

**ROLE OF HOMESTEAD AGRICULTURAL ACTIVITIES FOR  
SOCIOECONOMIC DEVELOPMENT OF WOMEN:  
A CASE STUDY ON 'KUSHUMPURA' UNION UNDER PATIYA UPAZILA  
OF CHITTAGONG, BANGLADESH**

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**ABSTRACT**

Homestead Agricultural Activities (HAA) refers to the works done by the women of the households to participate in agriculture in their closest homestead. The main purpose of the study was to determine the extent of participation of rural women on traditional system of homestead agriculture and to evaluate its role on socioeconomic development in rural area of Bangladesh. Data have been collected from both primary and secondary sources. Primary data were collected from the field survey, questionnaire survey, expert opinion, and FGD survey conducted from August 2017 to January 2018. The collected data computed, tabulated, and analyzed in accordance to the objectives of the study. The independent variables were measured by employing prevailing standard methods. Pearson's correlation coefficient ( $r$ ) was used in order to test the null hypothesis. The study revealed that women were used to engage at medium level in HAA that may help to improve their socio-economic development. However, women were comparatively less involved in various rural social program and political activities, restricting expected women empowerment. Furthermore, there was no relationship between age and education of women in HAA, but a positive relationship is found between farm size, family income and training on HAA. To this end, a recommendation list has been drawn for sustainable management of HAA by proper training, funding, promoting small enterprises and encouragement to women.

**Key words:** Homestead, Agriculture, Involvement, Rural, Bangladesh.

**INTRODUCTION**

Homestead agriculture and farming is the most significant traditional system of production in rural Bangladesh. In Bangladesh, women hardly participate in agricultural activities outside their homes. About half (49 percent) populations of Bangladesh are women and 45.6 percent of them are associated on homestead farming activities (Department of Agricultural Extension, 2015). Bangladeshi women play a significant role in agricultural production for nutrition. The economy of Bangladesh is almost predominantly agrarian and

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the agriculture sector contributes about 21.77 percent on Gross Domestic Product (GDP) in the national economy (BBS, 2017). In the past decade, the agriculture sector contributed about 3 percent per annum to the annual economic growth rate, which is 7.3% in 2015-2016 (BBS, 2017). Although the contribution of agriculture to the national economy and employment are going to be reduced but still it remains the single largest segment to income and employment generation as a vital sector for food production and helps reducing rural poverty and fostering sustainable economic development in Bangladesh.

Women play a key role in conservation of basic life support system such as land, water, flora, fauna (World Bank, 2016). They play a significant and crucial role in agricultural development as well as rural home development. Women account for 43% of the agricultural labor force in developing countries (FAO, 2011). As a developing country, Bangladesh cannot deny that under-utilized rural female force forms a vast reservoir of human resources because they constitute a large potential section of its total population (Jahan, 2000). The role of rural women on socio-economic development of Bangladesh cannot be overlooked. They are generally involved in crop related activities like composting, transplanting, sowing, weeding, harvesting, drying, homestead gardening and tree planting. However, their enhanced economic role did not go in hand with substantial improvement in education, training, health, nutrition, and access to production resources and services also. Similarly, they remain largely unrepresented in national agenda setting and resources allocating bodies. Their wider participation in village associations, marketing, co-operatives, and other community organizations can help reducing the social constraints on the access to productive resources. Rural women generally involve in different enterprises. So far, there is no systematic investigation in this aspect. Therefore, it is an essential task to ensure proper participation of women as a priority target group in agricultural production as well as contribution in rural development in Bangladesh.

In Bangladesh, several Government Organizations (GOs) have been taken various projects to involve rural women, namely, goat rearing, poultry rearing, tree plantation & gardening, literacy program under the Ministry of Agriculture. Among them, some active projects are mentionable; Small holder Agriculture Improvement Project (SAIP), Agricultural Services Innovation and Reform Project (ASIRP), *Kajer Binimoy Khaddo* (KABIKHA) etc. (Misu, 2012). All these projects emphasized on women participation in farming activities, where GOs are greatly encouraged to work closely together with local and national NGOs. Development of a society comes from both of men and women, and simultaneously in urban and rural areas (World Bank, 2016). Socio economic development means all kinds of social and economic activities and their positive acceleration. Bangladesh has 86,174 villages and 4,448 unions (BIDS, 2005). Therefore, we have to develop our rural areas, specially village levels. As half of the population of our country are women and most of them live in villages. So, we cannot imagine our socio-economic development, especially rural development without various participation of women. Hence, we should ensure the economic and production oriented activity through participation of women equally as men in order to rural development in Bangladesh.

Agriculture is prime economic activities in rural Bangladesh as it is the major means livelihood for the plurality of the rural dwellers. Nearly half of the total workers and about 87 percent of the rural households depend on agriculture (World Bank, 2016). Agriculture sector contributed to the scale down of 90 percent poverty in Bangladesh between 2005 to 2010 (World Bank, 2016). The involvement on homestead agriculture is a traditional on-going practice in rural areas of Bangladesh (Ahsan, 1986). Majority people of Bangladesh live in villages, therefore, we cannot imagine our rural development without women's economic activity and involvements for development. In Bangladesh, women belong low status in everywhere, especially in rural community. Though they are working as well as men but we do not feel to recognize them properly either at home or society. So, we have to establish them in parallel of men in our society and need to work together to develop rural socioeconomic condition by the more involvement and empowerment of women to achieve the goals of Sustainable Development Goals (SDGs).

The social context in rural Bangladesh is characterized by female seclusion and subordination, which combine to relegate women to a restricted role, mainly involving domestic work (Khan, 2001). From the childhood, most of the rural women taught to be as an obedient wives and their primary role is to bear children and maintain family responsibilities (Al-Mamun *et. al.*, 2010). The fact is that they are expected to eat only after their husbands and sons have finished speaks to their place in the family hierarchy. Poverty, oppression, and illiteracy, combined with limited exposure to new information have reduced the ability of many rural women to learn about life outside their homesteads and immediate surroundings (Akhter, 1989). As a result, they did not consult with their husband regarding family decisions. Under these circumstances, most of the rural women are bound to depend on their husbands' decision who exercises complete control of the family. According to Abecassis (1990), many rural women in Bangladesh are completely internalized their inferior status. Their self-image is very low, their creativity is stifled, and they believe that their inferiority is both real and inevitable. Ironically, the extremely poor women, who have no money, cannot afford to observe seclusion. Many of these poverty-stricken women have learned how to earn money inside or outside household compounds and have been contributing to household economic well-being. These women are learning that they are valuable to society and to themselves and are gaining some sort of self-esteem and influence over business and general household decisions (Khan, 2001).

Rural women in Bangladesh generally involve in different homestead enterprises. There is no systematic research investigation in these aspects. Therefore, it is an important task to ensure proper participation of women as a priority target group in agricultural production as well as contribution in rural Bangladesh. The present study has been tried to focus on the various natures and types of involvements or participations in homestead agriculture of rural women with assessment of the changes and role on socio-economic development through their involvements in HAA.

#### *Index of social status of women in the society of Bangladesh*

Social status of women can be measured by women's educational status, occupational status, monthly income and financial support, role on decision making capacity in the



family and political right & empowerment (BIDS, 2005). Though in Bangladesh, the overall women status is not satisfactory, but in recent years it has been improving. *Meaning of 'Homestead Agricultural Activities' and 'Involvement'*

'Homestead Agricultural Activities (HAA)' refers to the works done by the rural women of the households to participate in agricultural activities in their homestead. According to definition of World Bank (1988), HAA comprised with postharvest activities such as threshing, winnowing, drying, and preserving grains, vegetable and fruit production within the homestead area, poultry raising, goat rearing, cattle farming and such other activities related to agricultural production.

'Involvement' refers to one's participation in an events or situation (Akanda, 1994). Involvement of rural women on HAA means their active participation in various homestead oriented agricultural production and activities. Participation of the rural women in HAA is very vital to agricultural development in Bangladesh, where an overwhelming majority of them live in rural areas, very close to agricultural production system. Women play a very important role in agricultural development of the country and they are directly involved in agricultural production. Therefore, it is an important work to have adequate understanding on rural women's involvement for agricultural production spatially in HAA in the context of rural Bangladesh.

### ***Objectives of the study***

The aims and objectives of this study were to find out the traditional system of homestead agriculture and involvements of rural women on HAA and to explore its role on socioeconomic development in rural Bangladesh. We also aimed at figuring out problems restricting women's participation in HAA and accordingly drawing recommendation for sustainable management of HAA.

### ***Formulation of Hypothesis***

Five individual null hypotheses within a set have been formulated to test the relationships between five selected socioeconomic parameters of women (as independent variable) and involvement in HAA (as dependent variable). In brief, the formulated null hypotheses are "*There is no relationship between Age, Education, Farm size, Family income, and Agricultural training of women (as independent variable) and participation in HAA (as dependent variable).*"

## **MATERIALS AND METHODS**

### ***Selection of study area***

The '*Kushumpura*' union under Patiya Upazila of Chittagong District has been selected for the present study (Figure 1) as this area is fully agrarian where majority people are living on primary economic activities. In addition, a reconnaissance survey on '*Kushumpura*' union indicated that women on this area were habituated on HAA.

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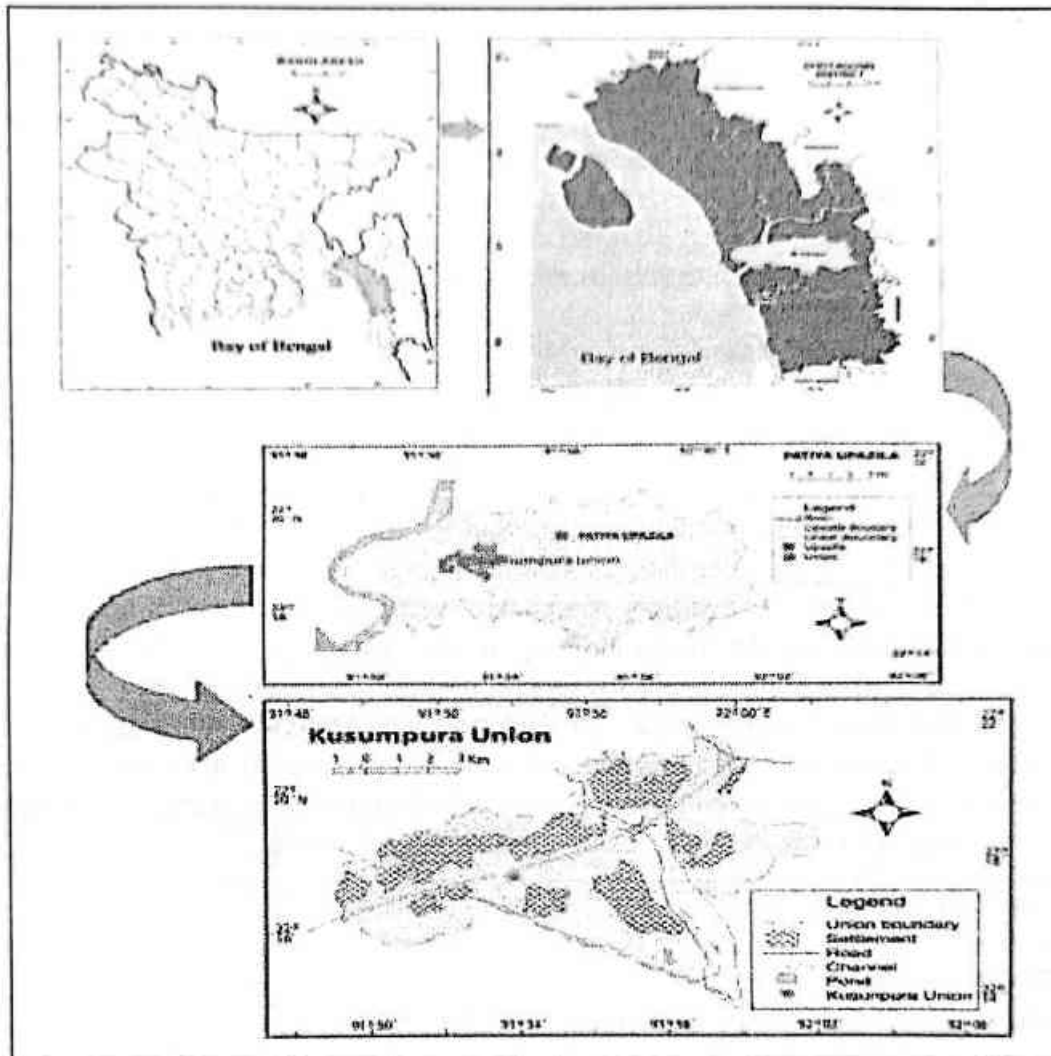


FIGURE 1: LOCATION MAP OF THE STUDY AREA  
[Source: Base map collected from Patiya Upazila Agricultural office 2017]

**Sources and collection procedures of data**

The present study was carried out by the combination of both primary and secondary sources of data. The primary data was collected from Direct field observation, Focus Group Discussion (FGD), Questionnaire survey and Expert opinion survey. *Field observation* included six field visits during the six seasons to find out the general scenario of HAA in the study area. The *Focus Group Discussion (FGD)* conducted three times among groups chosen by farmers and their housewives, female workers, female school teachers. *Questionnaire survey* has been conducted on different stakeholders (namely; housewife, local primary female school teacher, NGOs' worker, student, farmer, etc.) selected through random selection). The questionnaire comprised 200 questions.

*Expert opinion survey has been conducted through face-to-face and telephonic survey to know the sustainable ways of HAA in the rural areas of Bangladesh.*

On the other hand, all the secondary data have been collected from literatures survey, previous and present agricultural data, books, journals, local agricultural office records, related GOs/NGOs reports, Bangladesh Agriculture Extension Department report, published report of Bangladesh Agriculture Research Council (BARC), Bangladesh Institute of Development Studies (BIDS), Bangladesh Bureau of Statistics (BBS) and others various secondary online sources to enrich the paper.

### ***Compilation and analysis of data***

After completion of field survey, all the primary data with questionnaires and interview schedules were compiled. To convert the qualitative data into quantitative forms an appropriate coding and scoring technique was used followed by Nataliya *et.al.*, (2006). The responses of the individual respondent contained in the interview schedules were transferred to a master sheet for entering the data into the computer. The independent variables were measured by employing prevailing standard methods and the Pearson's correlation coefficient (r) was used in order to test null hypothesis. A three point Likert-type scale was used to measure each activity. The scores of 0, 1, and 2 are allocated for no participation, occasional participation and regular participation, respectively on HAA. For clear understanding of comparative participation of rural women on 10 activities of homestead agriculture and gardening oriented tasks were taken to determine the participation index. The participation index (PI) was measured using the following formula.

$$PI = (P_{np} \times 0) + (P_{op} \times 1) + (P_{rp} \times 2)$$

Where,

PI= Participation Index

P<sub>np</sub> = Percentage of rural women with no participation

P<sub>op</sub> = Percentage of rural women with occasional participation

P<sub>rp</sub> = Percentage of rural women with regular participation

## **RESULTS AND DISCUSSION**

### ***Socio-economic profile and livelihood conditions of women in the study area***

To know the socio-economic condition of the rural women, five characteristics (age, education, marital status, occupation, monthly income of the respondents) of the stakeholders were considered in the present study (ie.). The summarized socio-economic profile and livelihood conditions of women in the study area are shown in Table 1.

TABLE 1: SOCIO-ECONOMIC PROFILE OF WOMEN IN THE STUDY AREA

Age			Education			Occupation			Monthly income (Tk)			Marital status		
Interval	f	%	Level	f	%	Types	f	%	Range	f	%	Status	f	%
20-30	30	15	Illiterate	54	27	House wife	72	38	0-500	22	11	Married	134	67
31-40	62	31	Primary	48	24	Student	20	10	500-1000	38	19	Unmarried	22	11
41-50	68	34	SSC	54	27	Teacher	4	2	1000-1500	44	22	Divorced	24	12
51-60	22	11	HSC	32	16	House worker	26	13	1500-2000	36	18	Widow	20	10
61-70	14	7	Degree	11	5.5	Social worker	4	2	2000-2500	26	13	Total	200	100
70+	4	2	Masters	1	0.5	Related in agriculture	25	25	2500-3000	22	11			
Total	200	100	Total	200	100	Total	200	100	3000+	12	6			
									Total	200	100			

Source: Questionnaire survey 2017-18 (Here; N= total respondent; f=Number of respondents as frequency)

Among the responders majority were middle aged ranging from 31 to 50 years). Table 1 also indicated that a significant number of respondents were Illiterate (27%) followed by primary passed (24%), SSC passed (27%), HSC passed (16%) and only 6% degree and/ masters passed. As for occupation details, majority of the responders were house wife (38%), followed by house worker (13%) and related to direct agriculture (25%). As per capita only 6% women earned over 3000Tk per month while 30% (11+19=30) earned below 1000 Tk. per month (Table 1). The majority respondents (67%) were married (Table 1) and such high percentage of married respondents could be due to illiteracy, poverty, and rural concept and/or social pressure making young girls married at early age. In an addition, multi-marriage of male and forcedly divorce were also observed in the study area.

#### *Involvement nature of women in rural society of Bangladesh and in the study area*

Women's involvement and participation in the society is innumerable now. They have to be imagined their need in society. Social development and progress is to be uncompleted without their effective participation on this development processes. In social development programme tended to treat women as a special target group of beneficiaries in projects and programmes in Bangladesh. Policy framework has now been broadened to reflect ways in which men and women relations constrain or advance efforts to boost growth and reduce poverty for all. Though the perspective is one of analyzing the structure of gender relations within the household but women's time, energy, work and skills are involved in every aspect of the development process (World Bank, 1994). It is the inequality of gender



relations and the continuing subordination of women that ensure that women's contribution is not matched by recognition and remuneration in social, political and economic terms. So, participation of women in rural society is mainly development program, such as rural educational health, family planning, tree plantation, rural development activities and another important participation is rural political activities, which are now being done by rural women.

In Bangladesh, women are now playing an important role in society. They now engage themselves in various social development for wellbeing of society and its people. Their involvement in society is numerous, such as education program, women development program, health, family planning, micro credit program, social organization, and NGO's. A comparative scenario of various types of rural women involvements in Bangladesh and in the study area are shown Table 2.

TABLE 2: INVOLVEMENT AND PARTICIPATION NATURE OF WOMEN IN BANGLADESH AND IN THE STUDY AREA

In Bangladesh		In the study area	
Category/Sector	Percentage (%)*	Category/sector	Percentage (%)*
Education program	58.00	Educational program	38.0
Health program	42.00	Women development program	30.0
Family planning program	40.65	Family planning program	35.0
Women empowerment	27.20	Women empowerment	13.0
Social organization	13.00	Micro-credit program	69.0
NGO's activity	08.00	Agriculture activity	41.0
Source: BIDS (2005)		Source: Questionnaire survey 2017-18	

\*Multiple answers were considered

The BIDS reports in 2005 (BIDS, 2005) showed that around 58% of the women are engaged in educational program followed by in health sector (42%), family planning sector (40.65)%, in other organizations (13%) and NGO's (8%) in Bangladesh. However, occupational scenario is quite different in the study area; 69% women are engaged in micro-credit program followed by agriculture (41%), family planning program (35%), women development program (30%), educational program (38%) and women empowerment (13%) (Table 2).

***Participation of women in selected activities on HAA and gardening with Participation Index***

A three point Likert-type scale was used to measure participation index. The scores of 0, 1, and 2 are allocated for no participation, occasional participation and regular participation on HAA, respectively. For clear understanding of comparative participation of rural women on 10 activities of homestead agriculture and gardening oriented tasks are taken to determine the



participation index. The summarized participation index (PI) with ranks are given in the following Table 3. To calculate the PI index the following formula is used.

$$PI = (Pnp \times 0) + (Pop \times 1) + (Prp \times 2)$$

Where,  
 PI= Participation Index ;      Pnp = % of women with no participation  
 Pop = % of women with occasional participation;      Prp = % of women with regular participation

TABLE 3: HEAD-WISE PARTICIPATION OF WOMEN IN SELECTED 10 ACTIVITIES ON HAA WITH PARTICIPATION INDEX (PI) AND RANK

SL	Activities	Rural Women as stakeholder (N=200)			Participation index	Rank order
		Regular (f X 2)	Occasional (f X 1)	No participation (f X 0)		
<b>A</b>	<b>Preparation of HAA land</b>					
i.	Selection of land	60X2=120	120 X1=120	20X0=0	240	4
ii.	Tilling by spade /knife	65X2=130	128 X1=128	7X0=0	258	2
iii.	Use for cow dung and manure	68X2=136	125 X1=125	7X0=0	261	1
iv.	Build boundary and drain	40X2=80	80 X1=80	80X0=0	160	10
v.	Weeding	45X2=90	82 X1=82	73X0=0	172	9
<b>B</b>	<b>Seedling/ Transplanting</b>					
i.	Transplanting after uprooting	55X2=110	110 X1=110	45X0=0	220	6
ii.	Transplanting in rows	52X2=104	118 X1=118	30X0=0	222	5
iii.	Transplanting of seedling in the afternoon	65X2=130	123 X1=123	12X0=0	253	3
iv.	Application of water after transplanting	62X2=124	86 X1=86	52X0=0	210	7
v.	Shading arrangement after pruning	49X2=98	82 X1=82	69X0=0	180	8

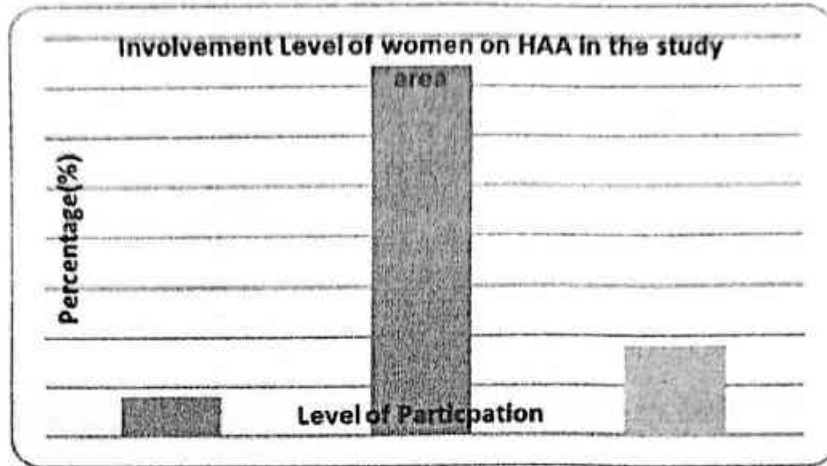
Note: f = Observed frequency; Participation Index (PI) = (Pnp x 0) + (Pop x 1) + (Prp x 2)

Source: Computed value of Questionnaire Survey 2017-18

The whole HAA are classified in to two major activities, (i) Preparation of land for HAA and (ii) Transplanting / Seedling in HAA. Both of the major activities are classified into five sorts of participation as activities on homestead agriculture. The calculated value of PI index for use of cow dung and manure (PI 261 and rank 1<sup>st</sup>), Tilling by spade/knife (PI 258 and rank 2<sup>nd</sup>), Transplanting of seedling in the afternoon (PI 253 and rank 3<sup>rd</sup>) has been observed (Table 3). On the other hand, the lowest PI value on HAA is observed by build boundary and drain (PI 160 and rank 10<sup>th</sup> out of 10) in the study area (Table 3).

***Involvement level of women in HAA***

An interval scale was used to measure the participation of rural women on HAA in the study area. The percentage distribution of the involvement scale of rural women according to their opinion of participation on HAA are shown in the following figure 2.



**FIGURE 2: INVOLVEMENT LEVEL OF WOMEN IN HAA**

[Source: Questionnaire survey 2017-18]

*Note: High Level Participation Means Above 10 Hours/Day; Medium Level Participation Means 6-10 Hours/Day; Low Level Participation Means Below 6 Hours/Day*

The above figure 2 indicates that large proportion rural women (74%) are involved with medium participation while 18% low and 8% women are involved with high-level participation on HAA in the study area. This scenario is also varied from women to women and case-to-case status in the study area. Uddin (2008) found that 68.63% of rural women had medium participation in home gardening followed by 31.37% had low participation in Shariatpur district in Bangladesh. Chowdhury *et al.*, (2011) observed that 47% of women had high contribution in homestead vegetable production followed by 27% had medium contribution. Jahan (2014) found that 62.5% women had medium and 30% had low participation in winter vegetable production.

***Involvement category of women on HAA in the study area***

It is observed from the field survey and FGD that women are involved on agriculture by traditional, forced, known or unknown ways in the study area. The major types of participation of women on HAA in the study area are shown in the following Table 4.

TABLE 4: INVOLVEMENT CATEGORY OF WOMEN ON HAA IN THE STUDY AREA

Types	Frequency (f)*	Percentage(%)*
Crop farming	18	9
Crop processing/harvesting	134	67
Vegetable farming	78	39
Gardening	44	22
Animal bearing	54	27
Fishing	12	6
Horticulture	4	2
Poultry rising	22	11
Others	--	--

Source: Questionnaire survey 2017-18

\* Multiple answers are considered

The Table 4 indicates that maximum women are engaged on crop farming (67%) in the study area. Farid *et al.*, (2009) stated that women were involved in various activities in order to meet basic family needs, increase family income and meet additional family requirements. Islam, Ahmed and Matiul (2018) also concluded from the gist of their findings that participation of women in homestead vegetable production is still not satisfactory and necessary steps concerning extension approach should be taken to increase the vegetable production by ensuring barrier free participation. Khatun *et al.*,(2014) found that participation of women considering different aspects in relation to vegetables cultivation, tilling by spade was ranked first. Ali, Ahmed and Islam (2008) stated that through homestead vegetable gardening daily vegetable requirement of small farmers were largely met by supplying 200-220g/head/day against the bench mark level of 40-50g/head/day.

#### **Role of HAA for development of socio-economic condition of women in the study area**

Five parameters, namely, Daily income, Purchase capacity, Deposit scheme, Food & nutrition intake and Self-dependency are taken (as indicators) (*ie;*) to evaluate the progress and development of socio-economic condition of women by the involvement in HAA (Figure 3).

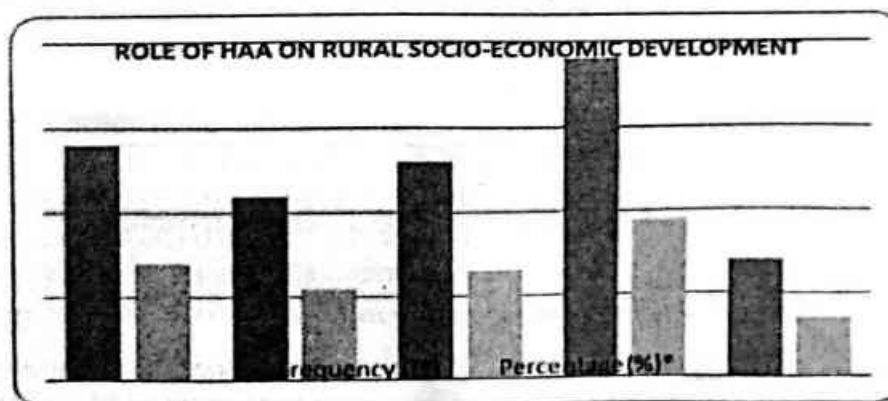


FIGURE 3: ROLE OF HAA FOR DEVELOPMENT OF SOCIO-ECONOMIC CONDITION OF WOMEN IN THE STUD AREA

[Source: Questionnaire survey 2017-18; \* Multiple answers are considered]



It is observed from the above figure 3 that majority (95%) women are benefited through getting more food and nutrition while daily income increased (70%), deposit money (65%), increase purchase capacity (55%) by the involvement on HAA in the study area. Iftekhar and Amin (2016) found that women's earnings to be approximately 58.5% of men's in rural Bangladesh. Amin (2005) showed that female labour force participation has increased pointedly in Bangladesh owing to better payment of home-based economic activities. Ferdous *et.al.*, (2016) observed that average net income (BDT 5030/year) were obtained from homestead agriculture by small farmers followed by BDT 4290/year by marginal and landless farmers at Rangpur under the On-farm Research Division of Bangladesh Agricultural Research Institute. He also found an increase in food security and a reduction in malnutrition of farm families in the target households of Rangpur region in Bangladesh through homestead agriculture and gardening.

***Relationship between the socioeconomic characteristics of women and involvements in HAA***

The selected five socioeconomic parameters (Age, Education, Farm size, Family income and Agricultural training) of rural women are considered as independent variables and participation in HAA is considered as the dependent variable to test the null hypothesis. Person's Product Moment Co-efficient of Correlation (r) has been used to test the relationship between two variables. Five percent and one percent level of probability were used as the basis for rejection of a hypothesis. The table value of 'r' was calculated at (100-2) = 98 degrees of freedom. The summary results of the co-efficient of correlations are indicating the relationships between the selected socioeconomic characteristics and their involvement in HAA (Table 5).

TABLE 5: CORRELATION MATRIX WITH VALUES TO TEST NULL HYPOTHESIS

Dependent Variable	Calculated value of 'r'	Independent Variables	Tabulated value of 'r' at 98 degrees of freedom	
			at 5% level	at 1% level
Participation in HAA	0.127 <sup>NS</sup>	Age	0.193	0.262
	0.061 <sup>NS</sup>	Education		
	0.397**	Farm size		
	0.442**	Family income		
	0.219*	Agricultural training		

Source: Questionnaire survey 2017-18

[Here, <sup>NS</sup> = Not significant, \*=Significant at 0.05 level of probability, \*\*=significant at 0.01 level of probability]

***(i) Relationship between 'age' and 'participation in HAA'***

The formulated null hypothesis regarding this issue is considered as 'There is no relationship between the age of the women and participation in HAA'. The computed value of the (r) regarding the age of the women is observed 0.127<sup>NS</sup> which is smaller than the tabulated value of 'r' at 98 degrees of freedom (Table 5). So, the concerned null

hypothesis is accepted because of the calculated value is smaller than the tabulated value at .005 level of significance (Table 5). The relationship between the above independent and dependent variable is not significant. The above findings also demonstrated that the age of the rural women had no significant relationship on HAA in the context of the study area. Islam, Ahmed and Matiul (2018) observed 'age' as characteristics of women had significant positive relationship with participation in HAA.

***(ii) Relationship between 'education' and 'participation in HAA'***

The formulated null hypothesis regarding this issue is considered, as *'There is no relationship between 'education' of the women and participation in HAA'*. The computed value of the (*r*) regarding the age of the women is observed (0.061<sup>NS</sup>) which is smaller than the tabulated value against same particulars (Table 5). So, the concerned null hypothesis is accepted because of the calculated value is smaller than the tabulated value at .005 level of significance (Table 5). The above finding also demonstrated that the education of the rural women had no significant relationship in HAA.

***(iii) Relationship between 'farm size' and 'participation in HAA'***

The formulated null hypothesis regarding this issue is considered as *'There is no relationship between the farm size of the women and participation in HAA'*. The computed value of the (*r*) regarding the age of the women is observed (0.397\*\*) which is higher than the tabulated value against same particulars (Table 5). So, the concerned null hypothesis is rejected and alternated hypothesis is sustained because of the calculated value is greater than the tabulated value at 0.005 and 0.001 level of significance (Table 5). The above finding demonstrated that the education of the rural women belongs a significant relationship in HAA.

***(iv) Relationship between 'family income' and 'participation in HAA'***

The formulated hypothesis regarding this issue is considered as *'There is no relationship between the family income of the women and participation in HAA'*. The computed value of the (*r*) regarding the family income of the women is observed (0.442\*\*) which is higher than the tabulated value against same particulars (Table 5). So, the concerned null hypothesis is rejected and alternated hypothesis is sustained because of the calculated value is greater than the tabulated value at 0.005 and 0.001 level of significance (Table 5). The above findings also demonstrated that the farm size of the rural women belong a significant relationship in HAA. Rashid, Kamruzzaman and Mustafa (2017) also found a significant relationship between income and HAA in the rural area of Bangladesh.

***(v) Relationship between 'agricultural training' and 'participation in HAA'***

The formulated null hypothesis regarding this issue is considered as *'There is no relationship between the agricultural training of the women and participation in HAA'*. The computed value of the (*r*) regarding the age of the women is observed (0.219\*) which is higher than the tabulated value against same particulars (Table 5). So, the concerned null

hypothesis is rejected and alternated hypothesis is sustained because of the calculated value is smaller than the tabulated value at 0.005 level of significance (Table 5). That's why, the relationship between the above independent and dependent variable is significant. The above findings also demonstrated that the agricultural training of the rural women belong a significant relationship on HAA in the context of the study area. Islam , *al.* (2014) found a positive relationship between education and awareness on agricultural extension activities implies that education is instrumental to make one conscious about ongoing development activities.

***Problems faced by the rural women to participate in HAA***

Several problems are identified after compiling the opinions of women through questionnaire survey in the study area. The problems are shown in Table 6.

**TABLE 6. PROBLEMS FACED BY THE WOMEN RELATED TO HAA**

SL No.	Types of problem	Opinion (in %)*
01	Scarcity of sufficient land for agriculture	81
02	Insufficient supply of fertilizer	73
03	Lack of necessary knowledge on HAA	64
04	Shortage of necessary capital	63
05	Unavailable of quality seeds	61
06	Deficits of sufficient insecticides	58
07	Lack of marketing opportunities	56
08	Weakness of transport & communication facilities	43
09	Lack of co-operation from male as the head of the family	36

[Source: Questionnaire survey-2017-18; \* Multiple answers were considered]

Table 6 clearly indicates that a significant portion (81%) was facing insufficient homestead land. It is also revealed from FGD of the present study that poor and marginal farmer families are more interested to participate in HAA but their farm size as homestead territory is not too large. So, they did not grow more products through participation in HAA due to shortage of land. The other problems, which are identified through present study is mentionable as insufficient fertilizers (73%), Lack of necessary knowledge on HAA (64%), Shortage of necessary capital (63%), Unavailability of quality seeds (61%), Deficits of sufficient insecticides (58%), Lack of marketing opportunity (56%), Lack of co-operation from male as the head of the family (36%) (Table 6).

***Recommendations for sustainable management of HAA in rural Bangladesh***

On the basis on important comments and suggestions from concerned experts and respondents, a brief summery as recommendations are drawn and given below.

- (i) In the present study, majority of the rural women involved with medium participation on HAA. So, it is recommended that necessary steps should be taken to motivate the farmers in HAA through motivation, incentives, skill development and family support.



- (ii) Homestead area or farm size of the rural women had a significant positive relationship with their involvements in HAA. So, it is recommended that labour-oriented support program, especially for small and marginal household owners should be taken. Another motivational program should be taken for medium and large farm size owners to grow more agro product through HAA.
- (iii) Family income of the rural women had significant positive relationship with their involvement in HAA. So, it is recommended that local government and non-government authority should provide more credit to the rural women who are unable to invest enough capital to participate in HAA.
- (iv) A positive significant relationship found between 'agricultural training' and 'participation in HAA'. Therefore, it may be recommended that concern government and local authority should take necessary training and skill development program, i. e. training on vegetable cultivation, poultry raising, goat rearing etc. so that the rural women can increase agricultural production in their homestead and can change their socio-economic condition through more involvement in HAA.

## CONCLUSION

The present study clearly indicated that the types and participation level in HAA by the rural women is not satisfactory. To meet the ever-growing demand for food and nutrition further enhancements of the rate and extent of participation of rural women on various homestead agricultural activities should be in consideration for the improvement of socio-economic status. The study indicated that middle-aged rural women are generally engaged in HAA and the relationship between age and participation on HAA is not significant. Therefore, t proper emphasis should be given on the rural women of all age categories by the extension workers in order to encourage participation on HAA. This study also showed that family income of the rural women and participation on HAA had a significant relationship in the study area. Agricultural training of the rural women had positive significant relationship with their participation on HAA. It was observed that majority of the respondents had no agricultural training at all. Therefore, participation of the rural women in homestead agriculture activities can be increased if more agricultural training is conducted for the rural women. Furthermore, the concepts of knowledge on homestead agricultural activities of the rural women showed a positive significant relationship with their participation in homestead agricultural activities. These suggest that the gathered proper agricultural knowledge, rural women will be able to know the recent information and techniques on the various aspects of modern and homestead agriculture and will engage themselves in HAA.

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