

**INVOLVEMENT OF FARMERS IN HOMESTEAD FRUIT
PRODUCTION ACTIVITIES**

BY

MD. AKRAM HOSSAIN

Reg. No. 04-01289

A thesis

Submitted to the Department of Agricultural Extension and Information System

Sher-e-Bangla Agricultural University, Dhaka

In partial fulfillment of the requirements

for the degree of

MASTER OF SCIENCE (MS)

IN

AGRICULTURAL EXTENSION AND INFORMATION SYSTEM

SEMESTER: JANUARY-JUNE, 2010



Prof. Dr. Md. Rafiquel Islam

Supervisor

Dept. of Agricultural Extension and Information System
Sher-e-Bangla Agricultural University
Dhaka

APPROVED BY:



Prof. Dr. Md. Sekender Ali

Co-Supervisor

Dept. of Agricultural Extension and Information
System
Sher-e-Bangla Agricultural University
Dhaka



Prof. Dr. Md. Rafiquel Islam

Chairman

Examination Committee

Dept. of Agricultural Extension and Information System
Sher-e-Bangla Agricultural University



JUNE, 2010



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

Memo No: SAU/

CERTIFICATE

This is to certify that the thesis entitled “**Involvement of Farmers in Homestead Fruit Production Activities**” submitted to the Faculty of Agriculture, Sher-e-Bangla Agricultural University, Dhaka, in partial fulfillment of the requirements for the degree of **Master of Science in Agricultural Extension and Information System**, embodies the result of a piece of bona fide research work carried out by **Md. Akram Hossain**, Registration No. **04-01289** under my supervision and guidance. No part of the thesis has been submitted for any other degree or diploma.

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

Dated:
Dhaka, Bangladesh

Prof. Dr. Md. Rafiquel Islam
Supervisor

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

ACKNOWLEDGEMENTS

All praises to Almighty Allah, the Great, Gracious, Mercifull, Whose blessings enabled the author to complete this research work successfully.

In particular, the author deems it a great pleasure to express his profound thankfulness to his respected parents, who entiled much hardship inspiring for prosecuting his studies, receiving proper education.

The author deems it a proud privilege to express his deep sence of gratitude, sincere appreciation and immense thanks to his supervisor Dr. Md. Rafiquel Islam, Professor, Department of Agricultural Extension and Information System, Sher-e-Bangla Agricultural University, Dhaka, for his continuous guidance, cooperation, constructive criticism and helpful suggestions in carrying out the research work and preparation of this thesis, without his intense co-operation this work would not have been possible.

The author feels proud to express his deepest respect, sincere appreciation and immense indebtedness to his co-supervisor Dr. Md. Sekender Ali, Professor, Department of Agricultural Extension and Information System, Sher-e-Bangla Agricultural University, Dhaka, for his scholastic and continuous guidance, constructive criticism and valuable suggestions during the entire period of course and research work and preparation of this thesis. The author also expresses his heartfelt thanks to all the teachers of the Department of Agricultural Extension and Information System, SAU, for their valuable teaching, suggestions and encouragement during the period of the study.

Special and thankful appreciation is also due to Mahmud, Asif, Anis, Modhusudan, Sifat, Shahriar, Bappi for their fellow feelings and encouragement during the study period.

Last but not the least, the author express his immense indebtness, deppest sense of gratitude and profound gratefulness to his friends who had been a constant source of bleesings, inspiration and encouragement for his higher study.

The Author

TABLE OF CONTENTS

CHAPTER	Page
ACKNOWLEDGEMENTS	i
TABLE OF CONTENTS	ii
LIST OF TABLES	v
LIST OF FIGURES	vi
LIST OF APPENDICES	vi
ABSTRACT	vii
1. INTRODUCTION	01
1.1 General Background	01
1.2 Statement of the Problem	04
1.3 Specific Objectives	05
1.4 Justification of the Study	05
1.5 Statement of Hypothesis	07
1.6 Assumption of the Study	07
1.7 Limitation and Scope of the Study	08
1.8 Definition of Terms	09
2. REVIEW OF LITERATURE	12
2.1 Involvement of respondents in homestead production activities	12
2.2 Review of Past Studies Concerning the Relationship between Dependent and Independent Variables	19
2.3 Conceptual Framework	28



CHAPTER	Page
3. METHODOLOGY	30
3.1 Location of the study	30
3.2 Sample size	30
3.3 The Research Instrument	32
3.4 Measurement of variables	32
3.5 Measurement of independent variables	33
3.6 Involvement of farmers in homestead fruit production activities	37
3.7 Hypothesis of the study	38
3.8 Data collection procedure	38
3.9 Data processing	38
3.10 Data analysis	39
4. RESULTS AND DISCUSSION	40
4.1 Characteristics of the farmers	40
4.1.1 Age	40
4.1.2 Level of education	41
4.1.3 Family size	42
4.1.4 Farm Size	43
4.1.5 Annual income	44
4.1.6 Training exposure	45
4.1.7 Organization participation	45
4.1.8 Extension media contact	46
4.1.9 Problem faced in homestead fruit production	47



CHAPTER	Page
4.1.10 Knowledge on homestead fruit production	48
4.2 Involvement of farmers in homestead fruit production activities	49
4.3 Relationship of the selected characteristics of farmers with the involvement in homestead fruit production	51
5. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS	61
5.1 Major findings	61
5.2 Conclusions	63
5.3 Recommendations	65
BIBLIOGRAPHY	68
APPENDICES	78

LIST OF TABLES

	Title	Page
Table 1.1.	Common fruits showing the area of production and yield	02
Table 3.1.	Distribution of the population sample and number of farmers in the reserve list	32
Table 4.1.	Distribution of the farmers according to their age	41
Table 4.2.	Distribution of the farmers according to their level education	42
Table 4.3.	Distribution of the farmers according to their family size	43
Table 4.4.	Distribution of the farmers according to their farm size	43
Table 4.5.	Distribution of the farmers according to their annual family income	44
Table 4.6.	Distribution of the farmers according to their training exposure	45
Table 4.7.	Distribution of the farmers according to their organizational participation	46
Table 4.8.	Distribution of the farmers according to their extension media contact	47
Table 4.9.	Distribution of the farmers according to problem faced in homestead fruit production	47
Table 4.10.	Distribution of the farmers according to their knowledge on homestead fruit production	48
Table 4.11.a	Distribution of the farmers according to the involvement in homestead fruit production activities	49
Table 4.11.b	Comparative statement in involvement of farmers in different household fruit production activities based on involvement index	50
Table 4.12.	Pearson's product moment co-efficient of correlation showing relationship between dependent and independent variables	51

LIST OF FIGURES

	Title	Page
Figure 2.1.	The conceptual framework of the study	29
Figure 3.1.	A Map of Pangsha Upazilla Showing the Study Area	31

LIST OF APPENDICES

	Title	Page
Appendix I.	English version of the interview schedule	77
Appendix II.	Correlation Matrix	83



INVOLVEMENT OF FARMERS IN HOMESTEAD FRUIT PRODUCTION ACTIVITIES

ABSTRACT

The study was conducted in the Bahadurpur union of Pangsha Upazila under Rajbari district. Farmers of Bokshipur and Joy Krishnapur villages under Bahadurpur union constituted the population of the study. An update list of 314 farmers involved in fruit production activities from the selected villages was prepared with the help of Sub-Assistant Agricultural Officer of these localities. Around one third (1/3) of the populations were randomly selected as the sample of the study by using random sampling method. Thus, 105 farmers constituted the sample of the study. A well structured interview schedule was developed based on objectives of the study for collecting information. The researcher himself collected data through personal contact during the period from 12 May to 20 June, 2011. Among the respondents the highest 64.76 percent farmers belongs to the group of medium level involvement group followed by 31.43 percent in low level involvement group and 3.81 percent in high involvement group. Level of education, training exposure and extension media contact of the farmers had significant positive relationships with their involvement in homestead fruit production activities. Problem faced in homestead fruit production activities of the farmers had significant negative relationship with their involvement in homestead fruit production activities. Age, family size, farm size, annual income, organizational participation and knowledge on homestead fruit production of the farmer had no significant relationships with their involvement in homestead fruit production activities.

CHAPTER 1

INTRODUCTION



1.1 General Background

Fruit is a structure formed from a mature or ripe ovary of any plant species after fertilization has occurred. The term 'fruit' is more conveniently used to refer to the part of the seed suitable for human consumption, eaten fresh, either ripe or young. From the nomadic age to present-day civilized life fruits have been used as food. The earliest cultivated fruit appears to be the date palm. Other fruits like pomegranates, Egypt figs and olives had been popular fruits since 3500 BC.

Bangladesh abounds with a large variety of tropical and sub-tropical fruits. The most widely cultivated fruits are Mango, Jackfruit, Black berry, Pineapple, Banana, Litchi, Lemon, Guava, Hog plum, Custard apple, Wood apple, Elephant apple, Golden apple, Indian berry, Papaya, Coconut, Tamarind, Melon, Watermelon, Cashew nut, Pomegranate, Palmyra, Plum, Rose apple, Indian olive, and Indian jujube. There are many minor edible fruits that are locally available in the wild and are also cultivated, such as latkan, monkey jack, uriam, rattan, river ebony, garcinia, water coconut, wild date palm, etc.

May, June and July are specially treated as fruit festival months in Bangladesh when almost all the major and minor fruits are matured and available. A few fruits are available throughout the year. These are the papaya, sapodilla, coconut and banana. The common imported fruits are orange, apple, pomegranate, grape, date, and mandarin.

Different fruits grow in Bangladesh round the year because of favorable climatic conditions. Homestead fruit production is quite prevalence in Bangladesh. Most of the people live in village who are farmers in occupation. They usually cultivate fruits through homestead gardening and meet their fruit consumption from it. A list of the common fruits showing the area of production and yield is given in Table 1.1.

Table 1.1 Common fruits showing the area of production and yield

English name	Local name	Scientific name	Area under production (in acre)	Yield ('000 m ton/ year)
Banana	Kala	<i>Musa sapientum</i>	131636	877
Jackfruit	Kathal	<i>Artocarpus heterophyllus</i>	24621	976
Mango	Am	<i>Mangifera indica</i>	78196	803
Litchi	Lichu	<i>Litchi chinensis</i>	5789	44
Hog Plum	Amra	<i>Spondias dulcis</i>	--	--
Papaya	Papaya	<i>Carica papaya</i>	--	104
Coconut	Narikel	<i>Cocos nucifera</i>	6416	334
Guava	Piara	<i>Psidium guajava</i>	--	152
Star Apple	Jamrul	<i>Syzygium samarengense</i>	--	--
Black Berry	Kalajam	<i>Syzygium cumini</i>	--	--
Orange	Kamla	<i>Citrus chrysocarpa</i>	--	01
Grape Fruit	Jambura	<i>Citrus grandis</i>	--	--
Indian Apple	Bel	<i>Aegle marmelos</i>	--	--
Wood Apple	Kathbel	<i>Feronia limonia</i>	--	--
Custard Apple	Ata	<i>Anona squamosa</i>	--	--
Indian Jujube	Boroi	<i>Zizyphus mauritiana</i>	--	--
Sapodilla	Sofeda	<i>Manilkara achras</i>	--	--
Indian Goose Berry	Amloki	<i>Phyllanthus embelica</i>	--	--
Pomegranate	Dalim	<i>Punica granatum</i>	--	--
Elephant Apple	Chalta	<i>Dillenia indica</i>	--	--
Carambola	Kamranga	<i>Averrhoa carambola</i>	--	--
Pineapple	Anaras	<i>Ananas comosus</i>	39358	210
Watermelon	Tarmuj	<i>Cucumis melo</i>	--	36
Lemon	Lebu	<i>Citrus limon</i>	--	--

Source: BBS, 2009; Yearbook of Agriculture Statistics, 2007-08

Homestead is the dwelling place and is the centre where all of fruits are grown by the household farmers. In Bangladesh, about eighty five percent of the people live in rural areas. According to Ninaz (1986), homestead refers to home and adjoining land occupied by a family for the purpose like small scale agricultural production, home up keeping, sanitation, health and nutrition. Likewise, homestead land is defined as the land owned and occupied by the dwelling unit of the household and immediate area surrounding the dwelling unit including court yard, pond, road space around homesteads, space used for cultivation of trees and vegetables and also utilized the spaces (Abdullah, 1986). Moreover, a vast number of rural people are landless and 55 percent of the land owners are small farmers. Landless families possess a small piece of land in the homestead area. The households' owners cultivate different kinds of vegetables, fruits and earn money more than medium and large farm size family (Halim, 1991). This income may fulfill a part of household expenditure for an average of 5.5 members' family size (Anonymous, 1991).

In Bangladesh context, the increase of homestead at present is not able to keep pace with the growing population. Most of the homestead areas are not utilized properly at present. So, a vast area remains unproductive even through theses land can able to meet the nutrient requirements which easily protect us from various diseases. For this reason, most of the people of our country are suffering from malnutrition. Homestead fruits can be easily cultivated by the household members. So, there is a great scope to overcome malnutrition by involving women in homestead fruit cultivation.

From the above discussion, we can say that homestead fruit production activities can play an important role to fight against malnutrition for the household families and to boost up economic development. Considering the importance of homestead fruit production both from economic and nutritional point of view the researcher became especially inclined to conduct an investigation of the involvement of farmers in homestead fruit production activities.

1.2 Statement of Problem

Farmers' involvement in homestead fruit production activities for attaining the benefits both in economically and nutritionally is an important aspect because of increasing the population and subsequently the area of homestead in Bangladesh day by day. A dynamic change in fruit production has already been observed in Bangladesh. The researcher undertook the investigation entitled, "Involvement of farmers in homestead fruit production activities" in a selected area of Pangsha Upazila under Rajbari district" in order to have an understanding of the extent of involvement by the farmers in homestead fruit production activities. Research information is required which could be helpful to the policy maker, regarding supply of inputs, technological knowledge and problems being encountered on homestead fruit production. The purpose of the study was to investigate the extent of farmers' involvement in homestead fruit production activities and to explore the relationship of the selected personal, economic, social and psychological characteristics with the involvements of homestead fruit production activities. In order to make the study manageable, the following research questions were taken into consideration.

- i) Are they really involving in homestead fruit production activities?
- ii) What is the extent of involvement of the farmers in homestead fruit production activities?
- iii) What are the selected characteristics of the farmers?
- iv) Is there any relationship exists between the farmers selected characteristics and their involvement in homestead fruit production activities?

For getting clarification of the above questions the researcher selected the following objectives of the study.

1.3 Specific Objectives

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

1. To assess the extent of involvement of farmers in homestead fruit production activities.
2. To assess and describe the selected characteristics of the fruit growing farmers. The characteristics are:
 - Age
 - Level of Education
 - Family size
 - Farm size
 - Annual family income
 - Training exposure
 - Organizational participation
 - Extension media contact
 - Problems faced in homestead fruit production
 - Knowledge on homestead fruit production
3. To explore the relationship between selected characteristics of the farmers and their involvement in homestead fruit production activities.

1.4 Justification of the Study

The people of Bangladesh are directly related to agriculture. We have almost attained self-sufficiency in cereal production. But as regards fruit production, we do still depend on foreign supplies. For balanced nutritional needs sufficient fruit intake is necessary. Fortunately Bangladesh is favorite playground of nature. It offers a highly congenial environment for the growth of different varieties of

fruits. The proverb goes that every season has its special fruits in Bangladesh. Even though having this situation, our fruit production is not sufficient to meet up our domestic need. During last three decades population of Bangladesh increased from 75 million to 142 million, simultaneously food grain production increased from 10 million to about 20 million tons. But fruit production did not increase at the same rate. The minimum dietary requirement of fruit per day per person is 85 g, where as our availability is only 30-35g. In view of the fact, the consumption and availability of fruits is very negligible. As a result, imbalanced nutrition and nutrition deficiency diseases are being increased at an alarming rate.

There are 11.2 million sq. km. homesteads in our in country. Their homesteads are the main source of fruits. Where there is a home, there is a homestead. Every farm families have large or small homestead where different types of fruits are grown. Practical experience indicates that majority of the farmers cultivates homestead fruits in unplanned way. A large area of every homestead remain as follows because of poor plant population whereas plantation of diversified fruit trees in planned way considering the harvesting period, a farmer can easily get year round fruit supply from his homestead garden and also can get more production of fruit from their garden. So fruit diversity in homestead is necessary. For doing so it is first necessary to have a clear understanding of the present position of homestead fruit production and the activities of the farmers. There may be a great source of vitamins and minerals that can fight against malnutrition as well as to boost up economic development. To achieve this goal an effective extension program is needed for speedy dissemination of information to the farmers. Before taking such program it is necessary to have clear understanding about their existing practice, knowledge and problems regarding involvement in the homestead fruit production. However, very few systematic researches have so far been conducted to determine the involvement of farmers in homestead fruit production.

Considering the above facts in view, it is necessary to undertake a research study entitled “**Involvement of Farmers in Homestead Fruit Production Activities**” in the area of Pangsha Upazila under Rajbari district.

1.5 Statement of Hypothesis

According to Karlinger (1973), a hypothesis is a conjectural statement of the relation between two or more variables. A null hypothesis states that there is no relationship between the concerned variables. The following null hypothesis was undertaken for the present study:

There is no relationship between the selected characteristics of farmers with the extent of involvement in homestead fruit production activities. The related characteristics are age, level of education, family size, farm size, annual family income, training exposure, organizational participation, extension media contact, problem faced in homestead fruit production and knowledge on homestead fruit production.

1.6 Assumptions of the Study

An assumption has been defined as the supposition that an apparent fact or principle is true in the light of the available evidence (Goode, 1945). The researcher had the following assumptions in mind while undertaking this study:

- The respondents, included in the sample were capable of furnishing proper responses to the questions included in the interview schedule.
- Views and opinions furnished by the respondents were the representative views and opinions of the whole population of the study.
- The responses furnished by the respondents were reliable. The researcher was well adjusted to the social environment of the study area. So the respondents gave their opinions without any hesitation.
- All the data concerning the independent and dependent variables were normally and independently distributed with their respective means and standard deviation.
- The findings of the study will have general applications to other parts of the country with similar personal, socio-economic and cultural conditions.

1.7 Limitation and Scope of the Study

Considering the time, money and other necessary resources available to the researcher and to make the study manageable and meaningful it became necessary to impose certain limitations and also to make meaningful and manageable. The limitations were as follows:

- i) The study was confined to Bahadurpur union of Pangsha Upazila under Rajbari district.
- ii) Population for the present study was kept confined within the heads of farm families in the study area.
- iii) There were many characteristics of the farmers in the study area but only ten of them were selected for investigation.
- iv) For information about the study, the researcher depended on the data furnished by the selected respondents during their interview with him.
- v) Facts and figures collected by the researcher applied to the situation prevailing during the year 2011.

Findings of the study will be particularly applicable in a selected area of Pangsha Upazila under Rajbari district. However, the findings may also have applications for other areas of Bangladesh where the physical, socio-economic and cultural condition do not differ much from those of the study area. Thus the findings will be helpful to the researchers, planners, policy makers and extension workers for promoting fruit production as well as rural development in our country.



1.8 Definition of Terms

A concept is an abstract of observed thing; events or phenomenon or in other words, it is a short hand representation of variety of. A researcher needs to know the meaning and contents of every term that he uses. It should clarify the issue as well as explain the fact to the investigator and readers. However, for clarity of understanding, a number of key concepts/terms frequently used throughout the study defined are interpreted as follows:

Respondents

People who have answered the questions by an interviewer for a social survey 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 are the farmers of Bokshipur and Joy Krishnapur village of Bahadurpur Union.

Farmers

The persons who were involved in farming activities are called farmers. They participated in different farm and community level activities like crops, livestock, fisheries, other farming activities etc.

Variable

A general indication in statistical research of characteristic that occurs in a number of individuals, objects, groups etc. and that can take on various values, for example the age of an individual.

Assumption

An assumption is “The supposition that an apparent fact or principle is true in the light of the available evidence” (Goode and Hatt, 1952).

Hypothesis

Defined by Goode and Hatt (1952), a proposition this can be put to “a test to determine its validity”. It may be true or false, it may seem contrary to or in accord with common sense. However, it leads to an empirical test.

Null hypothesis

The hypothesis which we pick for statistical test is null hypothesis (H₀). In this study the null hypothesis is stated that there is no relationship between the concerned variables.

Age

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

Level of Education

Empirically it was defined to the development of desirable changes in knowledge, skill and attitudes in an individual through reading, writing, walking, observation and other selected activities. It was measured on the basis of classes a farmers has passed from a formal educational institution.

Family size

Family size refers to the number of member including the respondent himself/herself, his/her wife/husband children and other permanent dependents, who live and live together in a family unit.

Farm size

The term related to the hectare of land owned by a farmers on which he carried his farming activities, the area being estimated in terms of full benefit to the farmers. A farmer was considered to have full benefit from cultivated area either owned by himself or obtained or, lease from others and half benefit from the area which was either cultivated by borga or given to others for cultivation on borga basis.

Annual family income

Annual family income of a respondent referred to the total earning by him and other members of his family from agricultural (field crop, fish, livestock, poultry, fruits and vegetables and timbers, etc.) and other sources (service, business, etc.) during a year. Annual family income of the respondent also included the cost of maintaining his family. It was expressed in Taka.

Training exposure

It refers to the total number of days that a respondent received training in his entire life from different organizations under different training program.

Organizational participation

Organizational participation of the respondent is measured in two dimension status of his participation and duration of participation in different organizations during the time of interviewing.

Extension media contact

It is referred to the respondents becoming accessible to the influence of different information media through different extension teaching methods.

Problem faced

Problem means any difficult situation which requires some actions to minimize the gap between “what ought to be” and “what is” The term problem faced refers to different problems faced by the farmers in homestead fruit production activities.

Knowledge on homestead fruit production

It is the extent of basic understanding of the farmers in different aspects of homestead fruit production like soil, seed, fertilizer, insects and diseases, high yielding variety etc. It includes the basic understanding of the use of different inputs and practices for homestead fruit production.

Involvement of homestead fruit production

This term referred to one’s decision to continue the cultivation of fruits in homestead area.

CHAPTER 2

REVIEW OF LITERATURE

To carry out the research program review of literature gives the clear and concise direction of the researcher. In this Chapter, review of literatures relevant to the objectives of this study is presented. This was mainly concerned with farmers' involvement in homestead production in various aspects. There was serious dearth of literature with respect to research studies on this aspect. So the directly related literatures were not readily available for this study. Some researchers addressed various aspects of farmers' role, their opinion on extension program and its effect on client group and suggesting strategies for their emancipation from socio-economic deprivations. A few of these studies relevant to this research are briefly discussed in this chapter under third sections. The first section is concerned with Involvement of respondents in homestead production activities. The second section contains the review on the past studies in concerning the relationships between dependent and independent variables. Conceptual framework of the study is cited in the third section.

2.1 Involvement of respondents in homestead production activities

Quddus and Bose (1985) stated that in the traditional society of Bangladesh, the involvement of men, women and children in different farm and non farm activities can not be always isolated because of their close bondage and inter-dependence in the family. The farm activities in the homestead include seed storage, and vegetable and fruit growing, post harvest rice processing, food processing, poultry raising and house construction etc.

Hussain *et al.* (1988) reported from a joint study in different locations of farming system side of Bangladesh that women more involved in most of the pre and post harvest work of vegetable production but husband played key role in forest and fruit growing activities except seed/seedling management and fruit processing. Man was more involved than women in laborious (e.g. land preparation)

hazardous (e.g. insecticide application) and outside job (selling fruits, vegetables in the market). They also found that women's participation was more than men in all the operations from production to storage of vegetable, on homestead.

Hussain *et al.* (1988) in their study revealed that family member, specially wife, husband and children participate in varying percentage in the pre and post harvest activities of forests, fruit and vegetable production in the homestead. The involvement of wife was highest followed by husband and children in seed/seedling collection, seed storage, water management and fruit processing when husband was more involved than wife and children in land propagation, tree plantation, propagation, fertility management, pest management, weeding, harvesting and selling the fruit and vegetables irrespective of farm category.

Ali (1980) opined that women played an extremely vital role in agricultural sector. Seventy percent of women labour forces were engaged in agriculture. They also performed agricultural activities such as processing, threshing, drying, winnowing, storage, parboiling, husking and preservation of paddy at home; besides, they grow vegetables and fruit trees and reared poultry and livestock and fish. During off-season, they were found to produce different handicrafts like quilts, mats, ropes, hangers etc.

Blumberg (1979) also reported that women's agricultural work was invisible, under reported and their household production was even more invisible.

Ferguson and Nancy (1985) urge the importance of recognizing women's agricultural and house hold production in the development and introduction of cowpea and bean plants. They indicated that the concerns of women as food producers and preparers were often overlooked in male focused research agendas.

Gleason (1988) reported that women in rural Taiwan were often farmer and worked with their male counter-parts in almost all aspects of agricultural production. There were tendencies for women perform certain farm tasks that men were likely to do and vice versa. The participation or non-participation of women

working on the farm appeared to have a pronounced effect on crop choice and diversification. An abundance of female labour was generally associated with intensive cropping, such as vegetables production and fruit cultivation, while men were responsible activities that needed machines. In Taiwan, it may reveal that farm families with more than female labour were more likely to grow mainly rice and sugarcane. However, if a farm husband and wife worked together in a team. Various crops grown would be far greater. This study revealed that farm decision making was based, at least in part, on the perception that labour was not a homogeneous input. Farouq (1980) found that women in the poorer families spent less time in satisfying personal needs, recreation and farm activities in the middle class family they spent more time in agricultural activities, especially crop processing marketing and off-farm enterprise.

Pineda (1984) reported that many rural women are vendors, selling vegetables and fruits; the most numerous are the landless rural poor who have no ownership or tendril rights to land. Others become domestic workers or service workers. Here work for rural women is a means to ensure the families physical survival.

Schoeffel (1983) reported that the productive inputs of women in the total society of Papua Guinea, have been significantly greater than those of men and inclusion of their contribution to domestic work would prove further that women do carry a heavier work load.

Sofilios and Mahmud (1989) showed that household production was in the hands of women. The major tasks and decisions regarding homestead vegetables and spices are the responsibility of the women in all except the large farm households.

Annonymous (1983) reported that in Thailand, non-farm activities have also become an increasing source of income for rural households. A study by the World Bank indicated that about 40% of total household income is derived from nonagricultural activities. While the said study did not categorically state the contribution of women, rural women have been known to engage in a variety of

nonagricultural activities ranging from marketing, seasonal off-farm employment to handicrafts making.

Halim and Ali (1986) reported that the farmer showed keen interest to have women extension workers in order to receive information and suggestion about vegetable cultivation, poultry rising, animal care and post harvest operation of crop.

Hussain (1985) showed that women were involved in most of the pre and post harvest operations of vegetables production. They also advocated some measures to be taken by the government, policy makers, planners, development workers and researchers for the effective integration of participation in different homestead production and management activities like vegetable growing, livestock raising, fish cultivation, post harvest operations like processing and household decision making etc.

Sattar (1985) observed that women participated in the post harvest operations, vegetables cultivation, fruit cultivation, livestock care as well as other economic activities which had a great contribution in the family income.

Stunburg (1984) reported that India provided an example of incorporating some participation to women domestic roles in an agricultural project. It was found that women roles in the project were more prominent in domestic activities than in agricultural activities.

Wallace et al. (1985) opined that women had a positive and direct contribution to the household economy through their active participation in pre and post harvest activities. The total hours spent by women in direct economic activity was affected by farm size, class and seasonality.

Yunus (1984) reported that social attitude to women participation in activities outside the home became more favourable in eighties, particularly when women participation was considered as an economic advantage to the family.

Veneracion *et al.* (1988) stated that in Philippines the women were involved in preparation, processing and preservation of food such as natada coco, peanut butter, vinegar, salted eggs, papaya caudices, pineapple jam, coconut oil and tomato ketch-up. They also prepared baskets, fan from anyhow leaves, soap etc. However, they were unable to find a market for their produce or had little access to potential markets. Thus, women activities remained confined within the home enterprise activities.

Marek *et al.* (1990) conducted a study on home garden project in Senegal. That project was run with vegetable production like tomatoes, onions, cabbages, lettuce etc. It was found that extension agents had first contact with men of the project but was not successful until it was turn over by women. Further they found that with the participation of women the rate of vegetable consumption also increased.

Quddus and Bose (1985) reported that the kitchen gardening and home level food processing was satisfactory and profitable and women participation was very high with strengthening extension work and their participation was highly favorable. They also advocated that with the existing social system homestead gardening may be considered a major area for women which have both economic and nutritional implications for the well being of rural women particularly for the poor unemployed women.

Scaffer (1986) opined that the rural women are used to do post harvest activities, livestock and poultry rearing inside the family compound and they also perform homestead vegetable gardening.

Rosemary and Zahir (1991) in their joint paper reported that women do not traditionally become tailor, but many RDRS group members are doing so successfully, albeit on a very small scale potential women are selected and get orders from their villages prior to training. They then receive training from a local tailor master. When they have sufficient skill, they fulfill their orders during the training period and are in a position to make a down payment on the lease

purchase of their swing machine. These women can then provide a useful service in their villages by making cloths at a price that poor people can afford. They also reported that women with experiences can run home based businesses and can participate in marketing for selling out their product like handicrafts and bamboo made materials. They can also setup small grocery shops or tea shop in local market if they are provided a basic training in record keeping, micro enterprise management and market bargaining etc. They should also be supplied with credit for building materials and for purchase of stock.

Castillo (1985) reported that in the Philippine rural women contribute mostly in transplanting, harvesting and care of animals, processing and marketing of produce.

Sudharani and Raju (1991) reported that household based subsidiary professional program such as cattle production, poultry rearing, agriculture, sericulture mushroom culture and fruit preservation might generate extra employment opportunities for the farm women and gradually they would proceed to these operations.

Ali and Rahman (1978) reported that women were engaged in both productive and household activities. The production or income generating activities improved their socio-economic condition.

Hoon (1991) stated that women's participation was much greater in rice based cropping system than in dry land farming. A comparison of women's participation in agriculture indicated that rice systems traditionally used more female labour. In rice farming systems, women contributed most of the labour in transplanting weeding and harvesting. Their contribution was highest at more than 50% in India, Nepal Indonesia and roughly 33% in South East Asian countries.

Vidya *et al.* (1991) in a case study at Naldung, Nepal reported that except for irrigation, the participation of women in vegetable production was much higher than men. The women labour constituted 73% of total labour employed in the

vegetable garden. These activities however were not as time bound as the activities in cereal production. Also year round production of vegetables was not common in the area. The farmers mostly grew seasonal vegetables.

Halim (1990) in a study found that rural women in Bangladesh were active in productive works in household industry and even in marketing in addition to taking care of children, prepare servicing food to other members of the family. They were also responsible for agricultural and non-agricultural activities.

Bergerlin (1987) reported that agricultural extension institutions overlooked the women of the developing countries leading to poor participation of the women in agricultural extension programs. He suggested 4 institutional approaches for agricultural extension organizations, one of these were specifically for women.

Dey (1985) found that women in the households were economically active and played important role in post harvest operations as well as other economic activities like kitchen gardening, livestock rearing etc. His study revealed that there was a diminishing effect on the importance of women's role in agriculture due to agriculture mechanization.

Huq (1979) reported that the rural women participate in agricultural activities to a large extent but their contributions have yet to be calculated in labour force activities.

Ali (1980) reported from an article that women's participation and their role in farm and non-farm activities were highly productive inspire of social and religion constraints. In non agricultural sector women were engaged in various kinds of occupation like tailoring, hand making works and works with bamboo and canes. Women played an extremely useful role in agriculture and perform activities on processing, threshing, drying, winnowing, storing, parboiling, husking and preservation of paddy at home.

Huq (1981) reported that women play an important role in country's economic growth, especially in agricultural production. But the tasks that rural women perform in a subsistence agricultural framework are mostly unpaid, because these tasks are socially recognized as the part of house keeping or home making and not considered as productive ones.

Westerguard (1981) found from a study that of two villages in different thanas in the Comilla district of Bangladesh, the agricultural production activities within the "bari" did not provide the landless and land poor women with sufficient work to keep them fully engaged or to supplement the income of the family.

Khan (1977) stated in an article about the participation of rural women in agricultural activities. He argued that the activities and contributions of the rural women are invisible to most men and their contributions are calculated neither in the GNP nor in the labour force.

Brammer (1983) pinpointed that women do a large extent of agricultural activities such as post harvest operations, poultry raising, vegetables and fruit trees culture, livestock etc. He further highlighted that low rate of literacy, shortage of women officials, introduction of inappropriate technology and insufficient program policies hinder women's participation in agricultural activities.

Martins and Von Harder (1985) found from a survey conducted in four village of Comilla Kotwali thana that women in the rural households perform a number of economic activities. These are post harvest activities, plantation activities, poultry raising, vegetables gardening, fuel gathering etc.

2.2 Review of Past Studies Concerning the Relationship between Dependent and Independent Variables

2.2.1 Age with involvement of respondents

Akanda (1994) revealed in his study that age of the rural women had significant positive relationship with their participation in the cultivation of homestead vegetables and fruit trees.

Islam (1994) showed that age of the women was not significantly related to their extent of participation in agricultural income generating activities.

Miah *et al.* (1994) found insignificant relationship between age of the rural women and their time spent in farming activities.

Fatema (1995) found that age of the farm women had no significant relationship with their training need in homestead agricultural production.

Begum (1998) in her study showed that age of the rural women had no significant relationship with their poverty alleviation owing to participation in ASA activities.

Chowdhury (2000) in his study observed that age of the rural women had insignificant relationship with their opinion for participation in development activities.

Akhter (2000) in his study found significant positive relationship between age of the women in RDRS client group and their participation in decision making role in the family with regard to development activities.

Alam (2001) in his study found that the age had positive significant relationship with their participation in agriculture, fisheries and poultry programs of BAUEC.

Aurangozeb (2002) found that age of the rural women had significant negative relationship with their adoption of integrated homestead farming technologies.

Islam (2002) in his study found that age of the women had no significant relationship with their involvement in income generating activities.

2.2.2 Education with involvement of respondents

Devi (1995) found that education of women had a significant positive impact on labour force participation.

Nahar (1996) mentioned that there was significant positive relationship between knowledge of farm women in homestead farming and their education. As the level of education increased, the level of knowledge on homestead farming was also increased. She also concluded that family education also had significant positive influence on the knowledge of farm women about homestead agriculture.

Rahman (1996) observed that level of education of the women had positive relationship with their participation in rural development activities.

Basak (1997) showed that education of the rural women under BRAC had a significant positive relationship with their impact of participation in BARC rural development activities.

Chowdhury (2000) in his study found that education of the rural women had significant positive relationship with their opinion for participation in development activities.

Akhter (2000) in his study observed that education of the women had significant positive correlation with their participation in decision making role in the family with regard to development activities.

Alam (2001) in his study found that education had non-significant relationship with their participation in agriculture, fisheries and poultry programs of BAUEC.

Islam (2002) in his study found that education of the women had significant positive relationship with their involvement in income generating activities and decisions making in household and health care.

2.2.3 Family size with involvement of respondents

Parveen (1993) found that there was a significant positive relationship between family size of the farm women and their awareness and knowledge on environmental degradation.

Akanda (1994) mentioned that family size of the rural women had significant positive relationship with their participation in the cultivation of fruit trees. The relationship with homestead vegetable cultivation and non-farm household activities was positive but not significant.

Rao (1994) reported that rural women's participation in agriculture was positive correlated with the size of their family.

Chowdhury (2000) in his study found that family size of the rural women had no significant relationship with their opinion for participation in development activities.

Alam (2001) in his study observed that family size had non-significant relationship with their participation in agriculture, fisheries and poultry programs of BAUEC.

Aurangozeb (2002) found that family size of the rural women had non-significant relationship with their adoption of integrated homestead farming technologies.

Islam (2002) in his study found that family size of the women had non significant relationship with their involvement in income generating activities.

2.2.4 Farm size with involvement of respondents

Halim (1991) in his evaluation report on Farming System Research activities of homestead component mentioned that women of small farm family spent more time in agricultural activities as compared to medium and large farm family in Kazirshimla site (upland). Whereas in Naogaon site (low lying area), women of medium farm family spent more time in agricultural activities.

Akanda (1994) in his study mentioned that farm size was one of the activities of rural family and it influenced all other variables. The rural women with bigger farm size had more participation in homestead vegetable cultivation, fruit tree cultivation and non-farm household activities. The reasons were that these

families had more opportunities, more education, more agricultural knowledge and better extension contact.

Nahar (1996) in her study found that farm size had no significant relationship with usefulness of agricultural radio program.

Sharder (1996) in his study found that the family farm size of the rural youth was not related with the interest and participation in the selected winter vegetable cultivation for income generation.

Akhter (2000) in his study found that farm size of the women had significant positive relationship with their participation in decision making role in the family with regard to development activities.

Islam (2002) in his study observed that farm size of the women had significant positive relationship with their involvement income generating activities.

2.2.5 Annual income with involvement of respondents

Anwar (1994) found that family income was not associated with the participation of rural youth in agricultural activities. Middleton (1958) also found the same findings from their study. Akhter (1989) opined that on an average the income from homestead varied from 5 to 13.42 thousands Taka in a year.

Akanda (1994) observed in his study that family income had significant positive relationship with their participation in the cultivation of fruit trees and non-farm household activities but not with homestead vegetable cultivation.

Nahar (2000) in her study found that family income had negative relationship with their participation in homestead vegetable cultivation, post harvest practices, poultry rearing and goat rearing.

Islam (2002) in his study found that family income of the women had significant positive relationship with their involvement in income generating activities and decision making in household and health care.

2.2.6 Training exposure with involvement of respondents

Hossain (1981) found a positive relationship with training exposure and development of farming skill as well as involvement in farm activities as per training.

Parveen (1993) in her study recommended that knowledge had played a vital role in farming favorable attitudes towards the homestead agricultural production. The knowledge about homestead agricultural production activities should be offered through training. Training facilities should be made available for the women regarding homestead agricultural production activities that lead their more involvement in homestead agricultural production.

Haque (2003) found a positive relationship with training experience and modern technology and also involvement with modern technology in day to day agricultural operation.

A positive relationship was also found between training experience and adoption of improved practices in transplanted Aman rice by Rahman (1996). He also stated that adoption leads to involvement.

Islam (2002) was also found that there is no relationship between training experience and adoption of ecological agricultural practices as well as involvement.

2.2.7 Organizational participation with involvement of respondents

Hossain (1971) study revealed a positive relationship of organizational participation of the farmers with their adoption of recommended doses of fertilizers and plant protection measures. Similar result was also reported by Hossain (1991).

Hossain (1983) in his study found that organizational participation of transplanted aman growers had no relationship with their involvement in cultivation of HYV rice.

Ali (1984) found that organizational participation of contact farmers had significant positive contribution to their agricultural knowledge.

Balasubramanian and Kaul (1985) studied adoption of improved practices by fish trawler owners in Kerala. The study indicated no relationship between organizational participation and involvement of improved practices. Similar finding was also observed by Alam (2001).

Khan (1993) found that organizational participation of the farmers had positive relationship with their adoption of insecticides and involvement in application.

Rahman (1996) in his study found that organizational participation of potato growers had no relationship with their knowledge regarding improved practices of potato cultivation and their involvement.

Hossain (2000) found insignificant relationship between organizational participation of the farmers and their knowledge on Binadhan-6 cultivation and their involvement in the cultivation process.

Hossain (2003) concluded that organizational participation of the farmers had no significant relationship with their adoption of modern Boro rice cultivation and ultimately their involvement in the cultivation process.

Hossain (2006) revealed that organizational participation of the farmers had no significant relationship with their adoption of HYV rice as well as involvement in the cultivation process.

2.2.8 Extension media contact with involvement of respondents

Kashem and Halim (1991) in a study on concluded that interpersonal communication media such as friends, neighbors, seed, fertilizers and pesticide dealers are the most reliable and trustworthy sources of agricultural information to the farmers.

Karim (1993) concluded from a study that there was a significant difference in the agricultural knowledge of farmers in sugarcane cultivation, based on their level of extension contact. Higher the level of extension contact of the farmers, higher was the level of agricultural knowledge in sugarcane cultivation.

Nahar (1996) in her study found that there was a significant relationship in the agricultural knowledge of farm women in homestead farming and their level of contact with information sources.

Chowdhury (2000) in his study observed that communication exposure of the rural women had no significant relationship with their opinion for participation in development activities.

Hossain (2006) concluded that the extension contact of the farmers had positive significant relationship with their adoption of selected HYV rice and also involvement in cultivation.

2.2.9 Problem faced with involvement of respondents

Akanda (1994) in his study mentioned that problem faced was one of the activities of rural family and it influenced all other variables. The rural women with lower problem had more participation in homestead vegetable cultivation, fruit tree cultivation and non-farm household activities. The reasons were that these families had more opportunities, more education, more agricultural knowledge and better extension contact finally they faced minimum problems.

Aurangozeb (2002) found that problem faced in homestead production of the rural women had significant negative relationship with their adoption of integrated homestead farming technologies. Generally when they faced minimum problems they have more involvement in integrated homestead farming technologies.

Islam (2002) in his study observed that problem faced of the women had significant negative relationship with their involvement in income generating activities.

2.2.10 Knowledge with involvement of respondents

Parveen (1993) in her study recommended that knowledge had played a vital role in farming favorable attitudes towards the homestead agricultural production. The knowledge about homestead agricultural production activities should be offered through training. Training facilities should be made available for the women regarding homestead agricultural production activities.

Akanda (1994) in his study found that agricultural knowledge of the rural women had positive relationship with their participation in the cultivation of fruit trees. But there was no significant difference in the participation of rural women in homestead vegetable cultivation and non-farm household activities because of their difference in education.

Parveen (1995) in her study observed that the level of existing knowledge of the farm women on the use of modern technologies revealed that 58% had moderate knowledge, 35% had high while 7% of the farm women possessed poor knowledge.

Ali (1995) stated that agricultural knowledge of the rural women had significant positive relationship with their attitude towards working in group in different agricultural activities.

Akhter (2000) in his study found that agricultural knowledge of the women had significant positive relationship with their participation in decision making role in the family with regard to development activities.

2.3 Conceptual Framework

In scientific research, selection and measurement of variables constitute an important task. The hypothesis of a research while constructed properly consist at least two important elements i.e.: a dependent variable and an independent variable. A dependent variable is that factor which appears, disappears or varies as the researcher introduces, removes or varies the independent variables (Townsend, 1953). An independent variable is that factor which is manipulated by the researcher in his attempt to ascertain its relationship to an observed phenomenon. Variables together are the causes and the phenomenon is effect and thus, there is cause effect relationship everywhere in the universe.

The conceptual framework of Rosenberg and Hovland (1960) was kept in mind while making structural arrangements for the dependent and independent variables. This study is concerned with the involvement of farmers in homestead fruit production activities. Thus, the involvement of the farmers was the dependent variable and 10 selected characteristics of the farmers were considered as the independent variables. Involvement in homestead fruit production of an individual may be affected through interacting forces of many independent variables. It is not possible to deal with all independent variables in a single study. It was therefore, necessary to limit the independent variables, which include age, level of education, family size, farm size, annual family income, training exposure, organizational participation, extension media contact, problem faced in homestead fruit production and knowledge on homestead fruit production for this study.

Considering the above mentioned discussion, a conceptual framework has been developed for this study, which is diagrammatically presented in the following Figure 2.1.

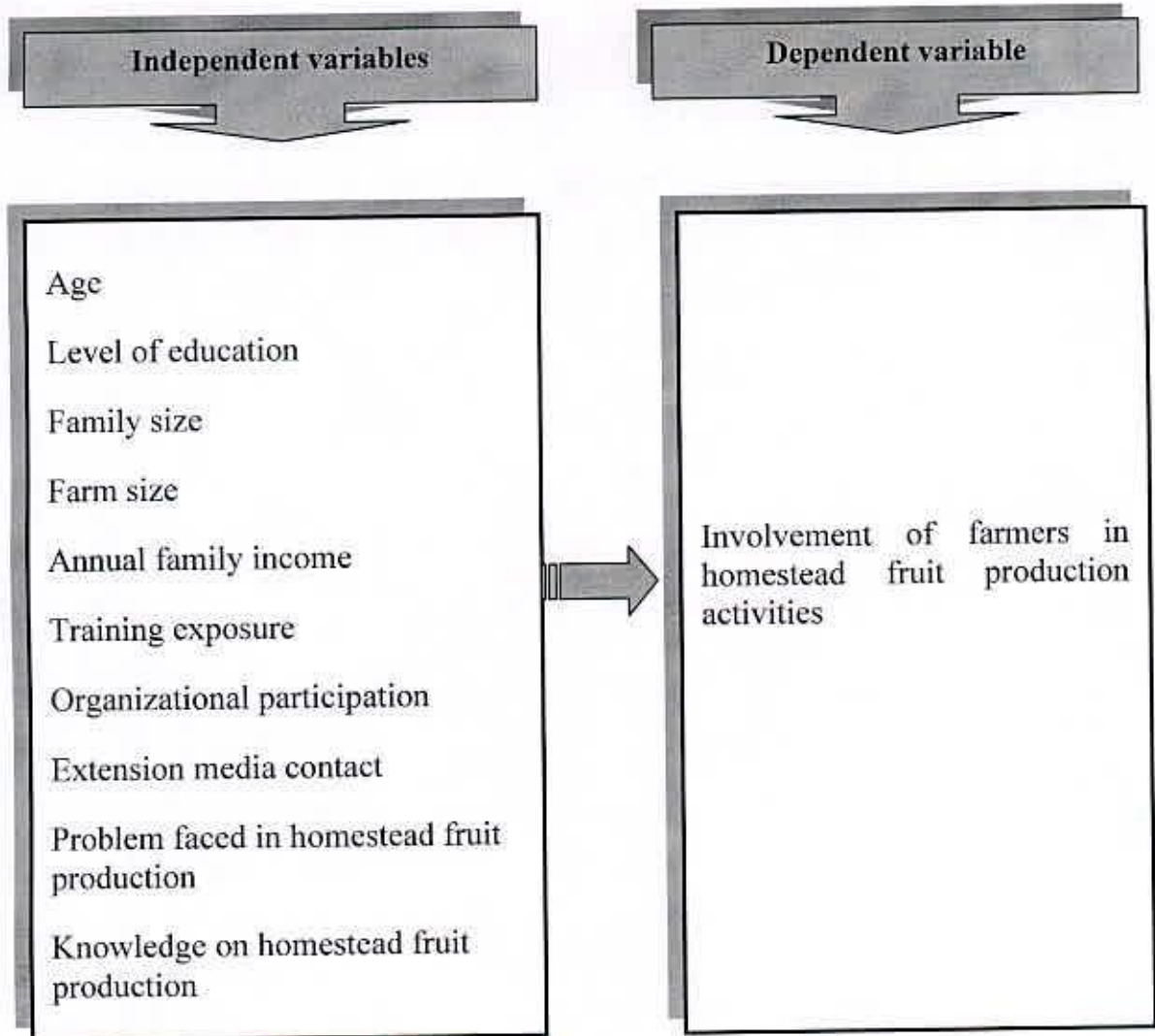


Figure 2.1 The conceptual framework of the study

CHAPTER 3

METHODOLOGY

Methodology would be enabling the researcher to collect valid information. It is impossible to conduct research work smoothly without proper methodology and it is very difficult to address the objectives with a scientific manner. It requires a very careful consideration on the part of the researcher to collect valid and reliable data and to analyze the same for meaningful conclusion. A sequential description of the methodologies followed in conducting this research work has been presented in this chapter.

3.1 Locale of the study

The study was conducted in the Bahadurpur union of Pangsha Upazila under Rajbari district. This Pangsha Upazila is situated 25 km west from Rajbari Districts head quarters. Pangsha is a typical district regarding fruit production in Bangladesh. Farmers are used to grow fruit trees in their small homestead areas. But most of them are unaware about the benefits of fruit production regarding in both cash crop and nutritional value. So, to bring the area in the light of great concern it was selected as the locale of the study. Bokshipur and Joy Krishnapur villages under Bahadurpur union of Pangsha Upazilla selected purposively as the locale of the study. Maps of Pangsha Upazila showing the study area are presented in Figures 3.1.

3.2 Sample size

Farmers of Bokshipur and Joy Krishnapur village under Bahadurpur union constituted the population of the study. An update list of 314 farmers who were related to fruit production activities from the selected village was prepared with the help of Sub-Assistant Agricultural Officer of these localities. Around one third (1/3) of the populations were randomly selected as the sample of the study by using random sampling method. Thus, 105 farmers constituted the sample of

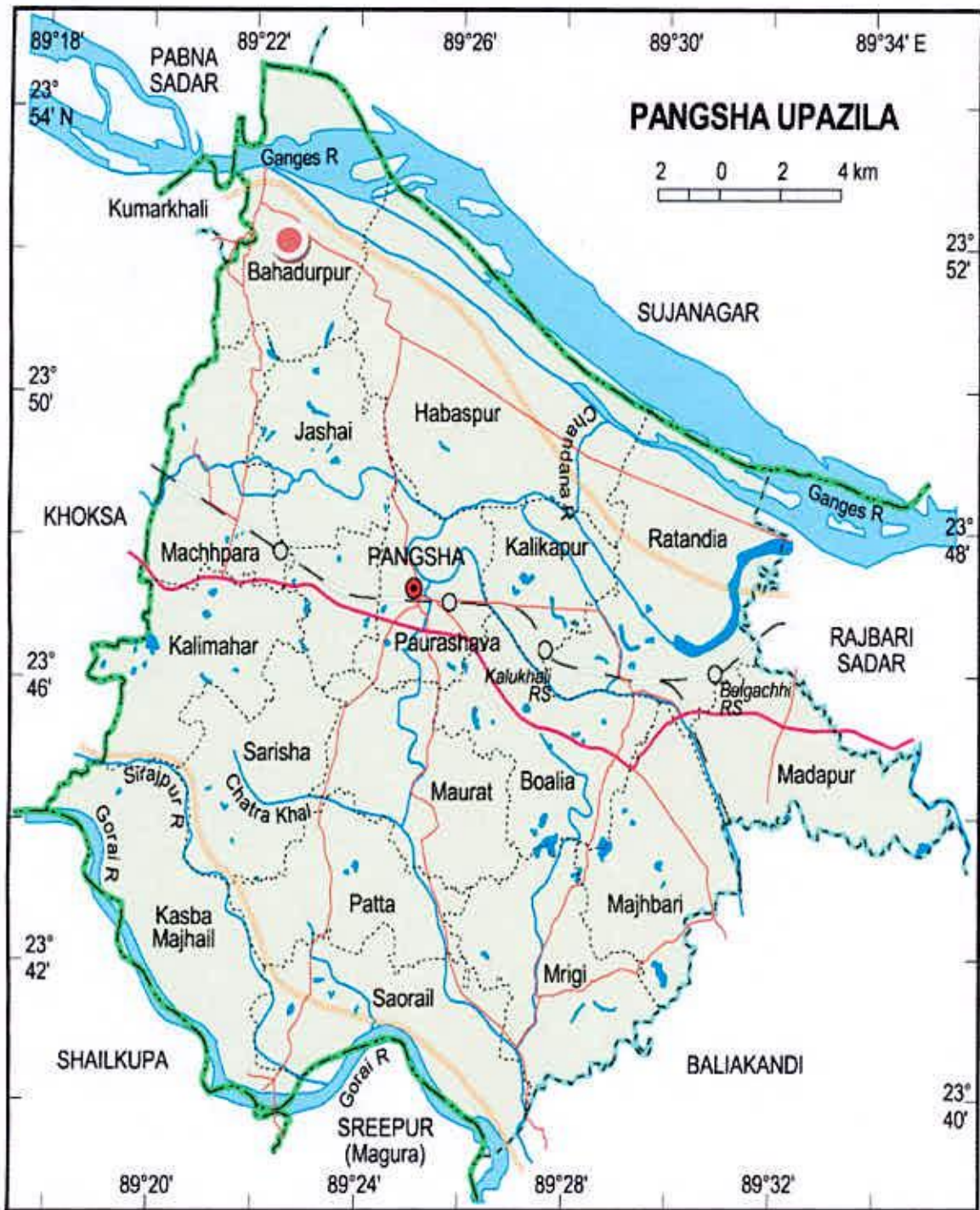


Figure 3.1 A Map of Pangsha Upazilla Showing the Study Area



the study. A reserve list of 15 farmers was also prepared by the same method so that the respondents of this list could be used for interview if the respondents included in the original sample were not available at the time of data collection. The distribution of the population sample and number of respondent farmers in the reserve list are given in Table 3.1.

Table 3.1 Distribution of the population sample and number of farmers in the reserve list

Name of the of village	No. of farmers	No. of farmers included in the sample	No. of farmers in the reserve list
Bokshipur	111	37	6
Joy Krishnapur	203	68	9
Total	314	105	15

3.3 The research instrument

A well structured interview schedule was developed based on objectives of the study for collecting information with containing direct and simple questions in open form and close form keeping in view the dependent and independent variables. Appropriate scales were developed to measure both independent and dependent variables.

The questionnaire was pre-tested with ten farmers in actual situation before finalized it for collection of data. Necessary corrections, additions, alternations, rearrangements and adjustments were made in the interview schedule based on pretest experience. The questionnaire was then multiplied by printing in its final form. A copy of the interview schedule is presented into Appendix I.

3.4 Measurement of variables

The variable is a characteristic, which can assume varying, or different values in successive individual cases. A research work usually contains at least two important variables viz. independent and dependent variables. An independent variable is that factor which is manipulated by the researcher in his attempt to

ascertain its relationship to an observed phenomenon. A dependent variable is that factor which appears, disappears or varies as the researcher introduces, removes or varies the independent variable (Townsend, 1953). In the scientific research, the selection and measurement of variable constitute a significant task. Following this conception, the researcher reviewed literature to widen this understanding about the natures and scopes of the variables relevant to this research. At last he had selected 10 independent variables and one dependent variable. The independent variables were: age, level of education, family size, farm size, annual family income, training exposure, organizational participation, extension media contact, problem faced in homestead fruit production and knowledge on homestead fruit production. The dependent variable of this study was the involvement of farmers in homestead fruit production activities. The methods and procedures in measuring these variables are presented below:

3.5 Measurement of independent variables

The 10 characteristics of the farmers mentioned above constitute the independent variables of this study. The following procedures were followed for measuring the independent variables.

3.5.1 Age

Age of a respondent farmer was measured by the period of time from their birth to interview and it was measured in terms of complete years on the basis of their response. A score of one (1) was assigned for each year age.

3.5.2 Level of education

Level of education was measured in terms of class passed by respondent farmers. If a respondent received education outside the school, their education was assessed in terms of year of schooling, i.e. one (1) score was given for one year of schooling. For example, if the respondent passed the final examination of class V, their education score was taken as 5. If the respondent had education outside school and the level of education was equivalent to that of class V of the school than his education score was taken as 5. Each illiterate person was given a score

of zero. The respondent who did not know how to read or write but able to sign only was given a score of '0.5'.

3.5.3 Family size

The family size of a respondent was measured in terms of actual number of members in his/her family including himself/herself, spouse, children, brothers, sisters, parents and other person who jointly live and ate together during the period of interviewing.

3.5.4 Farm size

Farm size of respondent farmers referred to the total area of land on which his/her family carried out farming operation and received full benefit for his family. It was measured in hectares for each respondent using the following formula;

$$FS = A + B + \frac{1}{2}(C + D) + E + F + G$$

Where,

FS = Farm size

A = Homestead area

B = Land under own cultivation

C = Share cropping in

D = Share cropping out

E = Leased in

F = Pond

G = Garden

3.5.5 Annual income

The term annual income refers to the annual gross income of a respondent himself and the members of his/her family from different sources. It was expressed in taka. In measuring this variable, total earning in taka of an individual respondent was converted into score. A score of one was given for every one thousand taka.

The method of ascertaining income form involved three phases. Firstly, the yield of all crops in the preceding year was noted and converted into taka, secondly,

income attained from domestic animal, poultry and fish resources. Thirdly, non-agricultural sources of income included earning form service, business, day labor and other family members.

3.5.6 Training exposure

Training exposure score of a respondent farmer was obtained by the number of days that a respondent had received training in his or her entire life. It was indicated by the total number of days of training received by a respondent under different training programs.

3.5.7 Organizational participation

Organizational participation of respondent farmers was measured on the basis of the nature of their participation in a selected organization. Score was computed by adding all the score of a selected organization.

Following scores were assigned for nature of participation:

Nature of participation	Scores assigned
No participation	0
Participation as ordinary member	1
Participation as executive member	2
Participation as executive officer	3



The organizational participation seems ranged from '0'-27 where '0' indicated no participation and 27 indicated very high organizational participation.

3.5.8 Extension media contact

The researcher selected three broad extension media contact namely, interpersonal contact, group contact and mass media contact comprising of nine media in total. The researcher selected the following media of information for studying extension media contact of the respondent farmers:

Interpersonal media contact: Sub Assistant Agricultural Officer (SAAOs), Agricultural Extension Officer and Upazila Agricultural Officer.

Group contact: Group discussion, field day and method/result demonstration.

Mass media: Television, radio and newspaper.

So, extension media contact score was measured by adding interpersonal media contact score + Group contact + Mass media contact score.

Extension media contact: The extension media contact of the respondent farmers were measured on the basis of their opinions regarding the extent of visit the above mentioned media in receiving information on fruit cultivation during the immediate passed year. Hence, the use of each of the nine extension media contact was first ascertained by computing their using score. A four point scale was used to compute the extension media contact. Then the extension media contact score of a respondent for the nine extension media contact were added together to ascertain his total score in extension media contact in homestead fruit production. In this regard weight was assigned to each of the four types of responses provided by the respondent farmers in the following manner:

<u>Responses</u>	<u>Weight</u>
Regularly	4
Frequently	3
Occasionally	2
Rarely	1
Not at all	0

Thus, the extension media contact score of a respondent could range from '0' to 36 where '0' indicate no extension media contact and 36 indicate very high extension media contact in extension media contact regarding homestead fruit production activities.

3.5.9 Problem faced in homestead fruit production

Problem faced in homestead fruit production of respondent farmers was measured on the basis of the nature of problem that they faced in homestead fruit production activities. Score was computed by adding all type of nature of problems that they faced. Following scores were assigned for nature of participation:

Nature of participation	Scores assigned
No problem	0
Little problem	1
Medium problem	2
High problem	3

The problem faced in homestead fruit production seems ranged from '0'-42 where '0' indicated no problem and 42 indicated very high problem faced in homestead fruit production activities.

3.5.10 Knowledge on homestead fruit production

Knowledge on homestead fruit production referred to the knowledge gained by the respondent farmers in homestead fruit production activities. Fifteen questions on different aspect of homestead fruit production related to various aspects of homestead fruit production were asked to the respondent farmers to ascertain their knowledge score. The score was assigned as 2 for full correct answer and zero (0) for incorrect or no answer for each question. Partial score 1 was assigned for partial answers. Thus knowledge on homestead fruit production scores of the respondents could range from '0' to 30 where zero (0) indicated very low and 30 indicated very high knowledge on homestead fruit production.

3.6 Involvement of farmers in homestead fruit production activities

Involvement of farmers in homestead fruit production activities was measured by computing involvement score according to extent of involvement in 10 selected operational activities of homestead fruit production. Degree of involvement score was computed in the following way:

<u>Responses</u>	<u>Weight</u>
High involvement	3
Medium involvement	2
Low involvement	1
Not at all	0

Thus, the extent of involvement score of a respondent could range from '0' to 30 where '0' indicated no involvement and 30 indicated very high involvement in homestead fruit production activities.

3.7 Hypothesis of the study

In the present study the following null hypotheses were formulated:

“There are no relationships between each of 10 selected characteristics of the farmers and their involvement of farmers in homestead fruit production”.

3.8 Data collection procedure

The researcher himself collected the data from the sample respondents through personal contact with the help an pre-tested interview schedule. Whenever any respondent faced difficulty in understanding questions, more attention was taken to explain the same with a view to enabling the farmers to answer properly. No serious problem was faced by the investigator during data collection but obtained cooperation from the respondents. Data collection was started in 12 May, 2011 and completed in 20 June, 2011. The investigator himself collected data on the basis of objectives to test the hypothesis.

3.9 Data processing

For data processing and analysis the following steps followed:

3.9.1 Compilation of data

After completion of field survey all the interview schedule were compiled, tabulated and analyzed according to the objectives of the study. In this process all the responses in the interview schedule were given numerical coded values. The responses to the question in the interview schedule were transferred to a master sheet to facilitate tabulation. Tabulation was done on the basis of categories developed by the investigator himself.



3.9.2 Categorization of respondents

For describing the various independent and dependent variables the respondents were classified into various categories. In developing categories the researcher was guided by the nature of data and general consideration prevailing on the social system. The procedures have been discussed while describing the variable in the sub-sequent sections of next chapter.

3.10 Data analysis

Data collected from the respondents were compiled, coded, tabulated and analyzed in accordance with the objectives of the study. Various statistical measures such as frequency counts, percentage distribution, average, and standard deviation were used in describing data. SPSS (version 11.5) computer program were used for analyzing the data. The categories and tables were used in describing data. The categories and tables were also used in presenting data for better understanding.

For determining the association of the selected characteristics of the respondent farmers with the involvement in homestead fruit production activities Pearson Product Moment Correlation was used. Five percent (0.05) level of probability was used as the basis for rejecting any null hypothesis. In order to find out the relationship between the selected dependent and independent variables correlation co-efficient was done.

CHAPTER 4

RESULTS AND DISCUSSION

This chapter deals with the findings that were recorded in accordance with the objective of the study with the help of an interview schedule with interpretation. The chapter content in three (3) sections. The first section of this chapter deals with the characteristics of the farmers who were involvement in homestead fruit production activities. The second section deals with their involvement in homestead fruit production activities. The third section deals with the relationship between individual characteristics of the farmers with their involvement in homestead fruit production activities.

4.1 Characteristics of the farmers

An individual possesses various interrelated characteristics of the farmers were collected under the present study. It was therefore, hypothesized that the characteristics of the farmers who were involve in homestead fruit production. However, the 10 selected salient features of the farmers such as age, level of education, family size, farm size, annual family income, training exposure, organizational participation, extension media contact, problem faced in homestead fruit production and knowledge on homestead fruit production that greatly influences the involvement of farmers in homestead fruit production activities that are presented below-

4.1.1 Age

The age of the farmers who have involvement in homestead fruit production ranged from 23 to 62 with a mean and standard deviation of 38.13 and 9.77, respectively. Considering the observed age of the farmers was classified into three categories namely 'young', 'middle' and 'old' aged. The distribution on accordance of their age the respondents' are presented in Table 4.1.

Table 4.1 Distribution of the farmers according to their age

Categories	Respondents		Mean	Standard deviation
	Number	Percent		
Young aged (below 35 years)	44	41.90	38.13	9.77
Middle aged (35-50 years)	45	42.86		
Old aged (above 50 years)	16	15.24		
Total	105	100		

Table 4.1 indicates that the old aged farmers comprise the highest proportion (61.68 percent) followed by middle aged category (42.86 percent) and the lowest proportion were made by the old aged category (15.24 percent). Data also indicates that the middle and young aged farmers constitute about 41.90 of the respondents. A total 84.76 percent respondent belongs to the group of young and middle aged group. The young and middle aged farmers were generally tended to involve in homestead fruit production activities than the older. Probably young and middle aged person were more dynamic and basically they were more involved in homestead fruit production activities.

4.1.2 Level of education

The level of educational scores of the respondent's farmers ranged from 0 to 14 with a mean and standard deviation of 4.32 and 3.27, respectively. Based on their educational scores, the farmers were classified into four categories such as 'illiterate' (0), 'can sign only' (0.5), 'primary education' (1 to 5), 'secondary education' (6 to 10), higher secondary and above (above 10). The distribution of the farmers according to their level of education has been presented in Table 4.2.

Table 4.2 Distribution of the farmers according to their level education

Categories	Respondents		Mean	Standard deviation
	Number	Percent		
Illiterate (0)	7	6.67	4.32	3.27
Can sign only (0.5)	16	15.24		
Primary education (1-5)	45	42.86		
Secondary education (6-10)	34	32.38		
Above secondary (above 10)	3	2.86		
Total	105	100		

Table 4.2 shows that farmers under 'primary education category constitute the highest proportion (42.86 percent) compared to 32.38 percent 'secondary level category and 15.24 percent can sign only, 6.67 percent illiterate level category. On the other hand the lowest 2.86 percent above secondary level category. Education broadens the horizon of outlook of farmers and expands their capability to analyze any situation related to production. It was found that appreciable proportions (32.38 percent) of the farmers were secondary level educated.

An educated farmer is likely to be more responsive to the modern facts, ideas, technology and information of fruit production. To adjust with the same, they would be vulnerable to adopt as well as involve with modern cultural, processing and storage facilities of homestead fruit products.

4.1.3 Family Size

Family size of the respondents ranged from 2 to 9 with the mean and standard deviation of 5.17 and 1.73, respectively. According to family size the respondents were classified into three categories viz. 'small family', 'medium family' and 'large family'. The distribution of the respondents according to their family size is presented in Table 4.3.

Table 4.3 Distribution of the farmers according to their family size

Categories	Respondents'		Mean	Standard deviation
	Number	Percent		
Small family (upto 4)	38	36.19	5.17	1.73
Medium family (5-7)	55	52.38		
Large family (above 7)	21	11.43		
Total	105	100		

Data in Table 4.3 indicate that the medium family constitute the highest proportion (52.38 percent) followed by the small family (36.19 percent). Only 11.43 percent respondents had large family size. Such finding is quite normal as per the situation of Bangladesh. Table 4.3 also showed that average family size of the respondents was lower than that of national average of 5.4.

4.1.4 Farm size

The farm size of the respondent's farmer family ranged from 0.12 hectare to 3.43 hectare with a mean and standard deviation of 1.01 and 0.67, respectively. Based on their farm size, the respondents were classified into four categories following the categorization of DAE. These categories were marginal farm holder (below 0.2 ha), small farm holder (0.201 to 1.0 ha), medium farm holder (1.01 to 2.0 ha) and large farm holder (above 2.0 ha). The distribution of the farmers according to their farm size categories has been presented in Table 4.4.

Table 4.4 Distribution of the farmers according to their farm size

Categories	Respondents		Mean	Standard deviation
	Number	Percent		
Marginal (0.02-0.2 ha)	3	2.86	1.01	0.67
Small (0.21-1.0 ha)	52	49.52		
Medium (1.01-2.0 ha)	40	38.10		
Large (above 2.0 ha)	10	9.52		
Total	105	100		

Table 4.4 indicates that the small farm holder constitute the highest proportion 49.52 percent followed by 38.10 percent with medium farm holder and the lowest 2.86 percent marginal farm holder and followed by 9.52 percent large farm farmers. The findings of the study reveal that majority of the farmers were small to medium sized farm holder because large sized farmers involved with other crop cultivation when small and medium sized farmers try to more income by utilizing their homestead area especially homestead fruit production. The average farm size of the rural farmer family of 1.01 hectares was higher than that of national average of 0.78 hectares in Bangladesh (BBS, 2008).

4.1.5 Annual income

Annual income of the respondents ranged from 35.80 to 410.30 thousand taka with a mean and standard deviation of 150.59 and 95.44, respectively. On the basis of their annual income, the farmers were classified into three categories, viz. low, medium and high family income. The distribution of the farmers according to the annual income categories has been presented in Table 4.5.

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

Categories	Respondents		Mean	Standard deviation
	Number	Percent		
Low income (below 90,000)	31	29.52	150.59	95.44
Medium income (90,000-180,000)	42	40.00		
High income (above 180,000)	32	30.48		
Total	105	100		

Data in table 4.5 revealed that the farmers having medium income constitute the highest proportion (40.00 percent) followed by high annual income (30.48 percent) and low annual income (29.52 percent). Medium income level constitutes the highest percentage because their annual income level within 90,000 to 180,000. Income of an individual allows him to invest more in agricultural production as well as taking risks involved in adoption of new technologies.

4.1.6 Training exposure

Training exposure of the respondent's farmers ranged from 5 to 34 with a mean and standard deviation of 18.07 and 6.65, respectively. Based on their training exposure score, the respondents were classified into three categories. These categories were low, medium and high training exposure. The distribution of the respondent farmers according to their training exposure presented in Table 4.6.

Table 4.6 Distribution of the farmers according to their training exposure

Categories	Respondents'		Mean	Standard deviation
	Number	Percent		
Low training exposure (below 15)	45	42.86	18.07	6.65
Medium training exposure (15-25)	40	38.10		
High training exposure (above 25)	20	19.05		
Total	105	100		

About (42.86 percent) of the respondents had low training exposure group towards homestead fruit production activities, while 38.10 percent had medium training exposure and 19.05 percent had high training exposure.

4.1.7 Organizational participation

Organizational participation score of the respondent farmers ranged from 0 to 24 against the possible range of '0'-27 with a mean and standard deviation of 11.37 and 4.82, respectively. According to organizational participation the respondents were classified into three categories viz. 'Low level participation, 'medium level participation and 'high level participation' on the basis of their observed scores. The distribution of the farmers according to organizational participation has been presented in Table 4.7.

Table 4.7 Distribution of the farmers according to their organizational participation

Categories	Respondents'		Mean	Standard deviation
	Number	Percent		
Low organizational participation (below 8)	26	24.76	11.37	4.82
Medium organizational participation (8-16)	60	57.14		
High organizational participation (above 16)	19	18.10		
Total	105	100		

Data in Table 4.7 indicates that the medium levels organizational participation constitutes the highest proportion (57.14 percent) followed by low level participation (24.76 percent) and high level participation (18.10 percent). Table 4.7 showed that the maximum percentage of respondents is the category of the group of low to medium level organizational participation (81.90 percent). Medium organizational participation reveals that the farmers of this area have medium level participation within their locality. But more organizational participation could create opportunity for changing attitude towards use of improved technology for homestead fruit production activities.

4.1.8 Extension media contact

The extension media contact of the respondent's farmers ranged from 2 to 24 with a mean and standard deviation of 8.48 and 5.17, respectively. Based on their extension media contact score, the respondents were classified into three categories. These categories were low, medium and high extension media contact. The distribution of the respondents according to their extension media contact presented in Table 4.8.



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

Categories	Respondents		Mean	Standard deviation
	Number	Percent		
Low contact (below 7)	54	51.43	8.48	5.17
Medium contact (7-14)	33	31.43		
High contact (Above 14)	18	17.14		
Total	105	100		

Table 4.8 indicates that the farmers have low extension media contact category constitute the highest proportion (51.43 percent) followed by medium contact (31.43 percent) and high contact category (17.14 percent). Lowest contact of the locality indicates that the respondents visit different area with minimum frequency although they have medium organizational participation. Table 4.8 showed that the maximum percentage (82.86 percent) is the category of the group of low to medium extension media contact group.

4.1.9 Problem faced in homestead fruit production

The scores of problem faced in homestead fruit production of the respondents ranged from 11 to 37 with an average of 27.14 and standard deviation of 4.66. Based on the observed individual scores, the respondents were classified into the three categories i.e. low problem, medium problem and high problem. The distribution has been shown in the Table 4.9.

Table 4.9 Distribution of the farmers according to problem faced in homestead fruit production

Categories	Respondents		Mean	Standard deviation
	Number	Percent		
Low problem (below 20)	6	5.71	27.14	4.66
Medium problem (20-30)	79	75.24		
High problem (above 30)	20	19.05		
Total	105	100		

About three fourth (75.24 percent) of the respondents faced medium problem in homestead fruit production activities, while 19.05 percent faced high problems and 5.71 percent faced low problems.

4.1.10 Knowledge on homestead fruit production

Knowledge on homestead fruit production score of respondent farmers could range from 9 to 30. The mean and standard deviation of knowledge of homestead fruit production was 18.77 and 5.04, respectively. On the basis of knowledge scores, the respondents were classified into three categories namely, 'poor knowledge', 'moderate knowledge' and 'sound knowledge'. The distribution of the respondents according to their agricultural knowledge is given in Table 4.10.

Table 4.10 Distribution of the farmers according to their knowledge on homestead fruit production

Categories	Respondents		Mean	Standard deviation
	Number	Percent		
Poor knowledge (below 15)	26	24.76	18.77	5.04
Moderate knowledge (15-25)	69	65.71		
Sound knowledge (Above 25)	10	9.52		
Total	105	100.0		

Data of Table 4.10 reveals that majority (65.71 percent) of the respondents felt in moderate knowledge category followed by 24.76 percent in poor knowledge category and only 9.52 percent in sound knowledge category. Knowledge is to be considered as vision of an explanation in any aspect of the situation regarding homestead fruit production. It is act or state of understanding; clear perception of fact or truth, that helps an individual to foresee the consequence he may have to face in future. It makes individuals to become rational and conscious about related field. To perform optimum production, farmers should have adequate knowledge on different aspects of the concern areas. The findings of the present study reveal that 65.71 percent of the farmers in the study area had moderate knowledge on homestead fruit production activities.

4.2 Involvement of farmers in homestead fruit production activities

Involvement of farmers in homestead fruit production activities ranged from 5-24 against the possible range of 0-30 with the mean and standard deviation of 11.80 and 4.38, respectively.

Involvement of farmers in homestead fruit production activities of farmers was measured using 10 items of homestead fruit production activities. Involvement score of a respondent was determined by adding the score obtained from all the statements. Based on score in homestead fruit production activities the respondents were classified into three categories as shown in Table 4.11.

Table 4.11.a Distribution of the farmers according to the involvement in homestead fruit production activities

Categories	Respondents		Mean	Standard deviation
	Number	Percent		
Low involvement (below 10)	33	31.43	11.80	4.38
Medium involvement (10-20)	68	64.76		
High involvement (above 20)	4	3.81		
Total	105	100		

Among the respondents, in homestead fruit production activities the highest 64.76 percent farmers belong to the group of medium level involvement group followed by 31.43 percent in low involvement group and 3.81 percent in high involvement group. Therefore, it was found that an overwhelming majority (96.19 percent) of the respondent farmers have low to medium level of involvement in homestead fruit production activities.

Identification of Activities as involved of the farmers

The farmers more or less involved in the selected 10 fruit production activities to different extent. An involvement index (II) was calculated for each of the ten activities to identify the more involved activity using following formula:

$$II = N_1 \times 3 + N_2 \times 2 + N_3 \times 1 + N_4 \times 0$$

Where,

II = Involvement Index

N_1 = No. of farmers had high involvement in fruit production activities

N_2 = No. of farmers had medium involvement in fruit production activities

N_3 = No. of farmers had low involvement in fruit production activities

N_4 = No. of farmers not at all involved in fruit production activities

The II could range from '0' to '315 (3×105)' where '0' indicate No involvement while 315 indicate high involvement in specific activities.

Results

Table 4.11.b Comparative statement in involvement of farmers in different household fruit production activities based on involvement index

Sl. No.	Homestead Fruit Production Activities	Involvement Index (II)	Remarks (Rank order)
1	Land preparation	242	1
2	Fertilization	230	2
3	Irrigation	211	3
4	Weeding	173	4
5	Insect management	140	5
6	Disease management	112	6
7	Care management	86	7
8	Training & pruning	65	8
9	Fruit seedling production	52	9
10	Use of PGRs	28	10

There were variations in the involvement index of involvement in homestead fruit production activities. The highest score was 242 and the lowest score 28 against the possible score. Land preparation was the highest score (242) followed by fertilization (230) and irrigation (211) and the lowest score (28) by use of PGRs followed by fruit seedling production (52) and training and pruning (65).

4.3 Relationship of the selected characteristics of farmers with the involvement in homestead fruit production

Pearson Product Moment Correlation Co-efficient was computed in order to find out the extent of relationship between the dependent variable and independent variables. To reject or accept the null hypothesis at 0.05 and 0.01 level of probability was used. Results of correlation have been shown in Table 4.12.

Table 4.12 Pearson's product moment co-efficient of correlation showing relationship between dependent and independent variables

N =105

Dependent variable	Independent variables	Value of co-efficient of correlation	Tabulated value	
			0.05 level	0.01 level
Involvement of farmers in homestead fruit production activities	Age	0.032 ^{NS}	0.196	0.252
	Level of education	0.293**		
	Family size	-0.114 ^{NS}		
	Farm size	-0.144 ^{NS}		
	Annual income	0.059 ^{NS}		
	Training exposure	0.494**		
	Organizational participation	0.107 ^{NS}		
	Extension media contact	0.206*		
	Problems faced in homestead fruit production	-0.213*		
	Knowledge on homestead fruit production	0.058 ^{NS}		

^{NS} Not significant

** Significant at the 0.01 level

* Significant at the 0.05 level

4.3.1 Age and farmers' involvement in homestead fruit production activities

Relationship between age and involvement in homestead fruit production activities was determined by Pearson product moment correlation coefficient.

The coefficient of correlation between age and involvement of the respondent farmers in homestead fruit production is presented in Table 4.12. The coefficient of correlation between the concerned variables was found 0.032. The following

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

- a. *The observed value between the concerned variables “r” (0.032) was found to be smaller than the tabulated value ($r = 0.196$) with 103 degrees of freedom at 0.05 level of probability.*
- b. *The null hypothesis could not be rejected.*
- c. *The relationship between the concerned variables was statistically non significant at 0.05 level of probability.*
- d. *The relationship showed a positive trend between the concerned variables.*

Based on the above findings it was concluded that age of the farmers had non significant positive relationships with the involvement in homestead fruit production activities. This represent that age of the respondent farmers was not an important factor in involvement in homestead fruit production activities of the farmers but with the increases of age of the respondent’s involvement of the farmers in homestead fruit production was also increased.

4.3.2 Level of education and farmers involvement in homestead fruit production activities

Relationship between level of education and farmer involvement in homestead fruit production activities was determined by Pearson product moment correlation coefficient.

The coefficient of correlation between level of education and involvement of the respondent farmers in homestead fruit production is presented in Table 4.12. The coefficient of correlation between the concerned variables was found 0.293. The following observations were made on the basis of the value of correlation coefficient between the two concerned variables of the study under consideration.

- a. *The observed value between the concerned variables “r” (0.293) was found to be greater than the tabulated value ($r = 0.252$) with 103 degrees of freedom at 0.01 level of probability.*

- b. The null hypothesis could be rejected.*
- c. The relationship between the concerned variables was statistically significant at 0.01 level of probability.*
- d. The relationship showed a positive trend between the concerned variables.*

Based on the above findings it was concluded that level of education of the famers had significant positive relationships with the farmers' involvement in homestead fruit production activities. This represent that level of education of the respondent farmers was an important factor in involvement in homestead fruit production activities of the farmers and with the increases of level of education of the respondent's involvement of the farmers in homestead fruit production was also increased.

4.3.3 Family size and farmers involvement in homestead fruit production activities

Relationship between family size and farmer involvement in homestead fruit production activities was determined by Pearson product moment correlation coefficient.

The coefficient of correlation between family size and involvement of the respondent farmers in homestead fruit production is presented in Table 4.12. The coefficient of correlation between the concerned variables was found -0.114. The following observations were made on the basis of the value of correlation coefficient between the two concerned variables of the study under consideration.

- a. The observed value between the concerned variables "r" (-0.114) was found to be smaller than the tabulated value ($r = 0.196$) with 103 degrees of freedom at 0.05 level of probability.*
- b. The null hypothesis could not be rejected.*
- c. The relationship between the concerned variables was statistically non significant at 0.05 level of probability.*
- d. The relationship showed a negative trend between the concerned variables.*

Based on the above findings it was concluded that family size of the famers had non significant negative relationships with the farmers involvement in homestead fruit production activities. This represent that family size of the respondent farmers was not an important factor in involvement in homestead fruit production activities of the farmers but with the increases of family size of the respondent's involvement of the farmers in homestead fruit production was decreased.

4.3.4 Farm size and farmers involvement in homestead fruit production activities

Relationship between farm size and farmer involvement in homestead fruit production activities was determined by Pearson product moment correlation coefficient.

The coefficient of correlation between farm size and involvement of the respondent farmers in homestead fruit production is presented in Table 4.12. The coefficient of correlation between the concerned variables was found -0.144. The following observations were made on the basis of the value of correlation coefficient between the two concerned variables of the study under consideration.

- a. The observed value between the concerned variables "r" (-0.144) was found to be smaller than the tabulated value ($r = 0.196$) with 103 degrees of freedom at 0.05 level of probability.*
- b. The null hypothesis could not be rejected.*
- c. The relationship between the concerned variables was statistically non significant at 0.05 level of probability.*
- d. The relationship showed a negative trend between the concerned variables.*

Based on the above findings it was concluded that farm size of the famers had non significant negative relationships with the farmers involvement in homestead fruit production activities. This represent that farm size of the respondent farmers was not an important factor in involvement in homestead fruit production activities of

the farmers but with the increases of farm size of the respondent's involvement of the farmers in homestead fruit production was also decreased.

4.3.5 Annual income and farmers involvement in homestead fruit production activities

Relationship between annual income and farmer involvement in homestead fruit production activities was determined by Pearson product moment correlation coefficient.

The coefficient of correlation between annual income and involvement of the respondent farmers in homestead fruit production is presented in Table 4.12. The coefficient of correlation between the concerned variables was found 0.059. The following observations were made on the basis of the value of correlation coefficient between the two concerned variables of the study under consideration.

- a. The observed value between the concerned variables "r" (0.059) was found to be smaller than the tabulated value ($r = 0.196$) with 103 degrees of freedom at 0.05 level of probability.*
- b. The null hypothesis could not be rejected.*
- c. The relationship between the concerned variables was statistically non significant at 0.05 level of probability.*
- d. The relationship showed a positive trend between the concerned variables.*

Based on the above findings it was concluded that annual income of the famers had non significant positive relationships with the farmers involvement in homestead fruit production activities. This represent that annual income of the respondent farmers was not an important factor in involvement in homestead fruit production activities of the farmers but with the increases of annual income of the respondent's involvement of the farmers in homestead fruit production was also increased.

4.3.6 Training exposure and farmers involvement in homestead fruit production activities

Relationship between training exposure and farmer involvement in homestead fruit production activities was determined by Pearson product moment correlation coefficient.

The coefficient of correlation between training exposure and involvement of the respondent farmers in homestead fruit production is presented in Table 4.12. The coefficient of correlation between the concerned variables was found 0.494. The following observations were made on the basis of the value of correlation coefficient between the two concerned variables of the study under consideration.

- a. The observed value between the concerned variables "r" (0.494) was found to be greater than the tabulated value ($r = 0.252$) with 103 degrees of freedom at 0.01 level of probability.*
- b. The null hypothesis could be rejected.*
- c. The relationship between the concerned variables was statistically significant at 0.01 level of probability.*
- d. The relationship showed a positive trend between the concerned variables.*

Based on the above findings it was concluded that training exposure of the famers had significant positive relationships with the farmers' involvement in homestead fruit production activities. This represent that training exposure of the respondent farmers was an important factor in involvement in homestead fruit production activities of the farmers and with the increases of training exposure of the respondent's involvement of the farmers in homestead fruit production was also increased.

4.3.7 Organizational participation and farmers involvement in homestead fruit production activities

Relationship between organizational participation and farmers' involvement in homestead fruit production activities was determined by Pearson product moment correlation coefficient.

The coefficient of correlation between organizational participation and involvement of the respondent farmers in homestead fruit production is presented in Table 4.12. The coefficient of correlation between the concerned variables was found 0.107. The following observations were made on the basis of the value of correlation coefficient between the two concerned variables of the study under consideration.

- a. The observed value between the concerned variables "r" (0.107) was found to be smaller than the tabulated value ($r = 0.196$) with 103 degrees of freedom at 0.05 level of probability.*
- b. The null hypothesis could not be rejected.*
- c. The relationship between the concerned variables was statistically non significant at 0.05 level of probability.*
- d. The relationship showed a positive trend between the concerned variables.*

Based on the above findings it was concluded that organizational participation of the farmers had non significant positive relationships with the farmers' involvement in homestead fruit production activities. This represent that organizational participation of the respondent farmers was not an important factor in involvement in homestead fruit production activities of the farmers but with the increases of organizational participation of the respondent's involvement of the farmers also in homestead fruit production was increased.

4.3.8 Extension media contact and farmers involvement in homestead fruit production activities

Relationship between extension media contact and farmer involvement in homestead fruit production activities was determined by Pearson product moment correlation coefficient.

The coefficient of correlation between extension media contact and involvement of the respondent farmers in homestead fruit production is presented in Table 4.12. The coefficient of correlation between the concerned variables was found 0.206. The following observations were made on the basis of the value of correlation coefficient between the two concerned variables of the study under consideration.

- a. The observed value between the concerned variables "r" (0.206) was found to be greater than the tabulated value ($r = 0.196$) with 103 degrees of freedom at 0.05 level of probability.*
- b. The null hypothesis could be rejected.*
- c. The relationship between the concerned variables was statistically significant at 0.05 level of probability.*
- d. The relationship showed a positive trend between the concerned variables.*

Based on the above findings it was concluded that extension media contact of the famers had significant positive relationships with the farmers' involvement in homestead fruit production activities. This represent that extension media contact of the respondent farmers was an important factor in involvement in homestead fruit production activities of the farmers but with the increases of extension media contact of the respondent's involvement of the farmers also in homestead fruit production was increased.

4.3.9 Problem faced and farmers involvement in homestead fruit production activities

Relationship between problem faced and farmer involvement in homestead fruit production activities was determined by Pearson product moment correlation coefficient.

The coefficient of correlation between problem faced and involvement of the respondent farmers in homestead fruit production is presented in Table 4.12. The coefficient of correlation between the concerned variables was found -0.213. The following observations were made on the basis of the value of correlation coefficient between the two concerned variables of the study under consideration.

- a. The observed value between the concerned variables "r" (-0.213) was found to be greater than the tabulated value ($r = 0.196$) with 103 degrees of freedom at 0.05 level of probability.*
- b. The null hypothesis could be rejected.*
- c. The relationship between the concerned variables was statistically significant at 0.05 level of probability.*
- d. The relationship showed a negative trend between the concerned variables.*

Based on the above findings it was concluded that problem faced of the famers had significant negative relationships with the farmers' involvement in homestead fruit production activities. This represent that problem faced of the respondent farmers was an important factor in involvement in homestead fruit production activities of the farmers but with the increases of problem faced of the respondent's involvement of the farmers also in homestead fruit production decreased.

4.3.10 Knowledge and farmers involvement in homestead fruit production activities

Relationship between knowledge and farmers involvement in homestead fruit production activities was determined by Pearson product moment correlation coefficient.

The coefficient of correlation between knowledge and involvement of the respondent farmers in homestead fruit production is presented in Table 4.12. The coefficient of correlation between the concerned variables was found 0.058. The following observations were made on the basis of the value of correlation coefficient between the two concerned variables of the study under consideration.

- a. *The observed value between the concerned variables "r" (0.058) was found to be smaller than the tabulated value ($r = 0.196$) with 103 degrees of freedom at 0.05 level of probability.*
- b. *The null hypothesis could not be rejected.*
- c. *The relationship between the concerned variables was statistically non significant at 0.05 level of probability.*
- d. *The relationship showed a positive trend between the concerned variables.*

Based on the above findings it was concluded that knowledge of the famers had non significant positive relationships with the farmers involvement in homestead fruit production activities. This represent that knowledge of the respondent farmers was not an important factor in involvement in homestead fruit production activities of the farmers but with the increases of knowledge of the respondent involvement of the farmers in homestead fruit production was also increases.

Level of education, training exposure and extension media contact had significant positive relationships with involvement in homestead fruit production activities of farmers. Age, annual income, organizational participation and knowledge on homestead fruit production activities had non significant positive relationships with involvement in homestead fruit production activities of farmers. On the other hand, problem faced in homestead fruit production activities had significant negative relationship with involvement in homestead fruit production activities of farmers.

CHAPTER 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The study was conducted in the Bahadurpur union of Pangsha Upazila under Rajbari district. Bokshipur and Joy Krishnapur village under Bahadurpur union of Pangsha Upazilla selected purposively as the locale of the study. Farmers of Bokshipur and Joy Krishnapur village under Bahadurpur union constituted the population of the study. An update list of 314 farmers who were related to fruit production activities from the selected village was prepared with the help of Sub-Assistant Agricultural Officer of these localities. Around one third (1/3) of the populations were randomly selected as the sample of the study by using random sampling method. Thus, 105 farmers constituted the sample of the study. A well structured interview schedule was developed based on objectives of the study for collecting information. The researcher himself collected data through personal contact. The independent variables were: age, level of education, family size, farm size, annual family income, training exposure, organizational participation, extension media contact, problem faced in homestead fruit production and knowledge on homestead fruit production. Data collection was started in 12 May, 2011 and completed in 20 June, 2011. Various statistical measures such as frequency counts, percentage distribution, average, and standard deviation were used in describing data. Co-efficient of correlation test was used to explore relationship between the concerned variables. The major findings of the study are summarized below:

5.1 Major Findings

5.1.1 Selected characteristics of the farmers

Age: The old aged farmers comprise the highest proportion (61.68 percent) followed by middle aged category (42.86 percent) and the lowest proportion were made by the old aged category (15.24 percent).

Level of education: Farmers under 'primary education category constitute the highest proportion (42.86 percent) compared to 32.38 percent 'secondary level category and 15.24 percent can sign only, 6.67 percent illiterate level category.

Family Size: The medium family constitute the highest proportion (52.38 percent) followed by the small family (36.19 percent). Only 11.43 percent respondents had large family size.

Farm Size: The small farm holder constitute the highest proportion 49.52 percent followed by 38.10 percent with medium farm holder and the lowest 2.86 percent marginal farm holder and followed by 9.52 percent large farm farmers.

Annual Income: The farmers having medium income constitute the highest proportion (40.00 percent) followed by high annual income (30.48 percent) and low annual income (29.52 percent).

Training exposure: About (42.86 percent) of the respondents had low training exposure group towards homestead fruit production activities, while 38.10 percent had medium training exposure and 19.05 percent had high training exposure.

Organizational participation: The medium levels organizational participation constitutes the highest proportion (57.14 percent) followed by low level participation (24.76 percent) and high level participation (18.10 percent)

Extension media contact: The farmers have low extension media contact category constitute the highest proportion (51.43 percent) followed by medium contact (31.43 percent) and high contact category (17.14 percent).

Problem faced in homestead fruit production: About (75.24 percent) of the respondents had medium problem group towards homestead fruit production activities, while 19.05 percent had high problems and 5.71 percent had low problems.

Knowledge on homestead fruit production: Majority (65.71 percent) of the respondents felt in moderate knowledge category followed by 24.76 percent in poor knowledge category and only 9.52 percent in sound knowledge category.

5.1.2 Involvement in homestead fruit production activities

Among the respondents the highest 64.76 percent farmers belongs to the group of medium level involvement group followed by 31.43 percent in low level involvement group and 3.81 percent in high of involvement group.

5.1.3 Relationship between involvements of farmers in homestead fruit production with their selected characteristics

Level of education, training exposure and extension media contact of the farmers had significant positive relationships with their involvement in homestead fruit production activities. Problem faced in homestead fruit production activities of the farmers had significant negative relationship with their involvement in homestead fruit production activities. Age, family size, farm size, annual income, organizational participation and knowledge on homestead fruit production of the farmers had no significant relationships with their involvement in homestead fruit production activities.

5.2 Conclusions

1. The findings indicate that among the respondents around 96 percent respondent farmers had low to medium level involvement in homestead fruit production activities. This fact leads to the conclusion that it is necessary to increase the involvement of farmers for increasing homestead fruits production.
2. Level of education of the farmers had significant positive relationships with their involvement in homestead fruit production activities. Among the respondents, about 65 percent stays below the group of secondary level education. Education has an effect of widening the horizon of knowledge. All these facts lead to the

conclusion that higher the level of education of the respondents higher their involvement.

3. Training exposure of the farmers had significant positive relationships with the involvement of homestead fruit production activities. About 81 percent farmers had medium to low level training exposure. Highest training exposure allows the respondents to involve more in homestead fruit production as well as taking risks.
4. Extension media contact of the farmers had significant positive relationships with the involvement of farmers in homestead fruit production activities. About 83 percent farmers had low to medium level extension media contact. Highest extension media contact leads to achieving better performance in homestead fruit production activities.
5. Problem faced of the farmers on homestead fruit production had negative significant relationship with the involvement in homestead fruit production activities. Among the respondents about 75 percent have medium level problem in homestead fruit production activities. With decrease problem leads to the increase in the involvement in homestead fruit production.

5.3 Recommendations

5.3.1 Recommendations for policy implications

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

1. Among the respondents, about 96 percent have medium to high level involvement group in homestead fruit production activities. In order to increase their level of involvement the DAE and different NGOs may arrange training and motivational programs for the farmers to encourage more involvement in homestead fruit production activities.
2. Among the respondent farmers about 65 percent falls in the group of below secondary level education. So it is necessary to increase their education level through ensuring access to informal educational facilities and other motivational programs.
3. About 81 percent farmers had medium to low level training exposure. Highest training allows him to involvement more in homestead fruit production as well as taking risks so it is necessary to take appropriate program. DAE can organize training for the farmers regarding homestead fruit production activities.
4. About 83 percent farmers had low to medium level extension media contact so, more motivational program is needed which may be chalked out by DAE to increase the extension media contacts.
5. About three fourth (75 percent) of the respondents faced medium problem in homestead fruit production. In order to solve their problem it is necessary to arrange more training and motivational programs by DAE and other related organizations that help to minimize the problems in homestead fruit production activities.

6. Training and motivation for the farmers to adopt modern and new technologies.
7. Formulation of appropriate policies to enable the resource poor and vulnerable farmers to recover easily former any adversities.

5.3.2 Recommendations for further study

On the basis of scope and limitations of the present study and observation made by the researcher, the following recommendations are made for future study.

1. Other factors might have influence over the involvement of the farmers, which need to be identified through further study.
2. This study was conducted in Pangsha Upazilla under Rajbari District. Similar studies are required to be conducted in other areas of Bangladesh where similar environmental, socio-economic and physical conditions exist to compare the findings.
3. The study investigated the direct and indirect effects of certain variables. Future studies should be conducted to explore the direct and indirect effects of all the variables under investigation.
4. Research on physiological aspects of different fruits under unfavorable agro-climatic condition should be strengthened.
5. Development of resilient technologies that will increase fruit production, profit and reduce risks.

BIBLIOGRAPHY

- Abdullah, T. (1986). Homestead Agricultural Production in Rural Bangladesh. *ADAB News*, **13**(5): 1-7.
- Akanda, M. R. K. (1994). Correlates of Information Sources Used by the Potato Growers in Garidaba Union of Sherpur thana. *M.S. (Ag. Ext. Ed.) Thesis*. Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.
- Akhter, A. (1989). Involvement of women in Homestead Production in a selected village of Tangail District. *M. Sc. (Ag. Ext. Ed.) Thesis*. Department of Agricultural Extension Education. Bangladesh Agricultural University, Mymensingh.
- Akhter, M. (2000). Participation of women clientele in development activities at the RDRS Project. *MS Thesis (Ag. Ext. Ed.)*. Department of Agricultural Extension Education. Bangladesh Agricultural University, Mymensingh.
- Alam, M. S. (2001). Agricultural knowledge of women receiving training from Begum Rokeya Training Centre Compared to other women. *M. S. (Ag. Ext. Ed.) Thesis*. Department of Agricultural Extension Education. Bangladesh Agricultural University, Mymensingh.
- Alam, M. S. (2001). Use of Improved Farm Practices in Rice Cultivation by the Farmers. *M. S. (Ag. Ext. Ed) Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.
- Ali, A.H.J. (1980). Women and Development, *ADDAB News*, **10**(4): 2-11.
- Ali, M. K., S. A. Chowdhury, M. A. Kader and M. O. Goni. (1984). Factors Influencing Adoption of Sugarcane Production Technologies among the Growers of a Sugar Mills zone. *Bangladesh Journal of Extension Education*, **1** (2): 25-31.

- Ali, O. (1984). Attitude of rural women of Bangladesh Agricultural University Extension Centre (BAUEC) towards working in group. M. S. (Ag. Ext. Ed.). Department of Agricultural Extension Education, Agricultural University, Mymensingh.
- Ali, R.N. and M.M. Rahman (1978). An Evaluation of Women Development Programme of Mymensingh District: A programme assessment. Bangladesh Agricultural University Mymensingh.
- Anonymous. (1983). Women in Development. Country Brief Paper, Thailand. Manila: Asian Development Bank.
- Anonymous. (1991). The Bangladesh Census of Agriculture and Livestock. 1983-84. Vol. 1. Bangladesh Bureau of Statistics, Statistical Division, Ministry of Planning, Government of the People's Republic of Bangladesh.
- Aurangozeb, M.K. (2002). Adoption of Integrated Homestead Farming Technologies by the Rural Women in RDRS. MS. (Ag. Ext. Ed) Thesis. Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.
- Balasubramanian, S. and P. N. Kaul. 1985. Adoption of improved practices by Fish Trawler owners in Kerala. *Indian Journal of Extension Education*, 20 (3&4): 35 - 42.
- Basak, N. C. (1997). Impact of BRAC rural development activities as perceived by the participating women. M. S. (Ag. Ext. Ed.). Department of Agricultural Extension Education. Bangladesh Agricultural University, Mymensingh.
- Begum, A. (1998). Poverty alleviation of the rural women organized by association for social advancement. M. S. (Ag. Ext. Ed.). Department of Agricultural Extension Education. Bangladesh Agricultural University, Mymensingh.

- Bergerlin. (1987). Agricultural Extension for Women Farmers in developing, Countries: Institutional constrains. *Quarterly Journal of International Agriculture*, 26(1): 18-45.
- Blumberg, R.L. (1979). Rural Women in development: Veil of University and international *Journal of internal Relations* (3): 447-472.
- Brammer, H. (1983). Women in Agriculture, What I do not know about Agriculture in Bangladesh. *ADAB News* 10(4): 40.
- Castillo, Gelia, T. (1985). The Philippine Women: wife mother, worker and citizen, occasional paper no. 3 NFE/W10 Exchange Asia. UPLB, Leguna.
- Chowdhury, A. R. (2000). Women's opinion for participation in development activities in a selected BAUEC village. M. S. (Ag. Ext. Ed.). Department of Agricultural Extension Education. Bangladesh Agricultural University, Mymensingh.
- Devi, L. K. R. (1995). Determines of labour force participation among women in Kerala. Some evidence from a micro level study. *Asian Economic Review*. 38(1): 102-115.
- Dey, J. (1985). Women in the Rice Farming Net work. Country profile on Bangladesh. A Paper Presented at the Project Design Workshop on Women in Rice Farming System. Manila, Phillipine, International Research Institute.
- Farouq, A. (1980). "Use of time by individual-A survey in Bangladesh" in: Binswargar et al (eds)- *Rural Household studies in Asia*. Singapore University.
- Fatema, K. (1995). Training need of the farm women in increasing homestead agricultural production in the project villages of BAU extension. M. S.

(Ag. Ext. Ed.). Department of Agricultural Extension Education. Bangladesh Agricultural University, Mymensingh.

Ferguson, A.E. and H. Nancy (1985). "Situating Agricultural Research: Class and gender issues in project Adverement" P85-90 in: Gallin and spring (eds) Women treating Wealth and Transforming Economic Development. Washington D.O Association for Women in Development.

Gleason, J.E. (1988). The contribution of Women to Agriculture in Taiwan, in: Poats et al. (eds) Gender issues in Farming System Research and Extension Boulder, Colorado, West Viewpress.

Goode, C. V. (1945). Dictionary of Education. New York. McGraw Hill Company. Inc.

Goode, WJ. and P.K. Hatt (1952). *Methods of Social Research*. New York: McGraw-Hill Book Company, Inc.

Halim, A. (1990). A study on the informal saving by the women. An evaluation report on BAU, FSRDP activities. Farming system research and development programme, Bangladesh Agril. University, Mymensingh.

Halim, A. (1991). A Study on Sectoral Contribution at Income Generation from Homestead Area. An evaluation report on BAU, FSRAD activities. Farming Systems Research and Development Program, Bangladesh Agricultural University, Mymensingh.

Halim, A. and M.H. Ali. (1986). The effect of rice based cropping system research on women in Bangladesh GTI Publication No. 63. Graduate Training Institute Bangladesh Agril. University, Mymensingh.

Haque, M. (2003). Information sources used by the IRRI Rice Growers of Thakurgaon thana Co-operative Tube-well project. Un-published M. Sc. (Ext. Ed.). Thesis. Bangladesh Agricultural University, Mymensingh.

- Hoon, V. and S. Swaminathan. (1991). The impact of high yielding varieties and irrigation on rural women in Asia. A country paper from research foundation, India. Presented in the consultation paper on the Economic Advancement of Rural women in Asia Pacific, Kualampur, Malayasia.
- Hossain, K. (2006). Adoption of Selected High Yielding Variety of Rice by the Farmers of Rajpat Union Under Kasiani upzila in Gopalganj District. *M.S. (Ag. Ext. Ed.) Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.
- Hossain, M. A. (1971). Adoption of Improved Farm practices by the Transplanted Aman Rice Growers in Gouripur thana of Mymensingh District. *M. Sc. (Ag. Ext. Ed.) Thesis*, Department of Agricultural Extension and Teachers' Training, Bangladesh Agricultural University, Mymensingh.
- Hossain, M. A. 1983. Relationship of Fanner Characteristics with their Adoption of HYV Rice as Transplanted Aman and other Related Aspects in Bhabakhali Union of Mymensingh District. *M. Sc. (Ag. Ext. Ed.) Thesis*, Department of Agricultural Extension and Teachers' training, Bangladesh Agricultural University, Mymensingh.
- Hossain, M. A. 1991. Adoption Behavior of Contact Wheat Growers in Sadar Upazila of Jamalpur District. *M.Sc. (Ag. Ext. Ed.) Thesis*, Department of Agricultural Extension and Teachers' training, Bangladesh Agricultural University, Mymensingh.
- Hossain, M. D. 1981. Relationships of Selected Characteristics of the Jute Growers with their Adoption of Improved Practices of Jute Cultivation, M. Sc. (Ext. Ed.) Thesis, Bangladesh Agricultural university, Mymensingh.
- Hossain, M. M. 2003. Farmers Knowledge and adoption of Modern HYV cultivation practice. *M.S. (Ag. Ext. Ed.) Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

- Hossain, S. M. 2000. Farmers' Knowledge and Perception of Binadhan-6. *M.S. (Ag. Ext. Ed.) Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.
- Huq, J. (1979). Economic activities of women in Bangladesh. The rural situation of women in Bangladesh. Women for women research and study group. Women Development Programme, UNICEF, Dhaka.
- Huq, J. (1981). Employment Generation in Cottage Industries and Women: Role and strategy. *The Bangladesh Journal of Political Economy*.
- Hussain, M.S. *et al.* (1988). Womens contribution to homestead production system in Bangladesh. Bangladesh Academy for Rural Development and Bangladesh Agril. Research Institute.
- Hussain, S.H. (1985). Women in Rice culture: A case study in Bangladesh village. Paper presented at the 16th working group meeting of Asia rice farming systems network, Bangladesh 9-13 November.
- Islam, M. M. 2002. Adoption of Innovations in the Primary Agricultural co-operative Societies of Comilla Kotwali Thana and its Relationships with the Characteristics of their leaders. *M. Sc. (Ext. Ed.) Thesis*, East Pakistan Agricultural University, Mymensingh.
- Karim, M. M. (1993). Assessment of farmers agricultural knowledge in sugarcane cultivation. Department of Agricultural Extension Education. IPSA, Salna, Gazipur.
- Kashem, M. M. and Halim, A. (1991). Use of communication Media in the transfer of technology of farmers: A farm level study. Research Mongraph No. 2. Department of Agricultural Extension Education. Bangladesh Agricultural University, Mymensingh.

- Kerlinger, T. (1973). *Foundations of Behavioral Research : Education and Psychological Inquiry*. New York: HOH. Richart and Winston, Inc.
- Khan, A.Z.M. Obaidulla. (1977) *Women in Agriculture Development The ADAB News*, 15-27.
- Khan, M. A. H. 1993. *Adoption of Insecticides and Related Issues in the Villages of Pachon Union, Madaripur District. M.S. (Ag. Ext Ed.) Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.
- Marek, T.T. Brun and J. Renard. (1990). *Do home home garden project improve income and nutritional status: A case study in senegal. Food and Nutrition Bulletin* 12(1) 20-25.
- Martins, G. and V. Von Harder (1985). *Participation of Women in Rural Development: A field study in four village of Comilla, Bangladesh Academy for rural Development*.
- Miah, M. A. M., Parveen and Rahman, M. H. (1994). *Time spent in farming activities by the rural women. Bangladesh J. Training and Dev.* 7(2): 41-46.
- Middleton, C. O. (1958). *A comparision of the family background statu between 4-H and non 4-H membes who are in the 6th and 9th grades of school in 10 Wisconsin Communities. M. S. (Ag. Ext. Ed.). Department of Agricultural Extension Education. Bangladesh Agricultural University, Mymensingh.*
- Nahar, N. (1996). *Relationship of selected characteristics of the farm women with usefulness of agricultural radio program and homestead farming knowledge. M. S. (Ag. Ext. Ed.). Department of Agricultural Extension Education. Bangladesh Agricultural University, Mymensingh.*

- Ninaz, V. K. (1986). Food Production for home consumption nature and function of garden in household economic. International Potato Centre. Lima, Orecu.
- Parveen, S. (1993). Attitude of rural women towards homestead agricultural production. M. S. (Ag. Ext. Ed.). Department of Agricultural Extension Education. Bangladesh Agricultural University, Mymensingh.
- Pineda, O. R. (1984). Women of the, Soil: An Alternative. Philippine report on rural women Philippine women research collective. Phantlet series No.1.
- Quddus, A and T. R. Bose. (1985). Kitchen gardening and home level food processing as areas of rural. Women employment and income an experiment in Comilla. Bangladesh in the eighteens. Bangladesh Institute of Development Studies.
- Rahman, M. S. (1996). Analysis of Factors in Relation to the Adoption of IR-20. M. Sc. (Ext. Ed.) Thesis, Bangladesh Agricultural University, Mymensingh.
- Rao, D. R. (1994). Qualitative exploration of some socio-economic issue in south Uddamdi, Matlab, RDP Annual report: Dhaka, Bangladesh Rural Advancement Committee.
- Rosemary, K. and S. Zahir (1991). Marginal and small Farm Systems Crop Intensification Project. Women in development strategy. A consultant report, Kurigram project.
- Rosenberg, M. and Hovland, C. L. (1960). Research on Communication and Attitude coated in Trainds, H. C. 1971. Attitude and Attitude Change, John Wiley and Sons' Publisher, New York.
- Sattar, E. (1985). Village women works. Women for Women for women research and study groups. Dhaka University Press.

- Scaffer, T.O. (1986). Profic of women in Bangladesh United States Agency for international development, Dhaka Bangladesh.
- Schoeffel, P. (1983). Women Association in the Rural Economy of South Pacific. Case study from western samaa and New Britain province, Papua New Guinea, South Pacific Commission, Occasional Paper No. 19.mm
- Sharder, M. A. M. (1996). Interest and participation of rural youth in improved winter vegetable cultivation. M. S. (Ag. Ext. Ed.). Department of Agricultural Extension Education. Bangladesh Agricultural University, Mymensingh.
- Sofilios, G. R. S. and S. Mahmud (1989). Women role in Agriculture, Present trend and potential growth, Bangladesh Agricultural Sector review, UNDP and UNIFBM.
- Stunburg, P.C. (1984). Women Role in Irrigated Agriculture. Diagnostic workshop, Dahod Tank Irrigation Project, Madya Prodesh, India.
- Sudharani, P. and V.T. Raju (1991). Participation of women in Agricultural operation. Dahod Tank Irrigation Project, Madya Prodesh, India.
- Townsend, J. C. (1953). *Introduction to Experimental Methods*. International Student Edition, McGraw Hill Book Company Inc. New York.
- Veneracion, C.C. E.B.D. Torne, R.C. Cantribaya, F.P. Sianpo and A.O. Borija. (1988). "The Bicol Farming System Project" in Jeanne Frances (ed). Gender issues in rural development institute of the Philippians. Allenco de Manila University, Quizon City, Philippine.
- Vidya, M.L. V.N. Qupraithy and M.P. Panth. (1991). Integrating women concerns in farming system research: A case study of Nulduns, Nepal, Rice farmers systcias technical exchange.

Wallace, P., Martins, G. and Renard, L. (1985). The invisible resources: Women folk in rural Bangladesh. Bangladesh Agril. Research Council, Dhaka, Bangladesh.

Westerguard, K. (1981). Implication of rural preparaization for economic role and status of women in rural. Bangladesh. CRD Project paper, Copenhagen, Centre for Development Research.

Yunus (1984). Jorimon of Beltoli Village other in search of a future, Gramen Bank, Dhaka.

Appendix I. English version of the interview schedule

**DEPARTMENT OF AGRICULTURAL EXTENSION AND INFORMATION SYSTEM
SHER-E-BANGLA AGRICULTURAL UNIVERSITY
DHAKA 1207**

An interview schedule for a research study entitle

**“INVOLVEMENT OF FARMERS IN HOMESTEAD FRUIT
PRODUCTION ACTIVITIES”**

Serial No.....

Respondent Name :

Village : Union : Upazila:

[Please provide following information. Your information will be kept confidential and will be used for research purpose only]

1. Age

What is your present age? Years



2. Education

What is the level of your education?

- a) Illiterate (), b. Can sign only(), c. Have passed class.....
d. Did not read in School/Madrasha but can read and write and level of education is equivalent to class.....

3. Family size

State the number of your family members.....

4. Farm size

Please mention the area of your land according to use

Sl. No.	Type of land use	Area of land	
		Acre	Hectare
A	Homestead land		
B	Land under own cultivation		
C	Sharecropping in		
D	Sharecropping out		
E	Leased in		
F	Pond		
G	Garden		
Total farm size = A + B + $\frac{1}{2}$ (C + D) + E + F + G			

5. Annual income

Please mention the amount of annual income from the following sources

a) Income from Agricultural Crop

SL. No.	Crop Name	Production (Maund)	Price/Maund (Tk)	Total Income (Tk.)
1	Rice			
2	Wheat			
3	Maize			
4	Potato			
5	Jute			
6	Pulse crop			
7	Oil crop			
8	Spice crop			
9	Vegetable			
10	Fruits			
Total				

b) Income from domestic animals and fish resources

SL. No.	Income resources	Total Income(Tk.)/year
1	Domestic animal	
2	Poultry	
3	Fish resources	
Total		

c) Income from another resources

SL. No.	Income resources	Total Income (Tk.)/year
1	Services	
2	Business	
3	Day labour	
4	Other family members	
Total		

6. Training exposure

Did you receive any kind of agricultural training in the last five years?

Yes...../ No..... (If yes, please furnish following information)

SL.	Title of training course	Duration	Training offering organization
1			
2			
3			
4			
5			
Total			

7. Organizational participation

Please mention the nature of your participation with the following organization
(Tick in right place)

SL. No.	Organizations	Nature of participation			
		No. Participation	Ordinary Member	Executive Member	Executive Officer
1	NGO organized group				
2	Salish Unnyan Kendro				
3	Ansar/VDP				
4	School Committee				
5	Madrasha/Temple Committee				
6	Farmer Co-operative Society				
7	Mosque/Puja Committee				
8	Hat/Bazaar Committee				
9	Youth Club				

8. Extension media contact

Please mention the extent of your contact with the following agriculture information media (Tick the right answer)

SL. No.	Media of Communication	Extent of Visit				
		Regularly	Frequently	Occasionally	Rarely	Not at all
a) Interpersonal contact						
1	SAAOs	> 12 Times/y	9-12 Times/y	5-8 Times/y	1-4 Times/y	0
2	Agricultural Extension Officer	7-8 Times/y	5-6 Times/y	3-4 Times/y	1-2 Times/y	0
3	Upazilla agricultural Officer	7-8 Times/y	5-6 Times/y	3-4 Times/y	1-2 Times/y	0
b) Group Contact						
4	Group discussion	7-8 Times/y	5-6 Times/y	3-4 Times/y	1-2 Times/y	0
5	Field day	4 Times/2y	3 Times/2y	1Times/y	1 Time/2y	0
6	Method/result Demonstration	2 Times/y	1 Times/y	1 Times/2y	1 Time/3y	0
C) Mass Media						
7	Television	>12times/month	8-12times/month	4-7times/month	1-3times/month	0
8	Radio	>10times/week	6-9times/week	3-5times/week	1-2times/week	0
9	Newspaper	>7times/week	5-6times/week	3-4times/week	1-2times/week	0

9. Problem faced in homestead fruit production

Please indicate the problems related to homestead fruit production

Sl. No.	Items of problem	Nature of problem faced			
		High problem	Medium problem	Little problem	No problem
1.	Unavailability of seeds and seedlings of high yielding varieties of homestead fruits				
2.	Lack of awareness and technical knowledge on improved homestead fruits production technology				
3.	Lack of irrigation facilities in the dry season				
4.	Lack of capital and institutional support				
5.	Lack of casual/permanent labor				
6.	Damage of seedlings by poultry, domestic animals and children				
7.	Shading of available spaces for homestead fruits by other trees				
8.	Inter and intra homestead tenure conflicts				
9.	Fencing of homestead fruits				
10.	Harvesting of homestead fruits				
11.	Storage of harvested homestead fruits				
12.	Marketing facilities of homestead fruits				
13.	Growing of seedling in homestead fruits.				
14.	Lack of intensive care				



10. Knowledge on homestead fruit production

Please answer the following questions.

Sl. No.	Questions	Assigned score	Obtained marks
1	Mention two minor homestead fruits	2	
2	Mention the benefits of homestead fruit production	2	
3	What type of soil is suitable for homestead mango production	2	
4	Name two year round fruit producing plant	2	
5	Do you know when fertilizers are to be applied for papaya?	2	
6	What precautions are needed at the time of pesticide application in homestead fruit production?	2	
7	What do you know about composting?	2	
8	Do you know how to prepare a seedbed for fruit trees?	2	
9	What is layering of citrus?	2	
10	How many types of grafting are done for mango propagation?	2	
11	What is ringing of mango tree?	2	
12	Name two diseases and symptoms of banana	2	
13	Mention two early and two late varieties of mango	2	
14	Do you know which fruit contains largest amount of vitamin C?	2	
15	What is mulching?	2	
Total		30	

11. Extent of involvement in homestead fruit production

Please mention your involvement in homestead fruit production activities

Sl. No.	Homestead Fruit Production Activities	Degree of Involvement			
		Not at all	Low	Medium	High
1.	Land preparation				
2.	Fruit seedling production				
3.	Fertilization				
4.	Insect management				
5.	Disease management				
6.	Weeding				
7.	Irrigation				
8.	Care management				
9.	Training & pruning				
10.	Use of PGRs				

Thanks for your co-operation.

Signature of the interviewer with Date

Appendix II. Correlation Matrix

Characters	A	B	C	D	E	F	G	H	I	J	K
A	1.00										
B	-0.260**	1.00									
C	-0.036	0.252**	1.00								
D	-0.072	-0.096	-0.032	1.00							
E	0.150	-0.166	-0.211*	-0.082	1.00						
F	-0.051	0.106	-0.108	-0.262**	0.085	1.00					
G	-0.140	0.269**	-0.003	-0.188	-0.025	0.097	1.00				
H	-0.227*	0.138	0.024	-0.110	-0.092	0.238*	0.261**	1.00			
I	-0.061	-0.045	-0.096	-0.044	0.090	-0.020	0.058	0.014	1.00		
J	-0.168	0.089	0.109	-0.093	0.187	-0.068	-0.031	-0.199*	0.045	1.00	
K	0.032	0.293**	-0.114	-0.144	0.059	0.494**	0.107	0.206*	-0.213*	0.058	1.00

A: Age

D: Farm size

H: Extension media contact

K: Involvement of farmers in homestead fruit production activities.

B: Level of Education

E: Annual family income F Training exposure

I: Problems faced in homestead fruit production

C: Family size

G: Organizational participation

J: Knowledge on homestead fruit production

Sher-e-Bangla Agricultural University
Library

Accession No. 37570

Sign: *Gmish* Date: 28/01/14

84



Sher-e-Bangla Agricultural University
111