception.
3. The extension media contact had positively significant relationship with perception of farmers about organic farming practices. It may be recommended that a wide publicity needs to be made regarding organic farming through mass media (e.g. Radio, TV, Newspapers etc.).
4. The study revealed that education, farm size, training experience, extension media contact, risk orientation and innovativeness of the farmers showed significant

positive relationships with perception on organic farming. So, it may be recommended that to formulate any program to improve perception on organic farming all of these factors should be considered.

5.3.2 Recommendation for further study

A small piece of study cannot provide all the research information for proper understanding of perception about organic farming practices, suggestions is put forward for further research:

1. The study was conducted at Nijpara union in Birganj upazila under Dinajpur district. Findings of the study need verification by the similar research in other part of the country.
2. Relationships of nine characteristics of the farmers with their perception about organic farming practices were investigated in this study. Further research should be conducted to explore relationships of other characteristics of the farmers with their perception about organic farming practices.
3. Age, farming experience and annual income of the farmers had non-significant relationships with their perception about organic farming practices. Consequently, further verification is needed.
4. The current research has pointed out 18 important statements of perception about organic farming practices. However, other important statements should be incorporated while conducting research in future.

REFERENCES

- Adeola, R.G. 2012. Perceptions of Environmental Effects of Pesticides Use in Vegetable Production by Farmers in Ogbomoso, Nigeria. *Global Journal of Science Frontier Research Agriculture & Biology*, 12(4):32-38.
- Akhter, S. 2007. Participation of Rural Women in Homestead Waste Management towards Integrated Plan Nutrient System. *M.S. Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.
- Ali, M.A. 2018. Perception of Farmers on Maize as a Potential Crop for Climate Change Adaptation. *M.S. Thesis*, Department of Agricultural Extension, Hajee Mohammad Danesh Science and Technology University, Dinajpur.
- Amin, M.A. 2018. Perception of Farmers on Maize as a Potential Crop for Climate Change Adaptation. *M.S. Thesis*, Department of Agricultural Extension, Hajee Mohammad Danesh Science and Technology University, Dinajpur.
- Ara, N. 2019. Farmers' Attitude towards Organic Farming Practices in SadarUpazila under Dinajpur District. *M.S Thesis*, Department of Agricultural Extension, Hajee Mohammad Danesh Science and Technology University, Dinajpur.
- Arefin, M.S. 2011. Identification of Factors in Pangas Farming under Semi-Intensive Culture in Mymensingh. *M.S. Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.
- Ashari, J. Sharifuddin, Z.A. Mohammed and R. Terano. 2016. Rice Farmers Perception and Attitude towards Organic Farming Adoption. *Journal Agro Economy*, 34(1):35-46.
- BBS. 2008. *Statistical Pocket Book of Bangladesh*. Planning Division, Ministry of Planning, Government of the People's Republic of Bangladesh.
- BBS. 2015. Bangladesh Bureau of Statistics, Statistical Division, Ministry of Planning, Government of the People's Republic of Bangladesh.
- BER. 2019. Bangladesh Economic Review, Report on Agricultural, 2019. Finance Division, Ministry of Finance, Government of the People's Republic of Bangladesh.
- Berhane, M., Z. Abreha and I. Fitiwy. 2015. Farmer's Perception of Productivity and Profitability of Organic and Conventional Production: Tigray, Northern Ethiopia. *Journal of Agricultural Science and Food Technology*, 1(7): 88-93.

- Bornstein, M.H. 1984. Discrimination and Matching within and between Hues Measured by Reaction Times: some implications for categorical perception and levels of information processing. *Psychological Research*, 46, 207-222.
- Chawdhury, S.K. 2015. Farmers Attitude towards Pariza Rice Cultivation in Nilphamari District. *M.S. Thesis*, Department of Agricultural Extension, Hajee Mohammad Danesh Science and Technology University, Dinajpur.
- Christian, R.V., L. Kilcher and H. Schmidt. 2005. Are Standards and Regulations of Organic Farming Moving Away from Small Farmers' Knowledge? *Journal of Sustainable Agriculture*, 26 (1).
- DAE. 1999. Agricultural Extension manual. Ministry of Agriculture, Government of the people's Republic of Bangladesh. Khamarbari, Dhaka.
- Emsley, J. 2001. Going one better than Nature. *Nature*, 410, 633-634.
- Eyhorn, F.M., G. Heeb and Weidmann. 2002. IFOAM Training Manual for Organic Agriculture in the Tropics-Theory, Transparencies, Didactic Approach. International Federation of Organic Agriculture Movement.
- FAO. 1999. Guidelines for the Production, Processing, Labelling and Marketing of Organically Produced Foods. Joint FAO/WHO Food Standards Program Codex Alimentarius Commission, Rome, CAC/GL32. 49.
- FAO. 2003. Awareness Folder on Organic Agriculture: [http://www.fao.org/organicag/doc/awareness folder.htm](http://www.fao.org/organicag/doc/awareness%20folder.htm).
- Gido, O.E., J.K. Lagat, K.I. Gicuru, K.M. Benjamin, W.K. Sibiko and K.J. Mwangi. 2013. Maize Farmers Perceptions towards Organic Soil Management Practices in Bungoma County, Kenya. *Research Journal of Environmental and Earth Sciences*, 5(2):41-48.
- Hamid, M.A. 2011. Farmers' Perception of the Effect of Shrimp Farming. *M.S. Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.
- Hasan, M.F., H. Begum and F. Khatun. 2018. *Research Methodology in Social Science*. Dhaka: BornoProkash Limited.
- IFA. 1996-2004. World Fertilizer use Manual, Fertilizer and their Effective Use. Introductory Chapter by A. Frankt. Mineral Fertilizers.
- Isaacs, J.R. 2012. Organic farming keeps carbon out of the atmosphere. <http://news.mongabay.com/2012/1128-isaacs-organic-carbon>.
- Islam, G.M.W. 2014. Farmers' Perception on the Effect of IPM. *M.S. Thesis*, Department of Agricultural Extension Education and Information System, SAU, Dhaka, Bangladesh.
- Islam, M. 2011. Perception of Sub-Assistant Agriculture Officer on Sustainable Agricultural Practices. *M.S. Thesis*, Department of Agricultural Extension and Rural Development, Bangabandhu Sheikh Mujibur Rahman Agricultural University, Gazipur.

- Iyagba, A.G. and C.B. Ekpote. 2017. Perception and Practice of Organic Farming among Secondary School Teachers in Ahoada East Local Government Area of Rivers State, Nigeria. *British Journal of Applied Science & Technology*, 20(4):1-9.
- Jakir, A. 2010. Attitude of Farmers towards the Effect of Pond Ownership on Fish Production. *M.S. Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.
- John, P. 2011. Nanomaterials in Food and Agriculture: the big issue of small matter for organic food and farming. Proceedings of the third scientific conference of ISOFAR (International Society of Organic Agriculture Research), pp. 96–99.
- Kabir, M.H. and R. Rainis. 2012. Farmers' Perception on the Adverse Effects of Pesticides on Environment: The Case of Bangladesh. *International Journal of Sustainable Agriculture*, 4(2):25-32.
- Karim, M.R. 2009. Perception of Fish Farmers towards Flood Coping Mechanism in Dewanganjupazila under Jamalpur District. *M.S. Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.
- Kerlinger, F.N. 1973. *Foundation of Behavioral Research*. New York: Hoil, Rinehart and Winston Inc.
- Khan, M.A. 2012. Farmers Attitude towards Modern Jujube Cultivation. *M.S. Thesis*. Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.
- McGraw-Hill 2004. McGraw-Hill Encyclopedia of Science and Technology, 5th edition, published by The McGraw-Hill Companies, Inc. p. 1598.
- MOA (Ministry of Agriculture). 2005. Trends of Pesticides Consumption in Bangladesh. *A Booklet*. Plant Protection Wing of the Department of Agricultural Extension, Ministry of Agriculture, Government of the People's Republic of Bangladesh.
- MOA. 2008. National Agriculture Policy (Draft 3). Ministry of Agriculture, Government of the People's Republic of Bangladesh.
- Mohiuddin, M. 1993. *Shilpa Monobiggan*. 3rd edition. Dhaka: Needs Publications.
- Morgan, C.T. 1956. *Introduction to Psychology*. New York: McGraw-Hill Book Co. Inc.
- Murmu, S. 2019. Women Farmers' Perception on Vermicompost as Environment Friendly Fertilizer. *M.S. Thesis*, Dept. of Agricultural Extension, Hajee Moammad Danesh Science and Technology University, Dinajpur.
- Osei, S.A., M. Owusu, P. Pomaa-Yeboah and M. Boateng. 2013. A Study of Student Perception of Organic Agriculture and Organic Foods. *Ghanaian Journal of Animal Science*, 7(2): 142-150.
- Oyedele, G.T., F.I. Wole-Alo, K.E. Owolabi and J.O. Okunlola. 2018. Small-Scale Farmers Perception on Organic Farming Status in Ondo State, Nigeria. *American Journal of Agriculture and Forestry*, 6(6):186-190.

- Oyesola, B., O. Obabire and E.Ibikunle. 2011. Farmers' Perceptions of Organic Farming in Selected Local Government Areas of Ekiti State, Nigeria. Department of Agricultural Extension and Rural Development University of Ibadan, Nigeria. *Journal of Organic Systems*, 6(1).
- Pal, K.B. 2009. The Perception of Organic Farmers Regarding Introduction of ICT in Organic Farming. *M.S. Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.
- Parganiha, O. 2016. Farmers' Perception about Climate Change and its Impact on Agriculture and Allied Activities in Chhattisgarh Plains. *Ph.D. Thesis*, Department of Agricultural Extension, Indira Gandhi Krishi Vishwavidyalaya Raipur (Chhattisgarh).
- Patel, C.D., R.M. Naik and V.P. Vejpara. 2015. Awareness Level of Organic Farming Followers about Organic Farming of South Gujarat. *Gujrat Journal of Extension Education*, 26(1).
- Patidar, D.S. and H. Patidar. 2015. A Study of Perception of Farmers towards Organic Farming. *International Journal of Application or Innovation in Engineering & Management*, 4(3):2319-4847.
- Philip, H. and P. Sivaraj. 2018. Perception of Certified Organic Farmers towards Organic Farming Practices - An Ex Post Facto Study. *International Journal of Current Microbial Applied Science*, 7(12): 56-61.
- Pinthukas, N. 2015. Farmers' Perception and Adaptation in Organic Vegetable Production for Sustainable Livelihood in Chiang Mai Province. 1st International Conference on Asian Highland Natural Resources Management, Asia Hi Land, Department of Agricultural Economics and Agricultural Extension, Chiang Mai University, Chiang Mai 50200, Thailand.
- Prajapati, R.C., J.J. Mistry and D.B. Patel. 2018. Perception of Farmers about Organic Farming. *Gujrat Journal of Extension Education*, 29(1):56-61.
- Rahman, M. 2010. Aquaculture Management Practices Followed by the Fish Farmers in Kishoregonj District. *M.S. Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.
- Rahman, M.Z. and H. Mikuni. 1999. Farmers' Perception towards Sustainable Agriculture Issues and Environmental Quality in a Selected Area of Bangladesh. *American Journal of Alternative Agriculture*, 14(1): 22-29.
- Rahman, M.H.M. 2018. Farmers' Perception on Climate Change in Panchagarh District. *M.S. Thesis*, Department of Agricultural Extension, Hajee Moammad Danesh Science and Technology University, Dinajpur.
- Rahman, M.S. 2008. Farmers' Response towards the Cultivation of BRRI Dhan-33 to Mitigate Monga. *M.S. Thesis*, Department of Agricultural Extension and Rural Development, Bangabandhu Sheikh Mujibur Rahman Agricultural University, Gazipur.

- Rana, S., M.H. Hasan, M.S. Alamandand M.S. Islam.2017. Farmer Attitude towards Organic Vegetable Cultivation in RanguniaUpazila, Chittagong, Bangladesh.*Journal of Bioscience and Agriculture Research*, 14(1):1151-1156.
- Rogers, E. M. 2003. *Diffusion of Innovations* (5th Edition). New York: Free Press.
- Roy, B.S. 2009. Farmers' Perception of the Effect of IPM for Sustainable Crop Production. *M.S. Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.
- Saha, A., C.R. Shumway and A. Havenner. 1997. The Econometrics of Pest Control. *American Journal of Agricultural Economics*, 7(9): 77-85.
- Sarker, M.A. and Y. Itohar. 2009. Farmers' Perception about the Extension Services and : the case of organic agriculture extension program by PROSHIKA. *American Journal of Agricultural and Biological Sciences*, 4(4): 332-337.
- Sayeed, M.A. 2003. Farmer's Perception of Benefit from Using Manure towards Integrated Nutrient Management for Sustainable Crop Production. *M.S. Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.
- Singh, S., R. George and B. Prafull. 2012. Organic Farming Practices of Plains and Hills Farmers and their Extent of Compliance with National Program for Organic Production Guidelines. *Journal of Agricultural Science*, 3:55-62.
- Sultana, M. 2015. Information Needs for Climate Change Resilience in Panchagarh District. *M.S. Thesis*, Department of Agricultural Extension,HajeeMoammadDanesh Science and Technology University, Dinajpur.
- Supe, S.V. 2007. Measurement Techniques in Social Science. Agro-tech Publishing Academy, Udaipur.
- Talukder, M.N. 2013. Use of Union Information and Service Center by the Farmers in Receiving Agricultural Information. *M.S. Thesis*, Department of Agricultural Extension, Hajee Mohammad Danesh Science and Technology University, Dinajpur.
- Ullah, S.M.A. 2011. Farmers' Perception of One House One Farm Approach. *M.S. Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.
- Umale, P.B., R.Umesh, S.B. Bharane and Chinchmalatpure. 2014. Role Performance of Rural Women in Vermiculture Enterprise. *Journal of Rural Development*, 33(1): 101-110.
- UNDP. 2006. Desertification in Bangladesh. *A Publication on World Environment Day 2006*. United Nations Development Programme.
- Zinzala, G.P. and M.R. Bhatt. 2018. Perception of Farm Women towards Animal Husbandry as Occupation. *GujratJournal of Extension Education*, Special Issue: 175-176.

APPENDIX A

Department of Agricultural Extension

Hajee Mohammad Danesh Science and Technology University, Dinajpur

An interview schedule of the research study entitled

Perception of Farmers about Organic Farming Practices in Dinajpur District

Date: - - - - -

Serial No.

Respondent's name - - - - - Father's Name - - - - -

Village: - - - - - Mobile No - - - - -

(Please answer the following questions and put tick (✓) whenever necessary)

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

2. **Education:** Mention your educational qualification.

a) Can't read and write

b) Can sign name only

c) Passed class.....

3. **Farm size:** Please indicate the area of land in your possession.

Sl. No.	Nature of holding	Area		
		Local Unit		Hectare
		Decimal	Bigha	
A.	Homestead (including garden and fallow land)			
B.	Own land under own cultivation			
C.	Area of land taken from others on lease			
D.	Area of land given to others as <i>borga</i>			
E.	Area of land taken from others as <i>borga</i>			
F.	Others (if any)			
Total=				

4. **Farming experience:** How many years are you engaged in agricultural profession?

Ans.: Years

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

Sl. No.	Sources of income	Production (local unit)	Market price (Tk./local unit)	Total (Tk.)
A. Agricultural				
1.	Rice			
2.	Maize			
3.	Potato			
4.	Vegetable			
5.	Fruits			
6.	Fish			
7.	Dairy and poultry			
8.	Land lease			
B. Non-Agricultural				
1.	Service			
2.	Business			
3.	Others (if any)			
Total=				

6. Training experience: Did you receive any training related to agricultural activities?

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

If yes, then how many days? days

7. Extension media contact: Please indicate the extent of your contact with following extension media.

Sl. No.	Extension media	Extent of contact			Not at all
		Frequently	Occasionally	Rarely	
A.	Individual Contact				
1.	Neighbor (times/week)	≥ 5	3-4	1-2	
2.	Local leader (times/week)	≥ 3	2	1	
3.	Agricultural input dealer (times/season)	≥ 6	4-5	1-3	
4.	Sub-Assistant Agricultural Officer (times/season)	≥ 5	3-4	1-2	
5.	Agricultural Extension Officer (times/year)	≥ 5	3-4	1-2	
6.	Upazila Agricultural Officer (times/year)	≥ 4	2-3	1	
7.	Veterinary Surgeon (times/year)	≥ 5	3-4	1-2	
8.	Upazila Livestock Officer(times/year)	≥ 4	2-3	1	

Cont.

Sl. No.	Extension media	Extent of contact			Not at all
		Frequently	Occasionally	Rarely	
9.	Upazila Fisheries Officer(times/year)	≥ 4	1	2-3	
B.	Group contact				
1.	Participate in field day (times/year)	≥ 2	1	0.5	
2.	Participate in result demonstration meeting (times/year)	≥ 2	1	0.5	
C.	Mass Contact				
1.	Reading agricultural features from newspaper (times/week)	≥ 5	3-4	1-2	
2.	Watching agricultural TV program (times/month)	≥ 10	5-9	1-4	
3.	Watching agricultural poster (times/year)	≥ 10	5-9	1-4	
4.	Reading agricultural leaflet (times/year)	≥ 10	5-9	1-4	
5.	Reading agricultural booklets or magazines (No./year)	≥ 4	2-3	1	
6.	Visit to union agricultural information center(No.\Season)	≥ 3	2	1	
D.	ICT				
1.	Mobile, internet, computer (times/month)	≥ 6	4-5	1-3	

8. Risk orientation: Indicate your opinion about the following statements.

Sl. No.	Statements	Level of agreement		
		Agree	Undecided	Disagree
1(+)	A farmer should take risk for getting more profit in organic farming			
2(-)	It is bad for farmers to take risk when he knows his chances of success are fairly low			
3(+)	A farmer who is willing to take greater risk, usually has better financial conditions than the average farmer			
4(-)	It is better for a farmer not to try organic farming unless most others have used them successfully			
5(+)	Trying an entirely new practice in farming by a farmer involves risk but it is worth			
6(-)	Farmers should not take calculated risk instead of bothering over losses			

9. Innovativeness: Please furnish your information about the duration and extent of uses of the following technologies.

Sl. No.	Name of the Technology	Duration of adoption			Do not use
		Within 1 year of hearing	Within 1-2 years of hearing	Above 2 years of hearing	
1.	Use of crop residues				
2.	Inter cropping				
3.	Crop rotation				
4.	Cultivate green manuring crops				
5.	Installing Bird perches to control pest				
6.	Use of pheromone traps				
7.	FM radio				
8.	Watching Satellite TV channel				
9.	Minimum tillage and mulching				
10.	Use balance fertilizer dose				

10. Perception about organic farming practices: Please state the degree of your agreement or disagreement to each of the statements.

Sl. No.	Statements	Level of agreement			
		H	M	S	N
1.	Organic agriculture is environmentally friendly				
2.	Pesticide is less demanded in organic farming				
3.	Organic farming is useful to reduce surface runoff of farmland				
4.	Organic agriculture helps to improve farmers' income				
5.	Organic foods are useful to prevent diseases				
6.	Organic foods are completely safe to eat				
7.	Organic agriculture is expensive				
8.	Organic ingredient improve the nutritional quality of food				
9.	Organic farming is beneficial only for large farmers				
10.	Health consciousness among people will enhance the demand of organic products				
11.	Low input cost and high return may attract farmers toward organic agriculture				
12.	Export opportunities for organic products will promote organic farming				
13.	There may be possibility of adulteration in organic products				
14.	The balance of organism is hampered by practicing organic farming				
15.	Sustainable agriculture will depend on organic farming				
16.	Problems in conventional farming will lead farmers toward organic farming				
17.	Consumers will prefer to pay higher prices for organic products				
18.	Improving crop production using organic agriculture is the best thing to do				

H= High, M= Moderate, S= Somewhat and N= Not at all

11. Problems faced by the farmers about organic farming: Mention the extent of problems of the following areas.

Sl. No.	Problems	Extent of problems			
		High	Medium	Low	No
1.	Lack of reliable package of practices for organic farming				
2.	Inadequate information related to organic farming technologies				
3.	Lack of interest to know about organic farming				
4.	Improper community movement for the promotion of organic farming				
5.	Poor contact of extension workers with farmers				
6.	Inadequate supply of organic agricultural inputs				
7.	Management of pest and insect damage is difficult in organic farming				
8.	There is no special incentive or awards for adopters of organic farming practices				
9.	Lack of market facility for organic produced commodity				
10.	Lack of awareness about price and availability of organic food in people				

Thanks for your kind cooperation.

.....
Signature of the interviewer
Date:

APPENDIX B

Correlation matrix of the focus issue and selected characteristics of the farmers

	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	X ₈	X ₉	Y
X ₁	1									
X ₂	-0.054	1								
X ₃	0.554**	0.103	1							
X ₄	-0.145	0.334**	0.058	1						
X ₅	-0.164	0.243*	0.068	0.873**	1					
X ₆	-0.038	0.238*	0.185	0.398**	0.028	1				
X ₇	0.001	0.390**	0.102	0.529**	0.293	0.292**	1			
X ₈	0.011	0.337**	0.047	0.075	-0.067	-0.011	0.160	1		
X ₉	0.109	0.197	0.164	-0.081	-0.098	0.028	0.042	0.597**	1	
Y	-0.011	0.240*	0.397**	0.097	0.138	0.251*	0.222*	0.205*	0.240*	1

*Correlation is significant at the 0.05 level, **Correlation is significant at the 0.01 level

Note:

X₁=Age

X₂= Education

X₃= Farm size

X₄= Farming experience

X₅= Annual income

X₆=Training experience

X₇= Extension media contact

X₈= Risk orientation and

X₉= Innovativeness

Y= Perception of farmers about organic farming practices