PARTICIPATION OF RURAL WOMEN IN HOMESTEAD AGROFORESTRY AT DUMURIA UPAZILA OF KHULNA

RAZIA BASREE

DEPARTMENT OF AGROFORESTRY AND ENVIRONMENTAL SCIENCE

SHER-E-BANGLA AGRICULTURAL UNIVERSITY
DHAKA-1207

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PARTICIPATION OF RURAL WOMEN IN HOMESTEAD AGROFORESTRY AT DUMURIA UPAZILA OF KHULNA

BY

RAZIA BASREE

REGISTRATION NO.18-09252

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Approved By:

----------	----------
Md. Golam Jilani Helal	**Dr. Ferzana Islam**
Assistant Professor	**Professor**
Supervisor	**Co-Supervisor**

Dr. Jubayer-Al-Mahmud
Chairman
Examination Committee

DEPARTMENT OF AGROFORESTRY AND ENVIRONMENTAL SCIENCE
Sher-e-Bangla Agricultural University
Sher-e-Bangla Nagar, Dhaka-1207

CERTIFICATE

This is to certify that the thesis entitled ***"PARTICIPATION OF RURAL WOMEN IN HOMESTEAD AGROFORESTRY AT DUMURIA UPAZILA OF KHULNA"*** *submitted to the Faculty of* ***Agriculture****, Sher-e-Bangla Agricultural University, Dhaka in partial fulfillment of the requirements for the degree of* ***Master of Science (MS) in Agroforestry and Environmental Science****, embodies the result of a piece of bona-fide research work conducted by* ***RAZIA BASREE, Registration no. 18-09252*** *under my supervision and guidance. No part of this thesis has been submitted for any other degree or diploma.*

I further certify that any help or source of information, received during the course of this study has been dully acknowledgement by him.

DECEMBER, 2020

Dhaka, Bangladesh

Md. Golam Jilani Helal
Assistant Professor
Supervisor

Dedicated to
My
Beloved Parents

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LIST OF ABBREVIATIONS

AEZ	Agro-Ecological Zone
ADB	Asian Development Bank
BAU	Bangladesh Agricultural University
BBS	Bangladesh Bureau of Statistics
BRAC	Bangladesh Rural Advancement Committee
BRDB	Bangladesh Rural Development Board
et al.	All others etc. et cetera, and the other
FAO	Food and Agriculture Organization Of the United Nations
GDP	Gross Domestic Product
Ha	Hectare
PFI	Problem Faced Index
NGOs	Non-Government Organizations
SPSS	Statistical Package for Social Science
SAU	Sher-e-Bangla Agricultural University

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ABSTRACT

The study was conducted to assess women's participation in homestead agroforestry and to explore their relationships with the selected parameters. Data were collected by purposive random sampling method of 101 respondents from three villages of Dumuria upazila under khulna district by using a pretested interview schedule during the period of October 2019 to January 2020. Data were analyzed by SPSS version 16. Appropriate scales were developed to measure the variables of the study. Multiple regression was used to ascertain the contribution of the concerned independent variables on dependent variable of the study. Findings indicated that highest proportion (78.22%) of the rural women had medium participation in homestead agroforestry compared to 8.91% having low participation. Multiple regression analysis indicated that four, out of ten independent variables namely agricultural training, knowledge, attitude and problems on homestead agroforestry of the rural women had significant contribution to their participation in homestead agroforestry. On the other hand other selected varivables age, education, family and farm size, annual incomes, organizational perticipation had no significant contribution to their participation in homestead agroforestry.

CHAPTER I

INTRODUCTION

Homestead is the home and very adjacent lands occupied by the family for their living and provide support as the ground for homestead Agroforestry. Homestead Agroforestry is the subsistence system and potential production area in Bangladesh, especially for the rural poor people. Homestead production system, which is popularly called homestead Agroforestry or home gardening (the integrated production of crops, trees, and/or livestock in the household's residence and its surrounding areas), has been playing an important role in the rural economy of Bangladesh since time immemorial, and providing various essential products and services to millions of rural households (Islam, 2015).

According to World Agroforestry Center, Agroforestry is a dynamic, ecological-based natural resources management system through integration of trees into rangeland and farmland to diversify and sustain production for the increasing socio-economic and environmental benefits for all land users at all levels (Atangana *et al.,* 2013; ICRAF, 2006). Agroforestry has been a traditional agricultural practice sustainable for thousands of years and an important element of the cultural rural landscape in tropical and temperate regions around the world (Alam and Sarker, 2011; Kalaba *et al.,* 2010; Kumar, 2006; Lamanda *et al.,* 2006; Maroy, 2009 and Peyer *et al.,* 2006). More than hundred different Agroforestry practices have been identified in tropical and temperate regions (Atangana *et al.,* 2013).

Bangladesh is the most densely populated county in the world. Seventy-five percent people lives in rural areas. Bangladesh is also an agro based country. The most of inhabitants directly or indirectly are involved in agricultural subsectors for their livelihood. Agriculture is of the production sector of the economy which comprises around 14% of GDP and 43% labour force are involved in agricultural sector (BBS, 2019). Bangladesh is a highly patriarchal society (as are many countries in the region) with gender being a key factor in defining social roles, responsibilities and power relationships within the family and workplace (Bridges *et al.,* 2011). Male workforce involvement is significantly higher 83% than female involvement (17%). However,

male workforce involvement has been decreased by 4 percent, while female involvement has been increased by 4 percent from the year 2000 (Bangladesh, 2012).

Women are the backbone of the development of rural and national economies. They comprise 43% of the world's agricultural labor force, which rises to 70% in some countries (Raju *et al.,* 2001). Rural women play a key role in agricultural sector production by working with full passion in production of crops right from the soil preparation till post-harvest and food security activities.

In Bangladesh, women hardly participate in agricultural activities outside of their homes (Hossain, 2002). About half (49%) of population of Bangladesh is women among them 45.6 percent are associated with the farming activities (Agricultural Diary, 2012). About 20 to 70% of the rural women are involved in agricultural production and post-harvest activities. The agricultural activities in which the women play a very leading role are: transplantation, weeding, threshing, looking after cattle and other livestock (poultry, goat rearing, sheep rearing etc), collecting fodder, watering fruit plants, preparing and transporting manure and other inputs to the field. Currently, women in Bangladesh have an anchoring role in the management of their families as well as equal involvement in different economic activities like crop production, post-harvest activities, poultry rearing, management of livestock and fisheries, pisciculture and miscellaneous income generating activities (Nessa *et al.,* 2004).

Women participate in agricultural development of the country and they have been directly involved in agricultural production and productivity. It is therefore, important to have adequate understanding on rural women's involvement in agricultural production especially in homestead Agroforestry. Presently, due to extreme poverty and a food crisis, social norms and traditions are changing and women are intimately involved in all phases of agricultural activities: from sowing seeds to harvesting and processing of crops (Tuli, 2011). Ahmed *et al.* (2008) observed that the economic status of respondent family was developed due to homestead farming by the women.

Thus, it is necessary to strengthen women participation in homestead Agroforestry for effective utilization of homestead areas with suitable sophistical Agroforestry

approach to maximize homestead productivity and family income (Miah and Hussain, 2009). So, the study was conducted to fulfill the following objectives.

The objectives of the study were:

- To determine the level of participation of rural women in homestead agroforestry;
- To explore the relationship between the participation of the rural women and homestead agroforestry; and
- To find out the problems faced by rural women in practicing homestead agroforestry.

CHAPTER II

REVIEW OF LITERATURE

This chapter deals with the review of past researches related to this investigation. The reviews are conveniently presented based on the major objectives of the study. In spite of sincere effort adequate numbers of direct related literatures were not readily available for this study. However, the literatures of available studies have been briefly discussed in this chapter as Women participation in homestead agricultural activities, review of past studies concerning relationships on the selected characteristics of the respondents with their participation in homestead agricultural activities and conceptual framework of the study.

2.1 Concepts of Agroforestry and Homestead Agroforestry

Roy *et al.*(2013) stated that In Bangladesh, homestead agroforestry represent a well-established traditional land-use system where natural forest cover is less than 10 percent; homestead gardens, represent one possible strategy for biodiversity conservation. The conservation of cultivated plants in homestead gardens of Bangladesh not only preserves a vital resource for human kind but plays an important role in household food security, as it is a sustainable source of food, fruits and vegetables.

Homestead agroforestry give support direct and indirect benefits to human being and to nature. They supply fruits, fuel, furniture, shelter and all other necessary items and are inextricable with food security. Women are very good contributors to agricultural and other economical production along with household activities. Department of Agricultural Extension (DAE), Bangladesh Rural Development Board (BRDB), Grameen Bank (GB), Bangladesh Rural Advancement Committee (BRAC) and other Non-Government Organizations (NGOs) have been trying to motivate rural poor women by organizing them in formal and informal groups for homestead agricultural production and other development activities (Mukta, 2011).

Hasan *et al.* (2008) found most of the trees in homestead agroforestry system to be traditional varieties with less production potential. So, there is much scope to improve productivity of the system both in the homesteads and in the fields by replacing the

existing tree species/varieties with the improved ones, planting trees in planned ways, using suitable tree-crop combination and by improving management practices.

Homestead production systems contribute about 70.0 percent fruits, 40.0 percent vegetables, 70.0 percent timber and 90.0 percent fire wood and bamboo requirement of Bangladesh (Miah and Ahmed, 2003).

Awal *et al.* (2000) reported that homestead fruit and vegetable practices earned substantial income for all categories of farmers. The women were involved in the household decision making process to a greater extent. The evidence was more spectacular in aspects like family planning education of children, poultry rearing, plantation of fruit and vegetables and marriages of sons and daughters

Khalid and Bora (2000) stated that agroforestry does not merely mean planting trees in the fields or other places rather provide an effective land management system that can ensure more production in a balanced ecological environment. It helps to overcome shortcoming of traditional agriculture that are often characterized by low output at the cost of relatively high investment resulting in a deterioration of environment.

Trees of the homesteads can be given suitable structure of the canopy as desired by the house-owners under which vegetables, spices and some ornamental herbs/shrubs can be raised (Haque, 1994).

Today there is a consensus of opinion that agroforestry is practiced for a variety of objectives. It represents as an interface between agriculture and forestry and encompasses maxed land-use practices. This practice have been developed primarily in response to be special needs and conditions of tropical developing countries that have not been satisfactorily addressed by advances increase environmental agriculture or forest (Nair, 1993).

Saka *et al.* (1990) stated that in agroforestry systems there are both ecological and economical interactions between the different components. Agroforestry can provide a sound ecological basis for increase crop and animal productivity, more dependable economic returns and greater diversity in social benefits on sustained basis.

2.2 Reviews on Rural Women Participation in Homestead Agroforestry

Participation of women in farm and non-farm activities in two villages of Sadar Upazilla of Mymenshingh 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 (Chowdhury, 2009).

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. In fact, these kinds of activities are mostly performed by the 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.

The highest proportion (98 percent) of conventional rural women had medium involvement in homestead activities (Hasan, 2006).

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 (Gopalappa, 1997).

The 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 labor (Chakma, 1995).

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 (Akanda, 1994)

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

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

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

Women in the households were economically active and played important role in post-harvest operations as well as other activities like kitchen gardening and livestock care (Dey, 1985).

2.3 Relationship between the Selected Characteristics of the Rural Women and their Participation

2.3.1 Age and Participation

Age has no the significance relationship in participation potential of rural women in different homestead farm activities (Khatun, 2014).

Ali *et al.* (2011) stated in his study that there was no significant relationship between age and role of rural women in homestead agroforestry.

Tazkira (2009) found in her study that age has a significant and positive relation with their extent of involvement in the homestead farming activities.

Majority of the rural women (46 percent) was middle-aged and its relationship with their participation in homestead agriculture activities. Comprised of either young or middle aged categories and its relationship with their involvement in home gardening practice were negatively significant (Rahman, 2007).

There was a significant positive relationship between age of landless women and their functional participation in Income Generating Activities (IGAs) (Akhtaruzzaman, 2006).

Rahman (2006) indicate that 81 percent of the respondent were young to middle age and the rest were old aged. Age of the respondent had significant positive relation with their winter, summer, and overall homestead vegetable cultivation.

There was no significant relationship between age of the rural women and their participation in homestead farming activities (Khatun, 2004).

Nahar (2000) stated in her study that age of the rural women had no significant relationship with their participation in homestead agriculture.

Age of the rural women had significant positive relationship with their participation in homestead vegetable cultivation and in the cultivation of fruit trees but a negative correlation with non-farm household activities (Akanda, 1994).

There was positive correlation between age of the household women with their time spent in both agricultural and nonagricultural activities (Akhter, 1989).

2.3.2 Education and Participation

Tazkira (2009) stated that most of the rural women were educated up to primary level and education had significant and positive relationship with their extent of involvement in homestead farming activities.

Uddin (2008) in his statistical analysis showed a significant positive relationship of education of the rural women with their involvement in home gardening practices.

There was non-significant relationship between education of landless women and their functional participation in income generating activities (Aktaruzzaman, 2006).

The majority (46%) of the respondent had primary level education. Education of the rural women showed a significant positive relationship with their involvement in homestead vegetable cultivation (Rahman, 2006).

Aziz (2004) observed that the level of education of the tribal women had no relationship with their participation in homestead agriculture.

Naher (2000) observed in her study that education of the rural women had no significant relationship with their participation in homestead agriculture.

Education of rural women had significant positive relationship with their involvement in the cultivation of fruit trees. However, there was a positive relationship between education and vegetable cultivation (Akanda, 2000).

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

2.3.3 Family Size and Participation

The family size of rural women had significant negative relationship with their involvement in homestead vegetable production (Salahuddin, 2003).

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

The family size of the rural women had no significant relationship with their opinion for participation in development activities (Chowdhury, 2000).

There was no relationship between family size and participation of women in homestead vegetable cultivation, poultry, farming and goat rearing but she found a significant positive relationship between family size and participation in post-harvest practices (Nahar, 2000).

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

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

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

2.3.4 Family Income and Participation

Islam *et al.* (2018) reported that in Jessore district Highest proportion of the rural women (45 percent) had medium income while 31.7 percent had low income and only 14 percent had high income and no significant relationship.

Annual family income of the respondent had negative and highly significant relationship with the involvement in home gardening practices. Therefore, he concluded that financial hardship of the respondent allowed them to access involvement in home gardening practices (Uddin, 2008).

Annual family income of the rural women had no significant relationship with their adoption of agricultural technologies (Ferdous, 2007).

More than 70 percent of the respondent had medium to high family income. Annual family income of the rural women and their in homestead vegetable cultivation showed significant positive relation (Rahman, 2006).

Aziz (2004) observed that family income of the tribal women had significant relationship with their extent of involvement in homestead farming activities.

Salauddin (2003) found that the family income of rural women had significant positive relationship with their involvement in homestead activities.

Nahar (2000) observed that family income of the rural women had no significant relationship with their participation in homestead agriculture.

Family income had significant positive relationship with their participation in the cultivation of fruit and nonfarm household activities but not with homestead vegetable cultivation (Akanda, 1994).

2.3.5 Farm Size and Participation

Rahman (2007) showed that farm size of the rural women had positive significant relationship with their participation in homestead agricultural activities.

The farm size of the respondent had significant positive relationship with their involvement in homestead vegetable cultivation. 97% of the respondent had small to medium farm size (Rahman, 2006).

Islam (2003) mentioned that farm size of the rural women had a negative relationship with their participation in goat rearing.

Farm size was one of the most crucial variables in the activities of rural family and it influenced all other variables. The rural women with bigger farm size had more participation in homestead vegetable cultivation, fruit trees cultivation and non-farm homestead activities. The reasons were that these families had more opportunities, more education, more agricultural knowledge, and better extension contact (Akanda, 1994).

Farming System Research activities of homestead component mentioned that women of small farm size family spent more time in agricultural activities as compared to medium and large farm size family in Kazishirmla site (upland), whereas in Naogaon site (low lying area), women of medium farm family spent more time in agricultural farming activities (Halim, 1991).

Saugwan *et al.* (1990) conducted a study on participation of women in farm activities and found that involvement of women decreased in farm activities with increasing farm size.

2.3.6 Agricultural Training and Participation

Ali (2012) indicated in his study that training exposure of the farmers had significant positive relationship with the participation in community development activities.

Hossain (2010) found that training exposure had significant relationship with their adoption in homestead fruit production activities.

Agricultural training and organizational participation of the rural women had positive significant relationship with their participation in homestead agricultural activities (Rahman, 2007).

Islam (2003) indicated that training had very strong significant association with their knowledge on vegetable production.

There was a positive relationship between training of the women and involvement with homestead cultivation. Training increases knowledge and develop awareness of respondent (Parvin, 1993).

There was significant change in attitude of rural women before training to after training in improved home making task (Verma *et al.*,1988).

2.3.7 Organization and Participation

Tazkira (2009) indicated in her study that organizational contact had significant and positive relationship with their extent of involvement of the rural women in homestead agricultural activities. Aziz (2004), Khatun (2004) and Islam (2003) observed similar findings in their respective studies.

Extension contact and organization had significant positive relationship with their participation in agricultural practices (Uddin, 2008).

Nahar (2000), Nahar (1996), Karim (1993) and Kaur (1988) in a study observed that extension contact and mass media exposure had positively significant relationship with their participation in agricultural practices.

2.3.8 Knowledge of Homestead Vegetable Cultivation and Participation

knowledge about homestead farming had significant and positive relationship with their extent of involvement of the rural women in homestead agricultural activities (Tazkira, 2009).

Rahman (2007) indicated in his study that knowledge on homestead agricultural activities of rural women had positive significant relationship with their participation in homestead agricultural activities. And Nahar (2000) showed similar findings in their respective studies.

Salahuddin (2003) found that knowledge of the rural women had no significant relationship with their involvement in homestead vegetable production.

Agricultural knowledge of the women had significant positive relationship with their participation in decision working role in the family with regard to development activities (Akhter, 2000).

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

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

2.3.9 Attitude and Participation

Attitude towards homestead agriculture of the rural women had significant positive relationship with their participation in homestead agriculture (Nahar, 2000).

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

The correlation between problem confrontation and attitude of the farm women towards agricultural income generating activities was negatively significant i.e. women who had more favourable attitude towards agricultural income generating activities face less problem (Fatema, 1995).

2.4. The conceptual framework of the study

In scientific research, selection and measurement of variables constitute an important task. The hypothesis of a research while constructed properly contains at least two important elements i.e. "a dependent variable" and "an independent variable". A dependent variable is that factor which appears, disappears or varies as the research introduces, removes or varies the independent variable (Townsend, 1953). An independent variable is that factor which is manipulated by the researcher in his attempt to ascertain its relationship to an observed phenomenon. In view of prime findings of review of literature, the researcher constructed a self-explanatory conceptual model of the study which is presented in Figure 2.1.

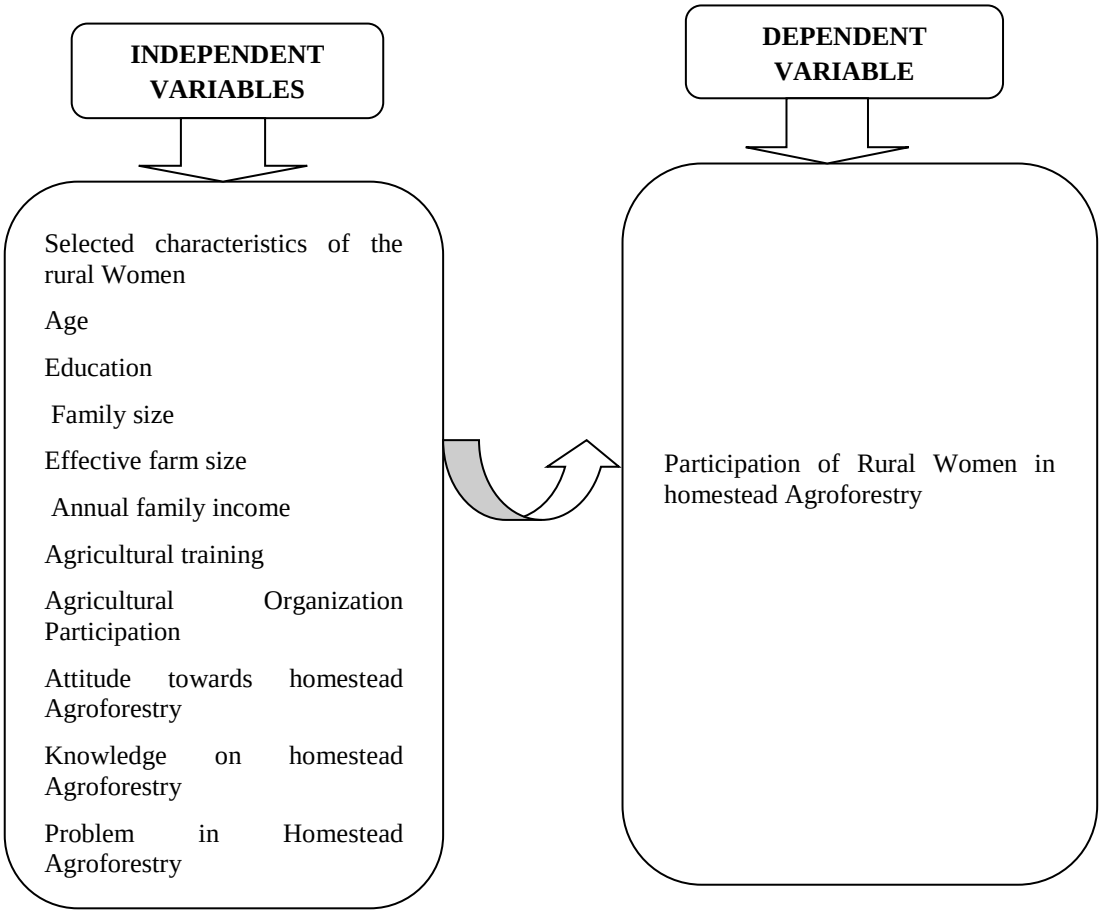

Figure 1: The conceptual framework of the study

CHAPTER III

METHODOLOGY

Methodology plays most important role in scientific research. Research methodology is a systematic way to solve a research problem. It may be understood as a science of studying how research is done. A sequential description of the methodologies that was followed in conducting this research work has been presented in this chapter under the following headings-

3.1 Design of the study

The study was conducted at three selected villages following diagnostic and descriptive research design. Face to face interviewing was performed to the women which are involved in agroforestry by the researcher.

3.2 Locale of the study

The study was conducted at three selected villages of Sahas union of Dumuria upazila under Khulna district. The selected villages were Mukhia, Kapalidanga and Gojendropur under Gojendropur block. The study area is situated 11 km away from Dumuria upazila. Dumuria is the largest upazila of Khulna district with an area of 454.23 square kilometres. Map of Dumuria upazila is presented in **figure 2**

Figure 2. A map of Dumuria upazila

3.3 Population and sampling

The rural people of the study area who were involved in homestead agroforestry were treated as population of this study. A list of rural women participated in homestead agroforestry was prepared with the cooperation of Sub-Assistant Agricultural Officer (SAAO) of the concerned Gojendropur block in Sahas union. The total number of women participating homestead agroforestry of this block was approximately one thousand. Representative sample from the population were taken for collection of data following purposive random sampling technique. Depending on the size of the population of the selected three villages Mukhia, Kapalidanga, Gojendropur and 101 rural women were randomly selected (10% of the population). So the sample size stood 101

Table 3.1 Population and sampling

District	**Upazila**	**Union**	**Village**	**Total population**	**Sample Population**
Khulna	Dumuria	Sahas	Mukhia	139	38
			Kapalidanga	135	33
			Gojendropur	128	30
Total				402	101

3.4 Preparation of interview schedule

An interview schedule was used as the research instrument in order to collect relevant information from the respondents. The interview schedule contained both simple and direct form of questions to collect data on the selected variables. The interview schedule was pre-tested before final collection of data. After pre-test necessary correction, addition, alteration and rearrangements were made. The interview schedule was then multiplied in its final form for collection of data. English version of the same interview schedule has been presented in the Appendix A.

3.5 Selection and Measurement of variables

3.5.1 Selection of variables:

Reviewing related studies, the researcher considered 10 characteristics of the rural women as independent variables. The selected characteristics (independent variables) are:

a) Age

b) Level of education

c) Family size

d) Farm size

e) Annual income

f) Agricultural training

g) Organizational participation

h) Knowledge

i) Attitude On the other hand, participation of rural women in homestead Agroforestry was treated as dependent variables.

3.5.2 Measurement of variables

3.5.2.1 Age of the respondents:

Age of the rural respondents refers to the period of time from her birth to the time of interview. It was measured in terms of actual years from their birth to the time of interview on the basis of their response to question no. 1 of the interview schedule (Appendix A). Based on age, the respondents were classified into following categories **Table 3.2**

Table 3.2 Categories of the respondents according to their age

Categories	Score (Year)
Young	Up to35
Medium	36-50
Old	> 50

3.5.2.2 Educational qualification of the respondents

The level of education of a respondent was measured by the number of years of schooling written specifically in the item 2 of the interview schedule (Appendix A). For example, if a respondent completed the study of class five her education score was assigned as 5. The educational of a respondent who could sign only was assigned a score of 1 and while 0 score was assigned if a respondent could not read and write. Based on level education score, the respondents were grouped into different categories as shown in following **Table 3.3**

Table 3.3 Categories of the respondents according to their education

Categories	Score (Year of schooling)
Illiterate	**0**
Primary	**1-5**
Secondary	**6-10**
Above secondary	**>10**

3 .5.2.3 Family size of the respondents

The family size of a respondent was measured by the total family members who were eating and staying together. This variable has been shown in the question no. 3 of the interview schedule (Appendix A). Based on family size, the respondents were classified into different categories as shown in **Table 3.4**

Table 3.4 Categories of the respondents according to their family size

Categories	No of family members
Small sized family	1 – 4
Medium sized family	5 -7
Large sized family	>7

3.5.2.4 Farm size of the respondents

Farm size of a respondent was measured by the land area possessed by her. Data obtained in response to questions under item No. 3 of the interview schedule formed the basis for determining the farm size of the respondent. Here, farm size was computed by using the following formula:

Farm Size= A1+A2+A3+$\frac{1}{2}$ (A4+A5) +A6

Where,

A 1 = Homestead area

A2 = Own pond and garden

A3 = Own land under cultivation

A4 = Land given to others as borga

A5 = Land taken from others as borga

A6 = Land taken from others as lease

Actual size of the farm was considered as the score of the farm size. For example, if a respondent had 0.05 ha of land then his score was 0.05. The data were first recorded in local unit and then converted to hectare (question no. 6 of the interview schedule; Appendix A). Based on farm size, the respondents were classified into five categories (according to DAE) as shown in **Table 3.5**

Table 3.5 Categories of respondents according to farm size

Categories	Score (ha)
Landless	<0.02
Marginal farmers	0.02 -0.20
Small farmers	0.21- 1.0
Medium farmers	1.01-3.0
Large farmers	>3

3.5.2.5 Annual income of the respondents

Family income of a respondent was measured on the basis of total yearly earning from agriculture and her other sources (service, business, daily labor etc.) by the respondent and other family members. In calculating the family income of a respondent, income of that respondent as well as her family members (earned from different sources) in the year 2019 were added together to obtain total family income of a respondent. The respondents were classified into following categories according to annual income as shown in **Table 3.6**

Table 3.6 Categories of respondents according to annual family income

Categories	Taka (BDT)
Low income	103000
Medium income	104000-179000
High income	Above 179000

3.5.2.6 Agricultural Training experience of the respondents

The agricultural training score was determined by the number of agricultural training received by the respondents. For example a respondent received low training; her training score '1' irrespective of its duration. This variable has been shown in the interview schedule. Based on training score the respondents were classified into following categories as shown in **Table 3.7**

Table 3.7 Categories of respondents according to their training experience

Categories	Score
No training experience	**0**
Low training experience	**1-2**
Medium training experience	**3-4**

3.5.2.7 Organizational participation

Organizational participation of a respondent was measured on the basis of number of organization she involved. For example, if a respondent in one organization her organizational participation scores 1, the respondents were grouped into the following categories as shown in **Table 3.8**

Table 3.8 Categories of respondents based on organizational participation

Categories	Score
No participation	0
Low participation	1
Medium participation	2
High participation	≥3

3.5.2.8 Knowledge of the respondents on homestead agroforestry

Knowledge of the respondent on homestead Agroforestry was measured by asking by 10 selected questions and a score of 2 was assigned to each of the question. Full mark was given to appropriate answer and partial score was given for partially correct answer. Knowledge about homestead Agroforestry score could range from 0 to 20 where 0 indicated no knowledge while 20 indicated high knowledge (question no. 9 of the interview schedule). Based on the knowledge the respondents were grouped into following categories as shown in **Table 3.9**

Table 3.9 Categories of the respondents according to their knowledge on homestead Agroforestry

Categories	Score
Low knowledge	**Up to 12**
Medium knowledge	**13-16**
High knowledge	**> 16**

3.5.2.9 Attitude of the respondents on homestead agroforestry

To measure attitude towards homestead agroforestry ten statement were included in question no. 8 of interview schedule (Appendix A). Each respondent was asked to indicate her degree of agreement about each of the statement along with five point rating scale as strongly agree, agree, no opinion, disagree and strongly disagree. Scores were assigned to these five alternative responses as 4, 3, 2, 1and 0 respectively for each statement. The attitude towards homestead Agroforestry score was obtained by adding individual scores for all the 10 statements. This score could range from '0' to '40', where '0' indicates less favorable and '40' indicates highly favorable attitude. Based on attitude score, the respondents were grouped into the following categories as shown in **Table 3.10**

Table 3.10 Categories of the respondents according to their Attitude on homestead Agroforestry

Categories	Score
Less favorable	**≤15**
Moderate favorable	**16-30**
Highly favorable	**>30**

3.5.2.10 Measurement of Problem Faced by the Rural Women in Homestead Agroforestry

Five problems of homestead Agroforestry activities in different aspect were considered for this study. This was measured by using a 4 point scale. Score were assigned to 3 for very high problem, 2 for high problem, 1 for medium problem, and 0 for no problem at all. To determine the rank order of the identified problems, Problem Faced Index (PFI) for each problem was measured using the following formula:

PFI=(P3×3)+(P2×2)+(P1×1)+(P0×0)

Where, PFI= Problem Faced Index

P3 =No. of the respondent faced very high problem

P2 = No. of the respondent faced high problem

P1 = No. of the respondent faced medium problem

P0 = No. of the respondent faced no problem

As there were 101 respondents, so Problem Faced Index (PFI) could range 0- 303. Where 0 indicated no problem and 303 indicated very high problem.

3.5.3 Measurement of Dependent Variable

3.5.3.1 Measurement of Participation of Rural Women in Homestead Agroforestry

To measure participation of the rural women in selected areas of homestead agricultural activities, Thus, 10 items were selected to measure rural women's participation in homestead agroforestry activities. The respondents were asked to indicate their extent of participation to each of the above 10 items along with a five-point scale: 'never', 'rarely', 'occasionally', 'often' and 'regularly'. The responses of these questions were given scores of 'O', 'l ', '2', '3' and '4' respectively. Thus, the participation score of a rural woman for all the areas of homestead Agroforestry activities could range from '0' to '40', where '0' (zero) indicated that the rural woman never participated in homestead Agroforestry and '40' indicated that the rural woman participated regularly in homestead Agroforestry.

3.6 Statement of Hypothesis

As defined by Goode and Hatt (1952),"A hypothesis, which can be put to a test to determine its validity. It may see contrary to, or in accord with common sense. It may prove to be correct or incorrect. In any event, however, it leads to an empirical test". In studying the relationship between variables, research hypothesis is formulated which state the anticipated relationship between the variables. However, for statistical test it becomes necessary to formulate null hypothesis. A null hypothesis states that there is no relationship between the variables. lf a null hypothesis is rejected on the basis of a statistical test, it is assumed that there is a relationship between the concerned variables. The null hypothesis can be assumed for this study as - "there was no relationship between the rural women's selected characteristics and their participation in homestead Agroforestry". The characteristics were: age, education, farm size, family income, agricultural training, organizational participation, knowledge on homestead Agroforestry and attitude towards homestead Agroforestry.

3.7 Instrument for Data Collection

In order to collect relevant information from the respondents, an interview schedule was used. The schedule was carefully designed keeping the objectives of the study in view. The schedule contained both open, closed, easiest, simple, direct questions and different scales were used to obtain the information. Direct questions were also used to obtain information like age, level of education, farm size, and family income, agricultural training, knowledge and organizational participation etc. Different scales were developed and used to measure the extension, and participation of rural women in homestead Agroforestry. The question were arranged systematically and presented clearly so that the respondents could understand to furnish information in a consistent and systematic manner. Before finalization of interview schedule, it was pretested. Necessary correlations and modification were made based on pretest results. An English version of interview schedule is enclosed at Appendix I.

3.8 Collection of Data

Data were collected personally by the researcher himself through face to face interview. To familiarize with the study area and for getting local support, the researcher took help from the local leaders and field staffs of Upazila Agriculture Office. The researcher made all possible efforts to explain the purpose of the study to the women. Rapport was established with the women prior to make interview and the objectives were clearly explained by using local language as far as possible. Data were collected during the period October 2019 to January 2020.

3.9 Compilation of Data

After completion of field survey all the data of the interview schedule were compiled. Local units were converted into standard unit. Appropriate coding and scoring technique was followed to convert the qualitative data into quantitative forms. The responses of the individual respondent contained in the interview schedules were transferred to a master sheet for entering the data in the computer.

3.10 Statistical Analysis:

Statistical measure such as frequency, percentage, minimum, maximum etc. Mean and standard deviation were used in describing the dependent and independent variables of the study. For clarity of understanding the tables were used to present the data. For exploring the relationship among selected characteristics of the respondents with their

participation in homestead agricultural activities Pearson's Product Moment Correlation Co-efficient (r) was computed. Data were analyzed by SPSS software.

CHAPTER IV

RESULTS & DISCUSSION

Data were collected from the respondents were carefully edited, coded, computed, tabulated, and analyzed in accordance with the objectives of the study. After completion of those processes this chapter was written carefully. This chapter is divided into three sections. In the first section, the independent variables (selected characteristics of the rural women) have been discussed. The second section deals with the dependent variable of the study. In the third section, the relationships among selected characteristics rural women and their extent in participation in homestead Agroforestry have been discussed.

4.1 Selected characteristics of the respondents

The findings of the ten selected characteristics of the respondents have been discussed in ten subsections. A brief summary of the characteristic profile of the respondents like measuring unit, categories, and distribution, mean, standard deviation have been presented as follows in **Table 4.1**

Table 4.1 The salient features of the selected characteristics of the women

Sl.	Categories	Measuring Unit	Range		Mean	SD
			possible	observed		
1	Age	Years	-	13-74	40.59	10.88
2	Education	Year of schooling	-	0-16	6.17	4.34
3	Family Size	Number		3-9	5.08	1.36
4	Effective Farm Size	Hectare	-	.15-2.90	1.40	.62
5	Annual family income	“000” Tk.		60-220	141.61	38.85
6	Agricultural training	Days	-	0-4	.76	.86

7	Organizational participation	Score	0-18	0-2	.80	.67
8	Attitude towards homestead agroforestry	Score	0-40	12-34	22.91	3.80
9	Knowledge on homestead agroforestry	Score	0-20	8-19	14.26	2.88
10	Problem faced women in homestead agroforestry	Score	0-15	1-12	6.9901	1.80

4.1.1 Age

The age of the rural women ranged from 13 to 74 years, with a mean 40.59 years and the standard deviation was 10.88. On the basis of their age, the rural women were classified into three categories: "young" (up to 35), "middle aged" (36- 50) and "old aged" (above 50). The distribution of the rural women according to their age is shown in **Table 4.2**.

Table 4.2 Distribution of rural women according to their age

Categories	**Respondents'**		**Mean**	**SD**
	Number	**Percent**		
Young aged (up to 35)	40	39.60	**40.59**	**10.88**
Middle-aged(36-50)	38	37.62		
Old(>50)	23	22.77		
Total	**101**	**100**		

Data presented in Table 4.2 indicated that the highest proportion (39.60 percent) of the respondents felt in the young aged category compared to 37.62 percent middle aged and 22.77 percent old aged category. The findings indicated that a large proportion of (77.22 percent) the rural women were young to middle aged. It was

found that young aged respondents are more interested in participation in homestead Agroforestry. The young and middle-aged respondents were generally more involved in homestead Agroforestry system than the older.

4.1.2 Educational Qualification

The level of educational scores of the homestead owners ranged from 0 to 16 with a mean and standard deviation of 6.17 and 4.34, respectively. Based on the educational scores, the respondents were classified into four categories such as Illiterate (0), 'primary level' (1 to 5), 'secondary level' (6 to 10), above secondary level (above 10). The distributions of the respondents according to their level of education are presented in **Table 4.3**

Table 4.3 Distribution of the respondents' according to their level of education

Categories	Respondents'		Mean	SD
	Number	Percent		
Illiterate(0)	19	18.81		
Primary level(1-5)	28	27.72		
Secondary level(6-10)	38	37.62	**6.17**	**4.34**
Above secondary level(>10)	16	15.84		
Total	**101**	**100**		

Table 4.3 shows that respondents under secondary education category constitute the highest proportion (37.62 percent) followed by primary education (27.72 percent), illiterate (18.81 percent) and the lowest respondents (15.84 percent) are in the category of above secondary level. The findings indicated that a large proportion of (81.18 percent) the rural women were primary level to above secondary level. An educated homestead owner is likely to be more responsive to the homestead Agroforestry.

4.1.3 Family Size

Family size of the rural women ranged from 3-9, with a mean of 5.08 and standard deviation 1.36. Based on their family size scores, the rural women were classified into

three categories namely small (up to 4), medium (5-7) and high (above 7). The distribution of the rural women according to their family size is shown in **Table 4.4**.

Table 4.4 Distribution of the respondents' according to their family size

Categories	Respondents'		Mean	SD
	Number	Percent		
Small family (up to 4)	45	44.55	**5.08**	**1.36**
Medium family (5-7)	49	48.51		
Large family (above 7)	7	6.93		
Total	**101**	**100**		

Data presented in Table 4.4 shows that the highest proportion (48.51 percent) of the women belonged to the medium families consisting of 5 to 7 members compared to 44.55 percent and 6.93 percent of the rural women belonged to small family and large family respectively. Women with medium family size spent more time in homestead Agroforestry compared to small and large family. The findings indicated that a large proportion of (93.06 percent) the rural women were medium family to small family.

4.1.4 Annual Family Income

Family income of the respondents ranged from 60 to 220 (Thousand) with a mean of 141.61 and standard deviation of 38.85. Based on their family income, the respondents were classified into three categories: low income (up to103), medium income (104 - 179) and high income (above 179) which are shown in **Table 4.5.**

Table 4.5 Distribution of rural women according to their annual income

Categories	Respondents'		Mean	SD
	Number	Percent		
Low income (up to 103)	**22**	**21.78**	**141.61**	**38.85**
Medium income (104-179)	**56**	**55.45**		
High income (above 179)	**23**	**22.77**		
Total	**101**	**100**		

Data from Table 4.5 reveals that the highest proportion of the respondent (55.45 percent) had medium income while 22.77 percent had low income and only 21.78 percent had high income. In fact the overwhelming majority of the respondent (77.23 percent) women of the study area constituted medium to high income categories.

4.1.5 Farm size

Farm size of the rural women ranged from 0.15 to 2.90 hectares and the mean was 1.40 hectares with standard deviation of 0.62. According to the farm size of the rural women, they were classified into four categories as suggested by DAE (1999) "Marginal (up to 0.2)", "Small (0.21-1)", "Medium (1.1-3)" and "Large (>3)". The participation of the rural women according to their farm size is shown in **Table 4.6.**

Table 4.6 Distribution of the women according to their farm size

Categories	Respondents'		Mean	SD
	Number	Percent		
Marginal farm(up to 0.2 ha)	1	0.99	**1.40**	**0.62**
Small farm(0.21-1.0 ha)	32	31.68		
Medium farm(1.01-3.0 ha)	68	67.33		
Total	**101**	**100**		

Table 4.6 shows that the highest proportion of the women belongs to medium farm size category (67.33 percent), 31.68 percent of them having small farm size and only 0.99 percent had marginal farm size.

4.1.6 Agricultural training

The observed training exposure score of the rural women ranged from 0 to 4 with a mean of 0.76 and standard deviation of 0.86. Based on the training exposure scores, the rural women were classified into three categories: "no training" (0), "low training" (1-2) and "medium training" (3-4). The distribution of the rural women according to their agricultural training score is presented in **Table 4.7.**

Table 4.7 Distribution of the women according to their farm size

Categories (Scores)	Respondents'		Mean	SD
	Number	Percent		
No (0)	43	42.57	**0.76**	**0.86**
Low (up to 2)	53	52.48		
Medium (3-4)	5	4.95		
Total	**101**	**100**		

Data contained in Table 4.7 indicated that the highest proportion (52.48 percent) of the respondents was having low agricultural training exposure compared to 42.57 percent of them having no agricultural training. Only 4.95 percent had medium agricultural training. Training increases knowledge and skills of the rural women in a specific subject matter area. Individuals who gain medium agricultural training are likely to be more competent in performing in different activities. But the fact that rural women who received no training need attention of the authorities of extension services (GOs and NGOs) in the country. Providing adequate training on appropriate subject matter is likely to increase the knowledge of the rural women.

4.1.7 Organizational participation

Organizational participation score of the homestead owners ranged from 0 to 2 with a mean and standard deviation of 0.80 and 0.67, respectively. Based on their organizational participation score, the respondent homestead owners were classified into four categories as no, low, medium and high participation. The distribution of the homestead owners as per their organizational participation is presented in **Table 4.8**

Table 4.8 Distribution of the respondents according to their organizational participation

Categories (Scores)	Respondents'		Mean	SD
	Number	Percent		
No (0)	35	34.65	**0.80**	**0.67**
Low (1)	51	50.50		
Medium (2)	15	14.85		
Total	**101**	**100**		

Data revealed that the highest proportion (50.50 percent) of the respondents had low organizational participation, while 34.65 percent had no organizational participation and the lowest 14.85 percent had medium organizational participation.

4.1.8 Respondent's Knowledge

Knowledge on homestead production system scores of the homestead owners varied from 8 to 19 with the mean and standard deviation of 14.26 and 2.88, respectively. On the basis of knowledge on homestead Agroforestry scores, the respondents were classified into three categories namely, 'low, 'medium' and 'high' knowledge. The distribution of the respondents according to their knowledge on homestead Agroforestry is given in **Table 4.9**

Table 4.9 Distribution of the respondents according to their knowledge

Categories	Respondents'		Mean	SD
	Number	Percent		
Low knowledge (up to 12)	32	31.68	**14.26**	**2.88**
Medium knowledge (13-16)	44	43.56		
High knowledge (>16)	25	24.75		
Total	**101**	**100**		

Table 4.9 revealed that the majority (43.56 percent) of the homestead owners fell in medium knowledge category followed by 31.68 percent in low knowledge category, whereas the lowest is 24.75 percent in high knowledge category. The findings of the present study reveal that around 75.24 percent of the homestead owners had low to medium knowledge on homestead Agroforestry.

4.1.9 Attitude towards homestead Agroforestry

The Attitude towards homestead Agroforestry ranged from 12-34. The mean value of the attitude was 22.91 and standard deviation was 3.80.The table- shows that the most of the rural women had medium favorable attitude towards homestead Agroforestry. 87.13 percent respondents were low to medium favorable attitude towards homestead Agroforestry.

Table 4.10 Distribution of the respondents according to their attitude toward homestead Agroforestry

Categories (Scores)	Respondents'		Mean	SD
	Number	Percent		
Low (up to 19)	15	14.85	**22.91**	**3.80**
Medium (20-25)	73	72.28		
High (above 25)	13	12.87		
Total	**101**	**100**		

This may be assumed that most of the respondents were interest and involved in Agroforestry in homestead area. 72.28 percent rural women were medium favorable attitude and there were 14.85 and 12.87 percent low and high favorable attitude towards homestead Agroforestry.

4.1.10 Problem confrontation in homestead production

The scores of problem confrontation in homestead Agroforestry of the homestead owners ranged from 1 to 12 with the mean 6.99 and standard deviation of 1.80. Based on the observed individual scores, the respondents were classified into the three categories i.e. low, medium and high problem confrontation in homestead Agroforestry. The distribution has been shown in the **Table 4.11.**

Table 4.11 Distribution of the respondents' according to their problem

Categories (Scores)	Respondents'		Mean	SD
	Number	Percent		
Low (up to 5)	24	23.76	**6.99**	**1.80**
Medium (6-9)	72	71.29		
High (above 9)	5	4.95		
Total	**101**	**100**		

The highest (about 72 percent) of the respondents faced medium problem confrontation in homestead production, while 4.95 percent faced high problem confrontation followed by 23.76 percent faced low problem confrontation in homestead Agroforestry.

4.2 Respondent's participation about Homestead Agroforestry

The scores of participation in homestead Agroforestry of the homestead owners ranged from 30 to 38 with a mean 33.20 and standard deviation of 1.99. Based on the observed individual scores, the respondents were classified into the three categories i.e. low, medium and high participation in homestead Agroforestry. The distribution has been shown in the pie chart

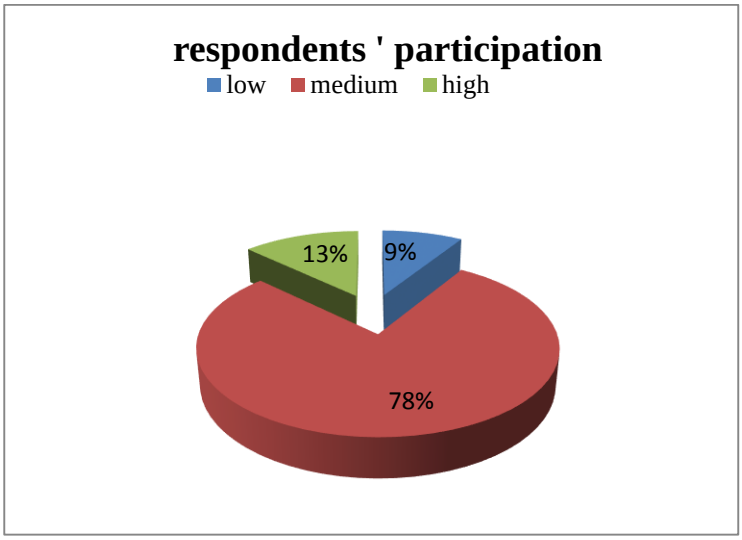

Figure 3: Pie chart showing different participation in homestead Agroforestry.

The highest (about 78 percent) of the respondents were medium participation in homestead Agroforestry, while 13 percent were high participation confrontation followed by 9 percent were low participation in homestead Agroforestry.

Table 4.12 Respondents' participation (rank order) in homestead agroforestry

Sl. No.	Items/Options	Regularly (score-4)	Rarely (score-3)	Occasionally (score-2)	Often (score-1)	Total (Scale)	Rank
1	Land selection and preparation for vegetables cultivation.	50×4	21×3	17×2	13×1	310	8th
2	Irrigation and pest management for vegetables cultivation.	45×4	25×3	23×2	8×1	309	9th
3	Participating post harvest activities in agricultural crops such as threshing and winnowing.	75×4	12×3	12×2	3×1	363	3rd
4	Grading and storing of agricultural crops	44×4	31×3	18×2	8×1	313	7th
5	Collection of poultry birds.	57×4	27×3	13×2	4×1	339	5th
6	Poultry shed management.	69×4	23×3	8×2	1×1	362	4th
7	Feeding of poultry.	78×4	16×3	5×2	2×1	372	2nd
8	Vaccinations and treatments of poultry.	61×4	21×3	12×2	7×1	338	6th
9	Firewood collection from homestead.	79×4	19×3	3×2		379	1st
10	Marketing of homestead products.	7×4	11×3	22×2	61×1	166	10th

Respondents' participation (rank order) shows the first rank position is firewood collection from homestead where major rural women participate fluently, second rank position is feeding of poultry and the last rank position is marketing of homestead products. In homestead product marketing sector where women were less participate.

4.3 The Contribution of the selected characteristics of the respondents to their participation of rural woman in homestead Agroforestry

In order to estimate the Participation of rural woman in homestead Agroforestry, the multiple regression analysis was used which is shown in the Table 4.13.

Table 4.13 Multiple regression coefficients of the contributing variables related to their participation of rural woman in homestead Agroforestry

Dependent Variable	Independent variable	B	P	R^2	Adj. R^2	F
Participation of rural woman in homestead agroforestry	Age	0.110	0.213	0.589	0.544	12.91
	Education	0.043	0.659			
	Family Size	0.138	0.107			
	Effective Farm Size	-0.057	0.570			
	Annual family income	0.084	0.435			
	Agricultural training	0.228	0.009**			
	Organizational participation	0.014	0.845			
	Attitude towards homestead agroforestry	0.293	0.033*			
	Knowledge on homestead agroforestry	0.207	0.045*			
	Problem faced women in homestead agroforestry	-0.176	0.014*			

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

Table 4.13 shows that there is a significant contribution of respondent in participation of rural women in homestead Agroforestry. In this model, the important significant levels were attitude, knowledge and problem on homestead Agroforestry at the 5% level of significance. And agricultural training of women in homestead Agroforestry was 1% level of significance while coefficients of other selected variables don't have any contribution on participation of rural women in homestead Agroforestry at dumuria upazila of Khulna district.

The value of R^2 is a measure of how the variability in the dependent variable is accounted by the independent variables. So, the value of $R^2 = 0.589$ means that independent variables account for 59% of the variation in participation of rural women in homestead Agroforestry. The F ratio is 12.91 which are highly significant ($\rho < 0.000$).

However, each predictor may explain some of the variance in respondent's participation in homestead Agroforestry. The adjusted R^2 value penalizes the addition of extraneous predictors in the model, but values 0.589 is still show that variance is participation of rural women in homestead Agroforestry can be attributed to the predictor variables rather than by chanced the suitable model (Table 4.12). In summary, the models suggest that the respective authority should be considered the women agricultural training, attitude, knowledge and problem in this connection some predictive importance has been discussed below:

4.3.1 Significant contribution of agricultural training to the participation of rural women in homestead Agroforestry

The contribution of agricultural training in participation of rural women in homestead Agroforestry by testing the following null hypothesis; "there is no contribution of agricultural training in participation of rural women in homestead Agroforestry".

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

a. The contribution of the family size was at 1% significance level. So, the null hypothesis could be rejected.

Women agricultural training had positive influence on participation of rural women in homestead Agroforestry. It had the 1st most significant (significant at $p < 0.009$)

contribution on their participation. It could be said that as agricultural training increased by one unit, participation of rural women in homestead Agroforestry increased by 0.009 units. Considering the effects of all other predictors are held constant.

From the multiple regressions, it was concluded that agricultural training of the respondent had highest positive contribution to their participation. This implies that with the increase of agricultural training of the women will increase their participation in homestead Agroforestry.

4.3.2 Significant contribution of attitude to the participation of rural women in homestead Agroforestry

The contribution of attitude in participation of rural women in homestead Agroforestry by testing the following null hypothesis; "there is no contribution of attitude in participation of rural women in homestead Agroforestry".

The p-value of the concerned variables was found .033. The following observations were made on the basis of the value of the concerned variable of the study under consideration.

a. The contribution of the family size was at 5% significance level. So, the null hypothesis could be rejected.

Based on the above finding, it can be summarized that women had more positive attitude increased the capabilities to participating homestead Agroforestry in Dumuria upazila. So, attitude has significantly contributed to the participation of women. It seemed that positive attitude women had more knowledge, a greater ability to understand and respond to anticipated changes, were better able to forecast future scenarios and, overall, have greater access to information and opportunities than others, which might encourage participation.

4.3.3 Significant contribution of knowledge to the participation of rural women in homestead Agroforestry

The contribution of knowledge in participation of rural women in homestead Agroforestry by testing the following null hypothesis; "there is no contribution of knowledge in participation of rural women in homestead Agroforestry."

The p-value of the concerned variables was found .045. The following observations were made on the basis of the value of the concerned variable of the study under consideration.

b. The contribution of the family size was at 5% significance level. So, the null hypothesis could be rejected.

The p-value of knowledge in participation of rural women in homestead Agroforestry is (0.045). So, it can be stated that as knowledge on improved practices of homestead Agroforestry increased by one unit, participation of rural women in homestead Agroforestry will increased by 0.045 units. Considering the effects of all other predictors are held constant.

Based on the above finding, it can be said that respondent had more knowledge on homestead Agroforestry improved the participation in homestead Agroforestry in Dumuria upazila. So, knowledge has high significantly contributed to rural womens participation.

4.3.4 Significant contribution of problem to the participation of rural women in homestead Agroforestry

The contribution of problem in participation of rural women in homestead Agroforestry by testing the following null hypothesis; "there is no contribution of problem in participation of rural women in homestead Agroforestry."

The p-value of the concerned variables was found .014. The following observations were made on the basis of the value of the concerned variable of the study under consideration.

c. The contribution of the family size was at 5% significance level. So, the null hypothesis could be rejected.

The p-value of knowledge in participation of rural women in homestead Agroforestry

is (0.014). So, it can be stated that as problem on improved practices of homestead Agroforestry decreased by one unit, participation of rural women in homestead Agroforestry will increased by 0.014 units. Considering the effects of all other predictors are held constant.

Based on the above finding, it can be said that respondent had more problems on homestead Agroforestry their participation in homestead Agroforestry decreased.

So, problems has significantly contributed to rural women participation.

4.4 Problem Faced by the Rural Women to undertake the Homestead Agroforestry

The problem faced index (PFI) was calculated to find out major problems confronted by the rural women in homestead Agroforestry. It is obvious that the rural women face a number of problems or constrains in performing in homestead activities, the extent and types of problems are diversified as they are mostly controlled by nature. However, after discussion with the respondent five major problems of homestead Agroforestry were selected to measure the extent of problem faced. In order to understanding the comparative importance, the problems have been arranged in rank order according their PFI as shown in Table 4.14.

Table 4.14 Problem Faced Index (PFI) with rank order

Sl. No.	Problems	Very high (3)	High (2)	Moderate (1)	Not at all (0)	Score	Rank order
1	Lack of necessary knowledge	63	5	11	22	210	1st
2	Lack of co-operation of male	46	10	12	33	170	2nd
3	Lack of necessary capital	35	15	10	41	146	3rd
4	Lack of quality seed and fertilizers	24	12	14	51	110	4th
5	Lack of communication and marketing facilities	13	4	23	61	70	5th

CHAPTER V

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 SUMMARY

The study was conducted at three selected villages of Sahas union of Dumuria upazila under Khulna district. The selected villages were Mukhia, Kapalidanga and Gojendropur under Gojendropur block. The study area is situated 11 km away from Dumuria upazila. Dumuria is the largest upazila of Khulna district with an area of 454.23 square kilometers. The sample of 101 women was drawn from the population. A well-structured interview schedule was developed based on objectives of the study for collecting information. The researcher herself collected data through personal contact. The independent variables were: age, level of education, family size, farm size, annual income, organizational participation, Agricultural training, knowledge in homestead Agroforestry, Attitude of homestead Agoforestry system and problem confrontation in homestead Agroforestry. The dependent variable of this study was the participation of rural women in homestead Agroforestry. Data were collected during october 2019 to January, 2020 using a pretested interview schedule. A summary of the major findings is given below:

The young-aged homestead owners comprised the highest proportion (39.60 percent), where as the lowest proportion were made by the old aged category (22.77 percent). Average age of the respondent was (40.59 percent).The respondent under secondary education category constitute the highest proportion (37.62 percent), whereas the lowest 15.84 percent in above secondary level. The average educational qualification of respondents was 6.17. The medium size family constitutes the highest proportion (48.51 percent) and the lowest only 6.93 percent respondents had large family size. The average family size was 5.08. The medium farm holder constitutes the highest proportion (67.33 percent), while the lowest 0.99 percent in marginal farm holder. The average farm size was 1.40. The homestead owners having medium annual income constitute the highest proportion (55.45 percent), while the lowest proportion in low income (21.78 percent). The average respondents' income was 141.61 percent. The highest proportion (50.50 percent) of the respondents had low organizational participation and the lowest 14.85 percent had medium organizational participation.

The average organizational participation was 0.80. The highest proportion (52.48 percent) of the respondents had low agricultural training and the lowest proportion (4.95 percent) had medium agricultural training. The average agricultural training was 0.76. The majority (43.56 percent) of the homestead owners fell in medium knowledge category, whereas the lowest is 24.75 percent in high knowledge category. The average knowledge of respondents was 14.26. The highest proportion (57 percent) of the respondents had medium attitude in participation of Agroforestry and the lowest proportion (12.87 percent) had no high attitude in participation of Agroforestry. The highest about (78.22 percent) of the respondents had medium participation in homestead Agroforestry. And the lowest proportion (8.91 percent) had low participation in homestead Agroforestry. The average participation was 33.20.The highest about (71.29 percent) of the respondents faced medium problem confrontation in homestead Agroforestry, while 4.95 percent faced high problem confrontation in homestead Agroforestry.

The multiple regression coefficients of the contributing variables related to their participation of rural women in homestead Agroforestry. There were significant contribution of respondent's agricultural training, knowledge, attitude and problems on homestead Agroforestry. Where 58.90% (R2= .589) of the variation in the participation of rural women in homestead Agroforestry. The F value indicates that the model is significant (p= 0.000). Adjusted R-square value was (.544). On the other hand, age, family member of the respondents, farm size, annual income of the respondents, organizational participation had no significant relationship with the participation of rural women in homestead Agroforestry.

5.2 CONCLUSION

1. Findings shows that the majority of the women about (78 percents) had medium participation in homestead agroforestry under studying area, where 101 rural respondents participated.
2. Findings also showed that agricultural training, attitude towards homestead agroforestry, knowledge and problems have significant relationships with participation.
3. Majority of the respondents under homestead agroforestry had low to no agricultural training. About 44 percent of respondents had medium knowledge on homestead Agroforestry and 72 percent had positive attitude towards homestead Agroforestry. It can be concluded that positive attitude and knowledge on homestead Agroforestry contributed to increase participation which helps to improve their socio-economic condition.
4. Problems had negative significant relation with respondents' participation. The highest respondents' faced medium problem confrontation, problems decreases women participation in homestead Agroforestry. Age, education, family and farm size, annual family income and organizational participation have no significant relation with women participation in homestead Agroforestry.

5.3 RECOMMENDATIONS

On the basis of scope and limitations of the present study the recommendations are given below:

- Similar studies like this are required to be conducted in other areas of Bangladesh where similar environmental, socio-economic and physical conditions exist to compare the findings.

- Other factors might have influenced in participation of rural women in homestead Agroforestry, which need to be identified through further study.

- The study investigated the direct and indirect effects of certain variables. Further studies should be conducted to explore the direct and indirect effects of all the variables under investigation.

- Extension agencies should realize the existing problems of homestead Agroforestry and take necessary steps to minimize these problems.

CHAPTER VI

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APPENDICES A

Appendix I. English version of the questionnaire of the study on "Participation of rural women in homestead Agroforestry at Dumuria upazila of Khulna district"

AN ENGLISH VERSION OF THE INTERVIEW SCHEDULE

Department of Agroforestry and Environmental Science

Sher-e-Bangla Agricultural University Dhaka, Bangladesh

An interview schedule for a research study entitle

"PARTICIPATION OF RURAL WOMEN IN HOMESTEAD AGROFORESTRY

AT DUMURIA UPAZILA OF KHULNA DISTRICT"

ADDRESS OF THE RESPONDENT

Date:…… **Respondents No:…..…**

Name of the respondent :…….

Village:……..

Union:……

Upazila:…….

District:…….

Please answer the following questions:

1. Age :

How old are you ?

…… years.

2. Level of Education:

Please mention your level of education giving tick (√) mark against the appropriate response

a) I cannot read and write (……)

b) I can sign only (……)

c) I studied up to class (……)

3. Family Size:

How many members are there in your family?

……..

4. Effective Farm Size:

Please mention the area of your land according to use:

Sl. No.	Type of Land Use	Area of land	
		Local Unit (Decimal/Bigha)	Hectare
A	Homestead area including garden, pond and fallow land		
B	Own land under own cultivation		
C	Land taken from others as share cropping		
D	Land given to others as share cropping		
E	Land taken from others on lease		

Total Farm Size (FS) = A+B+1/2(C+D)+E

5. Annual family income

How much money you received from the following sources last year

A. Income from agricultural sources ----------

B. Income from non-agricultural source ----------

Total income = A + B (Tk)

= Tk.

6. Agricultural training

Have you received any training on vegetable cultivation?..... ( ) Yes / ( ) No

If yes, please give the following information:

Sl. No.	Name of training	Duration	Sponsoring agency
1			
2			
3			
4			

7. Organizational participation:

Are you a member of any village organization?..... ( ) Yes / ( ) No

If yes, please tell the name of organization with status

Sl. No.	Name of Organization	Not participation (0)	General member (1)	Executive member (2)	Executive officer (3)
1	Union parisad				
2	NGO Organization				
3	Youth Organization				
4	Farmers co-operative Organization				
5	School Organization				
6	Others				

8. Attitude towards homestead agroforestry

Please indicate to what extents do you agree or disagree with the following statement.

Sl. No.	Statement	Strongly agree (4)	Agree (3)	No opinion (2)	Disagree (1)	Strongly disagree (0)
1.(+)	Intensive vegetable cultivation in the homestead is a good technique that meets nutrients and vegetable requirement of the family round the year and also provide some income.					
2.(-)	Vegetable cultivation require much fertilizer and pesticide. So I try to avoid it					
3.(+)	Trees planted in the homestead is main source of fuel and fruits.					
4.(-)	Did not plant trees (for timber) in the homestead as it require long time to get returned from it.					
5.(+)	Raising poultry in homestead is less time consuming and profitable.					
6.(-)	Epidemic diseases of poultry cause huge loss. Hence I don't prefer raising poultry cultivation.					
7.(+)	Fish cultivation in homestead pond is profitable as it serves family consumption and also provide some cash.					
8.(-)	Drying of pond in winter discourages me in growing fish.					
9.(+)	Foreign breeds of poultry provide more production than local breeds. So I like foreign breed.					
10.(-)	Feed and maintenance cost of foreign breed more. So that I don't like foreign breeds.					

9. Knowledge about homestead agroforestry:

(Please mention your opinion regarding the following items)

Sl. No.	Items	Full Marks	Marks obtained
1	What is Agroforestry?	2	
2	What is homestead Agriculture?	2	
3	Which type of vegetables and trees used in homestead agroforestry?	2	
4	Do you think homestead is ideal for vegetables cultivation?	2	
5	Name two organic fertilizer used in vegetables cultivation?	2	
6	What is the balanced diet for poultry?	2	
7	Name two epidemic diseases for poultry?	2	
8	Which one is best fodder for goats?	2	
9	What types of fishes you cultivate in your pond?	2	
10	Name two trees that provide food, fodder and fuel?	2	

Total marks:

10. Participation of rural woman in homestead Agroforestry :

Please mention your extent of media contact with the following media giving tick (√) mark against media item

Sl. No.	Items/Options	Regularly (score-4)	Rarely (score-3)	Occasionally (score-2)	Often (score-1)	Never (score-0)
1	Land selection and preparation for vegetables cultivation.					
2	Irrigation and pest management for vegetables cultivation.					
3	Participating post harvest activities in agricultural crops such as threshing and winnowing.					
4	Grading and storing of agricultural crops					
5	Collection of poultry birds.					
6	Poultry shed management.					
7	Feeding of poultry.					
8	Vaccinations and					

	treatments of poultry.					
9	Firewood collection from homestead.					
10	Marketing of homestead products.					

Total score:

11. Problem faced women in homestead agroforestry

Please indicate to what extents do you agree or disagree with the following statement.

Sl. No.	Problems	Very high (score-3)	High (score-2)	Moderate (score-1)	Not at all (score-0)
1	Lack of necessary knowledge				
2	Lack of necessary capital				
3	Lack of quality seed and fertilizers.				
4	Lack of commurucation and marketing facilities.				
5	Lack of co- operation of male.				

Total score :

Thanks for your nice co-operation and giving time to me for complete this study.

Signature: ……...……

Date: ……...……

Appendix II. Sample data collection from the village people (some pictorial view)

Plate 1. Data collection sample 1

Plate 2. Data collection sample 2

Plate 3. Data collection sample 3

Plate 4. Data collection sample 4

Plate 5. Data collection sample 5

Plate 6. Fish cultivation sample 6

Plate 7. Poultry farming sample 7

Plate 8. Vegetable cultivation sample 8

Plate: Data collection