WOMEN'S PARTICIPATION IN VEGETABLES CULTIVATION IN SELECTED AREAS OF BOGURA DISTRICT

NAZIA NOWSHEEN AUISHY

DEPARTMENT OF DEVELOPMENT AND POVERTY STUDIES
SHER-E-BANGLA AGRICULTURAL UNIVERSITY
DHAKA-1207

JUNE 2020

WOMEN'S PARTICIPATION IN VEGETABLES CULTIVATION IN SELECTED AREAS OF BOGURA DISTRICT

BY

NAZIA NOWSHEEN AUISHY
Reg. No. 13-05586

A thesis

Submitted to the Faculty of Agribusiness Management

Sher-e-Bangla Agricultural University, Dhaka

In partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE (MS)

IN

DEVELOPMENT AND POVERTY STUDIES

SEMESTER: JANUARY-JUNE 2020

APPROVED BY:

(Prof. Dr. Mohammad Mizanul Haque Kazal)	**(Prof. Dr. Ashoke Kumar Ghosh)**
Supervisor	Co-Supervisor
Dept. of Development and Poverty Studies	Dept. of Development and Poverty Studies
Sher-e-Bangla Agricultural University	Sher-e-Bangla Agricultural University

Dr. Ashoke Kumar Ghosh
Professor & Chairman
Examination Committee
Dept. of Development and Poverty Studies
Sher-e-Bangla Agricultural University

Department of Development and Poverty Studies
Sher-e-Bangla Agricultural University
Sher-e-Bangla Nagar,
Dhaka-1207, Bangladesh

CERTIFICATE

This is to certify that the thesis entitled ***"WOMEN'S PARTICIPATION IN VEGETABLES CULTIVATION IN SELECTED AREAS OF BOGURA DISTRICT"*** *submitted to the department of Development and Poverty Studies, Faculty of Agribusiness Management, Sher-e-Bangla Agricultural University, Sher-e-Bangla Nagar, Dhaka in partial fulfillment of the requirements for the degree of Master of Science (M.S.) in Development and Poverty Studies, embodies the result of a piece of bona fide research work carried out by* ***NAZIA NOWSHEEN AUISHY, Registration No. 13-05586*** *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, as has been availed of during the course of this investigation has been duly acknowledged by the Author.

Prof. Dr. Mohammad Mizanul Haque Kazal
Supervisor

Dated:

Dhaka, Bangladesh

Department of Development and Poverty Studies
Sher-e-Bangla Agricultural University
Sher-e-Bangla Nagar, Dhaka-1207

DEDICATED

TO

MY BELOVED

GRAND PARENTS

WOMEN'S PARTICIPATION IN VEGETABLES CULTIVATION IN SELECTED AREAS OF BOGURA DISTRICT

ABSTRACT

The objectives of this study were to describe the selected characteristics of the women; to determine the level of participation of women in vegetable cultivation and to determine the significant contributor to women participation in vegetable cultivation. The study was conducted in Shajahanpur Upazila under the Bogura District. Data were collected by using interview schedule from the randomly selected 60 women respondents during 1st April to 31th May, 2020. Women participation in vegetable cultivation was the dependent variable of the study. The variable was measured on the basis of whether the women participate or not participate in vegetable cultivation and eleven selected characteristics of the respondents was considered as independent variables of the study. The higher proportion (53.3 percent) of the respondents had participated in vegetable cultivation and while 46.7 percent of women did not participate in vegetable cultivation. Among selected characteristics of the respondent's viz. education, family size, satisfaction, monthly income from vegetable cultivation, extension contact and training in vegetable cultivation had significant positive contribution to their participation in vegetable cultivation. Lack of training facilities was the 1st problem followed by low yield and unstable price and **l**ack of technical knowledge was the last problem. So, the policy makers should consider these important factors to increase women participation in vegetable cultivation.

ACKNOWLEDGEMENT

All praises are due to Almighty Allah, the Great, Gracious and Merciful, Whose blessings enabled the author to complete this research work successfully. Guidance, help and co-operation have been received from several persons or authority during the tenure of the study, the author is grateful to them all who made a contribution to this research work. Although it is not possible to mention all by names it will be an act of ungratefulness if some names are not mentioned here for their immense contribution in the accomplishment of this study.

In particular, the author takes the opportunity to express her deepest sense of gratitude her honorable ***Supervisor Professor Dr. Mohammad Mizanul Haque Kazal****, Department of Development and Poverty Studies, Sher-e-Bangla Agricultural University, Dhaka for his continuous inspiration, valuable suggestions, constructive criticism, constant guidance and intensive supervision through the period of the study and preparation of this thesis without his intense co-operation this work would not have been possible.*

The author deems proud privilege to extend her extreme gratefulness and best regards to her venerable ***Co-supervisor Professor Dr. Ashoke Kumar Ghosh, Chairman,*** *Department of Development and Poverty Studies, Sher-e-Bangla Agricultural University, Dhaka for her keen interest, valuable advice, creative suggestions, co-operation and encouragement to bring this thesis up to its present standard.*

It is also a great pleasure for the author to express hearty appreciation and regard to all teachers of Department of Development and Poverty Studies, Sher-e-Bangla Agricultural University, Dhaka for their affectionate feelings and valuable suggestions during the research work.

The author expresses her grateful thanks to all staff and employees of the Department of Development and Poverty Studies, Sher-e-Bangla Agricultural University, Dhaka for their co-operation and encouragement to prepare this thesis.

Last but not least, the author expresses her deepest sense of gratitude, indebtedness and profound respect to her beloved mother, uncles, brothers, sister, relatives and friends for their blessings, encouragement and moral support in all phases of this academic pursuit from beginning to the end.

The Author

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS

GDP	Gross Domestic Product
GOs	Governmental Organizations
SAIP	Smallholder Agriculture Improvement Project
ASIRP	Agricultural Services Innovation and Reform Project
BBS	Bangladesh Bureau of Statistics
CDP	Crop Diversification Programme
NCDP	North West Diversification Project
DAE	Department of Agriculture Extension
FAO	Food and Agriculture Organization
ILO	International Labour Organization
PHT	Post-Harvest Technologies
NGOs	Non-Governmental Organizations
BB	Bangladesh Bank
HYV	High Yielding Varieties
BER	Budget Execution Review
SPSS	Statistical Package For Social Sciences
NTFPs	Non timber forest product

CHAPTER 1
INTRODUCTION

1.1 Background of the study

Bangladesh is predominantly an agrarian country. Due to its very fertile land and favorable weather, varieties of crops, grow abundantly in this country. About 75 percent of the total population live in rural areas who are directly and indirectly engaged in a wide range of agricultural activities (BBS, 2020). Agriculture sector which contributes about 13.35 percent to the country`s Gross Domestic Product (GDP) and provides employment to around 45.1 percent of the total labor force (BBS, 2020). Sustained government investment in irrigation facilities, rural infrastructure, agricultural research, and extension services has helped Bangladeshi farmers achieve dramatic increases in agricultural production. The process of agricultural production is, however, underpinned by the increasing use of agrochemicals and multiple cropping. And while significant production transformation has been achieved and food production has more than doubled since independence in 1971, these have mostly supported the country's large population base rather than uplifting the living standards of the average citizen. Food security remains a major development issue.

Diversification into vegetable crops and increasing commercialization can support the development of the agricultural sector in several ways. Vegetables are cultivated in only 1.8 percent of the total cultivatable land. Besides this, the premises of houses, tin sheds and rooftops are used for vegetable cultivation. In some areas, vegetables are also cultivated on floating systems. Almost 20-25 varieties of vegetables, including tomato, bottle gourd and cauliflower, are produced year-round. Women using improved varieties and modern technologies 30 percent more vegetables can be produced in the country, according to scientists. According to FAO, vegetable production has increased five times in the past 40 years. Bangladesh has scored 3rd in global vegetable production, next to China and India. The farmers are getting a huge profit from vegetable production which is changing their life. Literate youths are joining the industry and are achieving targets

with the use of improved technology and their talents. The land under vegetable cultivation in the country has increased at a rate of 5.0 percent in the last decade. The rate of increase in vegetable production was 6.0 per cent in the last three years. Land under vegetable cultivation during the current Rabi season has been set at 528 thousand hectares. Every year 10 million MT of potato is produced of which 100 thousand MT are exported abroad.

Vegetables and fruits are now exported to about 50 countries around the world. About sixty percent of the total quantity is exported to the Middle East and the remaining 40 per cent to Europe and other countries. The exported vegetables include yard-long bean, cowpea, cucumber, snake gourd, bitter gourd, tomatoes, papaya, eggplant, pumpkin, lady's finger, pumpkin, amaranth, spinach, Indian spinach, cauliflower, cabbage, green chili, taro, coco yam, green papaya, plantain, jute leaf, bottle gourd leaf, arum leaf, water lily, mustard green, bean seed, jackfruit seed, aroid, etc. To increase earnings from export, the government has taken initiatives to export salmonella-free betel leaf and bacteria-free vegetables. The demand for Bangladeshi vegetables is increasing in the South Asian sub-continent and the Gulf region day by day.

Vegetables are a rich and comparatively cheaper source of vitamins. Consumption of these items provides taste, palatability, increases appetite and provides fiber for digestion and to prevent constipation. Their consumption is plenty of fair amount of protein. They also play a key role in neutralizing the acids produced during digestion of pretentious and fatty foods and also provide valuable roughages that help in the movement of food in the intestine. Some of the vegetables are good sources of carbohydrates (leguminous vegetables, sweet potato, potato, onion, garlic and methi) proteins (peas, beans, leafy vegetables and garlic) vitamin A (carrot, tomato, drumstick, leafy vegetables), Vitamin B (peas, garlic and tomato), Vitamin C (green chilies, drumstick leaves, Cole crops, leafy vegetables and leaves of radish) minerals (leafy vegetables, drumstick pods). As per the dietician, the daily requirement of vegetables is 75 - 125 g of green leafy vegetables, 85 g of other vegetables and 85 g of roots and tubers with other food. Food production is

increasing. Ii is essential to sustain increased production besides the nutritional standard of people. It can be increased by increasing the production of vegetables which will help to solve food problems as the yield of vegetable crops is 4 to 10 times more than cereals. Thus, vegetables play a vital role on the food front as they are the cheapest sources of natural foods and can admirably supplement the main cereals of the country.

Women play a key role in the conservation of basic life support system such as land, water, flora, fauna (Swaminathan, 1985). They play a significant and crucial role in agricultural development as well as home development. In a developing country like Bangladesh, it cannot be denied that under-utilized rural female force forms a vast reservoir of human resources. They constitute a large potential section of its total population. The role of rural women in the socio-economic development of Bangladesh cannot be overlooked. They generally involved in crop related activities like-composting, transplanting, sowing, weeding, harvesting, drying, homestead gardening and tree planting. But their enhanced economic role has not gone in hand with substantial improvement in education, training, health and nutrition and access to production resources and services. Similarly, they remain largely unrepresented in national agenda-setting and resources allocating bodies. Their wider participation in village associations, marketing, co-operatives and other community organizations can help to reduce the social constraints on access to productive resources. Rural women generally involve in different enterprises but have not been clearly defined so far, since there is no systematic research investigation in these aspects. It is essential, therefore, that women become a priority target group in agricultural production.

At present there are many GOs program involving rural women, namely goat rearing, poultry rearing, tree plantation program, literacy program, etc. Under the Ministry of Agriculture there are some service sector projects, namely SAIP (Smallholder Agriculture Improvement Project), ASIRP (Agricultural Services Innovation and Reform Project), CDP (Crop Diversification Program), NCDP (North West Diversification Project), Gram

AUS etc. All these projects emphasize women's participation in farming activities, where GOs are greatly encouraged to work closely together with local and national NGOs.

Rural women - who are half of the rural population of Bangladesh, must be included in development activities specially in homestead agricultural activities. So, when rural women are involved and included with these development activities and are aware of their rights and claims, their participation in homestead agricultural activities will be increased to a great extent.

The contributions of rural women in Bangladesh are largely unorganized. They are very well contributors to agricultural and economic production along with household activities. Women's participation in vegetable cultivation, more particularly in agricultural development in Bangladesh is the most important strategy designed to improve the social and economic life of a specific group of a farming community. In the existing socioeconomic condition of the country, activities of most of rural women are confined to the homestead where they are involved mostly in household vegetable cultivation. Farm women play an important role in post-harvest activities especially in threshing, cleaning, washing, drying and storage of grains & vegetables in all the zones proving that they were a major role contributor to family food and economic security. Farm women are responsible for the more time-consuming and labor-intensive tasks of crop and livestock production: sowing, application of fertilizer, weeding, harvesting, transporting, threshing, winnowing, cleaning, sorting grading and bagging. These tasks are carried out manually or with simple tools. It is most unfortunate that the role of farm women and their contribution to farm activities are not yet recognized.

Women produce more than 50% of the food grown worldwide, according to FAO estimates (FAO, 1995). Women's contributions to farming, forestry, and fisheries may be underestimated, as many surveys and censuses count only paid labour. Farm women are active in both the cash and subsistence agricultural sectors and much of their work in

producing food for the household and community consumption, important as it is for food security, is not counted in statistics.

1.2 Background studies on women´s work in Bangladesh

The role of women's work for gender, development and poverty reduction continues to be an important area of investigation in Bangladesh (Farouk 1980, 1985; Khuda 1980; McCarthy 1981; Abdullah and Zeidenstein 1982; Begum 1983; Rahman 1986; Ahsan et al 1986; Chowdhury 1986; McCarthy and Feldman 1988; Rothschild and Mahmud 1989; Jahan, 1990; Shirin, 1995; Jordans and Zwatreveen, 1997; Asaduzzaman and Westergaard 1983; Amin and Pebley 1994; Hashemi et al 1996; and Mahmud 2003). It is recognized that women work more hours than men particularly in low-income households, more in agriculture than in non-agricultural economic activities, and more as unpaid family laborers than as managers. Even if they do most of the work, men mostly control their decision making power and ownership of household resources. Institutional services for development target only men. Even when women are targeted such as in the micro-credit program, women are often used as a font and men keep control over managing the resources. Thus, it is acknowledged that women are disadvantage group to acquire knowledge on-farm and non-farm production systems and technologies from the service sectors. They are disadvantaged because of traditional culture and social norms that confer power and privilege to men. However, some recent studies have observed that women from poor households change their traditional norms and responsibilities at home and involve in post-harvest agricultural activities outside the home due to extreme poverty and food deficiency. A general critique (Westergaard 1983) of the studies is that they are based on field work in one or a few selected villages, and hence it is difficult to get a picture for the country as a whole or different regions. With a few exceptions, few studies have analyzed how the dynamics in rural Bangladesh have affected women.

1.3 Women in Bangladesh

The incidence of poverty in Bangladesh is alarming. It is much higher compared not only to the East Asian countries but also to our South Asian neighbors. This country with half of the population below the recommended calorie intake of 2122 cal/day (upper poverty line) and about a quarter percent below the lower poverty line of 1805 cal/day/person is one of the poorest countries in the world (Salahuddin and Shamim, 1996).

Not only are women the poorest of the poor, they are also disproportionately represented among the poor. Such a situation prevails in most developing countries. Data from 41 countries which account for 84 percent of the total rural population of 114 developing countries indicate that while in 1965–70 women comprised 57% of the rural poor, by 1988, they accounted for 60%. Again between 1965–70 and 1988, the number of rural women living below the poverty line rose more than the number of rural men living below the poverty line (47% for women as compared to 30% for men) (ILO, 1995). Hence, Diana Piearce (1978) coined the term "Feminization of poverty" which implies that not only are women as a group likely to be poorer than men, but more women than men are falling into the poverty trap under the existing discriminatory socio-cultural norms and practices and economic policies. The conflicting social relations, faulty economic policies leading to unequal economic growth and wide spread gender discrimination and the notion that women's income is secondary and complimentary, have not only aggravated the poverty situation in most of the developing countries including Bangladesh, but also led to a sharp rise in the proportion of women among the poor. The structural adjustment policy, which is being implemented in Bangladesh, has also contributed to an increase in the burden of poverty on women (Salauddin, 1995). The role of women in society is seen as subsidiary to that of men and having its principal concern with the household, reproduction and childcare and family management. The distortions show particularly in the sectors shown by the following Table:

Table 1.1 Distortions of Women in Different Sectors

Sector	Women	Men	Source
Average Literacy	38 percent	52 percent	BBS, 1998
Age at first marriage	20 years	28 years	World Bank, 98
Participation in education	30 percent	-	BBS, 1998
Labor Force	18 percent	-	United Nations, 2000

In the case of participation in education – women comprise only about 30 percent of secondary and higher secondary enrollment (BBS, 1998) whereas only 18 percent of women participate in the labor force (United Nations, 2000) and have significantly lower wages when they do, but contribute 80 percent of the unpaid family work.

1.4 Justification of the study

Rural women play a vital role in the agriculture of Bangladesh. Farming is operated by the joint participation of males and females by farm families. However, the majority of women in rural families are illiterate, unskilled and traditionally bound. Nevertheless, they contribute to agricultural and rural development. Some of the agricultural activities performed by women include weeding, fodder cutting and chopping, livestock management, pre and post-harvest produce handling. Their productive efficiency in farming is extremely low due to low literacy and lack of skill. Rural women are the main producers of staple crops as well as the production of secondary crops such as legumes and vegetables. These vegetables, which are often grown in home gardens, provide essential nutrients and can often, be the only source of food during times of food shortage. Rural women are assuming a greater role in Agricultural production, yet their contribution remains largely overlooked in development plans. Women remain largely unpaid for their domestic services, their household labor remains invisible in national economies. In many parts of Bangladesh, agriculture is the chief occupation of women 46% of the total farming population of Bangladesh is women. Yet, here in Bangladesh women earn less on an average per hour than men. Bangladesh is an agro-based overpopulated country. About 70% of 10 million farm households have below one

hectare of land. About half of the population in Bangladesh is women. Among them, 45.6% are associated with farming activities. Currently Bangladeshi women are playing significant role in agricultural production, more specifically in vegetable cultivation. If women can perform their roles in vegetables cultivation properly and skillfully they will be able to ensure food security and family nutrition, increase family income and contribute to the overall improvement in Bangladesh. Assessment of the role of women in household activities particularly in vegetable production is therefore, important particularly for policy formulation and program interventions for the development of women. Vegetable cultivation in home gardening activities is centered on women and it can also increase the income of women, which may result in better use of household resources and improved caring practices and empowerment. This empowerment of women also addresses a priority area of poverty alleviation and provides important socio-economic returns through lower health and welfare costs, lower fertility, and lower maternal and infant mortality rates. Thus, the simultaneous impact of vegetable cultivation programs in terms of giving women a voice and promoting their full participation in domestic life can make an important contribution to the overall development of communities as well as national income level. Women from landless and marginally landless rural families cultivate different kinds of vegetables in their farming land. Undoubtedly, women can play a vital role if their full talent can be explored in vegetable cultivation. If women can perform their roles in vegetable cultivation properly and skillfully, they will be able to ensure food security and family nutrition, increase family income and contribute to the overall development of Bangladesh. So, when rural women are involved and included with these development activities and are aware of their rights and claims, their participation in vegetable cultivation will be increased to a great extent.

Hence, the present study “women participation in vegetable cultivation” has undertaken.

1.5 Statement of the problem

"Participation" generally means one's involvement in an object, thing or situation related to homesteading agricultural production. Participation in homestead vegetable cultivation activities is the condition of an individual about vegetable production in homestead areas. Participation of the rural women in homestead vegetable cultivation activities is very vital to the agricultural development of Bangladesh, where an overwhelming majority of them live in rural areas and live close to the agricultural production system. Women play a very important role in the agricultural development of the country and they have been directly involved in vegetable production and productivity. It is therefore, important to have an adequate understanding of rural women's participation in agricultural production especially in homestead vegetable cultivation activities of the country.

Analyzing the issues from rural women's perspective, this study was designed to find out the following research questions regarding rural women's participation in vegetable cultivation activities:

i. What is the extent of participation of the rural women in vegetable cultivation? ii. Is the participation of the rural women in vegetable cultivation affected by the selected characteristics?

iii. What extent do the relationships have between selected characteristics of the rural women and their participation in vegetable cultivation?

1.6 Specific objectives

a) To identify the selected characteristics of the women;
b) To examine the level of participation of women in vegetable cultivation;
c) To determine the significant contributor to women participation in vegetable cultivation; and
d) To identify the problem faced by the women in vegetable cultivation.

1.7 Scope and limitations of the study

Considering the time, money and other resources and also to make the study meaningful and manageable, the researcher had to impose certain limitations as mentioned below:

a) The study was confined to a selected area i.e. six villages of Shajahanpur Upazila under the Bogura District.
b) There were many farm women in two union but only 60 respondents who were involved in vegetable cultivation were considered for this study.
c) These studies included only winter vegetables
d) Only 5 activities and 7 vegetables were selected for measuring the extent of participation.
e) Only the housewives of males headed families were considered as respondents of the study.
f) There were many characteristics of the housewives but only a few of them were selected for this study.
g) The researcher had to depend on the data furnished by the selected respondents.

1.8 Assumptions of the study

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

I. The respondent farm women of the study area was capable of furnishing adequate information, views and options.
II. The responses furnished by the respondent were valid and reliable.
III. Information furnished by the respondents included in the sample were representative of the whole population of the study.
IV. The researcher personally collected data was well adjusted herself to the social environment of the study area. Hence the data collected from the respondents were free from any biasness and with no hesitation.

CHAPTER II
REVIEW OF LITERATURE

The present study is concerned with the participation of women in vegetables cultivation. This review of literature chapter deals with the review of past studies and findings related to study. The researcher came across with some expert opinions and has tried his best to collect needful information through searching relevant studies, journals, periodicals, bulletins, leaflets, internet etc. These enhanced the researcher's knowledge for a better and clear understanding of the present study.

2.1 Reviews on women participation in vegetable cultivation

Chowdhury (2009) conducted a study on the participation of women in farm and non-farm activities in two villages of Sadar Upazilla of Mymensingh district. This study showed that in case of both low and medium income households, female participation is moderately higher in non-farm activities than the high income households.

Nahar (2008) in her study in a selected area of Gazipur district observed that the involvement of rural woman in each of the homestead activities i.e. homestead vegetable cultivation, post-harvest activities, poultry raising and goat rearing and the extent of participation is high in all cases which is highly encouraging. These kinds of activities are mostly performed by rural women in our country and have perfectly reflected in her study.

Uddin (2008) conducted a study among the women of Shariatpur district. He found that 68.63 percent of the respondent had medium and 31.37 percent had low involvement in home gardening practices.

Hasan (2006) observed that the highest proportion (98 percent) of conventional rural women had medium involvement in homestead activities. On the other hand,

cent percent of organic women farm workers had high involvement in homestead farming activities by organic women farm workers was significantly higher than that of conventional rural women's farming activities.

Gopalappa (1997) reported that the respondent women were able to participate in the new cropping pattern for sericulture on the household's land, and hence they no longer had to hire their labour out. It was concluded that their contribution to the household's agriculture was more greatly appreciated.

Karim and Wee (1996) mentioned that women were involved in seed collection, seed storage, fertilizer application, and daily maintenance and harvesting. In the case of tribal people, vegetables were growing mostly cared by women.

Ajayi (1995) in his study found that most women take part in planting, weeding, harvesting and post-harvest activities of subsistence crops.

Chakma (1995) in a socio-economic study in a selected area of Khagrachari Hill district found that women and children participation from the landless group was the highest particularly in the case of hiring out the labour.

Akanda (1994) in his study revealed that the highest proportion of the rural women had high participation in vegetable cultivation while only 15 percent of them had high participation in the cultivation of fruit trees.

Halim *et al.* (1994) reported that in Bangladesh, women produced Indian spinach, amaranth, okra, gourd, cucumber and pumpkin during the summer season and country bean, brinjal and tomato during the winter season in their homestead garden successfully.

Islam and Dham (1994) reported that women members of the co-operator farm families participated in all the operations needed for homestead gardening whatsoever.

Sultana (1993) stated that homestead vegetables and fruits form an integral part of the family diet and a part of them enters the commercial-market.

Virdi (1993) mentioned that rural women in Bangladesh have almost always been associated with agriculture.

Vlassak (1993) mentioned that in third world countries, the role of women in agricultural production is extremely important. The tasks in agriculture as well as in food distribution and processing carried out by women show a particular pattern. Women like to increase agricultural production, but their activities are being impeded in different ways.

Halim (1990) stated that rural women in Bangladesh were active in productive works in the household industry and even in marketing in addition to taking care of children, preparing and serving food to other members of the family.

Gleason (1988) in his report mentioned that women in rural Taiwan often worked with their male counter-parts in almost all aspects of agricultural production. There were tendencies for women to perform certain tasks that men were likely to do and vice versa.

Hossain *et al.* (1988) reported that women constitute about 48% of the total population in Bangladesh. Even then, their role is not adequately reflected in the national census and development activities because of a lack of necessary information and documentation on homestead agriculture.

Akhter (1989) stated that women were involved in homestead agricultural production activities such as vegetables, fruits, timber, small animals (goat, sheep) and poultry to supply food and to increase family income.

Halim (1987) informed that women were the potential producer of the homestead agricultural products and through their participation intensive homestead products may be produced. But due to a lack of knowledge and utilization of proper technology and manageable practices the production remained below the expected level.

Hossain (1985) mentioned in his paper that women were involved in most of the post-harvest operations of vegetable production. He also advocates 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 operation and household decision making.

Quddus *et al.* (1985) reported that the kitchen gardening and home level food processing was satisfactory extension work and their participation was highly favourable.

Dey (1985) mentioned in his paper that women in households are economically active and played important role in post-harvest operations as well as other activities like kitchen gardening and livestock-care.

Younus (1984) stated 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.

2.2 Vegetable Production Scenario in Bangladesh

Weinberger and Genova (2005) stated that More than 60 types of vegetables of indigenous and exotic origin are grown in Bangladesh. Based on the growing season, vegetables are categorized as summer/rainy season vegetables, winter season vegetables, and all-season vegetables. Of the summer vegetables, various cucurbits, vegetable

cowpea, hyacinth bean, stem amaranth, several aroids and Indian spinach are predominant. Winter vegetables include tomato, cabbage, Chinese cabbage, cauliflower, eggplant, carrot, spinach, bottle gourd, bush bean and radish. Crops like okra, heat-tolerant tomato, eggplant, carrot, spinach, many leafy vegetables and small onion are grown all year round. Summer vegetables are cultivated during the monsoon season from May to October. On the other hand, winter vegetables are grown from November to April. The production of vegetables is higher during winter (60 to 70%) and most districts produce marketable surplus during that season.

Department of Agricultural Extension (DAE) has informed that in the fiscal year of 2015-16, the government has set target the production of 143,47,000 Metric tons of vegetables from the 8.05 lakh hector cultivable land. DAE source further said right now more than 150 types of vegetables are being cultivated in Bangladesh.

According to FAO, vegetable production has increased five times in the past 40 years. Bangladesh has scored 3rd in global vegetable production, next to China and India. The farmers are getting a huge profit from vegetable production which is changing their life. Literate youths are joining the industry and are achieving targets with the use of improved technology and their talents.

According to scientists, Vegetables are cultivated in only 1.8 per cent of the total cultivatable land. Besides this, the premises of houses, tin sheds and rooftops are used for vegetable cultivation. In some areas vegetables are also cultivated on floating systems. Almost 20-25 varieties of vegetables, including tomato, bottle gourd and cauliflower, are produced year-round. By using improved varieties and modern technologies 30 per cent more vegetables can be produced in the country.

Karim *et al.* (2005) observed that the vegetable sector, occupying a more or less significant position in our export sector, helps meet our needs for foreign currency as well as ensure our economic development. Bangladesh earns Tk. 1456.33 million (US$ 24.70 million) in the year 2003-04 by exporting vegetables, which constitutes
60.08 percent of the earnings from agricultural products.

According to the Hortex Foundation estimation (2005), the area under vegetable cultivation accounts for only 1.79 percent of the total cropped areas. From this small proportion of the land area, Bangladesh produces about 1.63 million metric tons of vegetables annually, of which about 60 percent are produced in winter and the rest in summer (Horetx Foundation, 2005). Therefore, production is not well distributed throughout the year and produce for domestic use is relatively scarce in the offseason.

Hortex Foundation (2005) reported that most of the agricultural production in Bangladesh is concentrated in rice, occupying about 75 percent of total cropped areas (Government of Bangladesh, 1999), whereas only seven percent of the total cropped land is used for horticulture crops, including root and tuber crops.

Weinberger and Lumpkin (2005) found that farmers who are engaged in the production of vegetables often earn higher incomes than those engaged in the production of cereal crops alone.

Hossain (2004) reported that Export volumes for fruit and vegetable products, though modest in relative terms (about $US16.5 million in 2002), have been rising rapidly in the recent past (export volumes in 2000 were five times those of 1990). Fresh fruits and vegetables are mostly exported through members of the Bangladesh

Fruits, Vegetables and Allied Products Exporters' Association. The Association had a total of 252 members in 2001, approximately 25 of whom are reportedly active in exporting activities.

Hossain *et al.* (2004) conducted a study on the Nature and impact of women's participation in economic activities in rural Bangladesh: insights from household surveys and found that empowerment index is developed from the data on household decision-making in different spheres, and its relationship with women´s work is then explored. The persistent gender division of labour in rural Bangladesh has been found to be associated

with both economic factors - wage rates, access to production factors like land, micro credit, infrastructure) and socio-cultural factors - norms and customs regarding women´s mobility and gender role in production and reproduction. Economic activities within the household have been found to have weak impact on empowerment. Two policy implications emerge from the study: 1. Promotion of female education to enable women to take part in market activities in the non- agricultural sector where gender disparity in earnings is less. 2. Investment in infrastructure that can facilitate women´s mobility outside the household as well as can reduce the burden of domestic work.

Quasem (2003) found that the main crops exported are yard long bean, taro, and several gourds (teasle gourd, bitter gourd, bottle gourd, ridged gourd, and white gourd). Most exports are destined to the United Kingdom and the Middle East (United Arab Emirates, Saudi Arabia, Qatar, Kuwait and Oman), all countries with a large population of Bangladeshi migrant workers.

Shin (2001) found that vegetables in much of Asia and the Pacific region are grown by small-scale farmers who are unorganized and scattered in different locations and this also applies to Bangladesh.

Siskos *et al.* (2001) stated that Concentration on production is important because low production can affect all the players in agribusiness. At the production level, external factors such as weather and susceptibility to diseases and pests have significant effects on the output and quality of agricultural produce.

Ali (2000) observed that for Bangladesh, identifying the constraints on the expansion of vegetable production is important, since the supply of vegetables is quite irregular in most Asian countries, including Bangladesh.

2.3 General findings on women participation in post-harvest processing of vegetables

Bargali *et al.* (2015) home gardens are usually a small piece of land surrounding the house. They are important agro-ecosystems and are a source of subsistence and cash resources. Observation of home gardens revealed that women play a key role in home garden vegetable cultivation. The majority of rural women were independently participating (60%) in home garden vegetable cultivation while 40% of women participated jointly with men. Characteristics of rural women such as age, level of education, family size, home garden size, knowledge about the home garden etc vary from place to place and affect the contribution of rural women insignificantly. To enable women to actively participate in the various activities related to home garden vegetable cultivation there is a great need to promote change in policies, laws and development programmes.

Kumari *et al.* (2015) study revealed that in vegetable cultivation various intervention points are addressable. Women were involved in operations such as cleaning of land, sowing of seed, transplanting of vegetable nursery, hoeing and weeding, scaring off birds and rodents, harvesting and processing of vegetables and storage of seed. The non-participation of women in various operations is due to high fatigueless, the requirement of more muscle power, lack of knowledge and awareness concerning decision making. It is observed that women played only supportive role less participation of women in decision making could be attributed to custom, tradition social barrier, their illiteracy ignorance and less participation in extension programmes. Women education, technical training and adequate extension facilities can create a positive impact leading to a better tomorrow.

Khatri (2013) in her study stated that the majority of the respondents were not involved in processing either at the domestic or commercial level this was due to the lack of knowledge regarding this aspect.

Amin *et al.* (2009) studied 'Participation level of rural women regarding post harvesting activities in Pakistan' and reported that most of the activities related to taking the crop to the market and mills were performed by the husbands (67.97%) with limited participation in food preservation and processing whereas, the wives were mainly involved in the cleaning of store rooms, storage of agricultural products in bags and preparation of marmalades and pickles. The participation of women was very high in storage, drying, packaging of grains and low in marketing.

Ahmad *et al.* (2007) study was carried out to find the role of women in the vegetable production area of SRSP. Eighty female respondents each of the selected four villages were interviewed. The results of the personal characteristics showed that the majority of respondents were in the age group of 20-40 years, 54% of the total respondents were educated, 73% of the respondents had barani type of land. Education and adoption of vegetable growing practices were positively correlated. The results further showed that 54% of the respondents grew vegetable inside their houses, among which 47.5% grew vegetables for profit purpose and 47% of the female respondents grew vegetables themselves. Major constraints in vegetable production found in the study were lack of capital, credit availability and lack of marketing facilities.

Nazli and Hamid (2007) and Sindhu (2007) stated that rural women played an important role in post-harvest activities especially in drying, storage and cleaning of grains in all the zones proving that they were a major role contributor to the family food and economic security.

Dawn (2004) found that in Pakistan, rural women provide most of the labour for post-harvest activities, taking responsibilities for storage, handling, stocking, processing and marketing.

Begum (2002) reported that the division of labor by sex in Bangladesh indicates that women perform all (100%) of domestic work, 80% of processing and storing crops, 60% of weeding, 80% of harvesting, 80% caring for livestock and 55% of planting works in the agriculture sector of the country.

Supekar (2002) mentioned that to enable women to undertake the agricultural or other income-generating programs, it is very essential that specific need based training courses are to be prepared and conducted. These training programs shall include interalia cropping management patterns, agro-processing and preservation, marketing, packaging, the advertisement for entrepreneurship development, seed collection and selection, nursery activities, forestry, appropriate low-cost technology, organic farming etc. In short, in addition to adult literacy among women the "Agriculture Literacy" program has to be undertaken as a special campaign.

Maheshwari (2001) unveiled that almost 70 percent of the total population and 84 percent of the economically active women are involved in agriculture and make up to 46 per cent of the agricultural work force.

Pal (2001) reported that in Bangladesh rural women have played important roles in a wide range of income-generating activities. These rural production activities include post-harvesting.

Naher (2000) found that most of the rural women participated in each of the four selected homestead activities such as 62% in post-harvest activities, 54% in poultry rearing, 47% in goat rearing and 40% in case of homestead vegetable cultivation.
Their extent of participation was also high.

Verma et al. (1992) stated that in India, women have a crucial role to play in postharvest technology particularly in areas related to winnowing and storage of grains. However,

little attention has been paid to food losses. It is suggested that proper handling and management needs to be taught systematically to rural women. A study of the needs of training in PHT (Post Harvest Technologies) for farm women was launched which covered the involvement of women in operations, the effectiveness of the messages on PHT transmitted in terms of knowledge gain and associated factors influencing knowledge acquisition and attitudinal change. This study was undertaken to examine women's role in PHT and the results inferred that the message of PHT can be transmitted effectively without any consideration for age, caste, education or family type, implying that need based training can overcome the barriers of personal factors or limitations. PHT is, therefore, relevant to farm women irrespective of their personal profile variables.

In Bangladesh, Paul and Saadullah (1991) reported that families without women are not sustainable and women are responsible for 90% post-harvest activities further reported the role of women in homestead and family life.

2.4 Research gap of the study

The above-mentioned discussion and review indicate that most of the studies dealt with women participation in vegetable production. Some studies also determine the factors affecting the vegetable production. Maximum studies examined parameters, which influence production, more than a decade ago. Within this period changes might have taken place in production process, and owing to these changes, the validity of those factors needs to be looked into again. Side by side the influence of other factors identified by the researchers of other countries is needed to study in the context of Bangladesh. Very limited integrated studies were conducted on women participation in vegetable production in Bangladesh. Therefore, this study is expected to be conducted taking into account those aspects. The review of literature was helpful to re-design methodological aspects with a view to overcome the limitations of previous studies. From the above studies the researcher felt the need of conducting and analyzing the women participation in vegetable production in Bangladesh within the current development context, which will help the policy makers to understand the current situation and take programmes to

increase women participation in vegetable production in Bangladesh and improving the livelihood of people in Bangladesh. On the other hand, this researcher believed that the findings of this study would provide useful updated information, which would help the policy makers and researchers for further investigations.

CHAPTER III
MATERIALS AND METHODS

Methods and procedures used in conducting research need very careful consideration. The methodology should be such that enables the researcher to collect valid information and to analyze the same properly to arrive at correct decisions. The methods and procedures followed in conducting this research are being described below:

3.1 Selection of the study area

The study was conducted at six villages of Kharna and Majhira unions of Shajahanpur Upazila under the Bogura district. Three villages in Kharna and three form Majhira union were selected purposively as the locale of the study. The selected villages were Kharna, Nadur pukur, Brirgram, Majhira, Dublagari and Shanagar. There are seven primary schools, two high schools and a college in the study area. There are also a post office and a big market in the study area. There are eleven mosques, two Madrashas and one Mondhir in the study area. Various NGOs are working on homestead development activities in the study area. A map of the Bogura district showing Shajahanpur Upazila is presented in Figure 3.1 and a map of Shajahanpur Upazila showing the study area is presented in Figure 3.2.

The reasons for selecting this study area for the present study are given below:

- A comparatively higher concentration of women farmers.
- These villages had some identical characteristics like homogeneous soil type, topographical and climatic condition for producing vegetables.
- Easy accessibility and good communication facilities.
- Researcher's belief about getting well co-operation from the selected respondent and
- No such study was conducted in this area.

3.2 Sources of data

Data required for the present study were collected from primary and secondary sources. Primary data were obtained from women and secondary data were collected from various published sources. Secondary sources were the Bangladesh Bureau of Statistics (BBS), Department of Agriculture Extension (DAE), Bangladesh Bank (BB) and other related agencies in Bangladesh.

3.3 Population and sample

The rural women of the selected six villages were considered as the population of the study. A list of rural women who are currently cultivating homestead vegetable was prepared with the help of Sub Assistant Agriculture Officer. The number of rural women of the selected six villages was 594 which constituted the population of the study. Thus, the total sample size of 60 rural women was taken as the sample of the study by using simple random technique. Moreover, a reserved list of 6 rural women was prepared for use when the rural women under sample were not available during data collection. The distribution of the rural women included in the population and sample size appears in Table 3.1.

Table 3.1 Distribution of sample size of respondents in six selected villages of Shajahanpur Upazila

Upazilas' name	Unions' name	Villages' name	Sample size
Shajahanpur	Kharna	Kharna	10
		Nadur pukur	10
		Brirgram	10
	Majhira	Majhira	10
		Dublagari	10
		shanagar	10
Total			60

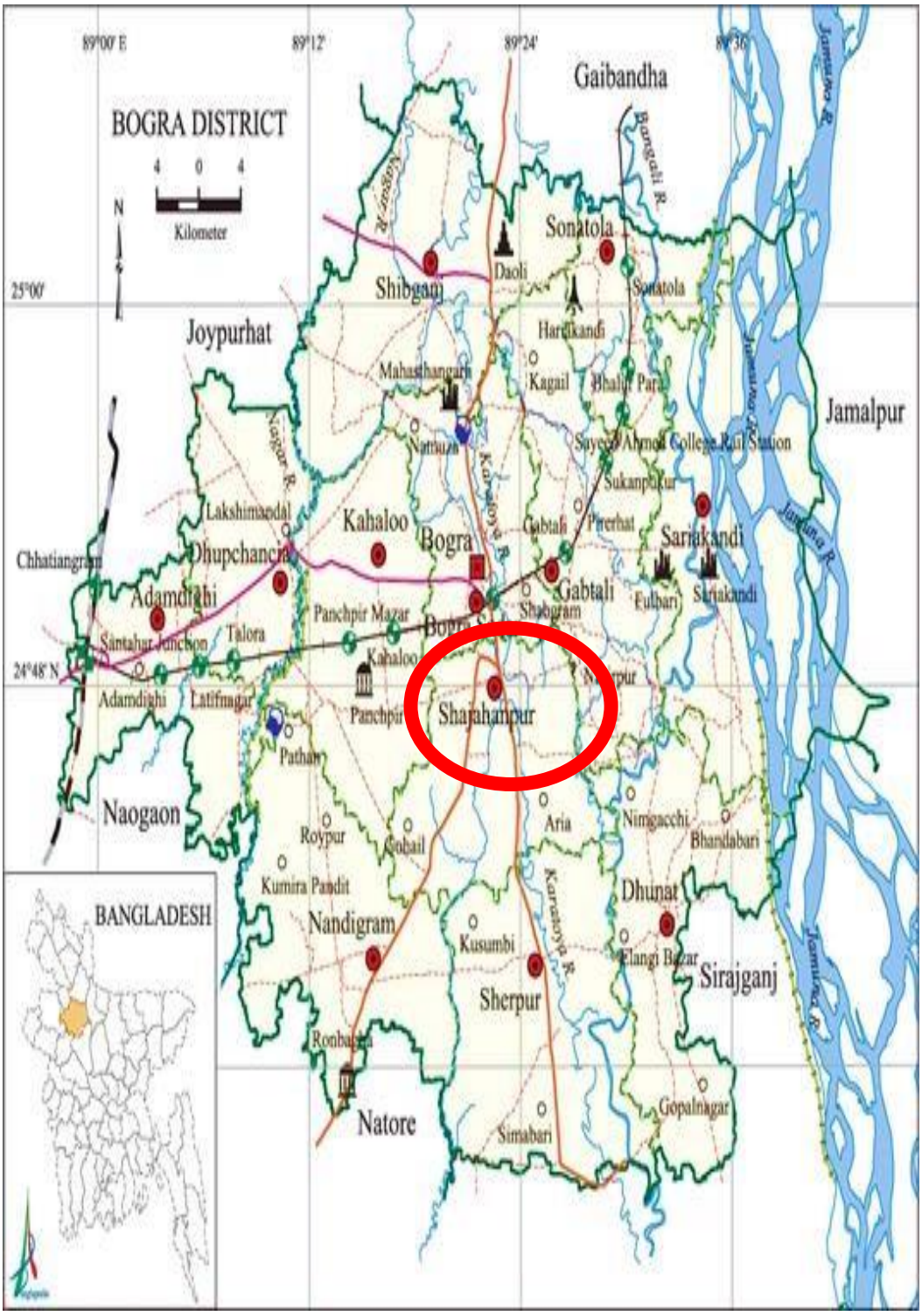

Figure 3.1: A map of Bogura district showing the Shajahanpur upazila

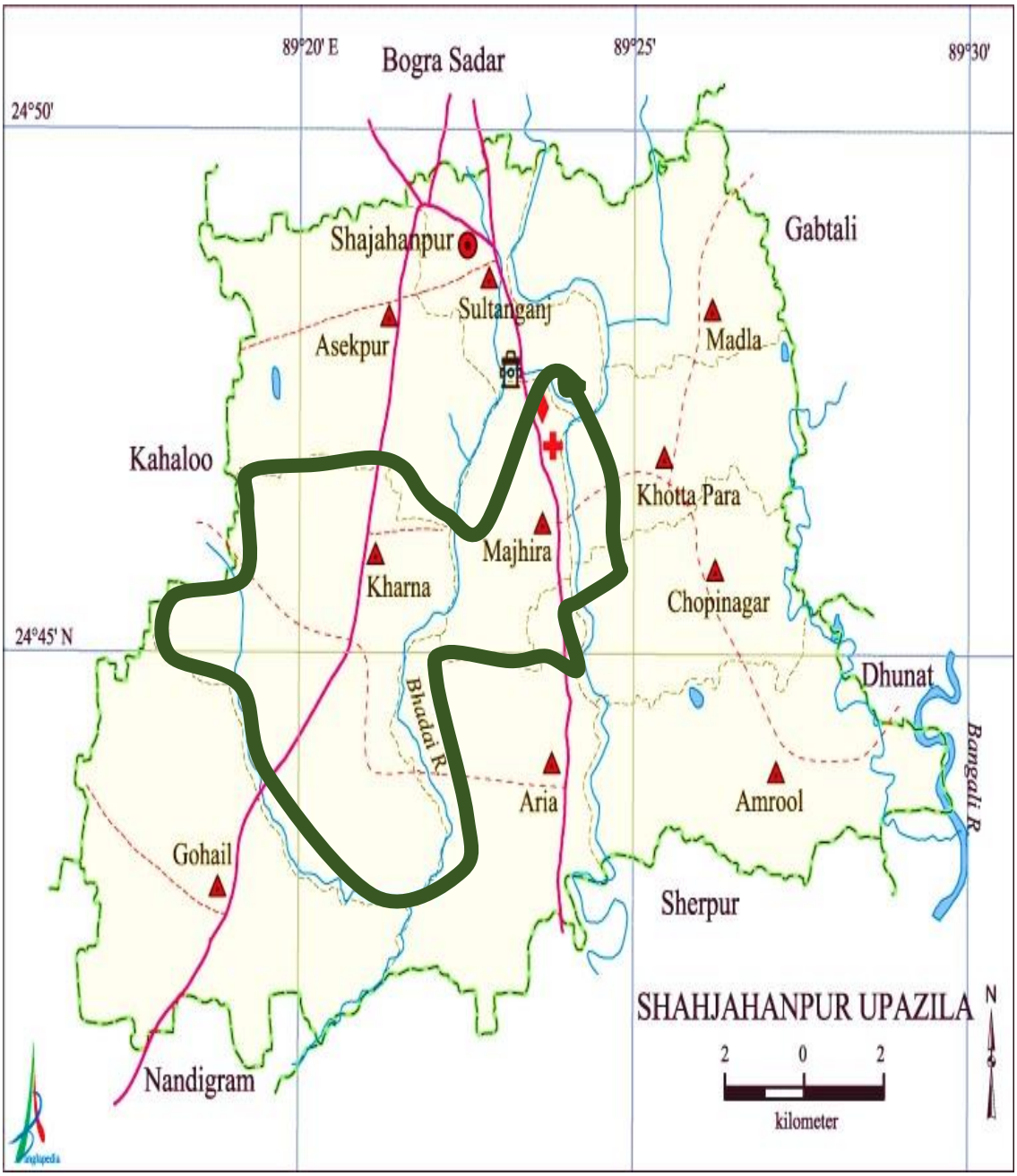

Figure 3.2: A map of Shajahanpur upazila showing the study area

3.4 Collection of data

To satisfy the objectives of the study, necessary data were collected by visiting each farm personally and by interviewing them with the help of a pretested interview schedule. Usually, most of the respondent does not keep records of their activities. Hence it is very difficult to collect actual data and the researcher has to rely on the memory of the respondent. Before going to an actual interview, a brief introduction of the aims and objectives of the study was given to each respondent. The question was asked systematically in a very simple manner and the information was recorded on the interview schedule. When each interview was over the interview schedule was checked and verified to be sure that information on each of the items had been properly recorded. In order to minimize errors, data were collected in local units.

These were subsequently converted into an appropriate standard unit.

The data collection period was 1st April to 31st May, 2020. In order to obtain reliable data the researcher initially visited several times to introduces herself to the people of the study areas during the season. Secondary data were collected through literature and different publications from BBS, BER and Bangladesh Bank (BB) etc.

3.5 Editing and tabulation of data

After the collection of primary data, the filled schedules were edited for analysis. These data were verified to eliminate possible errors and inconsistencies. All the collected data were summarized and scrutinized. For data entry and data analysis, the Microsoft Excel program and SPSS programs were used. It might be observed here that information was collected initially in local units and after checking the collected data, it was converted into standard units. Finally, a few relevant tables were prepared according to the necessity of analysis to meet the objectives of the study.

3.6 Analytical techniques

Data were analyzed to fulfill the objectives of the study. Both descriptive and statistical analysis was used for analyzing the data.

3.6.1 Descriptive analysis

The tabular technique of analysis was generally used to find out the sociodemographic profile of the respondent, to determine the women participation in vegetable cultivation. It is simple in the calculation, widely used and easy to understand. It was used to get simple measures like average, percentage etc.

3.7 Variables of the study

Measurable characteristics of a population that may vary from element to element either in magnitude or in quality are called variables (Ahmed et al., 2004). The success of research to a considerable extent depends on the exact selection of the variables. A research hypothesis contains at least two elements as the independent variable and dependent variable. An independent variable is a factor that is manipulated by the experimenter to ascertain its relationship to an observed phenomenon. A dependent variable is the factor that appears, disappears or varies as the experimenter introduces, removes or varies the independent variable (Townsend, 1953). The dependent variable of the study is "women participation in vegetable cultivation" and independent variables were: age, education, family size, annual family income, family expenditure, satisfaction, monthly income from vegetable cultivation, vegetable farm size, credit received, extension contact and training on vegetable cultivation.

3.8 Measurement of variables

In order to conduct a study in accordance with the objectives, it was necessary to measure the variables. The procedures for measuring the variables have been described below:

Women's participation in vegetable cultivation was the dependent variable of the study. The variable was measured on the basis of whether the women participate or not

participate in vegetable cultivation. The scoring method for both groups is mentioned below:

Extent of participation	**Assigned score**
Participant	1
Non-participant	0

The women who participated in vegetable cultivation were given a score of 1 and the women who didn't women who participant in vegetable cultivation were given a score of 0. Thus, the range of participation score was 0 to 1.

Table 3.2: A short description of both dependent and independent variables

Variables	Types	Measuring technique
Age	Continuous	1=20-30 years 2=30-40 years 3=40-50 years 4=50- above years
Level of education	Continuous	1=No education 2=Primary level 3=Secondary level 4=SSC
		5=HSC
Family size	Continuous	1= Male 2= Female 3= Children
Marital status	Continuous	1= Married 2= Single 3= Separated 4=Divorced 5= Widowed

Occupation	Continuous	1=Unemployed 2=House wife 3=Day labor 4=service 5=Student
Sources of income	Continuous	1= Agriculture 2= Agriculture and allied activities 3=Industrial/ Agriculture labor 4= Employment 5= Business 6= Pension 7=Fixed property 8=Rent
Total Income (monthly)	Continuous	1=2000-4000 2=4000-6000 3=6000-8000 4=8000-10000 5=10000 & above

Expenditure (Tk)	Continuous	1= Food 2= Education 3= Health 4= Others
Reason for involving in agricultural activities	Continuous	1=To produce food for household consumption 2=For livelihood 3=To supplement income,
Satisfaction	Continuous	1=Very satisfied 2=Fairly satisfied 3=Somewhat dissatisfied

Owner of the land	Continuous	1=Self 2= Father 3= Husband 4=Son 5=Relative
Vegetable land	Continuous	Decimal
The way of acquiring land	Continuous	1=Allocated 2= Inheritance 3=Through marriage 4=Purchase
Credit received	Continuous	1=Yes 2=No
Extension contact	Continuous	1=Yes 2=No
Training on vegetable cultivation	Continuous	1=Yes 2=No
Women participation in vegetable cultivation	Binary	1 for participation and 0 for no participation

3.9 Null hypothesis

The following null hypothesis was undertaken for the present study. There is no significant relationship between the selected characteristics of women with their participation in vegetable cultivation in Bangladesh.

3.10 Data processing and analysis

The collected raw data were examined thoroughly to detect errors and omissions. Having consulted with the research supervisor, the Investigator prepared a detailed coding plan. Data were then coded into the coding sheet. In the case of qualitative data, putting proper weight against each of the traits to transfer the data into quantitative forms followed suitable scoring techniques. Collected, data for the study were compiled, tabulated and

analyzed in accordance with the objectives of the study. Various statistical measures such as the number and percentage distribution, range, mean, standard deviation and rank order were used in describing the variables of the study. Tables and figures were used in presenting data for clarity of understanding.

The contribution with the individual characteristics of the respondents on their participation in vegetable cultivation was ascertained by the binary logistic regression model which is popularly known as the logit model. The model for this study is given below:

Log [P/1-P] =
$\beta 0+\beta_1 X_1+\beta_2 X_2+\beta 3X3+\beta 4X4+\beta 5X5+\beta 6X6+\beta 7X7+\beta 8X8+\beta 9X9+\beta 10X10+\beta 11X11+e$
Where,

P= Probability of outcome $\boldsymbol{\beta_0}$ =

Intercept

$\boldsymbol{\beta_1}$-$\boldsymbol{\beta_{11}}$ = age, education, family size, annual family income, family expenditure, satisfaction, monthly income from vegetable cultivation, vegetable land, credit received, extension contact and training on vegetable cultivation.

$\boldsymbol{X_1}$-$\boldsymbol{X_{11}}$ = Coefficient for age, education, family size, annual family income, family expenditure, satisfaction, monthly income from vegetable cultivation, vegetable land, credit received, extension contact and training on vegetable cultivation.

e = Random error

The analysis was done by using SPSS (version 20) software. Five percent (0.05) level of probability was used for rejecting a null hypothesis. Co-efficient values signification at 0.05 level is indicated by one asterisk (**) and that at 0.01 level by two asterisks (***).

CHAPTER IV
INTRODUCTION OF THE STUDY AREA

This chapter includes the introduction of the study area, geographical, demographical, political introduction of Shahjahanpur Upazila under Bogra district.
See map two of the study area.

4.1 Background

Shahjahanpur Upazila (Bogura district) area 215.64 sq km, located in between 24°41' and 24°50' north latitudes and in between 89°16' and 89°29' east longitudes. It is bounded by Bogura sadar upazila on the north, Sherpur upazila on the south, Gabtali and Dhunat upazilas on the east, Kahaloo and Nandigram upazilas on the west. Administration Shahjahanpur upazila was formed on 21 January 2003. History of the War of Liberation An encounter was held between the freedom fighters and the Pak army on 1 April, 1971, with causalities from both sides. In this encounter the freedom fighters captured the arms and ammunitions of the Pak army after their surrender. On 23 April, the Pak army entered the Bogra town and conducted killing, torture and burning of settlements in collaboration with the local Biharis. On 11 November the Pak army and the razakars captured 21 persons from the Thanthania Khandar area and later on killed 11 of them by gun shot at a place called Bibir Pukur.

4.2 Agriculture

Main sources of income Agriculture 55.48%, non-agricultural labourer 2.52%, industry 1.37%, commerce 13.01%, transport and communication 6.49%, service 10.98%, construction 2.50%, religious service 0.17%, rent and remittance 0.39% and others 7.09%.

Ownership of agricultural land Landowner 57.35%, landless 42.65%. Main crops paddy, pulses, potato, corn, vegetables. Fisheries, dairies and poultries Dairy 62, poultry 65,

artificial breeding centre 3. Communication facilities Pucca road 116.30 km, semi-pucca road 15.43 km and mud road 240.49 km.

Manufactories Metal works, furniture factory. Cottage industries weaving, pottery, wood work, embroidery, bamboo and cane work. Hats, bazars and fairs Hats and bazars are 9, fairs 3, most noted of which are Durlagari Hat, Sultanganj Hat, Ranir Hat, Nagar Hat, Domon Pukur Hat, Madla Bazar, Atia Bazar, Majhira Bazar, Majhira Mandir Mela (held on the Krishnapakkha of 30th day of Falgun, BS), Jamanna Mela at village Aria, Demajani Mela in Amrool union.

Access to electricity all the unions of the upazila are under rural electrification network. However, 32.27% of the dwelling households have access to electricity.

Sources of drinking water Tube-well 94.73%, tap 0.75%, pond 0.14% and others 4.38%. The presence of arsenic has been detected in the shallow tube well water of the upazila. Sanitation 41.05% of dwelling households of the upazila use sanitary latrines and 38.59%' of dwelling households use non-sanitary latrines; 20.36% of households do not have latrine facilities.

Health centres Upazila health centre 1, union satellite clinic 2, maternity and child welfare centre 10, community clinic 30. Natural disasters many people were victims of the floods of 1955, 1969, 1970, 1984 and the cyclone of 1864. These natural disasters also caused heavy damages to settlements, crops and livestock of the upazila. NGO activities operationally important NGOs are Palli Unnayan Prakalpa, Grameen Unnayan Prakalpa (BBS, 2011).

4.3 Natural Resources

Among the natural resources forest, water resources and mines are major natural resources of Shahjahanpur Upazila. Diverse timber species and Non timber forest products (NTFPs) can be found on different geographical region. Up to 1200 m altitude

sub-tropical forest, similarly between 1200 m to 2100 m deciduous plants can be found, at the altitude of 3000-meter evergreen forest grow and above 5000m Alpine is found. Hill Sal forest, Sal and Khote Salla Mixed Forest, Khote Salla plantation forest, Chilaune Forest, Sal and Broad Leaves mied forest and Rhododendron, Khasru mixed mountain forest is the major forest types of this district.

4.4 Demographic Scenario

Although, the majority of people are residing in the Shahjahanpur Upazila, there is a heterogeneous society. Different casts of people are residing in the study site. Muslim, Hindu and Buddhist Community people are residing in Shahjahanpur Upazila. According to census 2001, 234365 people were residing in Shahjahanpur Upazila. Some data on the demographic scenario are given in Table 4.1:

Table 4.1: Demographic Statistics of Shahjahanpur Upazila

Facts	**Numbers**
Union	10
Mouza	131
Village	131
Population	234365
Male	120510
Female	113855
Literacy rate	48.59%
Male	51.93%
Female	45.10%.
Density (per sq km)	1087

CHAPTER V

SOCIO-ECONOMIC CHARACTERISTICS OF THE WOMEN

5.1 Selected Characteristics of the Women

This section deals with the classification of the women according to their various characteristics. The behavior of an individual is largely determined by his characteristics. These characteristics of an individual contributor to a great extent in the matter of shaping of his behavior. In this section, findings on the woman's eleventh selected characteristics have been discussed. Therefore, the major hypothesis of the study was that the women's participation in vegetable cultivation would also be influenced by various characteristics of the women. Range, mean and standard deviations of these characteristics of the women have been described in the following sub-sections.

5.1.1 Age

The age of the women was found to range from 20 to 55 years. Based on age, the women were classified into four categories as shown in Table 5.1.

Table 5.1 Distribution of the women according to their age

Category	Number of women	Percent
20-30 years (1)	20	33.3
31-40 years (2)	25	41.7
41-50 years (3)	13	21.7
Above 50 years (4)	2	3.3
Total	60	100

Data presented in Table 5.1 indicate that the highest proportion (41.7 percent) of the respondents was in the 31-40 years category compared to 33.3 percent 20-30 years age and 21.7 percent 41-50 years aged category. However, data also revealed that only 3.3 percent of the women in the study area were above 50 years aged. The middle-aged women are the most effective group in vegetable cultivation.

5.1.2 Level of education

Education scores of women ranged from 0 to 12. Based on their education score, the women were classified into five categories as shown in Table 5.2.

Table 5.2 Distribution of the women according to their education

Category	Number of women	Percent
Illiterate	15	25
Primary level	21	35
SSC	18	30
HSC	6	10
Total	60	100

Data presented in Table 5.2 indicate that a large proportion (35 percent) of the respondents was the primary level of education compared to 30 percent of the women was SSC level of education, 25 percent the women were illiterate and only 10 percent of the women was HSC level of education. The findings indicate that 75 percent of the respondents were educated that varied from primary to secondary levels. The literacy rate of the country is 74.72 percent (BBS, 2020). Thus the findings indicate that in the study area, literacy seems to be greater than the national average.

5.1.3 Family size

The family size of the women in the study area ranged from 2 to 13. Based on their family size, the women were classified into three categories as shown in Table 5.3.

Table 5.3 Distribution of the farmers according to their family size

Category	Number of women	Percent
2-4 members	32	53.3
5-8 members	25	41.7
Above 8 members	3	5
Total	60	100

(Source: Field survey, 2020)

Data presented in Table 5.3 show that the major portion (53.3 percent) of the respondents was 2-4 members while 41.7 percent had 5-8 member and only 5 percent had above 8 members. Data also revealed that the majority (95 percent) of the women of the study area were 2-4 to 5-8 members.

5.1.4 Annual family income

The annual family income of the women in the study area ranged from Tk. 4000 to Tk. 30000 thousand ('000'). The average on-farm income was Tk. 11446.67 thousand with a standard deviation of Tk. 5881.56. Based on their annual family income, the women were classified into three categories as shown in Table 5.4.

Table 5.4 Distribution of the women according to their family income

Category (Tk.)	Number of women	Percent	Observed range	Mean	Standard Deviation
4000-8000	14	23.3	4000-30000	11446.6 7	5881.56
8001-16000	37	61.7			
Above 16000	9	15			
Total	60	100			

Data presented in Table 5.4 show that the major portion (61.7 percent) of the respondents had Tk. 8001-16000 category while 23.3 percent had Tk. 4000-8000 and 15 percent had above Tk. 16000.

5.1.5 Annual family expenditure

Expenditure of the women in the study area ranged from Tk. 5500-30000 thousand. The average annual family expenditure was Tk. 11243.33 thousand with a standard deviation of Tk. 5475.84. Based on their expenditure, the women were classified into three categories as shown in Table 5.5.

Table 5.5 Distribution of the women according to their family expenditure

Category (Tk.)	Number of women	Percent
5500-8000	19	31.7
8001-12000	28	46.6
Above 12000	13	21.7
Total	60	100

Data presented in Table 5.5 show that the major portion (46.6 percent) of the respondents had Tk. 8001-12000. Family expenditure while 31.7 percent had Tk. 5550-8000 family expenditure and 21.7 percent had above Tk. 12000 family expenditure.

5.1.6 Marital status

Marital status scores of the respondents ranged from 1 to 5. Based on the marital status of the respondents were classified into five categories. The distribution of the women according to their marital status is presented in Table 5.6.

Table 5.6 Classification of the women according to marital status

Category	Number of women	Percent
Married (1)	49	81.7
Single (2)	4	6.7
Separated (3)	1	1.7
Divorced (4)	1	1.7
Widowed (5)	5	8.3
Total	60	100

Data presented in Table 5.6 indicate that most 81.7 percent of the respondents were married, 6.7 percent of the respondents were single, 1.7 percent of women were separated, 1.7 percent were divorced and 8.3 percent were widowed.

5.1.7 Occupation

The occupation of a respondent ranged from 1 to 5. On the basis of the occupation of the women were classified into five categories as shown in Table 5.7.

Table 5.7 Distribution of the women according to their occupation

Category	Number of women	Percent
Unemployed	4	6.7
House wife	41	68.3
Day labour	9	15
Service holder	**5**	8.3
Student	1	1.7
Total	60	100

Data presented in Table 5.7 indicate that most 68.3 percent of the respondents was house wife, 6.7 percent of the respondents were unemployed, 1.7 percent women were student, 8.3 percent was service holder and 8.3 percent was day labour.

5.1.8 Monthly income from vegetable cultivation

The score of monthly income from vegetable cultivation of the women ranged from Tk. 375-8000. On the basis of monthly income from vegetable cultivation, the respondents were classified into three categories namely, Tk. 375-600, Tk. 6011200 and above Tk. 1200. The scale used for computing the monthly income from vegetable cultivation score is presented in Table 5.8.

Table 5.8 Distribution of the women according to their monthly income from vegetable cultivation

Category (Tk.)	Number of women	Percent
375-600	16	26.7
601-1200	22	36.6
Above 1200	22	36.7
Total	60	100

Data contained in Table 5.8 shows that the highest proportion (36.7%) of the respondents had above Tk. 1200 monthly income from vegetable cultivation while (36.6%) and (26.7%) of them had Tk. 601-1200 and Tk. 375-600 monthly income from vegetable cultivation categories.

5.1.9 Vegetable farm size

The score of vegetable farm size of the women ranged from 1-30 decimal. On the basis of vegetable farm size, the respondents were classified into three categories namely, '1-5 decimal', '6-10 decimal' and 'above 10 decimal'. The scale used for computing the vegetable farm size score is presented in Table 5.9.

Table 5.9 Distribution of the women according to their vegetable farm size

Category	Number of women	Percent
1-5 decimal	37	61.7
6-10 decimal	17	28.3
Above 10 decimal	6	10
Total	60	100

Data contained in Table 5.9 shows that the highest proportion (61.7%) of the respondents had 1-5 decimal vegetable cultivation farm while (28.3%) and (10%) of them had 6-10 and above 10 decimal vegetable cultivation farm.

5.1.10 Satisfaction

The score of satisfaction of the women ranged from 1-3. On the basis of satisfaction, the respondents were classified into three categories namely, 'low satisfaction', 'medium satisfaction' and 'high satisfaction'. The scale used for computing the satisfaction score is presented in Table 5.10.

Table 5.10 Distribution of the women according to their satisfaction

Category	Number of women	Percent
Low satisfaction (1)	22	36.7
Medium satisfaction (2)	30	50
High satisfaction (3)	8	13.3
Total	60	100

Data contained in Table 5.10 shows that the highest proportion (50%) of the respondents had medium satisfaction while (13.3%) and (36.7%) of them had low and high satisfaction.

5.1.11 Credit received

The credit received of the respondents varied from 0 to 1. The respondents were classified into two categories based on their credit received scores: yes and no. The categories and the distribution of the women according to their credit received are shown in table 5.11.

Table 5.11 Distribution of the women according to their credit received

Category	Number of women	Percent
No (0)	32	53.3
Yes (1)	28	46.7
Total	60	100

Data presented in Table 5.11 indicate that the highest proportion (53.3 percent) of the respondents had no credit received compared to about 46.7 percent of them having yes credit received.

5.1.12 Extension contact

The extension contact of the respondents ranged from 0 to 1 against the possible range of 0 to 1. Based on extension contact scores, the respondents were classified into two categories: no and yes. The distribution of the respondents according to extension contact is shown in Table 5.12.

Table 5.12 Distribution of the women according to their extension contact

Category	Number of women	Percent
Yes	48	80
No	12	20
Total	60	100

Data presented in Table 5.12 indicate that the highest proportion (80 percent) of the women had yes extension contact and 20 percent of the respondents had no extension contact.

5.1.13 Training on homestead vegetable cultivation

Training on homestead vegetable cultivation scores of the respondents was 0-1 against the possible range of 0 to 1. Based on their training in vegetable cultivation scores, the respondents were classified into two categories: no and yes. The distribution of the respondents according to their training in vegetable cultivation is shown in Table 5.13.

Table 5.13 Distribution of the women according to their training

Category	Number of women	Percent
Yes	44	62.5
No	16	37.5
Total	60	100

Data contained in Table. 5.13 indicate that the highest proportion (62.5%) of the women had training in vegetable cultivation. On the other hand, 37.5% of women had no training in vegetable cultivation.

5.1.14 Sources of income

Sources of income of a respondent ranged from 1 to 5. On the basis of sources of income of the women were classified into five categories as shown in Table 5.14.

Table 5.14 Distribution of the women according to their sources of income

Category	Number of women	Percent
Agriculture	45	75
Agriculture and allied activities	6	10
Agriculture labor	4	6.67
Employment	3	5
Business	2	3.33
Total	60	100

Data presented in Table 5.14 indicate that most 75 percent of the respondents' sources of income were agriculture, 10 percent of the respondents was agriculture and allied activities, 6.67 percent women were agriculture labor, 5 percent was employment and 3.33 percent was business their sources of income.

5.1.15 Reason for involving in agricultural activities

The reason for involving in the agricultural activities of a respondent ranged from 1 to 3. On the basis of the reason for involving in the agricultural activities of the women were classified into three categories as shown in Table 5.15.

Table 5.15 Distribution of the women according to their reason for involving in agricultural activities

Category	Number of women	Percent
To produce food for household consumption	42	70
For livelihood	12	20
To supplement income	6	10
Total	60	100

Data presented in Table 5.15 indicate that most 70 percent of the respondents to produce food for household consumption were reason for involving in agricultural activities, 20 percent of the respondents were livelihood for the reason of involving in agricultural activities and 10 percent was supplement income reason of involving in agricultural activities.

5.1.16 Ownership of the land

The ownership of the land of a respondent ranged from 1 to 5. On the basis of the owner of the land of the women were classified into five categories as shown in Table 5.16.

Table 5.16 Distribution of the women according to their ownership of land

Category	Number of women	Percent
Self	46	76.67
Father	6	10
Husband	5	8.33
Son	3	5
Relative	0	0
Total	60	100

Data presented in Table 5.16 indicate that most 76.67 percent of the respondents had self-land, 10 percent of the respondents had fathers' land, 8.33 percent women had husbands' land and 5 percent had sons' land.

5.1.17 Way of acquiring land

The way of acquiring land of a respondent ranged from 1 to 4. On the basis of the way of acquiring land of the women were classified into four categories as shown in Table 5.17.

Table 5.17 Distribution of the women according to their way of acquiring land

Category	Number of women	Percent
Allocated	43	71.67
Inheritance	6	10
Through marriage	5	8.33
Purchase	3	5
Total	60	100

Data presented in Table 5.17 indicate that most 71.67 percent of the respondents had allocated land, 10 percent of the respondents had inheritance land, 8.33 percent of women had marriage and 5 percent had purchased their land.

5.2 Women's participation in vegetable cultivation

Women's participation in vegetable cultivation score was found to range from 0 to 1. The average score was 0.53 with a standard deviation of 0.50. Based on the scores of women's participation in vegetable cultivation, the women were classified into two categories as participant and non-participant. The distribution of the respondents according to their Women's participation in vegetable cultivation has been presented in Table 5.18.

Table 5.18 Distribution of the women according to their Women's participation in vegetable cultivation

Category	Number of women	Percent
Yes	32	53.3
No	28	46.7
Total	120	100

Table 5.18 revealed that the higher proportion (53.3 percent) of the respondents had participated in vegetable cultivation and while 46.7 percent of women did not participate in vegetable cultivation.

5.2 Contributing Factors on the women's participation in vegetable cultivation

In order to estimate the contributing factors on the women's participation in vegetable cultivation from the independent variables, binary logistic regression analysis was used which is shown in Table 5.19**.**

Table 5.19 Binary logistic regression coefficients of contributing factors related to the women's participation in vegetable cultivation

Dependent Variable	Independent variable	B	S.E	Wald	Sig.	Exp (B)
Women participation in vegetable cultivation	Age	1.032	.803	1.651	.199	2.808
	Education	2.012**	.819	6.028	.014	7.475
	Family size	.824**	.471	3.063	.042	.439
	Annual family income	.000	.001	.005	.945	1.000
	Annual family expenditure	.000	.001	.004	.951	1.000
	Satisfaction	2.046**	.940	4.733	.030	7.736
	Monthly income from vegetable cultivation	.002***	.001	2.350	.005	1.002
	Vegetable farm size	.025	.111	.050	.823	.975
	Credit received	-.205	1.066	.037	.847	.815
	Extension contact	3.025**	1.924	2.472	.016	20.591
	Training on homestead vegetable cultivation	4.804***	1.837	6.841	.009	121.977

*** Significant at $p < 0.01$; ** Significant at $p < 0.05$

Overall percentage of correct prediction = 53.3%

Omnibus test of model coefficient = 48.130**

Cox and Snell R^2 = 0.552

Nagelkerke R^2 = 0.737

Table 5.19 shows that level of monthly income from vegetable cultivation and training on homestead vegetable cultivation were the important contributing factors (significant at the 1% level of significance) and education, family size, satisfaction and extension contact were the important contributing factors (significant at the 5% level of significance). The data in Table 5.19 test the final null hypothesis: There is no relationship between the selected characteristics (age, annual family income, annual family expenditure, vegetable farm size and credit received) and the probability of women's participation in vegetable cultivation. In order to assess which factors, contribute to the women's participation in vegetable cultivation, Binary logistic regression analysis was used. The analysis suggests that the respective authority should consider the respondents' level of education, family size, satisfaction, monthly income from vegetable cultivation, extension contact and training on homestead vegetable cultivation for increasing the women's participation in vegetable cultivation.

The Cox and Snell R^2 = 0.552 of the variation in the respondents changed the probability of women's participation in vegetable cultivation can be attributed 55% to their respondents' level of education, family size, satisfaction, monthly income from vegetable cultivation, extension contact and training on homestead vegetable cultivation. However, each predictor may explain some of the variances in women's participation in vegetable cultivation simply by chance. Besides, the overall percentage of correct predicates is 53.3% and the omnibus test of the model coefficient is 48.130 which is significant at the 1% level (Table 5.19). These findings indicate that the model is valid.

5.3.1 Contribution of education on the probability of women's participation in vegetable cultivation

The contribution of education on the probability of women's participation in vegetable cultivation by testing the following null hypothesis; "There is no contribution of education in the probability of women's participation in vegetable cultivation".

Based on p-value and the direction of the coefficient value of the concerned variable of the study under consideration the following observations were made.

a. The contribution of education was significant at the 5% level. So, the null hypothesis could be rejected.
b. The direction between education and women's participation in vegetable cultivation is positive.

Based on the direction of coefficient value it can be said that a woman with more education increased the probability of women's participation in vegetable cultivation. Moreover, the odd ratio value (2.01) indicates a woman with high education has a 2.01 times higher probability of women's participation in vegetable cultivation. Education enhances the abilities of the women in a short time to women's participation in vegetable cultivation.

5.3.2 Contribution of family size on the probability of women's participation in vegetable cultivation

The contribution of family size on the probability of women's participation in vegetable cultivation by testing the following null hypothesis; "There is no contribution of family size on the probability of women's participation in vegetable cultivation".

The p-value of the concerned variables was found .042. The following observations were made based on the value of the concerned variable of the study under consideration.

a. The contribution of family size was significant at the 5% level. So, the null hypothesis could be rejected.
b. The direction between family size and women's participation in vegetable cultivation is positive.

Based on the direction of coefficient value it can be said that a woman with more family members increased the probability of women's participation in vegetable cultivation. Moreover, the odd ratio value (0.824) indicates a woman with high family size has 0.824 times higher probability of women's participation in vegetable cultivation than the others who have fewer family members.

5.3.3 Contribution of satisfaction and the women's participation in vegetable cultivation

The contribution of satisfaction on the probability of u women's participation in vegetable cultivation by testing the following null hypothesis;

"There is no contribution of satisfaction in the probability of women's participation in vegetable cultivation".

The p-value of the concerned variables was found .030. The following observations were made on the basis of the value and coefficient of the concerned variable of the study under consideration.

a. The contribution of satisfaction was significant at the 5% level. So, the null hypothesis could be rejected.
b. The direction between satisfaction and the probability of women's participation in vegetable cultivation is positive.

Based on the direction of coefficient value it can be said that a woman with more satisfaction increases the probability of women's participation in vegetable cultivation. Moreover, the odd ratio value (2.046) indicates women who think satisfaction is necessary for vegetable cultivation has a 2.046 times higher probability of women's participation in vegetable cultivation than the others who think satisfaction is not necessary for vegetable cultivation.

5.3.4 Contribution of monthly income from vegetable cultivation on the probability of women's participation in vegetable cultivation

The contribution of monthly income from vegetable cultivation on the probability of women's participation in vegetable cultivation by testing the following null hypothesis; "There is no contribution of monthly income from vegetable cultivation on the probability of women's participation in vegetable cultivation".

The p-value of the concerned variables was found .005. The following observations were made on the basis of the value of the concerned variable of the study under consideration.

a. The contribution of monthly income from vegetable cultivation was significant at the 1% level. So, the null hypothesis could be rejected.
b. The direction between monthly income from vegetable cultivation and the women's participation in vegetable cultivation is positive.

Based on the direction of coefficient value it can be said that a woman with more monthly income from vegetable cultivation increased the probability of women's participation in vegetable cultivation. Moreover, the odd ratio value (0.002) indicates a woman with high monthly income from vegetable cultivation has a 0.002 times higher probability of women's participation in vegetable cultivation than the others who have a less monthly income from vegetable cultivation.

5.3.5 Contribution of extension contact on the probability of women's participation in vegetable cultivation

The contribution of extension contacts on the probability of women's participation in vegetable cultivation by testing the following null hypothesis;

"There is no contribution of extension contact in the probability of women's participation in vegetable cultivation".

The p-value of the concerned variables was found .016. The following observations were made on the basis of the value and coefficient of the concerned variable of the study under consideration.

a. The contribution of the extension contact was significant at the 5% level. So, the null hypothesis could be rejected.
b. The direction between extension contact and women's participation in vegetable cultivation is positive.

Based on the direction of coefficient value it can be said that a woman with more extension contact increased the probability of women's participation in vegetable cultivation. Moreover, the odd ratio value (3.025) indicates a woman with high extension contact has a 3.025 times higher probability of women's participation in vegetable cultivation. Extension contact enhances the abilities of the women in a short time to women's participation in vegetable cultivation.

5.3.6 Contribution of training on homestead vegetable cultivation on the probability of women's participation in vegetable cultivation

The contribution of training on homestead vegetable cultivation on the probability of women's participation in vegetable cultivation by testing the following null hypothesis;

"There is no contribution of training on homestead vegetable cultivation in the probability of women's participation in vegetable cultivation".

The p-value of the concerned variables was found .009. The following observations were made on the basis of the value and coefficient of the concerned variable of the study under consideration.

a. The contribution of the training on homestead vegetable cultivation was significant at the 1% level. So, the null hypothesis could be rejected.

b. The direction between training on homestead vegetable cultivation and the women's participation in vegetable cultivation is positive.

Based on the direction of coefficient value it can be said that a woman with more training on homestead vegetable cultivation increased the probability of women's participation in vegetable cultivation. Moreover, the odd ratio value (4.804) indicates a woman with high training in homestead vegetable cultivation has a 4.804 times higher probability of women's participation in vegetable cultivation. training on homestead vegetable cultivation enhances the abilities of the women at a short time to women's participation in vegetable cultivation.

CHAPTER VI
PROBLEMS OF VEGETABLE CULTIVATION

There were many problems which were faced by women in vegetable cultivation. The problems that are faced by the selected women are discussed below:

6.1 Problems faced by the women

The women within the study areas have been going through various troubles which might be widely labeled as production issues and advertising problems. Some of the producing issues have been lack of training facilities, low yield and unstable price, higher cost of input, storage of good quality seed, inadequate capital, lack of irrigation facilities, insect pests, diseases and weeds, lack of suitable land, lack of availability of adequate inputs and lack of technical knowledge.

6.1.1 Lack of training facilities

This implies that the increase in training will also increase their participation in vegetable cultivation. Training on vegetable cultivation helps women to make favorable possess- which ultimately helps them to take necessary steps. The problem of lack of training facilities was noticed by 25 percent of women vegetable growers in the study areas. It was a severe problem for vegetable production and ranked 1st among the problems.

6.1.2 Low yield and unstable price

The problem of low prices and the unstable price was noticed by 15 percent of vegetable growers in the study areas. It was a severe problem for vegetable production and ranked 2nd among the problems.

6.1.3 Higher cost of inputs

In the study area, the high cost of inputs was one of the most important problems faced by the producers in their vegetable cultivation. Table 6.1 indicates that about 13.33 percent of the producers faced this problem.

6.1.4 Shortage of good quality seed

In the observation regions majority of the women said that the shortage of appropriate nice seed become one of the most important problems. They could not get the desired first-rate of exact seed, as its supply becomes inadequate to fulfill the demand of the customers. For this purpose, the producers used personal preserved seeds and occasionally a local variety of seeds. As a result, they received a low yield of vegetables. Table 6.1 indicates that approximately 11.67 percent of the women (out of 60 women) complained that the correct best seed becomes now not available within the marketplace at some point in vegetable planting time.

6.1.5 Inadequate capital

In the study areas women suggested that the production of vegetable wishes right software of fertilizers, water and other inputs, in addition to important care with admire well-timed agronomic practices. The production fee of vegetable changed into excessive because enter necessities had been high. It became tough to control the required capital on the part of the manufacturers. Table 6.1 suggests that approximately 10 percent of the women (out of 60 women) have been confronted with inadequate capital as a production hassle.

6.1.6 Lack of irrigation facilities

Light and frequent irrigation are very essential for vegetable growing. During summer it is not possible to grow vegetables if irrigation facilities are not available. Perennial and large season vegetables are grown if better irrigation facilities are

available. It was observed that 8.33 percent of women in the study areas faced a lack of irrigation facilities for the cultivation of vegetables. This problem ranked 6^{th} for women.

6.1.7 Insect pests, diseases and weeds

Due to the tenderness of vegetables, the insect pest, disease and weed attack are more in vegetable crops than cereals/ fruit crops/forest trees. It was observed that 6.67 percent of

women in the study areas faced insect pests, diseases and weeds for the cultivation of vegetables. This problem ranked 7th for women.

6.1.8 Lack of suitable land

In the observed areas ailment and pest assault was a major trouble those producers faced in vegetable cultivation. They additionally mentioned that they had been now not well educated about pests and diseases manipulate measures on their vegetable cultivation. From Table 6.1 it turned into determined that about 5 percent of the women (out of 60 women) were adversely affected in their vegetable cultivation.

Table 6.1 Problem faced by the women in vegetable cultivation

Problem faced by women	Number	Percent	Rank order
Lack of training facilities	18	25	1st
Low yield and unstable price	6	15	2nd
Higher cost of input	8	13.33	3rd
Storage of good quality seed	7	11.67	4th
Inadequate capital	6	10	5th
Lack of irrigation facilities	5	8.33	6th
Insect pests, diseases and weeds	4	6.67	7th
Lack of suitable land	3	5	8th
Lack of availability of adequate inputs	2	3.33	9th
Lack of technical knowledge	1	1.67	10th
Total	60	100	

6.1.9 Lack of availability of adequate inputs

In the study areas producers also reported that lack of availability of adequate input was a major problem for vegetable cultivation. Table 6.1 indicates that about 3.33 percent of the producers (out of 60 women) faced this problem.

6.1.10 Lack of technical knowledge

It was observed that 1.67 percent of women in the study areas had lack of technical knowledge for the cultivation of vegetables. This problem ranked 10th for women.

CHAPTER VII

SUMMARY, CONCLUSIONS AND SUGGESTIONS

Women play a key role in the conservation of basic life support system such as land, water, flora, fauna. They play a significant and crucial role in agricultural development as well as home development. In a developing country like Bangladesh, it cannot be denied that under-utilized rural female force forms a vast reservoir of human resources. They constitute a large potential section of its total population. The role of rural women in the socio-economic development of Bangladesh cannot be overlooked. They generally involved in crop-related activities like-composting, transplanting, sowing, weeding, harvesting, drying, homestead gardening and tree planting. But their enhanced economic role has not gone in hand with substantial improvement in education, training, health and nutrition and access to production resources and services. Similarly, they remain largely unrepresented in national agenda-setting and resources allocating bodies. Their wider participation in village associations, marketing, co-operatives and other community organizations can help to reduce the social constraints on access to productive resources. Rural women generally involve in different enterprises but have not been clearly defined so far, since there is no systematic research investigation in these aspects. It is essential, therefore, that women become a priority target group in agricultural production.

Rural women - who are half of the rural population of Bangladesh, must be included in development activities specially in homestead agricultural activities. So, when rural women are involved and included with these development activities and are aware of their rights and claims, their participation in homestead agricultural activities will be increased to a great extent.

a) To identify the selected characteristics of the women;
b) To examine the level of participation of women in vegetable cultivation;
c) To determine the significant contributor to women participation in vegetable cultivation; and
d) To identify the problem faced by the women in vegetable cultivation.

7.1 Summary of the study

The highest proportion (41.7 percent) of the respondents was in the 31-40 years category compared to 33.3 percent 20-30 years age and 21.7 percent 41-50 years aged category. However, data also revealed that only 3.3 percent of the women in the study area were above 50 years aged. The middle-aged women are the most effective group in vegetable cultivation. A large proportion (35 percent) of the respondents was the primary level of education compared to 30 percent of the women was SSC level of education, 25 percent the women were illiterate and only 10 percent of the women were HSC level of education. The findings indicate that 75 percent of the respondents were educated that varied from primary to secondary levels.

The major portion (53.3 percent) of the respondents was 2-4 members while 41.7 percent had 5-8 members and only 5 percent had above 8 members. Data also revealed that the majority (95 percent) of the women of the study area were 2-4 to 5-8 members. The major portion (61.7 percent) of the respondents had Tk. 800116000. category while 23.3 percent had Tk. 4000-8000 and 15 percent had above Tk. 16000. The major portion (46.6 percent) of the respondents had Tk. 8001-12000. Family expenditure while 31.7 percent had Tk. 5550-8000 family expenditure and 21.7 percent had above Tk. 12000 family expenditure. Most 81.7 percent of the respondents were married, 6.7 percent of the respondents were single, 1.7 percent of women were separated, 1.7 percent were divorced and 8.3 percent was widowed.

Most 68.3 percent of the respondents was house wife, 6.7 percent of the respondents were unemployed, 1.7 percent women were student, 8.3 percent was service holder and 8.3 percent was day labour. The highest proportion (36.7%) of the respondents had above Tk. 1200 monthly income from vegetable cultivation while (36.6%) and (26.7%) of them had Tk. 601-1200 and Tk. 375-600 monthly income from vegetable cultivation categories. The highest proportion (61.7%) of the respondents had 1-5 decimal vegetable cultivation land while (28.3%) and (10%) of them had 6-10 and above 10 decimal vegetable

cultivation land. The highest proportion (50%) of the respondents had medium satisfaction while (13.3%) and (36.7%) of them had low and high satisfaction. The highest proportion (53.3 percent) of the respondents had no credit received compared to about 46.7 percent of them having yes credit received. The highest proportion (80 percent) of the women had yes extension contact and 20 percent of the respondents had no extension contact. The highest proportion (62.5%) of the women had training in vegetable cultivation. On the other hand, 37.5% of women had no training in vegetable cultivation.

Most 75 percent of the respondents' sources of income were agriculture, 10 percent of the respondents were agriculture and allied activities, 6.67 percent of women were agricultural labor, 5 percent were employment and 3.33 percent were business their sources of income. Most 70 percent of the respondents to produce food for household consumption was reason for involving in agricultural activities, 20 percent of the respondents were livelihood for the reason for involving in agricultural activities and 10 percent was supplement income the reason for involving in agricultural activities. Most 76.67 percent of the respondents had self-land, 10 percent of the respondents had fathers' land, 8.33 percent of women had husbands' land and 5 percent had sons' land. Most 71.67 percent of the respondents had allocated land, 10 percent of the respondents had inheritance land, 8.33 percent of women had a marriage and 5 percent had purchase their land.

7.2 Conclusions

The higher proportion (53.3 percent) of the respondents had participated in vegetable cultivation and while 46.7 percent of women did not participate in vegetable cultivation. Level of monthly income from vegetable cultivation and training on vegetable cultivation were the important contributing factors (significant at the 1% level of significance) and education, family size, satisfaction and extension contact were the important contributing factors (significant at the 5% level of significance). The overall percentage of correct

prediction is 53.3 percent. The omnibus test of the model coefficient is 48.130. Cox and Snell R^2 is 0.552 and Nagelkerke R^2 is 0.737.

Informants replied that Lack of training facilities was the first constraint in the study areas followed by low yield and unstable price for vegetable cultivars and lack of technical knowledge was last in order.

Although vegetable production was profitable as others crop, women were not so much interested to grow a huge amount of vegetables continuously, because of the fluctuating market price of the vegetable. Therefore, there is a need to ensure a reasonable market price of vegetables at the harvesting period and that should be stable. Moreover, the government should take necessary steps to overcome these constraints and to expand the production of vegetable keeping in different areas of Bangladesh. It was also revealed from the study that the vegetable cultivars can be more profitable if the constraints related to it can be solved.

7.3 Suggestions:

Some suggestions are given below:

- Necessary steps should be taken to motivate the rural women in participating in homestead vegetable cultivation.
- The price of vegetable seed should be readjusted from time to time safeguarding justice to the growers of vegetables.
- The government should reduce the pesticide and insecticide price.
- Adequate training so that they can produce vegetable cultivation appropriately.
- Modern technology should be taking on for superior labor cost control.
- The credit facility should be increased to the owners of the vegetable cultivars through banks/financial institutions on easy terms and conditions to meet the capital requirements for vegetable cultivation.

- DAE and other agriculture related organizations should organize necessary training and skill development programs like training on vegetable cultivation, fertilizer application etc.
- Extension workers must be well trained on the newly released vegetable cultivation practices/techniques.

REFERENCES

Abdullah, T.A. and Zeidenstein, S.A. (1982). Village women of Bangladesh: prospects for change. Oxford: Pergamon Press.

Ahmad, M., Nawab, K., Zaib, U. and Khan, I.A. (2007). Role of women in vegetable production: A case study of four selected villages of Abbottabad. *Sarhad J. Agric.* **23**(4).

Ahsan, R.M., Hussain, S.R. and Wallace, B.J. (1986). Role of Women in Agriculture. The Centre for Urban Studies, University of Dhaka, Bangladesh.

Ajayi, S. (1995). Gender Roles in Subsistence Crop Production in Kwara State, Nigeria. Department of Agricultural Extension and Rural Development, University of Ilorin, Nigeria.

Akanda, W. (1994). Particiaption of rural women in different farm and nonfarm activities in two selected villages of Mymensingh district. M. S. (Ag. Ext. Ed.) Thesis, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Akhter, A. (1989). Involvement of Women in Homestead Agriculture in Selected Village of Tangail District. M.S. (Ag. Ext. Ed.) Thesis, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Amin, S. and Pebley, A. (1994). Gender inequality within households: The impact of a women's development programme in 36 Bangladeshi villages. Bangladesh Development Studies. **22** (2&3): 121-154. Amsterdam.

Bachmann, J. and R. Earles. (2000). Postharvest Handling of Fruits and Vegetables.

Bargali, K., Vibhuti and Shahi, C. (2015). Contribution of Rural Women in Vegetable Cultivation in Homegardens of Nainital District, Kumaun Himalaya, *India. Curr. Agri. Res.,* **3**(2), 91-100.

Begum, S. (1983). Women and Rural Development in Bangladesh. Master's Thesis. Cornell University, Mimeographed. Bureau of Economic Research, Dhaka, Bangladesh.

Chakma, T.K. (1995). A Socioeconomic Study of Women Participation in Crop and Vegetable Production Activities in a selected area of Khagrachari Hill District. M.S. in Agricultural Production Economics Thesis, Department of Agricultural Economics, Bangladesh Agricultural University, Mymensingh.

Chowdhury, N. (1986). Revaluation of Women's Work in Bangladesh. *The Bangladesh Journal of Agricultural Economics,* **4** (1).

Chowdhury, N. (2009). Participation of Rural Women in Farm and Non-Farm Activities: An Economic Analysis. M. Sc. Econ. Thesis, Dept. of Agricultural Economics, Bangladesh Agricultural University, Mymensingh.

Dey, J. (1985). Women in Rice Farming Network: Country Profile in Bangladesh. A paper Presented at the project design workshop on women in rice farming systems. International Rice Research Institute, Manila, Philippine.

FAO, (1995). Postharvest and Food Technology: Science and Technology for Sustainable Development, Part 6.

Farouk, A. (1980). Time Use of Rural Women. Bureau of Economic Research, Dhaka University. Bangladesh.

Gleason, J. E. (1988). The contribution of women to agriculture in Taiwan. Gender issues in Farming Systems Research and Extension. Boulder, Colorado, West View Press.

Gopalappa, D.V. (1997). Diversified Agriculture and the rural Women. Institute for Social and Economic Change, Bangalore, India. Source: Yojana. **41**(11): 27-32.

Halim, (1991). Study on sectoral contribution at income generation from homestead area. An Evaluation Report on BAU-FSRDP Activities. Farming Systems Research and Development Programme. Bangladesh Agricultural University, Mymensingh.

Halim, A. (1987). Intensive Homestead Production Plant in Bangladesh. An unpublished Report of World Bank Consultancy. The World Bank Resident Mission in Dhaka, Bangladesh.

Halim, A. (1990). A study on the informal saving by the women. An evaluation report on BAU, FSRDP activities. Farming Systems Research and Development Programme, Bangladesh Agricultural University, Mymensingh.

Halim, A.B.S. Nahar and A.B.M M Alam. (1994). Research on Women in Agriculture: The Experience of BAU Farming System and Environment Studies. Paper Presented in the Workshop on Women in Agriculture: The Challenges, BRAC 23-24, March, Dhaka, Bangladesh.

Hashemi, S.M., Schuler, S.R., and Riley, A.P. (1996). Rural credit programmes and women's empowerment in Bangladesh. *World Development,* **24**(4): 635-653.

Hossain, M., Bose, M.L. and Ahmad, A. (2004). Nature and impact of women's participation in economic activities in rural Bangladesh: insights from household surveys. : https://www.researchgate.net/publication/5096523.

Hossain, M.A. (1985). Munoz in Rice Culture: A Case Study in Bangladesh Village. Paper Presented at the 16th working group meeting of Asia Rice Farming System Network, Bangladesh, 9-13 November.

Islam, M.R. and Dham, S. (1994). Studies on different vegetables pattern in the homestead saline area of Patuakhali. Research Report 1993-94, OnFarm Research Division, Bangladesh Agricultural Research Institute, Patuakhali. p 38.

Jahan, I. (1990). Country paper-Bangladesh. In Gender issues in agriculture: papers and proceedings of the regional conference on gender issues in agriculture. Manila, 5-6 December. ADB and UNIFEM.

Jordans, E. and Zwarteveen, M. (1997). A well of one's own: gender analysis of irrigation program in Bangladesh. International Irrigation Management Institute (IIMI), Colombo.

Karim, N.A. and Wee, M.M.B. (1996). Role of women in vegetable agribusiness. Vegetable crops agribusiness: proceedings of a workshop held at BARC, Farmgate, Dhaka, Bangladesh during 2-4 May, 1995. 177-182; Publication no. 97-457.

Khuda, B. (1980). Time Allocation Among People in Rural Bangladesh. DERAP Publication, No. 101. Chr. Michelsen Institute, Bergen.

Kumari, A.R. and Laxmikant. (2015). Participation of rural women in vegetable production. Advance Research Journal of Social Science. **6**(2), 258-260. DOI: 10.15740/HAS/ARJSS/6.2/258-260.

Mahmud, S. (2003), Actually How Empowering is Micro Credit? Paper presented at an International Seminar on Attacking Poverty with Microcredit, Organized by Palli Karma-Shayak Foundation (PKSF), January 8 and 9, Dhaka, Bangladesh.

McCarthy, F.E. (1981). Contribution of women to the production and processing of crops in Bangladesh. Ministry of Agriculture, Dhaka, Bangladesh.

McCarthy, F.E., and Feldman, S. (1988). Processes of Impoverishment in Bangladesh: Reconceptualizing Poverty and Resources". The Journal of Social Studies, No. 39. Dhaka, Bangladesh.

Miah, M.A.M. and Rahman, M.M. (1995). Farmers' Awareness regarding changes in the farming Environment. A research article accepted for publication in: Bangladesh Journal of Agricultural Science.

Nahar, N. (2008). Relationship of Selected Characteristics of the Farm Women with Usefulness of Agricultural Radio Program and Homestead Farming Knowledge M. S. (Ag. Ext. Ed.) Thesis, Dept. of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Quddus, A. and Bose, T.R. (1995). Kitchen gardening and home level food processing as areas of rural women employment and income: an experiment in Comilla. Bangladesh Academy for rural Development, Kotbari, Comilla.

Rahman, R.I. (1986). The Wage Employment Market for Rural Women in Bangladesh. BIDS, Research Monograph No. 6. Dhaka, Bangladesh.

Rothschild, S. and Mahmud, S. (1989). Women's Roles in Agriculture: Present Trends and Potential for Growth. Bangladesh Agriculture Sector Review, UNDP and UNIFEM, Dhaka, Bangladesh.

Shirin, M. (1995). Achievements of women in mixed farming. In Ahmed, U. and Miah, M.A.H. (eds.) Success stories of women in agriculture: proceedings of a national workshop on case studies. Bangladesh Agricultural Research Council (BARC), Dhaka.

Sultana, P. (1993). Gender Roles in Agricultural production. Crop Diversification Programme Workshop on Social and Gender Analysis and Gender Awareness Building, held during 1-2 Dhaka, Bangladesh. Workshop Hand Book Part I.

Swaminathan. (1985). Importing Rural Women's Users Perspective to Agricultural Research and Development-A draft paper for discussion in project design workshop rice farming system. 10-13 April, Banos, Philippines.

Uddin, M.M. (2008). Involvement of Rural Women in Home Gardening Practices in SDS Area of Shariatpur District. M. S. (Ag. Ext. Ed.) Thesis, Dept. of Agricultural Extension and Information System, Sher-e-Bangla Agricultural University, Dhaka.

Virdi, B. (1993). Reaching rural Women: Successful approaches in the crop diversification programme. Crop Diversification Programme Workshop on Social and Gender Analysis and Gender Awareness Building held during 12 December, Dhaka, Bangladesh. Workshop Hand Book, Part II.

Vlassak, K. (1993). Women in Agricultural production. Bulletin-des-Seances, Academie-Royale-des-Sciences' Outre-Mer. 1993, 39: sup, pp. 51-61.

Westergaard, K. (1983). Pauperization and Rural Women in Bangladesh: A *Case Study*. BARD, Comilla, Bangladesh.

Younus, M. (1984). Jorimon of Betoli village: other in search of a future-a case study report. Grameen Bank, Dhaka.

ID #

Department of Development and Poverty Studies
Sher-e-Bangla Agricultural University, Dhaka.
Title: Socio-economic Study on Women's Participation in Vegetable Cultivation in Selected Areas of Bogura District in Bangladesh

General information:

Upazila: **Union:** **Village:**

A. Personal and socio-economic characteristics:

Sl. No.	Question's/query	Response/Answer	Code
1.	Name		Mobile:
2.	Age	_____ Years	1=20-30 years, 2=30-40 years, 3=40-50 years, 4=50- above years
3.	Sex		1=Male, 2=Female
4.	Religion		1=Islam, 2=Hindu, 3=Christian, 4=Buddhist, 5=Other (Specify)
5.	Education level	_____ Schooling Years	1=No education, 2=Primary level, 3=Secondary level, 4=SSC,5=HSC,6=Others
6.	Household head		1=Father, 2=Husband, 3=Son, 4=Women herself, 5=Others (specify)
7.	No. of family members	1= 2= 3=	1= Male 2= Female, 3= Children
8.	Earning members:	1= 2=	1= Male 2= Female
9.	Marital status		1= Married, 2= Single, 3= Separated 4=Divorced, 5= Widowed
10.	Occupation		1=Unemployed, 2=House wife, 3=Day labor, 4=service, 5=Student, 6=Others (specify)
11.	Sources of income	1 = Tk. 2 = Tk. 3= Tk. 4= Tk. 5= Tk. 9= Tk.	1= Agriculture, 2= Agriculture and allied activities, 3=Industrial/ Agriculture labor, 4= Employment, 5= Business, 6= Pension, 7=Fixed property, 8=Rent, 9=Others (Specify)
12.	Total Income (monthly)	Tk =	1=2000-4000, 2=4000-6000, 3=6000-8000, 4=8000-10000, 5=10000 & above
13.	Expenditure	1 = Tk. 2 = Tk. 3= Tk. 4= Tk.	1= Food 2= Education 3= Health 4= Others

B. Agricultural productivity:

Sl. No.	Question's/query	Response/Answer	Code
14.	Reason of involving in agricultural activities:		1=To produce food for household consumption, 2=For livelihood, 3=To supplement income, 4=Others
15.	Name of Vegetables		
16.	Level of satisfaction with the yield		1=Very satisfied, 2=Fairly saisfied, 3=Somewhat dissatisfied, 4=Not at all satisfied
17.	Getting surplus from harvest		1=Yes, 2=No
18.	Selling the surplus		1=Yes, 2=No,
19.	Place of selling the produce		
20.	Facing market related problems		1=Yes, 2=No
21.	If Yes, type of problems		1= low price, 2= distant place, 3= less consumers, 4= Others (specify)
22.	Monthly income		

C. Accessibility to land:

Sl. No.	Question's/query	Response/Answer	Code
23.	Owner of the land		1=Self, 2= Father,3= Husband,4=Son,5=Relative,6=Other
24.	The way of acquiring land		1=Allocated, 2= Inheritance, 3=Through marriage, 4=Purchase, 5=Other
25.	Size of the vegetable cultivated land		
26.	Total cost of vegetable production	Tk=	
27.	Return from vegetable sale	1= Tk 2= Tk 3= Tk	1= Family consumption, 2=sale 3= others (specify)

D. Access to credit:

Sl. No.	Question's/query	Response/Answer	Code
28.	Any experience of credit obtaining		1=Yes, 2=No
29a.	(If yes) Last time credit obtained	1= Tk. 2= Tk. 3= Tk. 4= Tk.	1=Last season, 2= A year ago, 3=Two years ago, 4=Three years ago
29b.	(If no) Reason of not obtaining		1=No collateral, 2=Not aware of any credit facilities, 3= It's a

			difficult process, 4=Unable to repay, 5=Do not require credit, 6=Other

E. Access to Extension Service:

Sl. No.	Question's/query	Response/Answer	Code
30.	Awareness to extension services in the area		1=Yes, 2=No
31.	Availability of female extension officers in the area		1=Yes, 2=No
32.	Comfort to consult a male extension officer		1=Yes, 2=No
33.	Do the extension agents organize training programs for female farmers		1=Yes, 2=No
34.	Have you attended any farmer training program?		1=Yes, 2=No
35.	Would you want to receive more training program?		1=Yes, 2=No
36.	What type of benefits receive from training?		1= know how about technology, 2= get input support, 3= others (specify)

F. Access to Agricultural Inputs:

Sl. No.	Question's/query	Response/Answer	Code
37.	Have you ever receive any agricultural inputs from the government or any other organization		1=Yes, 2=No
38.	How much time do spend in agricultural activities	_____ = Hours	1=1 to 2 hrs, 2=2 to 3 hrs, 3=3 to 4 hrs, 4=4 to 5 hrs, 5= 5 to 6 hrs, 6=Above
39.	Indicate your level of participation		1=Low, 2=Medium, 3=High
40.	Indicate your stage of participation		1=Clearing, 2=Planting, 3=Weeding, 4=Harvesting, 5=Marketing 6=Other (Specify)
41.	Indicate your overall rate of participation in decision making		1=Low, 2=Medium, 3=High
42.	Constraints to your participation		1=Time constraints, 2=Water shortage, 3=No own land, 4=Financial constraints, 5=Limited

			agricultural inputs, 6=Distant extension training sites.
43	Benefits from participation		1= Increase family income, 2= meeting labor crisis 3= 4= other (specify)
44.	What are your recommendations for more effective participation		1= Open women sales point 2= more training needed 3= 4= 5= other (specify)