

Keynote Paper on
The Role of Women in Agricultural Development of Bangladesh

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Introduction

Agriculture is one of the main driving forces of the economy of Bangladesh. It is the source of food and nutrition for people through crops, livestock, fisheries; the source of raw materials for industry, timber for construction; and a generator of foreign exchange for the country through the export of agricultural commodities, whether raw or processed. The role of agriculture is fundamental in promoting nutritious diets, especially in the countryside where production and consumption patterns are closely linked. According to the HIES (2010), 35.2% and 21.1% of the population in rural areas lives below upper and lower poverty line respectively. Without achieving the desired growth in this sector, it would be impossible to secure food security, eliminate unemployment, and alleviate rural poverty. This sector plays an important role in attaining self-sufficiency in agricultural production, development of the rural economy, and sustainable socioeconomic development. During the fiscal year 2012-13, the broad agriculture sector contributed 16.77% to the total GDP. The contributions of crop, fishery, livestock and forestry subsectors in GDP were 9.49%, 3.68%, 1.84% and 1.76% respectively (BER, 2014). In the fiscal year 2014-15, the contribution of the broad agriculture sector to GDP was 15.96% with growth rate at 3.04% (AIS, 2016). The responsible key role players for increasing GDP in agriculture are agricultural professional with the help of farmers through their dynamic innovation of varietal, technological aspects along with protection and processing management of agricultural products. Women are the integral part of all of these agricultural development activities through agricultural education, research, extension and rural farming.

In the history of human civilization, women first initiated agricultural activities. In 1970, Ester Boserup, an economist presented the first comprehensive, empirically based analysis of women's participation in agriculture and linked the advancement of farming systems to population pressures, technological transform in agriculture, and the participation of women in the labor force. She distinguished three types of agricultural systems: female, male, and mixed. In female farming systems except for land clearing, most of the works are done by women, who support themselves and their children. These women tend to be economically independent and mobile. If they generate an agricultural surplus, they engage in trade to supplement their subsistence earnings with cash income. Male farming systems are based on land ownership, settled production patterns, and the use of draft animals and the plough. Field labor is done almost entirely by men and is supplemented by hired labor; if women contribute to farming at all, it is during harvest time or at other peak periods. Women are often secluded and are dependent on men for economic support. Mixed farming, which follows and shares many of the characteristics of male farming systems, emerges with rapidly growing populations. Later on, increasing land pressure requires year-round intensive cultivation and multiple cropping, which are facilitated with irrigation. Labor demand is high and, despite social norms to the contrary, women are drawn into such tasks as weeding, transplanting, and harvesting.

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Over time the role of women has been changing, rural women play a significant part in agronomy. Though women's contribution to prepare land for cultivation is not very significant, they contribute greatly both in the pre-harvesting and post harvesting activities, like selection of seeds, planting of seedlings and saplings, irrigation, harvesting, threshing, and storing seeds, nursery management, jute extraction, horticultural crop plantation, preparation of bio-compost, rearing activities of livestock and poultry and running agro-based cottage industry.

Of the total labor force of Bangladesh, about 45.1% is directly employed in this sector, while around 53.5 % female depends on agriculture in one form or another for their livelihoods (LFS, 2013). However, women's contribution to agriculture, which is considered as unpaid family labor, is grossly underestimated. In fact, if unpaid work were included, the figures for female employment in agriculture would be even higher (FAO, 2003). In this country, about 60-70 percent of women from landless and marginally landless rural families are engaged in agricultural labor. They play an important role in ensuring food security for poor rural families. Women also show more awareness and competency in storing food to deal with natural disasters and lean seasons. Besides, their household activities, women make important contributions to the agro-economy.

The increase of women participation in agriculture is attributed to a variety of factors such as persistent poverty in rural areas, empowerment of women by NGOs, changes in social values and norms, the growing number of women-headed households, the labour-intensive cash crops and male outmigration. With the absence of male members, female's role is changing from unpaid family worker to farm managers, a phenomenon termed as "feminization of agriculture." In view of the above background, this review paper aims at:

- i) to evaluate the present status of women engagement in agricultural education, research and extension
- ii) to explore the trend of female participation in agricultural labour force
- iii) to assess the trend, nature and extent of female participation in agricultural crop, livestock and fisheries sectors
- iv) to evaluate women role as an entrepreneur in agricultural sector
- v) to examine women empowerment in relation to mobility and intra-family decision making process.

Present Status of Women in Agricultural Education, Research and Extension

Figure 1 clearly shows a significant increase in female students (25%) compared with male students (55%) from 2005 to 2015 in the agricultural universities of Bangladesh. Per cent female student was increased by 21, 15, 17 and 10% in BAU (Bangladesh Agricultural University), SAU (Sher-e-Bangla Agricultural University), PSTU (Patuakhali Science and Technology University), and BSMRAU (Bangabandhu Sheikh Mujibur Rahman Agricultural University) respectively. In 2015, female student was 48% of total enrolment in all the Agricultural Universities and it is encouraging to note that in BSMRAU, female student enrolment (55%) is higher than male student (45%) in 2015.

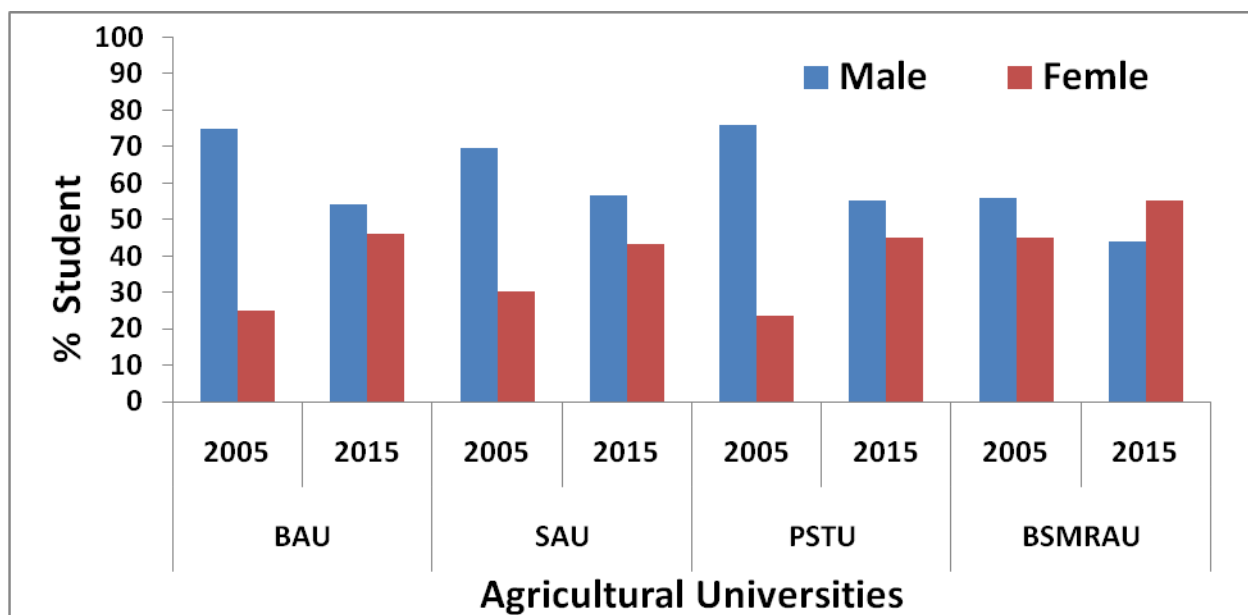


Figure 1. Comparison of male-female students (%) between the years 2005-2015 in different agricultural universities of Bangladesh

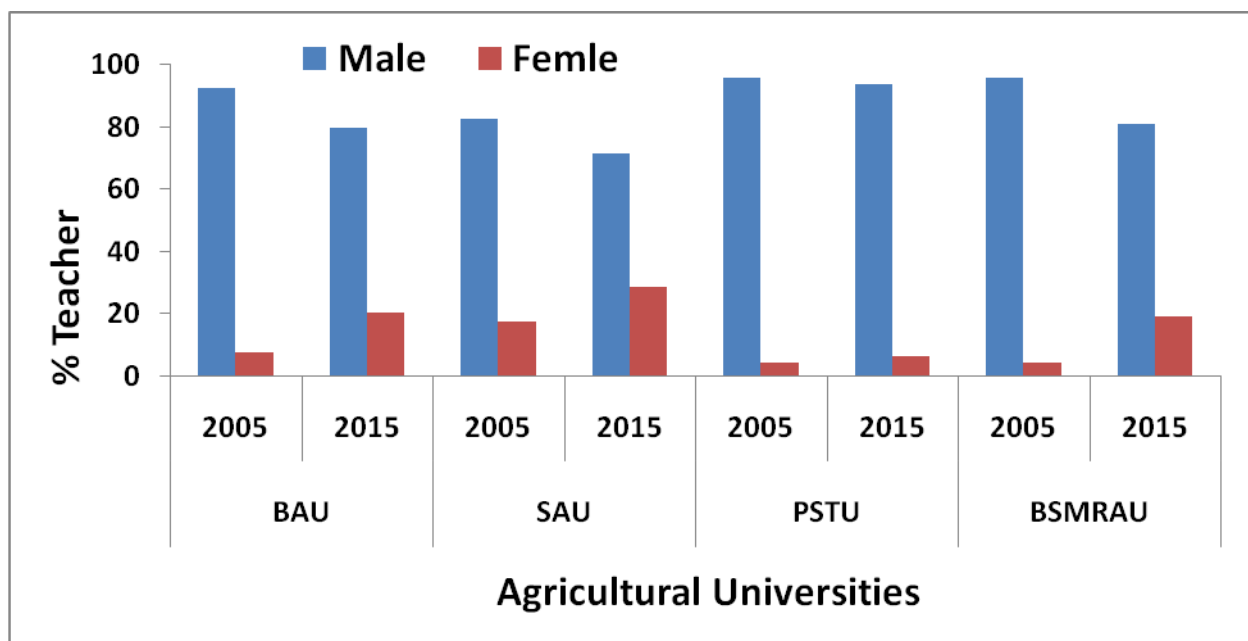


Figure 2. Comparison of male-female faculty (%) between the years 2005-2015 in different agricultural universities of Bangladesh

Figure 2 shows % of male and female faculty staffs of different agricultural universities in 2005 and 2015. The scenario has been dramatically changed during the last 10 years. In 2005, per cent

of female teaching staffs was <10% in all those universities except SAU (18%), while in 2015, percent of female teaching staffs was 30% in SAU, 20% in BAU and BSMRAU and only 7% in PSTU. Except PSTU, per cent female teaching staffs has been doubled during the last decade in all the universities.

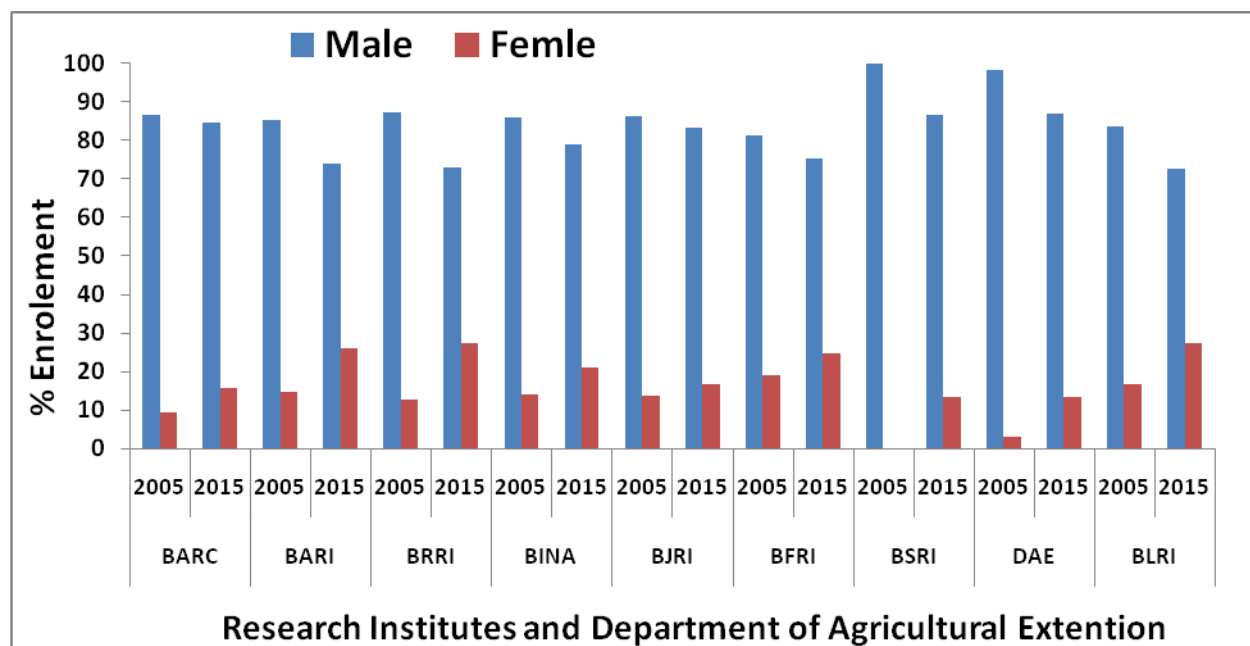


Figure 3. Comparison of male-female Scientist/Agricultural Extension Officer (%)between the years 2005 and 2015 in different agricultural research institutes and Department of Agricultural Extension of Bangladesh

Figure 3 confirms an encouraging change in the per cent female employee in different agricultural research institutes and Department of Agricultural Extension from 2005 to 2015. In 2005, BARC (Bangladesh Agricultural Research Council), BSRI (Bangladesh Sugarcane Research Institute) and DAE (Department of Agricultural Extension) had <10% female scientists/agricultural extension officers, while BARI (Bangladesh Agricultural Research Institute), BRRI (Bangladesh Rice Research Institute), BINA (Bangladesh Institute of Nuclear Agriculture), BJRI (Bangladesh Jute Research Institute), BFRI (Bangladesh Fisheries Research Institute) and BLRI (Bangladesh Livestock Research Institute) had about 13-19% female scientists. Unfortunately, BSRI failed to employ any female scientist till 2005. Even in 2015, per cent female scientists is 13 -16% in BSRI, DAE, BARC and BJRI and between 20-27% in BARI, BRRI, BINA, BFRI and BLRI.

Trend of Labour Force Growth and Participation of Women in Agriculture

In Bangladesh, women are engaged in a variety of economic activities ranging from homestead based expenditure saving activities to outside paid work. However, women's work always remains under reported; especially women's non-market homestead based economic activities. Because women are reluctant to mention some of the productive activities like cow, goat and

chicken rearing by spending few hours per week having few poultry birds or animals compared to their other reproductive and care work. Women are often involved in important but unpaid farm work, therefore they are not considered as farmers (Britt 2010), which undermines women's influence in the family structure.

Employment by broad sector has been presented in Table 1. In 2010, for the males, the highest 41.11% was engaged in the service sector followed by agriculture (40.18%) and industry (19.60%). For the females, the highest 64.84% was engaged in agriculture sector followed by service sector (21.89%) and industry sector (13.32%).

Table 1. Employed population by broad economic sector

Economic Sector	2010	
	Male (%)	Female (%)
Agriculture	40.18	64.84
Industries	19.60	13.32
Services	41.11	21.89

Source: (LFS 2010)

On the basis of data from the recent rounds of the LFS, a comparative position of the sectoral structure of male and female employment is possible for 1996 to 2010 (Figure 4). Changes in the sectoral distribution of the male and female labour forces over the last one and half decades showed contrasting patterns. The share of the male labour force in agriculture went through a slight decline while female labour force was increased from 27.8 per cent to 64.8 per cent during the period from 1995 to 2010. Participation of male labor force in non-agricultural activities, on the other hand, has increased, while female participation in non-agricultural activities has decreased from 72.2% to 35.2% during the same period. Shifting of participation of male laborers from agriculture to non-farm activities has created a tremendous labor shortage in the agricultural sector of Bangladesh which largely explains gradual increase of female participation in agriculture.

Mahmud and Tasneem (2011) conducted a study in eight districts of Bangladesh namely Faridpur, Comilla, Tangail, Chapainawabganj, Moulvibazar, Bagerhat, Kurigram and Narayanganj to find out women engagement on different types of economic activities. Not unexpectedly, participation in own agricultural activity was by far the most common occupation involving from 50% to 86% of economically active women in their study population. The next most common occupation was small business/trade/handicraft (8%), followed by non agricultural wage labor, subsistence activity and formal service. Agricultural wage labor, informal service and skilled worker were the least common occupations.

On the basis of the different types of women activities, Mahmud and Tasneem (2011) categorized economic activities into three broad groups with respect to place of work (outside or inside the home) and income earning or expenditure saving. The categories of work are as follows:

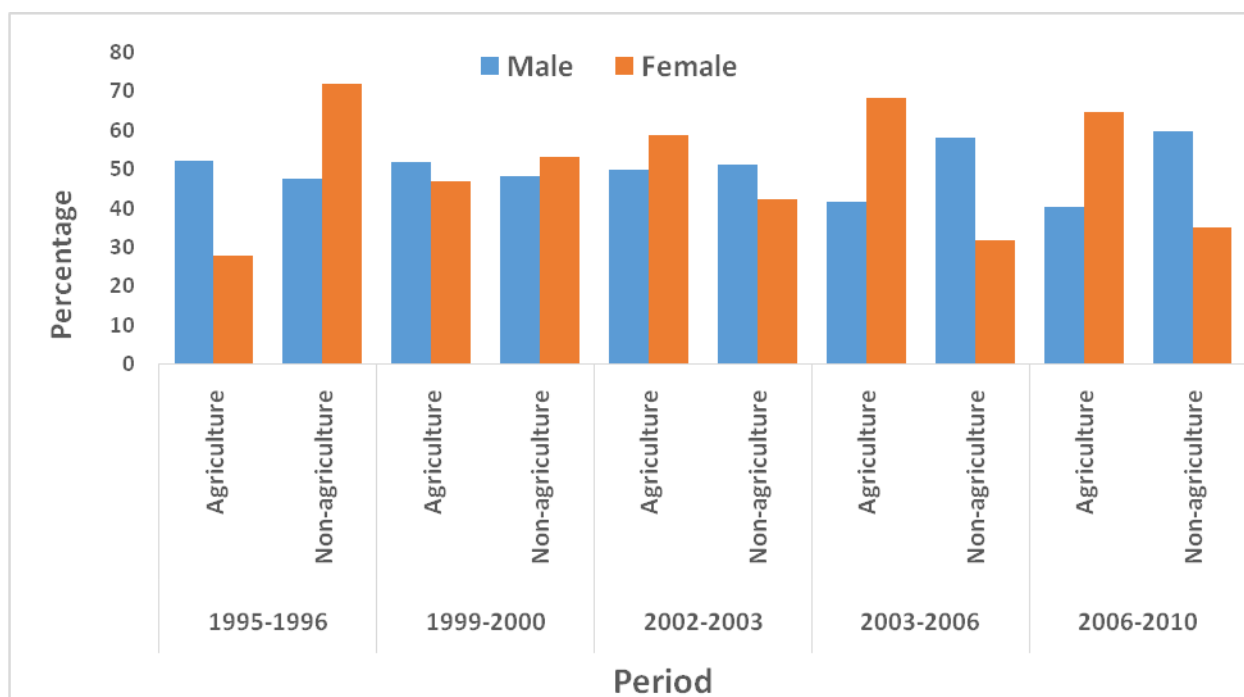


Figure 4. Trend of labour force participation in agricultural and non-agricultural activities by gender over time

- **Outside Paid Work (OPW):** Income earning work done outside the household premises of the respondents, for example, agriculture day labor, garments worker, domestic servants etc.
- **Market inside (MI):** Income earning work done inside the household premise of the respondents, for example, livestock and poultry rearing, work on family shop or trade, quilt sewing etc.
- **Expenditure saving (ES):** Work done for saving expenditure or for own consumption, for example, cow and goat rearing, poultry, kitchen gardening for own consumption etc.

They found that women are far less likely to be engaged in outside paid work compared to participation in other types of economic activity. On average, 10% of women are doing outside paid work, nearly half (48%) are doing market work inside the home and 15% are doing expenditure saving work inside the home (Table 2). The proportion of women doing OPW was highest for Narayanganj (16%) and lowest for Comilla (4%), probably reflecting varying opportunities for and acceptability of women's outside paid work (Comilla has a relatively conservative society, while Narayanganj is semi urban area and location of many garment factories). A relatively large proportion of women across regions (28%- 60%) engaged in inside market work, the highest proportion in Kurigram (60%) and lowest in Narayanganj (28%), where a fairly large proportion of women was also found not in any economic activity (42%). The proportion of women not in any economic activity was similarly large in Faridpur (45%), while

this proportion was lowest for Kurigram (18%), where poverty level is relatively higher (Table 2).

Table 2. Distribution of women by work category (%)

Districts	Economic activity			Not in economic activity
	Outside paid work	Market inside work	Expenditure saving work	
Faridpur	13.2	39.0	2.9	45.0
Comilla	3.8	59.4	18.1	18.7
Tangail	11.7	50.2	19.0	19.1
Chapainawabganj	4.2	59.7	15.8	20.3
Moulvibazar	8.6	28.7	32.2	30.5
Bagerhat	8.9	48.6	12.8	29.7
Kurigram	14.0	60.0	7.6	18.4
Narayanganj	16.2	28.0	13.5	42.3
All areas	10.2	47.8	14.9	27.0

Source: Mahmud and Tasneem (2011)

Gender Differences in Labour Market

A major gender differences in employment patterns within labour markets are due to several reasons which hold across cultures and regions. Most importantly, as a result of household and child-rearing, women are not only much less likely to participate in the labour force, those who do are also much more likely to engaged in self-employment activities rather than higher-paying wage employment. The national statistical system BBS fails to get the picture of female labour force by counting only those women who get salaries and those who are looking for a job. Thus statistics imply that women do not work. But the inclusion of all activities performed by women within and outside the household would almost double the contribution of women in the national accounts of Bangladesh (Hamid 1994). Female farmers' contributions in agriculture and food security remain largely unrecognized in Bangladesh, though they have been working in the sector in equal numbers as men for ages. To recognize women's contributions in agriculture 'equal pay for equal work' should be ensured with utmost importance.

Landless and poor female work as seasonal, casual and temporary labourers at lower wages than their male counterparts. Women working as day labourers, both in the agricultural and non-agricultural sectors, receive less income than men do for the same work. Jaim and Hossain (2011) observed that the disparity of wage rate had increased more in the recent years than in the past. In 1988, compared to men, women wage in agriculture was 26% less while in 2000 and in 2008 it was less by 42% and 39% respectively. On the other hand, LFS (2006) report showed that female wage is observed to be only two thirds of the male wage. The ratios are similar for rural and urban areas. However, HIES (2010) showed that the female to male wage ratio is 0.84, which is an improvement compared to the ratio obtained from the LFS, 2006. Gender differential of wage consists of three factors, gender segmentation of occupation, differences in endowment and pure discrimination, which is linked to the lower bargaining power of female workers.

Recently, an analysis has been done by the CARE Pathways project (in Kurigram) team in Bangladesh that shows that landlords are acknowledging that women are giving almost the same service as men, and in some agricultural activities women are more skilled than men like sapling raising and transplanting of specific crops like potato, maize, and chili, weeding, and harvesting of crops. These landlords admitted that women provide quality work and spend more time on work as they do not spend time for smoking.

Pathways is facilitating this wage mobilization process aimed at reducing the gender wage differential in agriculture by catalyzing action among landlords, wage earners, and local administration. To build greater unity and ignition between wage earner and landlord and with the broader community, the project facilitated 127 awareness and analysis sessions on gender roles and women's contributions in agriculture, fair wages, and the social and economic consequences of the gender wage differential. The mobilization process created significant impact in reducing the wage gap between men and women. The impact assessment report of Pathways shows that the wage rate for male agricultural day labor has increased by around 23%, while that for female agricultural day labor has gone up by around 46% to make it equal.

Women Role in Crop Sector

As a part of half of the society women have an important role to play in the productive activities. Findings suggest that the prevailing claim that women are involved only in post harvest processing of crop production is an underestimation of women's contribution to agricultural production. Sanzidur and Jayant (1997) observed that women's share of total labor requirements is between 10 - 18 per cent in food grain production and between 6 – 48 per cent in non-cereal crop (lowest for jute and highest for vegetables) production. However, women engage in 45 different types of activities of which crop related activities are (Efroymson *et al.* 2007):

1. Preparing soil, planting seedlings, weeding, etc. for paddy
2. Managing daily workers for paddy
3. Preparing plot for vegetable gardening
4. Growing vegetables (watering, weeding, etc.)
5. Managing daily workers for gardening
6. Harvesting
7. Grain processing
8. Collecting, drying and storing seeds

A Study was conducted in Madhupur forest areas to determine the extent of women participation in agricultural activities and explore the potential factors that influence their participation in agriculture. The highest proportion of the respondents (95.7%) had high level of participation, while only 4.3% had medium and 1.4% had low level of participation in agricultural activities. More than half of respondents (62.9%) were motivated towards agricultural activities as they have no alternatives to do, where 25.7 and 11.4% of them were self-motivated and enforced by other to practice agricultural activities. More training and exposure to extension media helped the people to become more informative, conscious and rational decision maker (Munmun *et al.*). Now a days, nearly all agricultural policies and programme attention including the new

technologies, are focused on grain production rather than on grain processing and storage. Conscientiousness of women and their education level are responsible for technology adoption. Adoption of technology was faster among higher educated women in the rural village (Paul and Saadullah 1997).

Women as Livestock Keeper

In mixed farming systems, livestock play an important role in financial support to women and women are heavily engaged in this sector. They share responsibility with men and children for the care of animals, and particular species and types of activity are more associated with women than men. For example, women often have a prominent role in managing poultry and dairy animals and in caring for other animals that are housed and fed within the homestead. Female-headed households are as successful as male-headed households in generating income from their animals, although they tend to own smaller number of animals, probably because of labour constraints. With effective savings and some financial literacy, livestock owners are able to grow their investments over time, progressing from poultry to goats and eventually dairy cows. Although women are usually the technical owners of their own livestock, they have little to no control over these assets and the income they generate.

A study intends to examine the extent of women involvement in livestock and poultry raising and utilization pattern of income earned in three selected upazilas of Mymensingh District showed that women played an important role in the activities dealing with livestock and poultry such as, care and management, transformation and marketing of certain livestock products. The participation of male and female in raising livestock and poultry was 38 per cent and 42 per cent respectively during the study period (Rahman 2008).

The role of women in small-scale livestock production is well recognized, much less has been documented about the engagement of women in intensive production and the market chains associated with large commercial enterprises. Because, when livestock enterprises scale up, the control of decisions and income and sometimes of the entire enterprise often shifts to men due to limited access that women have to land and credit. On the other hand, all smallholders face challenges when the livestock sector intensifies and concentrates and many go out of business.

CARE–Bangladesh implemented the Strengthening the Dairy Value Chain Project (SDVCP) in nine districts in North-western Bangladesh through mobilized smallholders into producer groups and gave them training on livestock health, the benefits of cross-bred cows and the use of artificial insemination, feeding practices and financial management. Through project activities, many women out of 82% have been able to bring about a positive change in their status as cattle owners and as decision-makers with regards to their own incomes and household assets. The meaningful participation of women can be fully achieved through building women's capacity, gender awareness building at household and community level and through men's engagement and ensuring support from men.

Rearing of livestock and poultry are the major source of household income in *Hakluki Haor* area rather than other source of income included crops, fisheries, services, small business, day labour, rickshaw pulling. Table 3 shows that livestock and poultry rearing play a significant role in household income. The highest (57%) income was earned by small raisers, whereas poultry contributed about 40% and the lowest (38%) by medium raisers, whereas livestock shared major part (21%).

Table 3: Contribution of livestock and poultry in total household income in *Hakaluki Haor*.

Raisers	Household income from Livestock and poultry rearing			
	Livestock (%)	Poultry (%)	Total income from livestock and poultry (%)	Others*(%)
Small	17.75	39.53	57.28	42.72
Medium	20.51	17.34	37.85	63.15
Large	38.83	23.81	62.64	37.36
Average income	25.70	26.89	52.59	47.74

In *haor* area the overall participation of men, women and others in livestock and poultry rearing activities were 39%, 42% and 19% respectively. Some of the rearing activities women was highly engaged such as feeding & collecting of grass, fodder etc., putting to and taking out of shelter, cleaning shed, offering water to the animal, selling egg and milk, whereas the role of male was higher in milking, selling & purchasing livestock and poultry, contact with doctor and purchasing medicine etc. (Table 4).

Table. 4. Active involvement of men, women, and others in livestock and poultry rearing activities

Activities	Male (%)	Female (%)	Others (%)
Feeding & collecting of grass, fodder etc.	22	58	20
Putting to and taking out of shelter	12	60	28
Cleaning of shed	8	61	31
Offering water to the animal	14	64	22
Collecting of egg	22	50	28
Milking	62	35	3
Selling egg and milk	21	60	19
Selling livestock and poultry	68	17	15
Purchasing livestock and poultry	65	11	24
Contact with doctor	67	22	11
Purchasing medicine	68	26	6
All (%)	39	42	19

Source: Mahadi *et al.* 2014

The Role of Women in Fisheries and Aquaculture

The Bengali proverb “mache-bhatee Bangali” (rice and fish make a Bengali) well illustrates the important role played by fish and fisheries in food security in Bangladesh. The total annual fish production in Bangladesh was estimated at 2.44 million tons in 2007 of which 945,812 tons (39% of the total production) were obtained from freshwater aquaculture. The main production systems for freshwater aquaculture in Bangladesh are extensive and semi-intensive pond polyculture of Indian major carps and exotic carps which accounts for 80% of the total freshwater aquaculture production. The remaining 20% are mainly from prawn, catfish, tilapia, small indigenous fish and rice-fish farming. Fish represent 58 percent of total animal protein consumption and are a key source of vitamins and nutrients.

The fish production in Bangladesh involves both men and women. While fishing is traditionally perceived to be a full-time occupation of men, women are considered to be less directly (around 3%) involved due to their lower social status, religious-cultural norms and values, restricted mobility and heavy responsibilities at household than men in fisheries activities. But in reality women are engaged in activities such as making fishing nets, repairing and maintaining other fishing equipment, sorting of fingerlings, processing, transportation and marketing of fish. Rural women also contributed to seasonal fish drying, an occupation that was largely restricted to them.

In the coastal areas many women are engaged in collecting of the fingerlings seed and their transportation and marketing (Ahmed *et al.* 1993). Besides, women can buy fish from the trawler and deep-sea fishing boats directly and undergo the fish drying process. These dry fishes can be marketed during the lean season to make good return of their investment. It has created self-employment opportunity for women (Alam 1996).

According to Samina *et al.* (2010), it was found that women were involved in aquaculture activities with various degrees of participation (Table 5). According to the survey, the majority of women were regularly involved in feed preparation, feeding to fish, fertilization, pond supervision and management and fish harvesting. In general, women provide partial assistance to men in pond supervision and management in two ways: first, most routine operations such as fertilisation and feeding could easily be managed by women, and second, take the lead role in day-to-day operations when their husbands were often busy in other economic work or away from the home for long hours. Harvesting of fish for marketing is done by men with commercial harvesters while in several cases harvest of fish for family consumption is done by women with the help of children. Women are involved in post-harvest handling including sorting, grading and washing of fish. The rapid development of the freshwater aquaculture industry has provided employment opportunities for women such as paid labourers in fish hatcheries and fish feed industries. A few women are involved in weaving fishing nets, a traditional occupation of women.

Halim and Ahmed (2006) studied the involvement of women in DFID funded aquaculture projects and found that all five projects had largely ignored the gender dimensions. Although women's contribution to family income has increased, their role in decision making in the family has not increased significantly. However, the positive aspect of the change was that women had a

slightly larger role in decision-making in family affairs, though very little of this ability finds expression in major decisions such as on the purchase, lease or sale of land, sharecropping, changes in occupation, marriage, children's education, etc. All fisheries projects fail to take into account women's low status with regard to access to resources, decision-making power, women's contribution within and outside the household and their legal and political status.

Table 5. Degree of participation by women in various aquaculture activities

Activities	Regular participation (%)	Irregular participation (%)	Seldom participation (%)	No participation (%)
Fish stocking	12	23	56	9
Feed preparation	67	28	5	0
Feeding of fish	82	29	12	9
Fertilization	53	29	12	6
Liming	36	42	12	10
Pond supervision	55	41	4	0
Harvesting	62	21	12	5
Marketing	4	11	48	37

Table 6 shows the use of women's income for various purposes. About 80% of the respondents allocated their income on food and clothes for household members; 34% on educational expenditures for their children; 8% on health care. Only 1% had the capacity to save some money. If women were given more opportunities to participate in income-generating activities like fisheries they would be in a position to improve the overall standard of living of the household.

Table 6. Use of women's earning

Sector	Frequency	%
Food for household member	51	79.7
Clothes for household member	52	81.3
Education	22	34.4
Occasional luxury for women and children	13	20.3
Petty cash formation	1	1.6
Health expenditure	5	7.8

Source: Halim and Ahmed (2006)

Ahmed *et.al* (2012) also observed that women play important roles in food security especially in rural areas. Among the respondents, 92% and 73% allocated their income respectively for food and cloths. About 40 percent respondent uses their income for health services. Across programs the findings ensures certain extent of social and economic empowerment enjoy by the women in the rural societies. It increases their awareness about their rights, about divorce and dowry.

Women Role in Agricultural Entrepreneurship

A woman entrepreneur is defined as a woman who has alone or with one or more partners started or inherited a business, and is eager to take financial, administrative, and social risks and responsibilities, and participate in the day-to-day management activities (UNDP 2004). According to BBS report, women access to land, credits and other property (beside land) has improved gradually with the point of 0.80, 0.30 and 0.50, respectively which implies that women are getting more access to loans than other assets (BBS 2009). In fact, government policy and other resource mobilizing institutions motivated and encouraged rural women, and made them entrepreneurs, that is, agricultural entrepreneurs (crops, livestock and fisheries), small business owners, tailors, handicraftsmen and so on (Rahman *et al.* 2011). However, based on entrepreneurship status, only 16% of women are self-employed out of 66% self-employed citizen.

Contribution to GDP by women owned enterprises is illustrated in Table 7. The contribution from manufacturing enterprises was the highest with 50%, followed by agriculture with 18%, wholesale retail trade with 15% and hotels restaurants with 8%.

Table 7. Contribution to GDP by women owners

Particulars	Per cent of total contribution
Agriculture	18
Fishing	3
Manufacturing	50
Construction	0
Wholesale, retail trade	15
Hotels, restaurant	8
Transport, storage and communications	1
Real estate, renting and business activities, education	2
Health and social work	1
Other services	1
Total	100

Source: Daniels (2003)

More and more women are trying to break free from their traditional roles and trying a hand at gaining stronger financial foothold. But they face major problems and have been restricted by various issues. Some of them are:

(i) Socio-cultural barriers (ii) Motivational factors (iii) Knowledge in Business Administration (iv) Awareness about the financial assistance (v) Exposed to the training programs (vi) Identifying the available resources

Information & Communication Technology (ICT) in Agriculture

In agriculture, an information-poor environment is one where improved farm performance or particular opportunities to respond to market demand or safeguard against shocks. Inadequate public service coverage, geographic remoteness and widespread illiteracy contribute to the pervasiveness of 'information poverty' across rural areas. It is true to say that many have coping

mechanisms which enable them to partially overcome some of these impediments, but in general smallholders are vastly underserved with relevant and timely information.

Introducing and integrating ICT applications into agriculture, industries, and services can present opportunities to improve working conditions for those employed, particularly women. These applications have immediate and direct implications for the poor:

- Managing, sharing and storing agricultural-related information and data;
- Access to time-sensitive information and public (government) information;
- Links and networks that support participatory information sharing; and,
- Access to market information across sectors.

Recent interventions by the state and by many non-governmental organizations (NGO) in the areas of micro-credit, health, and political empowerment, have positively affected women's bargaining power and their ability to challenge certain social norms, both in and out of the household. Due to these measures, women are better able to assert their needs and demands. For instance:

- Women are increasingly visible in the cash economy, which has traditionally been largely male-dominated;
- Women's increased mobility means more presence in traditionally male-dominated public domains;
- Increased mobility also means that more women are migrating to urban areas; and,
- Micro-credit programs for women have initiated new economic opportunities.

The use of ICT technologies for disseminating agricultural technologies has been proved to be useful for enhancement of production. The major ICT technologies for transferring scientific innovations are mobile phone and computer.

It has been revealed through a survey of Katalyst in 2013 that the farmers seek the following information through the helpline of mobile phone.

67% regarding pest management of crops

2% regarding seed

7% regarding fertilizer

10% regarding cultivation technologies

14% regarding other issues

The same survey revealed that 84% rural farmers use mobile phones, 67% farm families use more than one mobile phones and 73% farm families use more than one sims. By using ICT 7 lakh 45 thousand farm families were benefited and the average income increased BDT 10, 500 per family.

Climate Change and Food Security in Women Perspective

Women are vulnerable to climate change not because of natural weakness (i.e. because of their sex) but rather because of socially and culturally constructed roles ascribed to them as women. In the developing world due to the severity of gender inequality, especially climate change is likely

to magnify the existing of gender disadvantage (UNDP, 2010). There are several factors which will exacerbate this disadvantage position such as limited access to resources, dependence of natural resources and the gender-based division of labour, lack of education and access to information, limited mobility, limited roles in decision-making and lower capacity to cope with natural disasters.

As women is the main users and managers of natural resources (e.g. fetching water and wood for use in the house), they depend on the resources most at risk from climate change. When these become scarce, women often have to work harder, or go farther, to obtain these resources for their families. Climate change is likely to affect the availability of natural resources and potentially affect the growth of staple crops.

Women are not just victims of adverse climate effects due to their vulnerability; they are also key active agents of adaptation. This is due to their often deep understanding of their immediate environment, their experience in managing natural resources (water, forests, biodiversity and soil) and their involvement in climate-sensitive work such as farming, forestry and fisheries. Furthermore, women typically form strong social networks within their communities which place them in the ideal position to organize collectively around the risks posed by climate change.

According to World Food Summit (1996) “Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life”. Food security is given the topmost priority in Bangladesh. Side by side with domestic food production, greater importance is given to ensure access to adequate and safe food by all people at all times for maintaining an active and healthy life.

In our society women have multiple roles, as mothers, as homemakers, as produces and contributors to the family income and as community organizers. Women as part of their reproductive role, they apprehended responsible for properly feeding their children and the household work force. However, they often do not have sufficient decision-making power and access to productive resources to increase own food production or buy food, unless new opportunities are created. In a situation of increasing dependency on the market, women need access to cash to be able to buy food. Hence, household food security will depend on women’s ability to make money and/ or on their control over the allocation of household income. In the rural household in Bangladesh, there is evidence that women appear to take a much greater role in assuring the food requirements of their dependents in situations of economic deterioration.

Women Empowerment in Agriculture

According to Rao and Kelleher (1995), women’s empowerment is defined as “the capacity of women to be economically self-sufficient and self-reliant with control over decisions affecting their life options and freedom from violence”. The empowerment of women could be the principal strategy to upgrade their status. Moreover, women’s empowerment depends on a range of factors including psychological, cognitive, economic, social and political dimensions (Stromquist 1995). Resources may be economic (e.g. pond, land and credit), participation in

local government and community decision-making may be political and education and training are social (Parveen 2008).

Women suffer from different types of powerlessness in social and economic sphere of life. The lack of power or disempowerment reflects in their less education level, less income, less control over their own income, less bargaining power in selling their own produce and labour, less participation in decision making body, less access to production inputs and resources and employment opportunity than men. Although the role of women within the household and the community has been changing fast over the past decade but, their position in terms of prestige, power and control over resources remains almost unchanged. As a result, though the quantitative indicators of changes in women's lives have improved in some cases, qualitative changes have not been remarkable.

Results from Bangladesh Integrated Household Survey (BIHS 2010) showed that education and income had positive relationship with empowerment in agriculture for both men and women. However, for both the variables the rate of increase in empowerment was higher for men than for women. Sraboni *et al.* (2013) also observed that with same level of higher education and higher income, women may still remain less empowered than men in respect of decision making in agriculture.

Shahnaj and Leonhäuser (2004) conducted a survey in three villages of Mymensingh district covering 156 respondents to investigate the nature and extent of rural women's empowerment and factors influencing it. They observed that 83% of the women have a very low to low economic contribution, 44% have a very low to low access to resources, 93% have a very poor to poor asset ownership, 73% have a moderate to high participation in household decision-making and 43% have a highly gross to gross perception on gender awareness. The distribution of cumulative empowerment index (CEI) demonstrates that the majority of rural women have a very low to moderate (82%) level of empowerment. The multiple regression analysis shows that there were strong positive effects of formal and non-formal education, information media exposure and spatial mobility on women's CEI, while traditional socio-cultural norms have a strong negative effect.

They suggested that education, training and exposure to information media have the potential to increase women's empowerment. Therefore, effective initiatives undertaken by the concerned agencies in improving women's education, skill acquisition training and access to information could enhance women's empowerment in order to achieve gender equality and development at all levels in the rural society of Bangladesh. Samina *et al.* (2010) added some more strategies for empowering women to be actively involved in aquaculture activities are education, training, awareness, information, credit and group formation.

The researchers at USAID, IFPRI, and the Oxford Poverty and Human Development Initiative (OPHI) developed a new survey-based index "The Women's Empowerment in Agriculture Index (WEAI)" designed to measure the empowerment, and inclusion of women in the agricultural sector in an effort to identify ways to overcome those obstacles and constraints (Alkire *et al.* 2012). The WEAI is a useful tool for policymakers, development organizations, and academics

seeking to inform efforts to increase women's empowerment. For WEAI five domains of empowerment (5DE) are agricultural production, resources, income, leadership, and time and they comprise ten indicators. Each domain is weighted equally, as are each of the indicators within a domain (Table 8). A woman is defined as empowered in 5DE if she has adequate achievements in four of the five domains or is empowered in some combination of the weighted indicators that reflect 80 percent total adequacy. All range from zero to one; higher value = greater empowerment.

Using a nationally representative survey from Bangladesh, Women's Empowerment in Agriculture Index (WEAI) was used to assess the extent of women's empowerment in agriculture and diagnose areas where gaps in empowerment exist so that programmes and policies can be targeted to those areas. The results show that about 77% of rural women in Bangladesh are disempowered. It is also seen that empowerment gaps for women are greatest in terms of leadership in the community and control and access to resources. A larger proportion of women are disempowered relative to men within their households (Shraboni *et. al* 2013).

Table 8. The five domains of empowerment in the WEAI

Domain	Indicator
Production (1/5)	Input in productive decisions (1/10)
	Autonomy in production (1/10)
Resources (1/5)	Ownership of assets (1/15)
	Purchase, sale, or transfer of assets (1/15)
	Access to and decisions on credit (1/15)
Income (1/5)	Control over use of income (1/5)
Leadership (1/5)	Group member (1/10)
	Speaking in public (1/10)
Time (1/5)	Workload (1/10)
	Leisure (1/10)

Source: Shraboni *et al.* (2013)

Summery and Conclusion

Bangladesh is an agro-based country and 15.96% GDP comes from Agriculture. About half of the population is women. Women first initiated agricultural practices and demonstrated the art of science of farming. Now a day's women are actively participating in different kind of agricultural development activities along with their drudgery household activities. Over last ten years (2005-2015), percent enrolment of female student is very much satisfactory from 31 to 48% in agricultural education while trend of access to job opportunity especially in agricultural universities, research institutes and Department of Agricultural Extension is a bit low 9-19%, 12-21% and 3-13%, respectively.

Over the last one and half decades the share of the female labour force in agriculture was increased from 27.8 to 64.8 per cent due to attributed a variety of factors such as persistent

poverty in rural areas, empowerment of women by NGOs, changes in social values and norms, the growing number of women-headed households, the labour-intensive cash crop production and male outmigration. Women involvements in different economic activities like “outside paid work”, “market inside” and “expenditure savings” vary from rural to urban, and region to region due to cultural, attitudinal gap, poverty level and industrialization situation.

Women engage 45 different types of activities of which crop production, animal husbandry, handicrafts, housework, caring for family members. Women’s share of total labor requirements in crop sector is between 10 - 18 percent in food grain production and between 6 – 48 percent in non-cereal crop. Crop production, livestock and poultry rearing play a significant role in household income. Overall participation of men, women and others family member in livestock and poultry rearing activities were 39 per cent, 42 per cent and 19 per cent respectively. Some of the rearing activities like feeding, cleaning and selling of egg and milk women was highly engaged whereas the role of male was higher in milking, selling & purchasing livestock and poultry, contact with doctor and purchasing medicine etc. The meaningful participation of women can be fully achieved through building women's capacity, gender awareness building at household and community level and through men's engagement and ensuring support from men.

In fisheries sector, women are engaged in activities such as making fishing nets, repairing and maintaining other fishing equipments, sorting of fingerlings, feed preparation, feeding of fish, fertilization, pond supervision and management, processing, fish harvesting, transportation and marketing to some extent. Most of the women of rural areas allocated their income on food and clothes for household members followed by education expenditures for their children and health care. If women were given more opportunities to participate in income-generating activities they would be in a position to improve the overall standard of living of the household.

Gender differential of wage consists of three factors, gender segmentation of occupation, differences in endowment and pure discrimination, which is linked to the lower bargaining power of female workers. However, wage ratio gap between female and male is reduced from 0.64 to 0.84. Even though wage ratio gap between female and male was reduced in specific location (Kurigram) through intervention motivational activities and awareness building like women’s contributions in agriculture, fair wages, and the social and economic consequences of the gender wage differential among wage earner, employer and broader community in that location.

Based on entrepreneurship status, only 16% of women are self-employed out of 66% self-employed citizen and their contribution to GDP in Agriculture is 18%. However, Problem being faced by women entrepreneurs in rural areas is (i) socio-cultural barriers (ii) motivational factors (iii) knowledge in business administration (iv) awareness about the financial assistance (v) exposed to the training programs (vi) identifying the available resources.

Women suffer from various types of powerlessness in social and economic sphere of life. The disempowerment reflects in their less education level, less income, less control over their own income, less bargaining power, less participation in decision making body, less access to production inputs and resources and employment opportunity than men. In general women’s

contribution to family income has increased but their role in decision making in the family has not increased significantly. However, women now play greater decision making autonomy on minor household expenditures, daily tasks, and their health. The baseline study for the Women's Empowerment in Agriculture Index in Bangladesh found that 23% of the women in the sample were empowered. The empowerment gaps for women are greatest in terms of leadership in the community and control and access to resources.

Recommendation

We are proud that Bangladesh has achieved remarkable progresses in MDG-2015 goals in the areas of poverty alleviation, primary school enrolment, gender parity in primary and secondary level education, lowering the infant and under-five mortality rate and maternal mortality ratio, improving immunization coverage and reducing the incidence of communicable diseases. But, there are also challenges with regard to reducing income inequality and addressing low economic participation of women. Moreover, in SDG-2030 there is a direct gender related goal i.e. Goal 5: Achieve gender equality and empower all women and girls. Therefore, considering all these along with women role in agricultural development of Bangladesh we should do some remarkable activities at institutional and policy level.

- To strictly follow the Govt. National Policy for the advancement of women in institutional level along with providing women friendly physical and environmental facilities like toilets, office room arrangements, day care centre etc.
- To involve men in domestic tasks in order to reduce the work burden on women as well as access to express their potentiality in professional arena. If necessary, technical accessories/equipment may be used in the household activities.
- To develop gender-sensitive project design and planning in consultation with women.
- To provide training and up-date information on crop-fish-livestock related activities to increase productivity and income of women-headed household.
- To make market information and complex marketing mechanisms accessible to rural women.
- To give women access to own property, and use and control over of existing resources in the family.
- To increase the number of women entrepreneurs and develop entrepreneurial skills of the women
- To upgrade technical “know-how” of women and develop technologies suitable for women responding to the issue

- To take effective initiatives by the concerned institutes/agencies for empowering women are improving women's education, skill acquisition training, access to information and credit, awareness buildup and group formation.
- To recognize women as a farmer and their contributions in agriculture 'equal pay for equal work' should be ensured with utmost importance. Policy makers can introduce the success history of CARE Pathways project in Kurigram through motivational activities for equal pay.
- To calculate women unpaid work with the economic value and adding that value to measure national GDP. In that case GDP will be more than double which will reflect the contribution of women invisible work to visible as a result it will improve women position in the family and society. It will also help build more gender –equal society and wealthier nation.

References

- Ahmed, M., M.A. Rab and M.A.P. Bimbao. 1993. Household socio-economics resource use and marketing in two *Thanas* of Bangladesh. ICLARM Technical Report 04, pp. 34.
- Ahmed, M. K., S. Halim, and S. Sultana. 2012. Participation of women in aquaculture in three coastal districts of Bangladesh: Approaches toward sustainable livelihood. *World Journal of Agricultural Sciences*, Vol. 8(3), pp. 253-268.
- Akhter, S., M. Alamgir, M.S.I. Sohel, M.P. Rana, S.J.M. Ahmed and M.S.H. Chowdhury. 2010. The role of women in traditional farming systems as practiced in home gardens: a case study in Sylhet Sadar Upazila, Bangladesh. *Tropical Conservation Science*, Vol. 3(1), pp.17-30.
- Alkire, S., R. Meinzen-Dick, A. Peterman, A. R. Quisumbing, G. Seymour, and A. Vaz. 2012. *The Women's Empowerment in Agriculture Index*. IFPRI Discussion Paper 1240. Washington, DC: International Food Policy Research Institute. Downloadable at: <http://www.ifpri.org/publication/women-s-empowerment-agriculture-index>.
- Alam, K. 1996. Two fishing villages of Bangladesh: A Community study. Ph D Dissertation, Department of Development and Planning, Aalborg University, Denmark. (Bangla translation of this Ph D thesis has been published by the PRIP Trust, Dhaka in September 1998).
- AIS. 2016. Agricultural Information Service. Bangladesh at a glance, pp. 1-3.
- BMS. 2009. Bangladesh Microfinance Statistics, Credit and Development Forum (CDF) & Institute of Microfinance (InM), Dhaka, Bangladesh.
- Britt, C. 2010. Gender Assessment USAID/Bangladesh. Available at http://pdf.usaid.gov/pdf_docs/PNADS882.pdf.

- Daniels, L. 2003. National Private-sector Survey of Enterprises in Bangladesh. Report prepared for Department for International Development, United States Agency for International Development, Swiss Agency for Development and Cooperation, and Swedish International Development Cooperation Agency (October). Dhaka, Bangladesh: International Consulting Group and Micro Industries, Development Assistance & Services, FAO (Food and Agricultural Organization).
- Efroymson, D., B. Biswas and S. Ruma. 2007. The economic contribution of women in bangladesh through their unpaid labor. WBB Trust - HealthBridge Canadian International Development Agency (CIDA). Editing Lori Jones, Sian FitzGerald, and Ethel Tungohan.
- FAO (Food and Agricultural Organization). 2003. Gender, Key to Sustainability and Food Security, Plan of Action: Gender and Development, FAO, Rome.
- Halim, S. and M. K. Ahmed. 2006. Women in fisheries in Bangladesh: Level of involvement and scope for enhancement. Seventh Asian Fisheries Forum, 1-2 December 2004, Penang, Malaysia. Penang: World Fish Center. In: P.S. Choo, S.J. Hall and M.J. Williams (Eds.), Global Symposium on Gender and Fisheries, pp. 159-168.
- Hamid, Shamim. *Why Women Count, Essays on Women in Development in Bangladesh*. Dhaka: University Press Limited, Dhaka , 1996.
- HIES (Household Income and Expenditure Survey). 2010. Bangladesh Bureau of Statistics. Dhaka. Halim and Ahmed. Women in fisheries in Bangladesh: level of involvement and scope for enhancement. World Fish Center | Global Symposium on Gender and Fisheries, pp. 159-168.
- Hossain, M. 1991. Agriculture in Bangladesh: Performance Problems and Prospects. The University Press Limited, Dhaka, Bangladesh.
- Jaim, W. M. H. and M. Hossain. 2011. Women's participation in Agriculture in Bangladesh 1988-2008: Changes and Determinants. Paper presented in the pre-conference event on "Dynamics of Rural Livelihoods and Poverty in South Asia", 7th Asian Society of Agricultural Economists International Conference, Hanoi, Vietnam, October 12, 2011.
- Kapsoss, S. 2008. The Gender Wage Gap in Bangladesh, ILO-Asia-Pacific Working Paper series, Regional Office for Asia and Pacific, Bangkok, 2008.
- LFS (Labor Force Survey). 2010. Labor Force Survey Report 2010. Bangladesh Bureau of Statistics, Government of Bangladesh, Dhaka.
- Mahmud, S. and S. Tasneem. 2011. The Under Reporting of women's economic activity in Bangladesh: An Examination of Official Statistics. BRAC Development Institute, BRAC University, 66 Mohakhali, Dhaka 1212, Bangladesh. BDI working paper no 01.

- Mahadi, M. S. A., R. Khanum, and K. Akhi. 2014. Participation in livestock and poultry rearing: A study on *Haor* women in Bangladesh. *Journal of Chemical, Biological and Physical Sciences*. Section D: Environmental Sciences Aug. 2014 – Oct. 2014, Vol. 4(4), pp. 3850-3860.
- Paul and Saadullah. 1991. Role of women in homestead of small farm category in an area of Jessore, Bangladesh. *Livestock Research for Rural Development*, Vol. 3(2).
- Rahman, S. and K. Jayant Routray. 1997. Technological change and women's participation in crop production activities in Bangladesh. *Regional-Rural Development Planning at the School of Environment, Resources and Development (SERD), Asian Institute of Technology (AIT), Bangkok, Thailand*. pp. 1-29.
- Rahman, M. K. 2008. Women involvement in livestock and poultry raising in some selected areas of Mymensingh District, Bangladesh. *Asia-Pacific Journal of Rural Development*, Vol. 18(2), pp. 119.
- Rahman, M. W., J. Luo , W. Xiaolin and S. Ahmed. 2011. The Synthesis of Grameen Bank, BRAC and ASA Microfinance Approaches in Bangladesh, IPRCC working paper series. UNDP 2004. Human Development Report 2004, Oxford University Press.
- Rao, A. and D. Kelleher. 1995. Engendering Organizational Change: The BRAC Case. *World Development*, Vol. 24(1).
- Parveen, S. and I. Leonhäuser. 2004. Empowerment of rural women in Bangladesh: A household level analysis. *Deutscher Tropentag- Berlin, 5-7 October, 2004 Conference on Rural Poverty Reduction through Research for Development and Transformation*.
- Sraboni, E., H. J. Malapit, A.R. Quisumbing, and A. U. Ahmed. 2013. The Women's Empowerment in Agriculture Index: Results from the 2011-2012 Bangladesh Integrated Household Survey. Project report submitted to the U.S. Agency for International Development. International Food Policy Research Institute (IFPRI), Dhaka.
- SOFA. 2011. Women in agriculture closing the gender gap for development. *FAO: The State of Food and Agriculture*. Rome. Available at: <http://www.fao.org/docrep/013/i2050e/i2050e00.htm>