Adoption of Selected Homestead Agricultural Technologies by the Rural Women in Madhupur Upazila under Tangail District

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1.1 General Background

Women are considered as untapped national resources and society would benefit more if were given the opportunity to use their unique talents. Meaningful development can be expected if women are participated both in their traditional domestic role as well as productive role in a more planned way in technological sound activities. About 48 percent of the huge population of Bangladesh is female (BBS, 2000). About 85 percent of her population live in rural areas and 75 percent of her working population are engaged in agriculture. Moreover a vast number of rural people are landless and about 55 percent of the landowner are small farmers. The country is striving hard to feed her teaming millions. Overall food shortage is the salient feature of the country. To mitigate the situation, food production should be increased. But vertical increase is the only option as there is no scope for horizontal increase of food production.

In the present context of Bangladesh, agricultural activities may be broadly classified into two subsystems, namely the field production based agricultural sub-system and the homestead based agricultural sub-system. The important components of the homestead agricultural sub-system include back yard gardening for cultivation of vegetables and fruits, homestead forestry, livestock farming, poultry raising and fish culture in the ponds etc. According to Bangladesh Census of Agriculture and Livestock 1983-84, there were about 12.7 million rural households. Homestead constitutes about 5% of the total cultivated area of 8.4 million hectares. The size of individual homestead ranges on average between 0.004 to 0.08 hectares (Solaiman, 1988). Homestead agriculture plays an important role for the 62 percent of the total farmers in Bangladesh who are landless. As majority of them don't have

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no separate land for cultivation other than the homestead and have very limited resources, fertilizer, irrigation based improved technology for major cereals is have not much value to them. Homestead agricultural system is likely to provide hope to these poor landless farmers for their survival and existence because of secured supply of food. Akanda (1994) stated that homestead agriculture may be lifeboat for their survival and existence because of secured supply of food and petty cash.

The homestead agriculture is basically the domain of female members of the households. According to some historians, women first initiated agricultural practices. They first domesticated crops and developed art and sciences of farming. Women played significant and crucial role in agricultural development in the allied fields including crop production, livestock production, horticulture, post harvest operations, agro and social forestry and fisheries.

In a developing country like Bangladesh, it can not be denied that underutilized rural women labour force forms a vast reservoir of human reservoir of human resource. When women are effectively mobilized they can contribute successfully and significantly to the economic development of the nation. Rural women are mostly underutilized and largely unrecognized though they contribute significantly to agricultural and non-agricultural productive and service-oriented activities.

In a prevalent subsistence agricultural economy and traditional society in Bangladesh the role of women may be termed as domestic and hence they have to perform mostly such function as can be performed within the homestead. Though their activities are not less important, their contributions are conspicuous. They make these contributions by adopting various practices under homestead agriculture. In Bangladesh women are generally not habituated in working outside and their movement is mostly restricted to the homestead area (FSRDP, 1990). Halim (1987) reported that the women are potential producers of the homestead agricultural products and through their adoption of intensive homestead production, they may contribute to the national economy to increase the GDP coming from agriculture. From the above discussion we can realize that to increase agricultural production, due weightage should be given to the increasing involvement of women in mainstream agricultural activities and programmes.

1.2 Statement of the Problem

The importance of homestead production activities is not a new thought in the country. It is needed for increasing food shortage, malnutrition and unemployment (Halim and Islam, 1988). In Bangladesh due to limited cultivable area, there is little scope for bringing more land under cultivation. Consequently, families are using their dwelling houses as agricultural land for scarcity of fallow land. Since small farm holders do not have enough land for raising field crops, they should be assisted and encouraged to increase production in the homestead area. Poultry raising should be given high priority since it alone contributes almost 51 percent of total homestead income. The specific contribution of the production of homestead crops may be visualized in terms of poverty alleviation.

Homestead cultivation gives an ample scope of extra income especially for the poors. Moreover, it gives an opportunity of employment especially for the women who are generally not permitted to go for work outside their home. Thus it can contribute an important role in rural poverty alleviation. Homestead cultivation also provides scope of diversification and lowers the risks. It makes with the best utilization of family labour and additional space around the home. It is said that women are the key operators of household as well as homestead agricultural production activities. Women do work and often do more work than men. Among the female members, housewives are the most active ones who work 10 hours a day compared to 8.55 hours a day by a male (Halim and Hossain, 1993). Farouq (1980) reported that women's productive hour ranged from 10 to 14 a day compared to men's such hour from 9 to 12. Halim (1987) reported that the women are potential producers of the homestead agricultural products and through their participation in intensive homestead production they increase the GDP coming from agriculture. So in a country like Bangladesh more involvement of women in agriculture particularly homestead agriculture becomes a mandatory to combat the overall food shortage, malnutrition and also to boost up economic development of the country.

It is important to have a clear understanding of present status of homestead agricultural production as adopted and practiced by rural women. Such understanding and knowledge are very important to make a programme on homestead agriculture successful. For such understanding the planners, researchers and extension specialists should have answers of some inevitable questions. What is the extent of adoption of different homestead technologies by rural women? Is adoption of homestead agricultural technologies by rural women affected by

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their personal, economic and social characteristics? What is the extent of decision-making role in the family by the rural women? What are the problems they face in adopting homestead agricultural activities? What is the present utilization pattern of the homesteads in rural area? So a number of questions there. The present study was thus undertaken to get an answer to the above mentioned questions. As assessment about the adoption of homestead agriculture by the rural women, it could be helpful to formulate policy and programmes for the development of women and enhancing overall homestead agricultural production.

1.3 Objectives of the Study

The following specific objectives were formulated to give proper direction to the study:

1. To determine adoption of selected homestead agricultural technologies by the rural women. The technologies were homestead vegetables production technologies, post harvest technologies and poultry rearing technologies.
2. To determine and describe selected personal, economic and social characteristics of the rural women. The characteristics were as follows-
   A. Personal characteristics
      ⅰ. Age
      ⅱ. Education
      ⅲ. Knowledge about homestead agriculture
   B. Economic characteristics
      ⅰ. Homestead size
      ⅱ. Farm size
      ⅲ. Family size
      ⅳ. Annual family income
   C. Social characteristics
      ⅰ. Training exposure
      ⅱ. Extension contact
      ⅲ. Organizational participation
3. To explore relationships between the selected characteristics of the rural women and their extent of adoption of selected homestead agricultural technologies.
4. To determine the extent of decision making role in the family by the rural women.
5. To assess problems faced by the rural women adopting selected homestead

agricultural technologies.

1.4 Justification of the Study

Women are the potential producers of the homestead agriculture in Bangladesh. They spend a major part of their time in homestead agricultural activities. Thus, the more specific features of homestead agriculture may be visualised in terms of poverty alleviation, provision of employment to improve the problems of malnutrition and gender issues by generating opportunities particularly to resource poor women folk to earn extra income from their self-employment within the homestead areas. But the homestead production activities need more attention to reap maximum benefit out of it. The homestead area is not utilized in a very planned manner rather this is used indiscriminately. Besides these, the women are not using the modern technologies as they do not know about the technologies or are not motivated to use them commercially. So, we see that if we motivate or train the women towards adoption of homestead agricultural practices they will be able to increase production and also increase their social status. So, it is necessary know the extent of adoption of homestead agricultural practices by rural women. Considering the above facts and findings the researcher became interested to undertake a study to determine the adoption of homestead agricultural practices by rural women based on farm level primary data. It was also necessary to have an understanding of the factors facilitating and hindering the adoption of homestead agricultural practices.

Methodology

For conducting a research work successfully, methods and procedures are the key factors. In a research work, appropriate methodology can help to collect valid and reliable data and analyze the information purposively to arrive at a correct decision.

This chapter delineates to locale of the study followed by source of data, research design, variables of the study, measurement of variables, categorization and statistical treatment.

3.1 Locale of the Study

Three villages, namely Musuddi, Jhupna and Shoya of Madhupur upazila

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under Tangail district were selected purposively as the locale for this piece of study. All of these three villages belong to Musuddi Union. Though these villages are far from town, this area was very educated area from the beginning. The researcher used to visit these villages from his childhood. This selected area had no well developed communication facilities. Researcher had an interest in mind to know how women of backward villages adopted in various agricultural technologies. Besides, a little number of GOs and NGOs were working there for the development of agricultural sector and also for women as well. Considering the above mentioned factors coupled with time and availability of resources the researcher selected this area as the locale of the study. A map of Tangail district and Madhupur upazila slowing the study area has been presented in Fig. 3.1.

3.2 Population and Sample of the Study

Rural farm families of three selected villages were the population of the study. There were 257, 130 and 98 farm families in Musuddi, Shoya and Jhupna respectively. Thus a total of 485 farm families constituted the population of the study. It was considered that each family head had at least one housewife. Thus, 100 housewives (around 20%) among the 485 farm families were the sample of the study (Table 3.1). To obtain the sample following procedure was followed:

i. The researcher first collected the number of farm families from each village with the help of local leaders and aged persons of respective villages.

ii. A number of 100 samples (housewives) were selected from the three selected villages i.e. 54 samples from Musuddi, 26 from Shoya and 20 from Jhupna using table of random number.

iii. A reserve list of 10 rural women was prepared for use in case of unavailability of the respondents for any reason.

Table 3.1 Distribution of population and sample of women in three villages of Tangail district

Village	No. of farm families	No. of women selected as sample	No. of women in reserve list
Musuddi	257	54	6
Shoya	130	26	2
Jhupna	98	20	2
Total	485	100	10

3.3 The Research Instrument

For the purpose of data collection, an interview schedule was prepared keeping the objectives of the study in mind. The schedule contained both open and closed form of questions. Simple and direct questions and some scales were included in the schedule to collect data on adoption of homestead agricultural technologies and relevant matters. Appropriate scales were also developed to operationalize some selected characteristics of the rural women. The draft schedule was prepared in Bengla and pre-tested before using the same for collection of data. For pre-test purpose, twenty women of the three selected villages were interviewed by using the draft interview schedule.

Based on the pre-test experience, necessary corrections, additions and modifications were made in the schedule. Thus the schedule was prepared for final use. The Bangla version of interview schedule was multiplied as per requirements to collect data from the respondents of the study area. An English version of the same has been presented at Appendix I.

3.4 Variables of the Study and their Measurement

In a descriptive research, the selection and measurement of variables is an important task. The hypothesis of a research contains at least two important elements viz., an independent variable and a dependent variable. Independent variable is that factor manipulated by experimenter in his/her attempt to accretion its relationship to an observed phenomenon. On the other hand, a dependent variable is that factor which appears, disappears or varies as the experimenter introduces removes or varies the independent variables (Townsend, 1953).

3.4.1 Measurement of independent variables

For selection of independent variables, the researcher went through the related literature as far as possible. He had discussion with the relevant experts and researchers in agricultural extension and related fields. Therefore, considering the women behavior, limitations in respect of time money and other resources available to the researcher ten characteristics of the women were selected as the independent variables for the study. The selected ten characteristics of the rural women were - age, educational qualification, family size, homestead size, farm size, annual family income, knowledge about homestead agriculture, training exposure, extension contact and organizational participation.

Measurements of procedures for these independent variables have been discussed in the following sections.

3.4.1.1 Age

Age of the respondents was measured in terms of actual years from their birth to the time of interview. A score of one (1) was assigned for each year of one's age.

3.4.1.2 Educational qualification

Education of the respondents was measured by the academic grade they successfully completed usually expressed by the years of schooling. A score of zero (0) was given to a respondent who could not read and write and a score of one were assigned for each year of formal schooling completed by the respondents.

3.4.1.3 Family size

Family size was operationalized by computing the total number of member of a respondent's family who jointly lived and ate together. A score of one was assigned to each member of the family and two for two members and so on.

3.4.1.4 Homestead size

Homestead size was measured as the size of one's homestead area (excluding living houses, kitchen, cattle shed) on which he /she conducted homestead agricultural operations all round the year. The area was being estimated in terms of full benefit to the rural women in terms of hectare.

3.4.1.5 Farm size

It referred to the total area of land cultivated by a respondent or her family as owner, lease holder or share tenant. The farm size of a respondent was computed in hectares using the following formula:

$$FS = A_1 + A_2 + A3 + \frac{1}{2}(A_4 + A_5)$$

Where, FS = Farm size

A_1 = Homestead area

A_2 = Own land under own cultivation

A_3 = Cropped area leased in

A_4 = Cropped area share in

A_5 = Cropped area share out

3.4.1.6 Annual family income

This variable was measured by the total income earned by a respondent and other members of her family from agricultural and non-agricultural sources. Family income was measured in "thousand" taka per year.

3.4.1.7 Knowledge about homestead agriculture

It referred to the ability of a respondent to recall or recognize items of information related to homestead agricultural production. It was measured by computing a homestead agricultural knowledge score. Each respondent was asked to answer 15 questions and score was assigned as 2 for correct answer, 1 for partially correct answer and zero for incorrect answer for each question.

3.4.1.8 Training exposure

Training exposure of a respondent was determined on the basis of the total numbers of days of training received by her from any organization in her entire lifetime.

3.4.1.9 Extension contact

In this study extension contact score of a respondent was computed on the basis of the extent of her contact with 14 selected media as ascertained from her responses of question.

A Four-point rating scale ranging from "frequently" "occasionally" "rarely" and "not at all" was developed for this purpose. Weightage were given as 3, 2, 1 and 0 for these responses respectively. For each medium of contact the terms "frequently", "occasionally", "rarely" and "not at all" were specifically defined which could be seen in item number 8 of the interview schedule as located at Appendix-I. Extension contact score of a respondent was determined by summing the scores of all the 14 contact media. Thus the scare could range 0 to 42, where "0" (Zero) indicated no contact and 42 indicated highest extension contact.

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3.4.1.10 Organizational participation

Organizational participation of respondent was measured on the basis of three dimensions:

    (ⅰ) Nature of involvement,

    (ⅱ) Duration of participation and

    (ⅲ) Number of organizations in which a respondent was involved

Organizational participation score of a respondent was computed by using the following formula:

$$OP = P_{om} \times N_1 \times Y_1 + P_{em} \times N_2 \times Y_2 + P_{eo} \times N_3 \times Y_3$$

Where, OP = Organizational Participation score

        P_{om} = Ordinary member (weight = 1)

        P_{em} = Executive member (weight = 2)

        P_{eo} = Executive officer (weight = 3)

        Y_i = Year of participation (i = 1, 2, 3--------n)

        N_i = Number of organization (s) (i = 1, 2, 3--------n)

3.4.2 Measurement of dependent variable

The dependent variable of the study was women's adoption of selected homestead agricultural technologies.

Before selecting the dependent variable the researcher reviewed available books, journals, research reports etc. in home and abroad. He also discussed with the resource persons in this area for better understanding of the dependent variable. The researcher selected three major activities viz. homestead vegetable cultivation technologies, post harvest technologies and poultry rearing technologies as the dimensions of the variable.

To measure adoption, five items were selected under each of the activities that were as follows:

A. Adoption of homestead Vegetable cultivation technologies

      ⅰ. Soil management before sowing or transplanting for better production

      ⅱ. Application of manure and fertilizers in beds or pits

      ⅲ. Staking, mulching or artificial propagation when necessary

      ⅳ. Vegetative propagation of plants

      ⅴ. Collection and preservation of seeds of modern vegetables varieties

B. Adoption of post harvest technologies

   ⅰ. Threshing with mechanical thresher or by recommended manner (e.g. using Pedal Thresher)
   ⅱ. Winnowing maintaining proper time and direction
   ⅲ. Drying in recommended manner
   ⅳ. Grading with recommended manner
   ⅴ. Storing with safe bags and pesticides with recommended dose

C. Adoption of poultry rearing technologies

   ⅰ. Rearing of improved breed of poultry
   ⅱ. Collection and preservation of eggs of modern poultry breeds
   ⅲ. Care of chicks for better production
   ⅳ. Arrangement for vaccination
   ⅴ. Making of balanced food for poultry

Thus 15 items were selected to measure adoption score of a respondent. Adoption score of a respondent was measured by using the following formula:

Adoption score = $\Sigma N \times D$

Where, N = Nature of adoption of a technology

D = Nature of duration for the adoption of a technology

Nature of adoption scores were assigned in the following manner:

Nature of adoption	Scores assigned
No adoption	0
Regular practice	3
Occasional practice	2
Rarely practice	1

Nature of duration of adoption scores were assigned in the following manner:

Duration of adoption	Scores assigned
Adoption from 1-2 years	1
Adoption from 3-4 years	2
Adoption from 5-6 years	3
Adoption from 7-8 years	4
Adoption from 9 or above years	5

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Then, the adoption score of a rural woman in one of three aspects of adoption was obtained by summing her scores for all the 5 items included. For a particular activity of an aspect score was highest where adoption was regular and duration of adoption was 9 years or above which was 15 and for no adoption the score was 0. Thus the adoption score of a rural woman under one aspect could range from 0-75, where zero indicated no adoption and 75 indicated highest adoption.

Total adoption score of a respondent was computed by summing one's scores in all the three selected aspects of adoption. Thus total adoption score could range from 0 to 225, where 0 indicating no adoption and 225 indicating highest adoption.

3.5 Measurement of the Extent Of Decision-Making Role of Rural Women in the Family

Rural women's decision-making role in the family was measured by using a three-point scale. Each respondent was asked to indicate the extent of decision making role in their family. Each of the 15 selected activities by checking any one of the three responses- no role, passive role and active role and weights assigned to these responses were 0, 1 and 2 respectively. Then the score of the decision-making role of rural women was obtained by summing her scores for all 15 items included. The possible score of a respondent could range from 0 to 30, where 0 indicating no decision-making role and 30 indicating highest decision making role in the family.

3.6 Measurement of Problems Faced in Adopting Homestead Agricultural Technologies and their Probable Solutions

There were open-ended questions in the interview schedule about problem faced by the rural women in adopting homestead agricultural technologies. These problems were measured according to number of citations by respondents. Then by summing the number of citation all problems were arranged according to their importance. The probable solutions of the problems, as perceived by the respondents, were also identified by summing number of citation and were arranged according to importance.

3.7 Hypothesis

Goode and Hatt (1952) defined hypothesis as a proposition, which can be put to a test to determine its validity. It may seem contrary to or in according with common sense. In any event, however, it leads to empirical test. Hypothesis may be

broadly divided into two categories namely research hypothesis and null hypothesis. In studying relationships between variables an investigator first formulates research hypothesis which states anticipated relationships 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 concerned variables. If null hypothesis is rejected on the basis of statistical test it is concluded that there is relationship between the concerned variables. However following null hypotheses were formulated to explore relationships of the selected characteristics of rural women and their adoption of homestead agricultural technologies:

1. There was no relationship between age of the rural women and their adoption of selected homestead agricultural technologies;
2. There was no relationship between educational qualification of the rural women and their adoption of selected homestead agricultural technologies;
3. There was no relationship between family size of the rural women and their adoption of selected homestead agricultural technologies;
4. There was no relationship between homestead size of the rural women and their adoption of selected homestead agricultural technologies;
5. There was no relationship between farm size of the rural women and their adoption of selected homestead agricultural technologies;
6. There was no relationship between family income of the rural women and their adoption of selected homestead agricultural technologies;
7. There was no relationship between rural women's knowledge about homestead agriculture and their adoption of selected homestead agricultural technologies;
10. There was no relationship between training exposure of the rural women and their adoption of selected homestead agricultural technologies;
11. There was no relationship between extension contact of the rural women and their adoption of selected homestead agricultural technologies; and
12. There was no relationship between organizational participation of the rural women and their adoption of selected homestead agricultural technologies.

3.8 Data Collection

Data were collected by means of interviewing the selected sampled of the rural women. The researcher himself collected data for this study. But to familiarize researcher with the selected rural women and establishing rapport during conducting the interview, the researcher had to seek help from their husbands and

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women family planning workers of the study area.

Before going to the respondents home for interview they were informed verbally to ensure their availability at home as per scheduled date and time. If any respondent failed to understand any question, the researcher took great care to explain the issue. Ten respondents from the reserve list were interviewed because the respondents were repeatedly unavailable for data collection. In some cases the respondents felt shy to give answer at some aspect of questioning. Data were collected during 01 December 2001 to 15 January 2002.

3.9 Data Processing

To facilitate tabulation, the collected data were properly coded and transferred from interview schedule to a master sheet. Qualitative data were converted into quantitative forms by means of suitable scoring whenever necessary. Tabulation and cross tabulation was done on the basis of categorization developed by the researcher.

3.9.1 Data analysis procedure

The analysis was performed using statistical treatment with SPSS (Statistical Package for Social Sciences) computer package.

3.9.2 Descriptive analysis

Such statistical measures as number, frequency counts, percentage, range, mean, standard deviation and rank order were used in describing the variables wherever applicable.

3.9.3 Correlation analysis

In order to test the formulated hypotheses of the study, Pearson's Product Moment Correlation Coefficient (r) was used. Through this statistical treatment, nature of relationship between the dependent and independent variables was determined. Five percent (0.05) level of probability was used as a basis for rejecting any null hypothesis.

Findings and Discussion

Data collected from the respondents were carefully edited, coded, computed, tabulated and analyzed in accordance with the objectives of the study. This chapter

is divided into five sections. The first section deals with the independent variables
(selected characteristics of the rural women). In the second section, the dependent
variable has been discussed while the third section deals with the relationships
of select characteristics of the rural women and their adoption of homestead
agricultural practices. In the fourth section decision-making role of rural women
on their family was discussed while in the fifth section problems faced by the rural
women and probable solutions of those problems as suggested by them have been
presented and discussed.

4.1 Selected Characteristics of the Rural Women

Ten characteristics of the respondents were selected for the present study.
These selected characteristics included age, educational qualification, family size,
homestead size, farm size, annual family income, knowledge about homestead
agriculture, training exposure, extension contact and organizational participation.
The salient features of the ten characteristics of the subjects, each of which
constituted an independent variable, have been presented in Table 4.1.

Table 4.1 Salient features of the selected characteristics of the respondents (n=100)

Selected characteristics	Measuring units	Possible range of score	Observed range		Mean	Standard deviation
			Minimum	Maximum		
1. Age	No. of years	–	18	58	36.66	12.56
2. Educational qualifications	years of schooling	–	0	14	4.34	3.42
3. Family size	No. of members	–	2	12	4.89	2.20
4. Homestead size	Hectares	–	0.01	0.20	0.05	0.04
5. Farm size	Hectares	–	0.02	2.55	0.75	0.55
6. Family income	In ′000 Tk.	–	9	227	81.59	58.55
7. Knowledge about homestead agriculture	Knowledge scores	0 – 30	15	30	20.23	4.96
8. Training exposure	Training days	–	0	42	1.33	5.86
9. Extension contact	Scores	0 – 42	0	12	5.77	2.85
10. Organizational participation	Scores	–	0	12	0.74	1.39

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4.1.1 Age of the rural women

Age of the respondents ranged from 18 to 58 years with a mean of 36.66 years and standard deviation 12.56. However, based on their age the rural women were classified into three categories as shown in table below.

Table 4.2 Distribution of rural women according to their age

Categories	Rural women (N=100)		Mean	Standard deviation
	Number	Percent		
Young (up to 35)	58	58		
Middle-aged (36-50)	24	24	36.66	12.56
Old (above 50)	18	18		
Total	100	100		

Data present in the Table 4.2 shows that the largest portion (58 percent) of the respondents were young-aged while old were the lowest (18 percent) and middle aged constituted 24 percent. It is expected that middle-aged and young women (82 percent of the respondents) are more active, energetic and enthusiastic in performing homestead agricultural activities. Particularly the middle- aged housewives are well experienced and more acquainted with the farming activities. Thus decision-making regarding the adoption of homestead agricultural activities in the study area might be influenced by the middle-aged and young housewives.

4.1.2 Educational qualification of the rural women

Educational qualification scores of respondents ranged from 0 to 14. The average score was 4.34 with a standard deviation of 3.42. Based on their educational qualification scores, the rural women were classified into four categories as shown in Table 4.3.

Table 4.3 Distribution of rural women according to their educational qualification

Categories according to educational qualification	Rural woman (N=100)		Mean	Standard deviation
	Number	Percent		
Illiterate (No schooling)	25	25		
Primary (1 to 5)	39	39		
Secondary (6 to 10)	35	35	4.34	3.42
Above secondary (above 10)	1	1		
Total	100	100		

It is evident from Table 4.3 that 25 percent of rural women were illiterate, while 39 percent, 35 percent and 1 percent had primary level, secondary level and above secondary level academic qualification respectively. Thus most (75 percent) of rural women had educational qualification from primary level to above secondary level. The present literacy rate of the country is 56 percent (BBS 2000). The findings indicate that the literacy rate in the study area was higher than the national average because that area is very educated from a long time.

The finding indicates that about 75 percent of the rural women were literate. It is good sign that female literacy rate is increasing. It is assumed that literate women are more progressive and innovative than those of illiterate with respect to both farming and non-farming activities.

4.1.3 Family size of the rural women

Family size of the respondent women ranged from 2 to 12 with an average of 4.89 and standard deviation of 2.20. Respondents were grouped into three categories based on the score obtained as presented in Table 4.4.

Table 4.4 Distribution of rural women according to their family size

Categories	Rural women (N=100)		Mean	Standard deviation
	Number	Percent		
Small (Up to 4)	53	53		
Medium (5 to 6)	31	31	4.89	2.20
Large (above 6)	16	16		
Total	100	100		

Data contained in Table 4.4 show that highest portion (53 percent) of the rural women had small sized family, 31 percent had medium family and only 16 percent had large family. In Bangladesh, women with small to medium family size generally spend more time in agricultural activities compared to large family because women (housewives) of the large family are burdened with activities other than agriculture. In some cases housewives of the large family with small land holdings spare more time in agricultural activities to provide food and cash for the survival of the family.

4.1.4 Homestead size of the rural women

The homestead size of the rural women in the study area varied from 0.01

to 0.20 hectares. The average homestead size was 0.053 hectare with a standard deviation of 0.039. Based on homestead size the women were classified into three categories as shown in Table 4.5.

Table 4.5 Distribution of rural women according to their homestead size

Categories	Rural women (N=100)		Mean	Standard deviation
	Number	Percent		
Small (Up to 0.05 ha)	63	63		
Medium (0.06-0.1 ha)	28	28	0.053	0.039
large (above 0.1 ha)	9	9		
Total	100	100		

The Table 4.5 shows that the highest proportion (63 percent) of the rural women belonged to small homestead size compared to 28 and 9 percent to medium and large homestead size respectively. This finding indicates that the majority of the rural women of the study area had either small or medium homestead area.

4.1.5 Farm size of the family of the rural women

The total farm size of the respondents in study area varied from 0.02 to 2.55 hectares with an average of 0.75 and a standard deviation of 0.55. On the basis of farm holding the respondents were classified into four categories. The distribution of the rural women with number, percent, mean and standard deviation is presented in Table 4.6.

Table 4.6 Distribution of rural women according to farm size

Categories	Rural women (N=100)		Mean	Standard deviation
	Number	Percent		
Marginal (0.02 to 0.2 ha)	17	17		
Small (0.21 to 1.00 ha)	53	53		
Medium (1.01 to 3.0ha)	30	30	0.75	0.55
Large (>3 ha)	0	0		
Total	100	100		

Data presented in Table 4.6 shows that the highest proportion (53 percent) of the rural women had small farm compared to 17 percent, 30 percent and 0

percent were marginal, medium and large categories respectively. It indicates that majority of the families possesses small sized cultivable land. In Bangladesh at present, farmers are becoming small to marginal and then landless for various reasons of which fragmentation of land due to inheritance is the most important one. For this reason there were no large farm families. The farm families of the study area were survived with various types of jobs and business in and outside of villages. Small and marginal farmers are usually reluctant to adopt new agricultural technologies though striving hard to increase their income. Housewives of the small and medium farms are more active and involved in different productive to support family expenses and nutrition. So an appropriate extension programme is needed depending on the farm size to increase skill of rural women in different productive activities and to improve living condition.

4.1.6 Annual family income of the rural women

The annual income of a respondent was determined by adding her income from agriculture (crop. livestock, fisheries etc), service, business and other sources during a year. The score was expressed in thousand Taka. The range of annual income score was 9 to 227 with an average of 81.59 and standard deviation 58.55. On the basis of annual family income, the respondents were divided into three categories as shown in table 4.7.

Table 4.7 Distribution of rural women according to their annual family income

Categories according to annual family income	Rural women (N=100)		Mean	Standard deviation
	Number	Percent		
Low (up to 30 thousands)	14	14		
Medium (31-70 thousands)	43	43	81.59	58.55
High (above 70 thousands)	43	43		
Total	100	100		

Data presented in Table 4.7 shows that the lowest proportion (14 percent) of the rural women had low annual family income, while compared to 43 percent as medium income group and 43 percent under high income group. As a result, the most (86 percent) of the rural women in the study area were in medium to high income group. Because this study was conducted in highly educated area and the researcher observed that the most of the farm heads were engaged in various type of

一八〇

59

jobs or business, it was not surprising to get such a picture of family income.

4.1.7 Knowledge about homestead agriculture of the rural women

The level of knowledge of the rural women about homestead agriculture was assessed through asking 15 relevant questions. Score for each correct answer was 2, for partially correct answer 1 and 0 for incorrect answer. Thus score for knowledge about homestead agriculture could range from 0 to 30. The computed level of knowledge of the respondent women in the present study ranged from 15 to 30 with a mean of 20.23 and standard deviation of 4.96. The respondent women were grouped into three categories as shown in Table 4.8.

Table 4.8 Distribution of rural women according to level of knowledge about homestead agriculture

Categories	Rural women (N=100)		Mean	Standard deviation
	Number	Percent		
Poor (up to 15)	0	0		
Medium (16-24)	58	58	20.23	4.96
High (above 24)	42	42		
Total	100	100		

Data presented in Table 4.8 show that highest proportion (58 percent) of the respondent women had medium knowledge on homestead agriculture, which was strongly followed by high knowledge category belonged to 42 percent of the rural women. There was no respondent with poor knowledge category. In our society, women gained knowledge in agricultural activities mostly from her husband and somewhat from the parents. It was observed that knowledge of the housewives was medium to high category which is quite rational because rural women's are always related with some sorts of agricultural activities.

4.1.8 Training exposure of the rural women

The computed training exposure scores of the rural women ranged from 0 to 42, the average being 1.33 and the standard deviation 5.86. Based on their training experience scores, the rural women were grouped into four categories as shown in Table 4.9.

Data contained is in Table 4.9 indicate that maximum rural women (94 percent) of the study area did not receive any training. Only 4 percent rural women

Table 4.9 Distribution of the rural women according to their agricultural training exposure

Categories	Rural women (N=100)		Mean	Standard deviation
	Number	Percent		
No training exposure (0 days)	17	17		
Low training exposure (up to 12)	53	53		
Medium training exposure (13-24)	30	30	0.75	0.55
High training exposure (above 24)	0	0		
Total	100	100		

had received medium training exposure, while only 1 percent had low and high training exposure each. Data also revealed that only 6 percent of the rural women having low to high training exposure.

There is very little training programmes are available for rural women in the study area. There is an urgent need to take appropriate programme by various GOs and NGOs to increase skill of rural women in different productive activities of homestead agriculture.

4.1.9 Extension contact of the rural women

The score obtained for extension contact of rural women ranged from 0 to 12 with an average of 5.77 and standard deviation 2.85. The possible range was 0 to 42. The respondent rural housewives were grouped into four categories on the basis of their score for extension contact and presented in Table 4.10.

Table 4.10 Distribution of rural women according to extension contact

Categories	Rural women (N=100)		Mean	Standard deviation
	Number	Percent		
No contact (0)	8	8		
Low contact (up to 9)	87	87		
Medium contact (10-21)	5	5	5.77	2.85
High contact (above 21)	0	0		
Total	100	100		

Data presented in the Table 4.10 show that none of the respondents had high extension contact whereas highest proportion (87 percent) of women had low extension contact. As highest proportion of the rural women were educated

with primary level, they had low exposure to various extension contact methods. Practically there is very little extension programme for women in specific. The situation is changing through the interventions of GOs and NGOs but more attention is needed.

4.1.10 Organizational participation of the rural women

The computed organizational participation scores of the respondents ranged from 0 to 12 with an average of 0.74 and a standard deviation of 1.39. The rural women were classified into four categories on the basis of their organizational participation scores as shown in Table 4.11.

Table 4.11 Distribution of the rural women according to their organizational participation

Categories	Rural women (N=100)		Mean	Standard deviation
	Number	Percent		
No participation (0)	51	51		
Low Participation (up to 9)	48	48		
Medium participation (9-18)	1	1	0.74	1.39
High participation (above 18)	0	0		
Total	100	100		

Data presented in the Table 4.11 indicate that the highest proportion (51percent) of the rural women had no participation in organization compared to 48 percent low and only 1 percent had medium organizational participation. There were no rural women in high organizational participation category.

It reveals that almost all (99 percent) of the rural women in the study area were in no to low organizational participation categories. This indicates the necessity to develop various social organizations and to motivate the rural women for more participation in the organizations.

4.2 Adoption of Selected Homestead Agricultural Technologies by the Rural Women

In order to make a threadbare discussion, the dependent variable, i.e. adoption of homestead agricultural technologies was divided into three different aspects. The aspects were adoption of homestead production technologies, adoption of post harvest technologies and adoption of poultry technologies. A list of selected homestead agricultural technologies for the three aspects could be seen in the

interview schedule as presented in Appendix I (Item No. 10). These three different aspects of adoption have been discussed in the following section.

4.2.1 Adoption of homestead production technologies

The respondents' scores for adoption of homestead production technologies of the respondents ranged from 18-70 against the possible score range of 0 to 75. The respondents were classified into three categories on the basis of their adoption scores, which is shown in Table 4.12.

Table 4.12 Classification of the respondents according to their adoption scores of homestead
production technologies

Categories	Rural women (N=100)		Mean	Standard deviation
	Number	Percent		
Low adoption (Up to 25)	9	9		
Medium adoption (26-50)	49	49	46.34	14.24
High adoption (above 50)	42	42		
Total	100	100		

Table 4.12 reveals that the majority of the rural women (49 percent) had medium adoption of homestead agricultural production technologies while 42 percent and 9 percent of them had high adoption and low adoption respectively. Due to lack of healthy seeds and technical knowledge they could not adopt all technologies. For this reason, rural women's adoption could not reach to high category.

4.2.2 Adoption of post harvest technologies

The respondents' scores for adoption of post harvest technologies ranged from 25 to 72 against the possible range from 0 to 75. The respondents were classified into three categories on the basis of their adoption scores. The categories and distribution of the respondents were shown in Table 4.13 with their number, percent, mean and standard deviation.

Data furnished in table 4.14 indicate that the majority of the respondents (76 percent) had high adoption compared to 22 percent of had medium adoption and only 2 percent had low adoption of post harvest technologies.

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Table 4.13 Classification of the respondents according to their adoption of post harvest technologies

Categories	Rural women (N=100)		Mean	Standard deviation
	Number	Percent		
Low adoption (Up to 25)	2	2	58.09	10.96
Medium adoption (26-50)	22	22		
High adoption (above 50)	76	76		
Total	100	100		

4.2.3 Adoption of poultry rearing technologies

Score of adoption of poultry rearing technologies ranged from 12 to 54 against possible range of 0 to 75. The respondents were classified into three categories based on their adoption score in this aspect that has been presented in table 4.14.

Table 4.14 Classification of the respondents according to their Adoption of poultry rearing technologies

Categories	Rural women (N=100)		Mean	Standard deviation
	Number	Percent		
Low adoption (Up to 25)	15	15	58.16	10.96
Medium adoption (26-50)	71	71		
High adoption (above 50)	14	14		
Total	100	100		

Table 4.14 indicate that majority of the respondents (71 percent) had medium adoption of poultry rearing technologies while 15 percent had low adoption and 14 percent had high adoption.

Categories of rural women regarding aspect wise adoption of homestead agricultural technologies have shown in Fig. 4.1.

4.2.4 Overall adoption score (i.e. adoption of selected homestead agricultural practices)

Adoption of selected homestead agricultural technologies scores of rural women ranged from 73 to 191 against the possible score range of 0 to 225. The average was 142.59 and standard deviation was 26.65. On this basis of their adoption of selected homesteaded agricultural technologies the rural women were categorized into following three categories as shown in Table 4.15.

Data presented in Table 4.15 indicate that the highest proportion (55 percent) of rural women had medium adoption of selected homestead agricultural technologies while 44 percent having high adoption and only 1 percent women

Table 4.15 Distribution of rural women according to their adoption of selected homestead agricultural practices

Categories	Rural women (N=100)		Mean	Standard deviation
	Number	Percent		
Low adoption	1	1		
Medium adoption	55	55	142.59	26.65
High adoption	44	44		
Total	100	100		

belonged to low adoption category. It was found that almost all (99 percent) of the rural women showed medium to high adoption towards selected homestead agricultural practices. It is a good sign for homestead agriculture.

The findings of overall adoption (i.e. adoption of selected homestead agricultural technoloigeis) have been shown in a pie graph in Fig 4.2.

4.3 Relationship Between the Selected Characteristics of the Rural Women and their Adoption of Selected Homestead Agricultural Technologies

This section describes the relationships between the ten characteristics (independent variables) of the rural women of the study area and their adoption of selected homestead agricultural technologies (dependent variable).

Table 4.16 Co-efficient of correlation of the selected characteristics of the rural women and their adoption selected homestead agricultural technologies (N=100)

Selected characteristics	Observed correlation co-efficient (r) value (df =98)
Age	0.357**
Education	0.307**
Family size	0.008 NS
Homestead size	0.503**
Farm size	0.091 NS
Annual family income	− 0.077 NS
Knowledge about homestead agriculture	0.558***
Training exposure	0.294**
Extension contact	0.225 *s
Organizational participation	− 0.129 NS

NS = Not Significant
* Correlation is significant at the 0.05 level (tabulated value = 0.197)
** Correlation is significant at the 0.01 level (tabulated value = 0.257)
*** Correlation is significant at the 0.001 level (tabulated value = 0.397)

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Pearson's Product Moment Correlation Co-efficient ("r") has been used to test the hypotheses concerning between the dependent and independent variables. Five percent (0.05) level of significance was used as the basis for acceptance or rejection of a hypothesis.

The summary of the result of the correlation analyses is shown in Table 4.16.

The relationship between the independent and dependent variables are described in this section. During interpretation of the relationships the following thumb rule has been used (Cohen and Holiday, 1982):

'r' value	Meaning
0.00 to 0.19	A very low correlation
0.20 to 0.39	A low correlation
0.40 to 0.69	A moderate correlation
0.70 to 0.89	A high correlation
0.90 to 1.00	A very high correlation

4.3.1 Relationship between age of the rural women and their adoption of selected homestead agricultural practices

The relationship between age of the rural women and their adoption of selected homestead agricultural technologies was examined by testing the null hypothesis "*There is no relationship between age of the rural women and their adoption of selected homestead agricultural technologies.*"

As shown in the table 4.16 the co-efficient of correlation between the concerned variables was found to be 0.357, which led to the following observation:

Firstly, the relationship showed tendency in the positive direction between the concerned variables. Secondly a low relationship was found to exist between the two variables. Thirdly the computed value of "r" (0.357) was found to be greater than the table value (r = 0.257) with 98 degrees of freedom at 0.01 level of probability. Hence the concerned null hypothesis was rejected.

Thus considering the findings the researcher concluded that the age of the rural women had positive significant relationship with their adoption of selected homestead agricultural practices. Thus the observed relationship between the concerned variables indicates that with the increase of age of the rural women,

adoption of modern technologies in homestead agriculture increase.

4.3.2 Relationship between educational qualification of the rural women and their adoption of selected homestead technologies

The relationship between education of the rural women and their adoption of selected homestead agricultural technologies was examined by testing the null hypothesis "*There is no relationship between education of the rural women and their adoption of selected homestead agricultural technologies.*"

The co-efficient of correlation between the concerned variables were found to be 0.307 as shown in Table 4.16. This led to the following observation regarding the relationship between the two variables under consideration:

Firstly, the relationship showed a positive trend. Secondly a low relationship was found between the concerned variables. Thirdly the computed value of "r" (0.307) was greater than table value (r= 0.257) with 98 degrees of freedom at 0.01 level of probability. Hence the concerned null hypothesis was rejected.

The findings indicate that the education of the rural women had a positive significant relationship with their adoption of selected homestead agricultural technologies.

This implies that more education of the rural women had a tendency towards more adoption of selected homestead agricultural technologies.

The researcher found that rural women who had more education were more logical and may get suitable information solving their various types of problems with respect of selected homestead agricultural technologies through reading various agricultural related magazine, booklets, leaflets, news paper and other printed materials that definitely help to form their adoption of modern selected homestead agricultural technologies.

4.3.3 Relationship between family size of the rural women and their adoption of selected homestead agricultural technologies

The relationship between family size of the rural women and their adoption of modern selected homestead agricultural technologies was examined by testing the null hypothesis "*There is no relationship between family size of the rural women and their adoption of modern selected homestead agricultural practices.*"

Computed value of the co-efficient of correlation between the family size of the rural women and their adoption of modern selected homestead agricultural technologies was found to be -0.008 as shown in Table 4.16. The following observation was recorded regarding the relationship between the two variables on consideration:

Firstly, the relationship showed a tendency in the negative direction between the concerned variables. Secondly a very low relationship was found between the two variables. Thirdly the computed value of "r" (–0.008) was smaller than the table value (r= 0.197) with 98 degrees of freedom at 0.05 level of probability. Hence the concerned null hypothesis could not be rejected.

The finding demonstrates that the family size of the rural women has no significant relationship with their adoption of selected homestead agricultural technologies.

4.3.4 Relationship between homestead size of the rural women and their adoption of selected homestead agricultural technologies

The relationship between homestead size of the rural women and their adoption of selected homestead agricultural technologies were examined by testing the null hypothesis "*There is no relationship between homestead size of the rural women and their adoption of modern selected homestead agricultural technologies.*"

Computed value of the co-efficient of correlation between homestead size of the rural women and their adoption of selected homestead agricultural technologies was found to be 0.503 as shown in the Table 4.16. The following observation was recorded regarding the relationship between the two variables on the basis of co-efficient of correlation:

Firstly the relationship showed a tendency in the positive direction between the concerned variables. Secondly a moderate relationship was found between the two variables. Thirdly the computed value of 'r' (0.503) was found to be greater than the table value (r= 0.397) with 98 degrees of freedom at 0.001 level of probability. Hence the concerned null hypothesis was rejected.

From the findings the researcher concluded that the homestead size of the

rural women had a positive significant relationship with their adoption of modern selected homestead agricultural technologies.

The finding is quite rational, because the adoption of selected homestead agricultural technologies is relatively close with homestead size. So large homestead size gets more possibilities for adoption of homestead agricultural technologies. The findings are also implied such statement.

4.3.5 Relationship between farm size of the rural women and their adoption of selected homestead agricultural technologies

The relationship between farm size of the rural women and their adoption of selected homestead agricultural technologies was examined by testing the following null hypothesis: "*There is no relationship between farm size of the rural women and their adoption of modern selected homestead agricultural technologies.*"

The co-efficient of correlation between the concerned variables was found to be 0.091. This led to the following observation regarding relationship between the two variables under consideration:

Firstly, the relationship showed a positive trend. Secondly, the strength of relationship between the variable was very low. The computed value of 'r' (0.091) was smaller than the table value (r = 0.197) with 98 degrees of freedom at 0.05 level of probability.

Based on the above finding the null hypothesis could not be rejected. Hence, it can be concluded that farm size of the rural women had no significant relationship with their adoption of modern selected homestead agricultural technologies.

4.3.6 Relationship between annual family income of the rural women and their adoption of selected homestead agricultural technologies

The relationship between annual income of the rural women and their adoption of selected homestead agricultural technologies was examined by testing the null hypothesis "*There is no relationship between annual income of the rural women and their adoption of selected homestead agricultural technologies.*"

The co-efficient of correlation between the concerned variables was found -0.077. This led to the following observation observations regarding the relationship between the two variables under consideration:

Firstly, the relationship showed a negative trend. Secondly, the strength of relationship between the variable was very low. Thirdly, the computed value of "r" (−0.077) was smaller then the table value (r = 0.197) with 98 degree of freedom at 0.05 level of probability.

Based on the above findings, the null hypothesis could not be rejected. Hence, it could be concluded that annual family income of the rural women had no significant relationship with their adoption of selected homestead agricultural technologies.

4.3.7 Relationship between knowledge about homestead agriculture of the rural women and their adoption of selected homestead agricultural technologies

The relationship between the knowledge of rural women on homestead agriculture and their adoption of selected homestead agricultural technologies was examined by testing the following null hypothesis "*There is no relationship between the knowledge about homestead agriculture and their adoption of selected homestead agricultural technologies.*"

The co-efficient of correlation between the concerned variables was found to be 0.558. This led to the following observations regarding the relationship between the two variables under consideration:

Firstly, the relationship showed a positive trend. Secondly, the strength of relationship between the variables was moderate. Thirdly the computed value of 'r' (0.558) was greater than the table value (r = 0.397) with 98 degrees of freedom at 0.001 level of probability.

Based on the above findings, the null hypothesis was rejected and hence, it could be concluded that women's knowledge about homestead agriculture had a significant positive relationship with their adoption of selected homestead agricultural technologies. This means that the rural women with higher knowledge on homestead agriculture were more tend to adoption of homestead agricultural technologies.

4.3.8 Relationship between training exposure of the rural women and their adoption of selected homestead agricultural technologies

The relationship between agricultural training exposure of the rural women and their adoption of selected homestead agricultural technologies was examined by testing the following null hypothesis "*There is no relationship between training exposure of the rural women and their adoption of selected homestead agricultural technologies.*"

The co-efficient of correlation between the concerned variables was found 0.294 as shown in Table 4.16. This led to the following observation regarding the relationship between the two variables under consideration:

Firstly, the relationship showed a positive trend. Secondly a low relationship was found between the two variables. Thirdly low relationship was found between the two variables. Thirdly the computed value of "r" (0.294) was found to be greater than the table value (r = 0.257) with 98 degrees of freedom at 0.01 level of probability. Hence the concerned hypothesis was rejected.

The researcher hence concluded that the training exposure of the rural women had a positive significant relationship with their adoption of selected homestead agricultural technologies.

4.3.9 Relationship between extension contact of the rural women and their adoption of selected homestead agricultural technologies

The relationship between extension contact of the rural women and their adoption of selected homestead agricultural technologies was examined by testing the following null hypothesis "*There is no relationship between extension contact of the rural women and their adoption of selected homestead agricultural technologies.*"

The co-efficient of correlation between the concerned variables were found 0.225 as shown in Table 4.16. This led to following observation regarding the relationship between the two variables under consideration:

Firstly, the relationship showed a positive trend. Secondly the relationship between the concerned variable was a low relationship. Thirdly the computed value of "r" (0.225) was large than the table value (r = 0.197) with 98 degrees of freedom at 0.05 level of probability.

一六八

71

Thus the researcher concluded that extension contact of the rural women had a significant positive relationship with their adoption of selected homestead agricultural technologies.

This finding is also reasonable because it can be assumed that rural women with more extension contact receive more information on improved homestead agriculture. The extension contact strengthened the base of their knowledge. The knowledge definitely act as motivator towards adoption of new technologies.

4.3.10 Relationship between organization participation of the rural women and their adoption of selected homestead agricultural technologies

The relationship between organization participation of the rural women and their adoption of selected homestead agricultural technologies was examined to test the following null hypothesis "*There is no relationship between organizational participation of the rural women and their adoption of selected homestead agricultural technologies.*"

The co-efficient of correlation between the concerned variables was found −0.129. This led to the following observations regarding the relationship between the two variables under consideration:

Firstly, the relationship showed a negative trend. Secondly, the strength of relationship between the variables was very low. Thirdly, the computed value of 'r' (−0.129) was smaller than the table value (r = 0.197) with 98 degrees of freedom at 0.05 level of probability.

Based on the above findings, the null hypothesis could not be rejected and hence, it was concluded that organizational participation of the rural women had no significant relationship with their adoption of selected homestead agricultural technologies.

4.4 Decision Making Role of Rural Women in the Family

The scores for rural women's decision-making role in the family ranged from 0 to 29 against the possible range from 0 to 30. The average and standard deviation were 15.27 and 6.21 respectively. On the basis of the scores obtained, the respondents were classified into four categories. The categories and distribution of women have been shown in the Table 4.17.

Table 4.17 Distribution of rural women according to their decision making role in the family

Categories	Rural Women (N=100)		Mean	Standard deviation
	Number	Percent		
No role	1	1		
Low role (up to 14)	49	49		
Medium role (15-21)	35	35	15.27	6.21
High role (above 21)	15	15		
Total	100	100		

Data contained in Table 4.17 reveal that about one-half (49 percent) of rural women belonged to low role category compared to above one- third (35 percent) medium role and one sixth (15 percent) to high role categories. It is interesting to note that only 1 percent rural women had no role to make any decision in her family. It can be mentioned that an overwhelming proportion (84 percent) of rural women had been participated in the low to medium overall decision making role of the rural family. This is obviously fundamental to the question of women empowerment in the family as a distinct socio-economic unit. Families are giving opportunities to the women for their increased participation in decision-making role.

4.5 Problems Faced by the Rural Women in Adopting Homestead Agricultural Technologies

There was an open ended question in the interview schedule about problems faced by the rural women in adopting homestead agricultural practices. It was obvious that they faced a number of problems or constraints in performing any production oriented activity. In case of agricultural production activities, the extent and types of problems are diversified as they are more or less controlled by nature. However, rural women of the study area mentioned twelve problems that are given in Table 4.18 with number of citation in descending order.

It appears from Table 4.18 that a lack of quality seeds and seedlings for homestead production was the most important problem faced by the respondents. The next fiveimportant problems were, as maintained by about or more than 50 percent respondents, lack of good breed of poultry, diseases of the poultry, infestation of insect pest on homestead cultivation, lack of credit facilities and criticism from others as a strong social barrier.

The table also showed that the comparatively low cited problems were lack

Table 4.18 Rank order of the problems faced by the rural women

Sl. No.	Problems	Number of citations
1	Lack of quality seed and seedling for homestead cultivation	67
2	Lack of good breed of poultry	64
3	Diseases of the poultry	58
4	Infestation of insect pest on homestead vegetables	55
5	Lack of credit facilities	52
6	Criticism from others/ social barrier	49
7	Lack of training facilities on homestead agricultural production	42
8	Lack of knowledge on controlling insect-pests and diseases	38
9	Lack of vaccination facilities for poultry	35
10	Poor extension service and lack of information in proper time	33
11	Lack of veterinary medicine	30
12	Lack of semen in proper time for artificial insemination	27

of training facilities about homestead agriculture, lack of knowledge in controlling insect-pest, lack of vaccination facilities for poultry, poor extension service and lack of information in proper time, lack of veterinary medicine and lack of semen in proper time for artificial insemination. As number of citation for almost all of the problems not low, it could be concluded that these all were important problems in general and needed particular attention from the extension and other rural development organizations both from public and private sectors.

Probable solutions of the problems suggested by the rural women:

During interviewing the participating respondents were also asked to suggest the probable solutions to problems they have identified in relation adoption of selected agricultural practices. The solutions are arranged according to their number of responses and presented in Table 4.19.

It could be concluded from the table 4.19 that supply of seeds, improved poultry breeds and vaccination facilities for poultry were critical to solving problems faced by the rural women in adopting homestead agricultural production. Providing necessary extension support coupled with training and credit facility for homestead production could be instrumental for the widespread adoption of this much needed technology.

一六五

74

Table 4.19 Probable solutions the problems in relation to selected homestead agricultural
technologies

Sl. No.	Solutions as suggested by the respondent rural women	Number of citations
1	Supply of healthy seeds from GOs or NGOs	46
2	Supply of improved poultry breeds	43
3	Availability of vaccination facilities and medicine for poultry and livestock	40
4	Providing sufficient training facilities	37
5	Providing sufficient extension service for motivation and technical information	33
6	Distribution of agricultural credit on easy conditions and low interest	29
7	Lack of training facilities on homestead agricultural production	42
8	Lack of knowledge on controlling insect-pests and diseases	38

5.1 Conclusions

The following conclusions are drawn based on the findings of the study:

1. Rural women of the study area were found adopting in each of the selected homestead agricultural activities i.e. homestead vegetable cultivation technologies, post harvest technologies, poultry rearing technologies and the extent of participation was medium in all cases which is encouraging. In fact, these activities are mostly performed by women in our country and have rightly been reflected in the present study. Of course, their extent of adoption in different items under each activity varied depending on nature of the activity, availability of inputs, technical know-how and also due to other characteristics of the rural women. So, there is a need for strengthening extension services by GOs and NGOs to ensure a continuous flow of information and technical know-how to the rural women for enhancing their skills and knowledge in the respective areas.

Though participation is medium in the selected activities, question arises about productivity of the enterprise that has been studied. It is very important to know the present level of production to find possible means for its improvement because adoption is not enough to increase production.

2. It was observed that about 50 percent of rural women had some role with medium to high categories in decision making in their family. It is thus necessary to strengthen extension services to motivate rural women for taking more role in their family. As because they can take more decision

一六四

about adoption of more new technologies related to homestead agriculture of themselves.

3. Problems are the part of rural women's life. They faced a lot of problems due to ignorance and for depending on others. They are more or less controlled by others. Moreover, they faced various types of problems. From these, they mentioned 12 problems and eight probable solutions. These all were important problems in general and needed particular attention from the extension and other rural development organization both from public and private sectors. So it is badly needed to take necessary steps about these problems for the shake of more adoption of new agricultural technologies.

4. Findings reveal that majority of the respondents were either young or middle aged. It may be concluded that most of them would continue adopting those technologies for considerable period of time.

5. Majority of the respondents had marginal to small land holdings. So there is an urgent need to take initiatives by GOs and NGOs to boost up production and thus income, though proper utilization of these marginal holdings.

6. Educational qualification, homestead size, knowledge about homestead agriculture, training exposure and extension contact had significantly positive relationship with the adoption of selected homestead agricultural technologies, It implies that, the social, economical and psychological characteristics of the rural women could have profound influence on their adoption of the homestead agricultural technologies. All these social, economical and psychological characteristics are supportive to a great extent to motivate the women who are also related with the change in education, knowledge and their income. In the present study was found that highest percentage of the respondents had high level of knowledge and medium high level of education that have been ultimately reflected in their adoption of selected homestead agricultural technologies.

5.2 Recommendations

On the basis of findings and conclusion of the study, recommendations are made as follows:

5.3.1 Recommendations for policy implications

1. Extensive development programmes should be designed and implemented by

GOs and NGOs considering homestead as production unit and women as the key operator.

2. Extension services should be strengthened particularly for women. Due to social systems and religion, rural women are reluctant to come in contact with male extension workers. So, more women extension workers are to be engaged for effective and successful implementation of the development activities.

3. Necessary inputs such as HYV seeds/seedling, hybrid poultry birds, quality feed, chemical fertilizers, insecticides, quality fingerings need to be made available to the respondents at right time and at fair prices.

4. The success of homestead farming depends on skilled labour. Short-term training programme on modern techniques should be provided to make them aware of modern technologies and techniques of production. More scope and opportunity of work for the women should be created.

5. Veterinary services should be ensured for rearing poultry binds and livestock as they can play vital roles for their improvement on a sustainable way.

6. In order to implement homestead development, programmes and integrated approach should be strengthened involving private and public sector agencies.

5.3.2 Recommendations for further studies

1. The present study was carried in a small area of particular district. Similar studies should be conducted in other parts of the country, which could be helpful for effective policy for mention.

2. Relationship of ten characteristics of the rural women with their extent of adoption of selected homestead agricultural technologies. Further research should be conducted to explore the relationship of other characteristics of rural women with their adoption of selected homestead agricultural technologies.

3. There are so many problems in adoption of selected homestead agricultural technologies among the rural women. More research should be conducted to find out the problems suggested solutions of the problems from different stakeholders.

4. There are a few studies conducted so far particularly to assess extent of adoption of rural women in homestead agricultural technologies. Further studies should be designed considering other homestead agricultural and non-agricultural technologies of rural women that might affect their adoption.

5. The present study was concerned with the adoption of selected homestead

一六二

agricultural technologies by the rural women. It is therefore, suggested that further studies included characteristics of innovations, rate of adoption, adoption stages, adoption categories and use of information sources in relation to adoption stages and categories. The findings of these studies will be of great help to have an understanding of the different aspects of adoption process in the cultural setting prevailing is Bangladesh.

6. A negative trend relationship between family size of the rural women and their selected homestead agricultural technologies, otherwise relationship was not statistically significant. Generally a significant positive relationship is expected to be observed between family size of the rural women and their adoption of selected homestead agricultural practices. Hence further studies necessary to find out the relationship between the concerned variables.

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六

タンガイル地域のマドゥプル県郊外女性による特定自作農業技術の採用

ムハンマド・アサドザマン

タニア・ホサイン

　本研究の主要目的は、郊外の女性による特定自作農業技術の採用状況の研究と、郊外の女性の特徴と自作農業技術の採用の関係性を明らかにすることにある。こうした主要目的とは別に、家族内における郊外の女性の意思決定上の役割と、自作農業技術の採用にあたっての問題点を明らかにすることにある。

　本研究では、バングラディシュ人民共和国 Musuddi 州 Madhupur 県の Musuddi、Jhupna、Shoya の三村を調査対象地とする。三村全世帯485家族のうち、郊外居住者の女性100名（約20%）を研究対象のサンプルとして抽出した。調査データは、2001年12月1日から2002年1月15日まで実施された対面調査によって採取されたものである。特定の自作農業技術の採用の程度は、調査者によって策定された採用スケールによって認定されている。なお、客観性を保つために、データ解析には相関係数が用いられている。

　本研究が明らかにしたところによると、もっとも高い割合で（55%）郊外の女性は特定の自作農業技術を採用しているとされており、44%が中間で、採用率が低いとしているのは1%となっている。特定の自作農業技術の採用に関しては、年齢や学歴、世帯規模、自作農業に関する知識、訓練の体験の有無、他の郊外の女性との接触の程度が、特定自作農業技術の採用との関係で肯定的な関係を有していることが明らかにされたが、他の変数には有意な関係性は見られない。

　郊外の女性の意思決定の役割に関しては、家族内での意思決定に関して、役割が低いとされるものが最も多い割合（49%）となっており、35%が中間、15%が高いとされていて、意思決定に関わらないというものは1%に過ぎなかった。自作農業技術の採用における主な問題は、言及された数の多さの順で、次のようなものがある。自作農業における種子や苗木の品質の問題、家禽類の繁殖困難、家禽類の病気、資金調達先の不足、社会的障壁、トレーニング機会の不足、害虫による疫病に関する知識不足、家禽類のワクチン接種の機会不足、各種サービスへのアクセス困難や情報への適時アクセスの不足といったものが挙げられた。

一五五