

Impact of Homestead Gardening on Livelihood Improvement of Farmers of the Greater Mymensingh District

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Abstract: *The study was endeavored to analyze the impact of homestead gardening on livelihoods of rural women in some selected areas of Mymensingh district. A total number of 360 households were selected for this study of which 288 were 'homestead garden practicing household' and 72 were 'non-practicing household farmers'. The study revealed that the average working hours/week for respondent was 4.37 and 3.93, respectively for 'homestead garden practicing farmers' and 'non-practicing household farmers'. The average monthly income of homestead garden practicing and non-practicing household farmers were Tk 13218 and Tk 12579, respectively. Annual contribution of household income from homestead gardening by women was about 98% higher for homestead garden practicing household farmers than homestead garden non-practicing household farmers. Women decision making power is increasing day by day in different sectors. But the increasing rate is higher for homestead garden practicing household farmers than non-practicing household farmers at family level. The access to human capital, social capital, natural capital, physical capital and financial capital for homestead garden practicing household farmers were increased by 84.49%, 81.16%, 29.62%, 59.09% and 66.17%, respectively due to involvement in homestead gardening. The above findings showed that homestead gardening had a significant impact on farm households' women livelihood patterns than homestead gardening non-practicing household farmers.*

Key words: Homestead gardening, impact, livelihood, women

1. Background of the study

Bangladesh is one of the world's poorest countries, which is predominantly rural

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with 116.2 million (74.5 per cent) of its 156 million people living in rural areas. Among them about 50 millions are poor (BBS, 2013). Women are among the poorest of the rural poor, especially when they are the sole heads of their households, such as widows or wives of men who have migrated in search of employment. They have scarce income-earning opportunities and their nutritional intake is often inadequate. Malnutrition is a serious public health problem in Bangladesh, which is acute among women especially in rural areas. For poor households, vegetables and local homestead fruits are often the only source of micronutrients in the family diet (Talukder et al., 2000). Moreover, cultivable land is a scarce resource in densely populated Bangladesh, which is mostly employed for production of rice and other field crops. However, many small homesteads (around 20 million) of Bangladesh remains unutilized/underutilized/not scientifically managed, which could be brought under year round the year vegetable cultivation for reducing the above mentioned problems. Homesteads are the resources that provide major share of livelihood especially for poor farmers. Those resource poor farmers (RPF) get about 50% of their food and cash from homestead equally important, home gardening has been shown to be a source of additional income, because the household can sell a portion of the garden's produce. Home gardening activities provides most significant income generating activities for poor households (Talukder et al. 1997). Home gardening is especially important in overcoming seasonal availability of foods and promoting household self-sufficiency. Home gardening activities are centered on women and it is a source of employment opportunity for mostly unemployed and unpaid rural women and it can also increase the income of women, which may result in the better use of household resources and improved caring practices. All these (employment generation and increased income) may in turn contribute to the women empowerment since additional income can make them educated more and improve their livelihood. These activities involved an excellent source of employment mainly for female labour, which is an important component of family labour and also provide the bulk of total family income.

Therefore, homestead gardening can be an important strategy for providing productive employment opportunities to the women, increasing their income and improving their livelihood status. This study is a rigorous attempt to estimate the impact of homestead gardening on livelihood improvement of the farm households.

The specific objectives of the study are to examine the impact of homestead gardening on employment generation opportunities for women, to evaluate the livelihood improvement of the homestead garden practicing household farmers and non-practicing household farmers and to evaluate the contribution of women in households' incomes and decision making process.

2. Methodology

Three districts of greater Mymensingh namely, Mymensingh, Kishoregonj, and Jamalpur were selected. Two Upazilas were selected from each district randomly (i.e., Muktagachcha, Gouripur, Pakundia, Tarail, Melandah, Jamalpur sadar). Two villages were selected randomly from each Upazila and from each village 30 homestead garden households were selected randomly. Therefore, total sample size of 360 farm households was chosen for the present study (Table1). Data were divided into two categories. One was homestead garden practicing household and another was homestead garden non-practicing household. The farmers who produced two, three or more enterprises in the Rabi season were considered a homestead garden practicing household farmers. The farmers who produced one from where he received little amount of vegetable or no enterprise in the Rabi season were considered homestead garden non-practicing household farmers.

Therefore, homestead garden practicing household farmers were 288 and homestead garden non-practicing household farmers were 72.

Table 1: Distribution of sampled farmers in the study areas

Sl. No.	Upazila	Villages	No. of respondent	No. of practicing household	No. of non-practicing household
1	Muktagachcha	Tarati Purba	60	288	72
		Para			
2	Gouripur	Raythora	60		
		Achintapur			
3	Pakundia	Yusofabad	60		
		Mirjapur			
4	Tarail	Mandarcandi	60		
		Basati			
5	Melandah	Rawti	60		
		Bagadoba			
6	Jamalpur Sadar	Sampur	60		
		Mohespur			
		Nobabpur	360	360	
		Total			

Source: Haque, 2015.

Data were collected by the researchers themselves and other participations through personal interviews with the respondents. Data were collected during the period from August to October 2015.

A draft questionnaire was prepared for recording information from the sample farmers in conformity with the objectives of the study. Before preparing the final questionnaire, the draft questionnaire was pre-tested in the study area by interviewing a few farmers. After pre-testing and making necessary correction, the

questionnaire was finalized in such a logical sequence so that the sample farmers could answer systematically.

The collected data were coded, summarized and processed for analyses. To avoid possible errors and inconsistencies, the collected data were verified. All the collected data were summarized and scrutinized carefully. It may be noted that information were collected in local units, after checking it was converted into standard international units. Data entry was done in computer and analysis was done using the concerned software, e.g., Microsoft Excel and Statistical Package for Social Science (SPSS). Collected data were classified, tabulated and analyzed in terms of the objectives set for the study. Both descriptive and analytical techniques were used to find out important relationships among the relevant variables. Asset pentagon model were used for livelihood improvement.

3. Results and Discussions:

Income generation

An analysis of income sources adds further insight into the income generation process. There are two sources of income for homestead garden practicing and non-practicing household farmers. The average monthly income from farm activities of homestead garden practicing and non-practicing household farmers were Tk 4524 and Tk 3071, respectively. Table 2 reveals that livestock rearing and crop cultivation was about 14.5% and 10.92% of the largest sources of farm income for all farming systems in homestead garden practicing and non-practicing households, respectively. They also gain income from vegetables, poultry rearing, fish farming, and forestry. The table clearly indicates that homestead garden practicing household farmers farm income were about 32% higher than homestead garden non-practicing household farmers income. The major non-farm income sources are business, servicing, tailoring, garments worker as well as labour selling to agricultural and non-agricultural farms.

Table 2: Average monthly income of sample farmers from different sources

Income sources	Practicing household		Non-practicing household	
	Amount (Tk)	percentage	Amount (Tk)	percentage
Farm income				
Crop	1374	10.39	1374	10.92
Vegetables production	266	2.01	00	00
Livestock rearing	1919	14.52	1266	10.06
Fish culture	417	3.15	141	1.12
Fruits production	263	1.99	179	1.42
Forestry	127	0.96	46	0.36
Others	158	1.19	65	0.52
Total farm income	4524	34.22	3071	24.41

Non -farm income				
Service	2019	15.27	2889	22.96
Business	2841	21.49	3650	29.01
Tailoring	464	3.51	222	1.77
Wage labor	589	4.45	729	5.79
Others	2781	21.03	2017	16.03
Total non-farm income	8694	65.77	9507	75.58
Total income	13218	100	12579	100

Source: Haque, 2015.

The total monthly income from non-farm activities of homestead garden practicing and non-practicing household farmers were Tk 8694 and Tk 9507, respectively. The average monthly income from non-farm activities was 9% higher for homestead garden non-practicing household farmers than homestead garden practicing household farmers. But the total monthly income was about 5% higher for homestead garden practicing household farmers than homestead garden non-practicing household farmers income.

Employment generation for women by homestead gardening

The labour hour spent by both men and women has increased in the research sites. Women were mainly involved in homestead gardening. They spent more times for homestead gardening.

Table 3: Employment pattern on yearly basis for homestead garden practicing and non-practicing household farmers

Farming system	Workings hours/week			Duration (man-days/year)			Wage/day		
	Self	Husband	Son/daughter	Self	Husband	Son/daughter	Self	Husband	Son/Daughter
Practicing household									
Vegetable production	2.5	1	1	16	7	7	220	300	250
Livestock rearing	12	12	2	77	77	14	220	300	250
Poultry rearing									
Fish farming	2	2.5	0.5	14	13	4	220	300	250
Fruits production	1	1.6	0.4	7	10	3	220	300	250
Average	4.37	4.27	0.98	28.5	26.75	7	220	300	250
Non-practicing household									
Livestock rearing	9	10	1	58	64	7	220	300	250

Poultry rearing									
Fish farming	2	2	0.3	13	13	2	220	300	250
Fruits production	0.8	1	0.2	5	7	1	220	300	250
Average	3.93	4.33	0.5	25.33	28	3.33	220	300	250

Source: Haque, 2015

Women also worked in the field but it was not considered in the table. There was a significant difference in the wage rate between male and female workers. However, female labour got about 26% lower wage than the male. Table represents that homestead garden practicing household farmers worked the highest (12 hours per week) while the homestead garden non-practicing household farmers worked 10 hours. The average working hours/week for respondent was 4.37 and 3.93, respectively for homestead garden practicing and non-practicing household farmers. The highest employment duration for respondents was 77 man days/years for the homestead garden practicing household farmers and for homestead garden non-practicing household farmers; it was 58 man days/year. The wage rate is similar both for homestead garden practicing household farmers and for non-practicing household farmers (i.e., for women, husband and sons/daughter Tk 220, Tk.300 and Tk. 250) (Table 3). Finally, it revealed that homestead garden practicing household farmers spent more time in work in comparison to homestead garden non-practicing household farmers. Thus, it can be said that homestead garden creates more employment opportunity in the study areas.

Livelihood improvement

The sustainable livelihood framework includes the assets pentagon which is composed of five types of capitals namely human capital, social capital, natural capital, physical capital and financial capital.

Table 4: Livelihood status of farm households (in percentage)

Items	Practicing households			Non-practicing households		
	Increased	Decreased	Constant	Increased	Decreased	Constant
Human capital						
Knowledge	84.37	4.17	7.98	52.78	13.88	33.33
Health and sanitation	85.41	4.17	6.94	48.61	11.11	40.28
Average	84.49	4.17	7.46	50.69	12.49	36.81
Social capital						
Self-managerial capacity	83.33	6.94	6.25	55.55	6.94	44.44
Social mobility	69.44	6.94	23.61	27.78	12.5	59.72
Involved in social activities	80.21	3.47	16.31	58.33	6.94	34.72

Decision making	91.66	2.43	5.90	27.78	13.88	58.33
Average	81.16	4.94	13.01	42.36	10.06	49.30
Physical capital						
Building	18.05	4.51	72.22	6.94	15.28	77.78
TV/Radio	84.38	2.78	12.84	55.55	8.33	36.11
Mobile phone	53.81	5.55	16.67	48.61	4.17	47.22
Tube well	82.29	7.29	10.42	41.67	13.89	44.44
Furniture	56.94	5.20	37.84	34.72	13.89	51.39
Average	59.09	5.07	29.99	37.49	11.11	51.38
Natural capital						
Cultivable land	57.99	11.80	30.20	66.66	16.67	16.67
Forest	19.44	12.84	67.70	6.94	25.00	68.05
Open water resources	11.45	16.31	72.22	5.56	5.5	88.89
Average	29.62	13.65	56.70	26.38	15.72	57.87
Financial capital						
Cash in hand	81.25	4.51	14.23	34.72	9.72	55.55
Bank savings	65.20	3.47	30.20	13.88	13.88	72.22
Donation/aid	52.08	7.29	33.68	27.78	6.94	65.27
Average	66.17	5.09	26.04	25.46	10.18	64.3

Source: Haque, 2015

Human capital

In the present study, two components under human capital were considered. Among the sampled farmers, the access on human capital for households farmer was increased by 84.49 % due to the adoption of homestead gardening, where health and sanitation increased by 85.41% and knowledge increased by 84.37%. Meanwhile, the access on human capital for homestead garden non-practicing household farmers were increased by 50.69% which was less than homestead garden practicing household farmers (Table 4).

Social capital

The components of social capital are involvement in social activities, for example, social mobility, decision making, and self-managerial capability, etc. The social capital influenced by the adoption of homestead gardening in the study areas. The self-managerial capability of homestead garden practicing household farmers were increased by 83.33% and the social mobility or decision making was also increased by 69.44% and 91.66% for the homestead garden practicing household farmers. Majority of the homestead garden non-practicing farmers' self-managerial capability, involvements in social activities, and decision making were increased but it was less from the homestead garden practicing household farmers. (Table 4)

Physical capital

The changing state of physical assets has been shown in Table 4. Almost all the asset category showed positive trends for the homestead garden practicing household farmers. The total access of physical capital was increased by 59.09% while it was 37.49% for homestead garden non-practicing household farmers. The access of using radio/TV was increased by 84.38% for the homestead garden practicing household farmers where it was 55.55% for the homestead garden non-practicing household farmers (Table 4).

Natural capital

Overall natural resource access by the homestead garden practicing household farmers were constant which was 56.70% and majority of the homestead garden non-practicing household farmers also had constant access to different types of natural capital which was 57.87% (Table 4).

Financial capital

Financial capital includes financial resources such as bank savings, cash in hand, Donation/aid/grant, etc. The capital cash in hand was increased by 81.25% which covered majority of the homestead garden practicing household farmers, where it was 34.72% for homestead garden non-practicing household farmers. Cash at bank or savings were increased by 65.20% for the homestead garden practicing household farmers. Donation/aid also increased for the homestead garden practicing household farmers comparing to the homestead garden non-practicing household farmers (Table 4).

Asset pentagon

The pentagon was used to enable probable information about farmer's assets to be presented visually, thereby bringing to life important inter-relationships between the various assets. The shape of the pentagon displayed schematically the variation in farmer's assets. Figure 1 shows that the significant improvement took place in farmer's livelihood by the adoption of homestead garden practicing household farmers in contrast to the homestead garden non-practicing household farmers in the study areas.

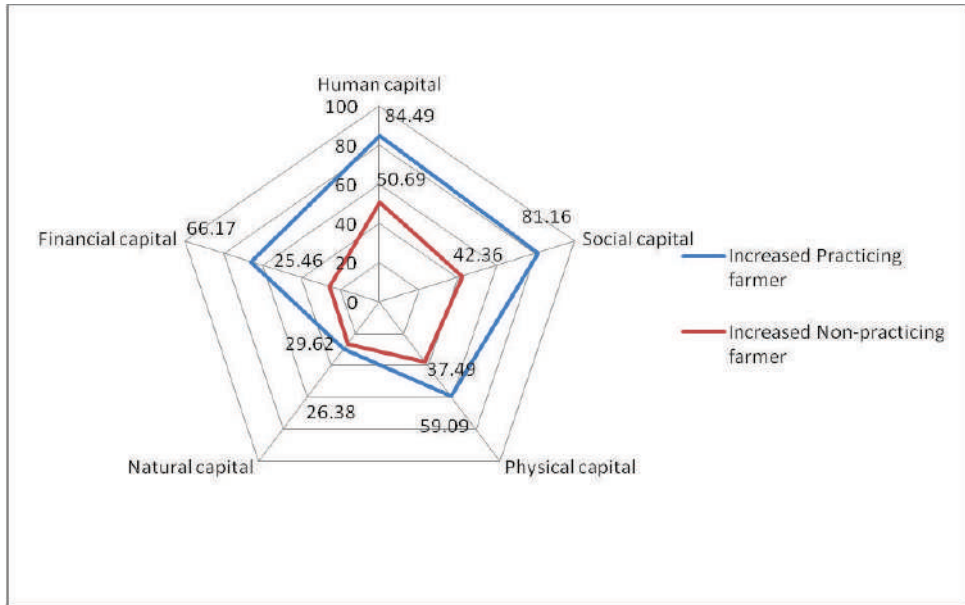


Figure 1: Livelihood status of sample farm household

From the above discussion it can be said that the livelihood patterns improved more and in an average it was about 43% higher for homestead garden practicing household farmers than homestead garden non-practicing household farmers. Because, the rural women are now involved in different activities in the homestead area. They cultivated different vegetables and fruits in the homestead area and improved their livelihood patterns.

Household income from homestead gardening

From the time immemorial women have been playing an important role in homestead based food production system. In Bangladesh, there is a clear division of between the male and female worker. Actually male activities are outside the home and these activities include earning cash income for buying inputs from market, selling the surplus crops to the market and purchase the daily necessities of life. Activities of women are confined within the home grounds. The activities cover homestead gardening, reproduction, child rearing, household management and most harvest crop processing activities (Aireen, 1992). In homestead based food production system women engaged in various activities related to farm. Yet the rural women in Bangladesh have long remained an unorganized contribution to household production activities, however, in recent times, there occurred a significant change in women’s socioeconomic status and a large number of women are now wage earners and are involved non-farm activities outside their homes. Women were engaged in different activities of homestead gardening such as vegetable production, fruits production, dairy cow rearing, goat rearing and fish farming. The contributions of women in household income were Tk. 15218 annu-

ally for per household who are involved in homestead gardening, and Tk. 7683 for homestead garden non-practicing household farmers. Homestead garden practicing household farmers contributes about 21% of total income from vegetable production. On the other hand, homestead garden non-practicing household farmers income was almost zero from vegetables production. The highest percentage of income was earned from dairy cow rearing both for homestead garden practicing and non-practicing household farmers (Table 5).

Table 5: Annual contribution of household income from different entities (Tk./entities)

Homestead activities	Practicing household	% of total	Non-practicing household	% of total
Vegetable production	3194	20.98	-	-
Fruits production	1579	10.38	1076	14.00
Dairy cow rearing	7456	48.99	4881	63.52
Goat rearing	996	6.54	569	7.41
Poultry rearing	1493	9.81	988	12.86
Fish farming	500	3.29	169	2.20
Total	15218	100	7683	100

Source: Haque, 2015

From the Table 5 it can be said that annual total contribution to household incomes were about 98% higher for homestead garden practicing household farmers than homestead garden non-practicing household farmers at family level.

Changes in decision making status of women

Participation of women in homestead-based food production activities is increasing; it also tends to have a positive impact on women's participation in household decision making process. The qualitative categories were developed in this study, namely male, female and both to investigate the women involvement in decision making process of homestead production system and household activities. In the category of male, only male took part in decision making process. Under the category of female, women take part in different aspects of decision making. In both category male and female are jointly taking decision for the activities, they performed from family level.

In decision making process there are many items such as land preparation, variety selection of fruits or vegetables or breed of livestock and poultry, taking care of items, weeding, fertilizing, etc. harvesting of output from the enterprises, marketing of products, and irrigation are considered. The participation of women in decision making process is presented in Table 6. Land preparation is necessary to grow vegetables or fruits. In the study areas, women are often prepared land themselves taking some help from their husband and sons. It is seen that 29.16 percent

women worked for land preparation for homestead-based food production system (Table 6) for practicing homestead garden household farmers. But in selection of variety, collection and preservation of vegetables and fruits, weeding and irrigation women participation was higher as 40.27, 44.09, 39.24 percent and 36.81 percent, respectively. Male counterpart is dominant in marketing of output from the enterprises shown in Table 6.

Table 6: Decision making process for the household and vegetables production enterprises

Decision items	Practicing household (%)			Non practicing household (%)		
	Male	Female	Both	Male	Female	Both
Homestead land preparation	25.00	29.16	45.83	-	-	-
Selection of variety (fruit, vegetables, livestock, fishes)	18.70	40.27	41.31	-	-	-
Collection and preservation of vegetables seed	17.01	44.09	38.88	-	-	-
Weeding	21.88	39.24	39.58	-	-	-
Irrigation	26.04	36.81	37.15	-	-	-
Fertilizer application	37.15	24.31	38.54	-	-	-
Harvesting of household products	43.05	22.92	34.03	-	-	-
Marketing of output	66.31	16.31	17.36	-	-	-
Other decision involved in family (not related with production)						
To educate children	20.8	14.93	64.23	23.61	11.11	65.27
Acceptance of family planning	10.66	8.33	81.59	13.88	6.94	79.16
Marriage of sons and daughters	13.88	6.25	79.86	12.5	4.16	83.33
Land holding	22.91	5.90	71.18	22.22	5.55	72.22

Source: Haque, 2015

In traditional sense, it was thought that women don't have any absolute right to take any decision in any aspect of family affairs. But in the study area, it is found that the participation of women in taking decision for family affairs is increased. In case of educating their children both of them taking decision and it was 64.23 percent for both (male and female) who are involved in homestead garden practicing household and it was 65.27 percent for non-practicing household farmers.

In case of acceptance of family planning, increasing family land holding ability

and marriage of sons and daughters both play the dominant role. Male and female individually take decision sometimes but in 81.59, 79.86 and 71.18 percent respondents take decision jointly for those items for homestead garden practicing household farmers and it was 79.16, 83.33 and 72.22 percent for homestead garden non-practicing household farmers. Female most often seen to make decision in rare case where family is female headed particularly for death of senior citizen of that family or for case of divorce female. From the above discussion it can be said that the women decision making power is increasing day-by-day in different sectors. But the increasing rate is higher for homestead garden practicing household farmers than homestead garden non-practicing household farmers at family level.

4. Conclusion

Generally, homestead gardening is a combination of different agricultural enterprises within the homestead to meet the basic demand of the poor family and generates some income with in a small investment and resources. If the modern inputs can be available to farmers in time, production of these enterprises may increase which can help them in alleviating poverty in many areas. More homestead based enterprises can help increasing household income and improved the livelihood status of the rural poor. This study was mainly analyzed with the contribution of homestead gardening in improving rural households' livelihood. Results showed a significant improvement took place in farmer's livelihood by the adoption of homestead gardening practice in the study areas. The annual contributions of household income were 98% higher for households, which were involved in practicing homestead gardening than those of non-practicing household homestead garden farmers. From the total income about 21% income came from vegetables production, which were involved in practicing homestead gardening. On the other hand, non-practicing homestead garden farmers could not earn any income from vegetable production. The decision making power and livelihood improvement also increased due to the adoption of homestead gardening. There is a reason to believe that the people of this country will be self-improved by their small earnings and the rural society will be far better off in near future. In fact, livelihood and standard of living of the farmers involved in homestead-based vegetable production have improved to some extent.

Thus, the study recommended that homestead gardening system should be encouraged specially for small land holding farmers. The weather of Bangladesh is suitable for vegetables production. If vegetables are produced round the year in this country it could also be contributed to improve health status of rural poor. The concerned departments of the government and non-government organizations should take necessary steps and encourage the poor people, especially resource-poor rural women to cultivate vegetables their homestead areas.

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References

- Aireen, S. Q., 1992. An Economic Analysis of Women's work in Homestead Farming in a Selected Area of Bangladesh. An unpublished M.S. thesis, Department of Agricultural Economics, Bangladesh Agricultural University, Mymensingh-2202.
- BBS (Bangladesh Bureau of Statistics), 2013. Statistical Year Book of Bangladesh. Bangladesh Bureau of Statistics Division, Ministry of Planning, Govt. of the People's Republic of Bangladesh, Dhaka.
- BER (Bangladesh Economic Review), 2013. Bangladesh Economic Review, Economic Advisers Wing, Finance Division, Ministry of Finance, Government of Peoples Republic of Bangladesh, Dhaka.
- Hossain, M., Naher, F., Shahbuddin, Q., 2005. Food Security and Nutrition in Bangladesh: Progress and Determinants. e-Journal of Agricultural and Development Economics, Vol. 2 (2): 103-132 (www.fao.org/es/esa/eJADE).
- Haque, M. E., 2015. Impact of Homestead Gardening on Livelihoods of Rural Women in Bangladesh. MS thesis submitted to the Department of Agricultural Economics at the Bangladesh Agricultural University, Mymensingh.
- Talukder, A., Khan, T. A., Baker, S. K., Zakaria, A. K. M., Bloem, M. W., Kiess, L.K., 1997. Home gardening activities in Bangladesh: Mapping report and inventory. Helen Keller International, Bangladesh.
- Talukder, A., Kiess, L., Huq, N., de Pee, S., Darnton-Hill, I., Bloem, M.W., 2000. Increasing the Production and Consumption of Vitamin A-rich Fruits and Vegetables: Lessons learned in taking the Bangladesh homestead gardening programme to a national scale. Food Nutrition Bulletin, 21: 165-172.