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Rural Development and Food Security Through Homestead Vegetable Production: A Case Study[#]

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ABSTRACT

Cumilla Sadar Dakshin region is highly diverse in respect to land types, topography, agro-ecology, land-use pattern, cropping systems and crop variability & variety. Agricultural development of the region largely depends on the reliable and comprehensive statistics of the existing cropping cultivation and its related system adopted by the farmers. To investigate the homestead vegetable production and its impact on family nutrition, food security, income generation as well as involvement of female members a survey study was conducted at Cumilla Sadar Dakshin during 2019. A total of 150 selected homesteads were surveyed for this purpose through developed questionnaire and focus group discussion. Both primary and secondary data has been collected from different sources to fulfill the objectives of the study. The results of this study indicated that the farmer's age, marital status, education level, farm size, source of income, women participation etc. Farmer's knowledge and farming experiences, perception and attitude differs on different demographic conditions like: age, sex, education, farm size, training which significantly influence the adoption of modern technologies provided by different organizations. The results also showed that women contribution in homestead vegetable production is high in medium farmer's category 41.67% and low in small farmers 36.36% respectively. The highest number of total vegetables was produced by the medium farmer (63,732 kg/year) followed by small (39,445 kg/year) and marginal farmer (25,514 kg/year). This study provides some recommendation which might impacts on betterment of farmers' occupational and socio-economic condition by establishing proper policy and legislation both in local and national level administration as well as agricultural extension.

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Introduction

Bangladesh is mainly an agriculture based country where about 80% of the populations are involved with this sector as their source of livelihood and contributes about 13.02 % to the total Gross Domestic Product (GDP) of the country (BBS, 2020).

Food insecurity at household level is one of the most important causes of malnutrition. Household food security depends on having financial, physical and social access as well as sustainable availability (Hasan & Sabina, 2011). Rahman et al. (2008) stated that food security is a condition related to the availability of food, and individuals' accessibility and affordability to it. In Bangladesh, landless

and marginal farmers are the most disadvantaged and vulnerable group suffering from insecurity of food and nutrition. The main cause of malnutrition is unavailability or low availability and consumption of vegetables. Malnutrition is a serious public health problem in Bangladesh especially for women and children (Ryan Yanke, 2014). Homestead vegetable gardening can play a significant role in improving food security for the resource poor rural households and may contribute to uplifting the socio-economic conditions, supply of fuel wood, give protection from hazards, provide food and other benefits etc in developing country like Bangladesh. It also contributes on rural development and women involvement in vegetable production as well as increasing income source. Hussein et al. (1988) reported that about 13% of total homestead area was under vegetable production.

The population of Bangladesh gradually increases. The growth rate of the population in 2016 was 1.37%. The growth of population has a massive impact on the livelihood of women (Josephson et al., 2014). Though Bangladesh has a solid tradition of homestead vegetable production practiced by its farming communities where traditional home gardens are ancient having outdated systems of usage of land with preventative measure and production functions but it can be play an important part in particular in women's food security and adequate nutrition (Vieira et al., 2012). Most of the Women thought that traditional homestead vegetable cultivation systems had a significant role in improving the socio-economic status and upgrade the environmental conditions of the area and that's why there is great scope for improving the prevailing homestead vegetable cultivation practices with modern technology for enhancing women's livelihood. According to the World Health Organization (WHO) in Bangladesh the average per capita daily vegetable intake is 166.1 g, where as the recommended intake is 250 g/day rather than China (292 g/day), Japan (432 g/day), Thailand (257 g/day) and also lowest among the countries of South Asia (FAO and WHO, 2014). Karim et al. (2021) stated that a healthy individual should take 220 g of vegetable daily while vegetables not only minimize the malnutrition but also maximize the financial returns and generate cash to the growers as well as helps to reduce the single dependence on rice. Thus, to fulfill farmers economic demand they are getting more involved in vegetable cultivation along with rice cultivation (Ali and Hauk, 2012). Though the trends of vegetables production are increasing in Bangladesh but in the recent period per capita consumption of vegetables is very low (about 32 g/day/person) compared to neighboring countries like in Nepal (42 g), Pakistan (19 g), India (135 g) and Srilanka (120 g) (Rampal and Gill 1990). A recent survey on vitamin A in rural Bangladesh by Helen Keller International's (HKI) revealed that children of households without a home garden were at greater risk of vitamin A deficiency than children of households with a home garden (Ali, 2008). So intensive vegetables production is needed for nutritional security, employment generation, higher farm income, better export potential and lower dependency on cereal consumption (Elias and Hussain 1994).

Homestead vegetables production not only provides the household with direct access to important nutrients but also readily available within their economic reach. Therefore, homestead vegetable production would be a great means to improve household food security. Considering the importance of vegetable in alleviating the problem of nutrient deficiencies as well as ensuring the food security and rural development different survey study is needed. Therefore, the study was conducted to know the socio-economic condition of farmers, impact of homestead vegetable production for food and nutritional security as well as rural development through women empowerment.

Materials and Methods

The study area Cumilla geographical coordinates: 23° 27' 28" North, 91° 12' 16" East (Anonymous, 2022) is a district of Bangladesh located about 100 kilometers south east of Dhaka (Hasnat, 2018). Siddiqi & Mamun (2012) stated that Cumilla has a total area of 3146.30.17 square kilometers. It is bounded by Brahmanbaria district and Narayanganj district of Dhaka division to the north, Munshiganj district of Dhaka division and Chandpur district of chattogram division to the west, Noakhali and Feni districts to the south and the Indian state of Tripura to the east. It has 6.09 million populations where 1700 people live in per square kilometer (Anonymous, 2021). Major rivers passing through Cumilla include the Gumti and the Little Feni. It is hot in summer and cold in winter (Siddiqi & Mamun, 2012). Mainly based on agriculture, the economy of Cumilla has been flourished through trade and cottage industries, especially the 'Khadi' textile. Maximum people are maintaining their livelihood by utilizing the homestead and selling of labor. The year round selling of labor is not evenly distributed. Potentiality of labor selling in agriculture is minimum in the rainy season and off-season when they suffer more malnutrition.

All kinds of secondary data were collected from Upazila Agricultural Officer (UAO) of Cumilla Sadar Dakshin. Cumilla Sadar Dakshin is situated with Latitude 23.3067° or 23° 18' 24" north and Longitude 91.1545° or 91° 9' 16" east has 14 unions, 361 Mouza and 432 villages as well as 38 blocks. Cumilla Sadar Dakshin Paurashava has 30.87 sq km area, 9 wards, 63 Mahalla, 20209 household having total population 103710 where 54196 male and 49514 female with literacy rate 69.3% (Census, 2011). The study was conducted at Cumilla Sadar Dakshin Upazila during April, 2019 with 25 villages and 10 unions which are listed below (Table 1). Cumilla has a tropical savanna climate. The climate of Cumilla is generally marked with monsoons, high temperature, considerable humidity, and heavy rainfall. The hot season commences early in April and continues till July. The average annual temperature in Cumilla is 25.5 °C (77.9 °F). About 2,295 mm (90.35 inches) of precipitation falls annually (Meteologix^{BD}, 2019 and Bangladesh Meteorological Department, 2019). The climatic condition of Cumilla during the study time (year: 2019) is stated below (Table 2) which was collected from UAO, Cumilla Sadar Dakshin:

Different types of data as a primary source were collected through interviewing of responded farmers from study area. Out of these data, some are direct message regarding service delivery from different government department at Upazilla level to farmers and some are relevant to the service delivery which was truly responsible for technology adoption and dissemination. In collecting

information regarding food security from these villages, different types of secondary and primary data were used. 150 homesteads farmers were considered in the study where Marginal, Small and Medium group had 50 farmers with each category which were randomly selected. Different data and other related information's were collected from 150 famers with 750 family members. Well structured questions were asked regarding the issue of food security and homestead vegetable production with income and other related information's. The study area (Figure 1) was purposively selected because it is one of the important commercial vegetables growing area as well as most popular homestead vegetable production area of Bangladesh as suggested by the Upazilla Agriculture Officer (UAO), and Upazilla level officials who used to deal with homestead vegetable production as well as commercial vegetable farming. At the same time an up to date list of the homestead vegetable growers were prepared with the help of Sub Assistant Agriculture Officers (SAAO) and UAO of Cumilla Sadar Dakshin Upazila.

A questionnaire was prepared for collecting necessary information from different types of farmers as well as women. From their information the questionnaire was filled up. Data were collected by face-to-face interview of the respondents by using 150 questionnaires. The questionnaire was prepared with different dependent and independent variables. Independent variables in the study were age, marital status, education, family size, homestead area/ farm size, source of income, annual income distribution, Visit of village outside, Time spent for household activities, Vegetable growing season, Net income from homestead vegetable production and Problems faced in homestead vegetable production. The dependent variables were training receive, contact with extension and other personnel, habit of reading newspaper and enjoyed agricultural fair, TV/Radio program.

Statistical analysis

The collected data were coded into numerical, compiled, tabulated and analyzed reckon the objectives of the study in mind. Then the collected data were sorted and simple analysis was done by using Microsoft excel. In order to categorize and elucidate the data, various statistical measures such as mean, percentage, standard deviation and rank were used in describing the selected variables, wherever relevant.

Result and Discussion

The UAO of Cumilla Sadar Dakshin Upazila gave us information about farmer's category. According to his information there are five categories farmer (Table 3). At the same time the details information's about Land type also collected from the UAO to observe soil type (Table 4). According to BINFS (1982) and BIDS Report (2012) the Annual Production Demand about 1579.69 MT, where for every single day 462 g demand for per person. The total farmer's number is about 51,000, which is illustrated in below: (Table 3).

The all collected general information were statistically evaluated and described below:

Age and marital status of the respondents

The age of farmers on different range of age and different age groups are described. From (Table 5) it has been shown that the age of farmers ranged from 18 to 75 where maximum frequency 46.7% were found in 48-57 category followed by 38-47 with the frequency of 20.0%. (Figure 2) also illustrated that old age group (>50 age) is high that is 63.34% where young age group (up to 30 age) is 3.33% which is low. According to this survey most of the farmers were very experienced in framing also the young people with no or little education mostly involved in farming specially rice and potatoes. As most of the farmers were aged, consequently maximum were married (96.7%) while only 3.3% were found unmarried according to this study (Table 6).

Education level of different category farmers

In Cumilla region the literacy rate is 53.32% (Census, 2011). Among the three category farmers' the rate of no education (35%) is higer in marginal and small farmers' (20%) while the number of no education is only (5%) in case of medium farmer. The education rate is higher in medium farmers' where 25% of the farmers have got higher secondary and above education (Figure 03, 04, 05).

Figure 1. Sadar Dakkhin Upazila of Cumilla district of Bangladesh showing local study area (Source: Banglapedia, 2022)

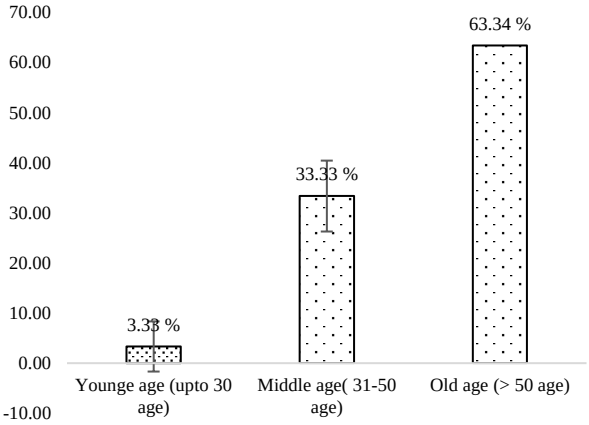

Figure 2. Age of respondents

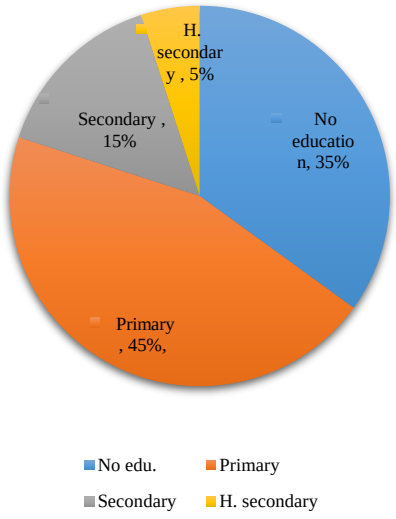

Figure 3. Marginal Group of Farmers

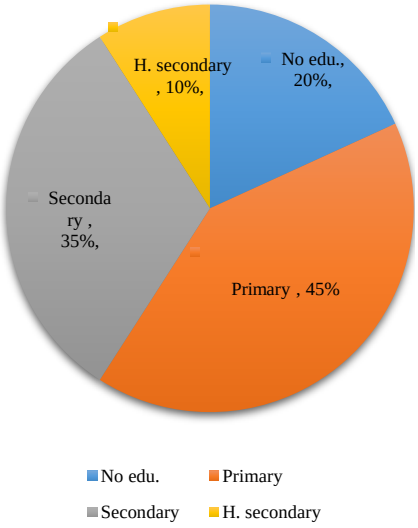

Figure 4. Small Group of Farmers

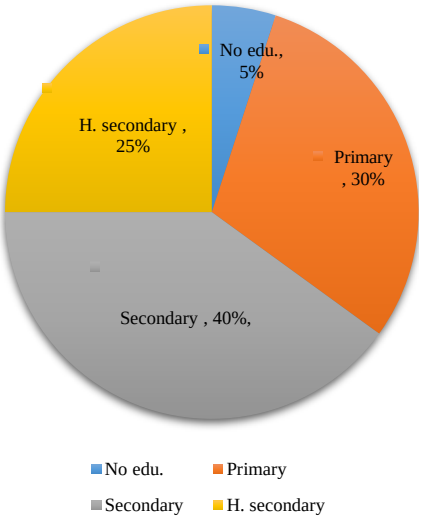

Figure 5. medium Group of Farmers

Table 1: Village and Union name (Source: Secondary data from Upazila Agriculture Officer)

Village name	Union name
Boro Durgapur, Dhormopur, Rakasherpar, Jorpuskuni	Boro Para Union
Nulchor	Protabpur Union
Uttor Gopalnagor, Pokhin Rampur	2 no. Choura Union
Ramchandrapur	Srimontopur Union
Banipur	JorkanonUnion
Krishnapur, Kunderghora, Gilatoly, Monipur, Jashpur, Maddham Rajarpur, Jhangolpur	Guliara
Lampur,Chotojoynagar	Purbo zorkanon
Komolpur	Pashim Zorkanon
Hemjora, Tongirpar, Pipulia	Chouara
Laxminagar, Razarpara, Kashipara	20 no.word, city corporation

Table 2. The climate condition of Cumilla during 2019 (Source: Secondary data from Upazila Agriculture Officer and Bangladesh Meteorological Department, Cumilla)

Parameter	Month, 2019											
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Total Rainfall (mm)	0	87	68	196	269	202	477	283	210	76	62	8
Average Temp. Min (Celsius)	12.1	14.7	18.6	22.4	25.4	25.4	24.9	25.2	24.9	24.0	20.3	14.4
Average Temp. Max (Celsius)	27.3	29.1	32.1	34.7	34.3	33.6	31.5	32.6	33.1	32.7	30.5	26.2

Table 3. Farmers Category and total number in Sadar Dakshin Upazila, Cumilla (Source: Secondary data from Upazila Agriculture Officer)

Family	Number
Land less farmer < 0.02 ha	15,300
Marginal farmer 0.02 ha to <0.2 ha	25,700
Small farmer 0.2 ha to <1.0 ha	5,550
Medium farmer1.0 ha to 3.0 ha	4,050
Large farmer > 3.0 ha	400
Total	51000

Table 4. Land type (Source: Secondary data from Upazila Agriculture Officer)

Class	Land quantity (Hector)					Total
	Clay	Clay loam	Loam	Sandy	Sandy loam	
Highland	15	15	-	-	-	30
Medium Highland	-	-	425	-	-	425
Medium Low land	-	25	-	-	-	25
Low land	-	20	-	-	-	20
Very Lowland		-	-	-	-	-

Table 5. Different range of age

Age	Frequency	Percentage (%)
18-27	5	3.3
28-37	20	13.3
38-47	30	20.0
48-57	70	46.7
58-67	20	13.3
Above 67	5	3.3
Total	150	100

Table 6. Marital status of respondents

Respondent	Frequency	Frequency (%)
Married	145	96.7
Unmarried	5	3.3
Total	150	100

Table 7. Average farm size of the sample farmers

Farm Categories	No of respondent	Average farm size (ha)
Marginal	50	0.11
Small	50	0.52
Medium	50	1.20

Table 8. Farm size

Farmer's category	Number	Percentage (%)
Small	50	33.3
Medium	50	33.3
Large	50	33.3
Total	150	100

Table 9. Family size

Family size	No. of respondent	Frequency (%)	Total family member
Small	40	26.7	110
Medium	80	53.3	400
Large	30	20.0	240
Total	150	100.00	750

Table 10. Socio economic conditions of farmers

Types of farmers	Age	Religion	Experience (age)	Farm size (ha)	No of house	Taking loan/ year USD	Income agriculture /year USD	Income others/ year USD	Total income/ year USD
Marginal	38	Islam 91% Hindu 9%	25.55	0.157	2	474.15	1913.95	1230.90	3144.85
Small	49	Islam 100%	28.00	1.00	3	468.94	1024.58	3460.47	4485.05
Medium	47	Islam 100%	24.00	1.71	4	307.58	8580.60	9691.29	18271.88

1USD dollar = 102.66 in Bangladeshi Taka

Farm size of different category farmers

The average farm size for marginal, small and medium farmer found as 0.11, 0.52 and 1.20 ha, respectively (Table 07). The marginal, small and medium farmers ranged 0.11 to 0.19 ha, 0.27 to 0.49 ha and 0.75 to 0.99 ha respectively.

Marginal = 0.01-0.2 ha; Small= 0.21-<1.0 ha; Medium= 1.0-3.0 ha

According to the study the farmers equally owned in three categories such as small, medium and large farmer (Table 08).

Family size

Most of the family was found medium in size with the frequency of 53.3% and 26.7% with small family where large family was found with 20.0% respondents that indicating maximum people are planning for nuclear one (Table 09). From (Figure 06) it is revealed that dependent members are more than the independent members in all family size.

Small=1-3 members, Medium= 4-6 members, Large= 7-10 members

Source of income and annual income distribution

More than half of the farmers 52.30% were found depended on agricultural source where 46.70% were depended on both source of income (agriculture and nonagriculture). Only 1.0% was depended on non-agricultural source (Figure 07). Non- agricultural source mainly cramped of different business, labor and service at part time. Maximum farmers 66.70% were fall into medium category in terms of income (Figure 08). High income farmers were second with 20.00% in number followed by the low income farmers 13.30%.

Socio-economic condition (In average)

From (Table 10) it has been revealed that the socio-economic condition is comparatively poor in marginal farmers (3,144.85 USD total income/year) compared to small (4,485.05 USD total income/year) and medium farmers (18,271.88 USD total income/year). Among the three categories marginal farmers earn 1,913.95 USD and small farmers earn 1,024.58 USD where medium farmers earn 8,580.60 USD from vegetable production. All farmers taking loan from different source all the year-round ranges from 307.58 USD (medium) to 474.15 USD (small).

Homestead vegetable production and income per year

From (Table 11) it has been shown that marginal, small and medium farmers produced 25,514 kg, 39,445 kg and 63,732 kg vegetables per year where their Benefit Cost Ratio (BCR) was 2.21, 1.01 and 1.78 respectively. Most of the farmers sell their vegetables directly to the local hat-bazar, village market as well as district market. That's why they can not only earn more profit than wholesaler farmers but also avoid market syndicates.

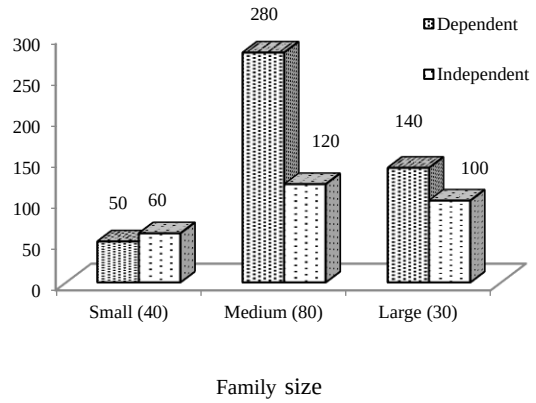

Figure 6. Family size Dependent & independent

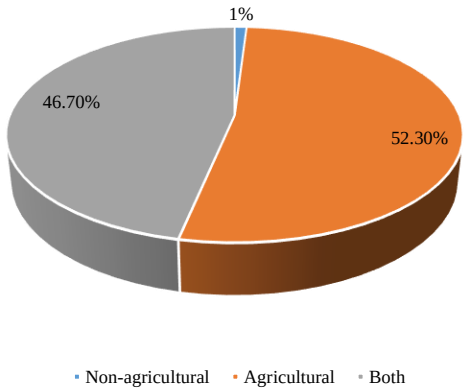

Figure 7. Source of income

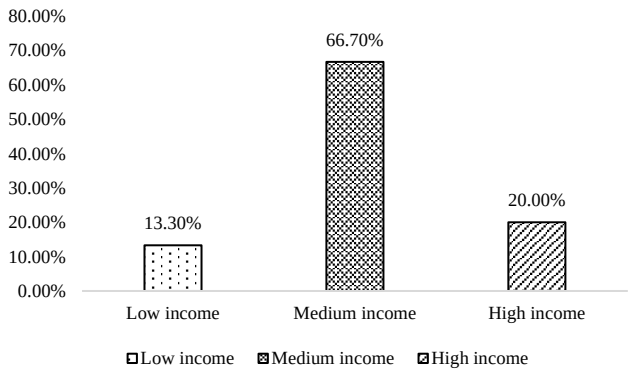

Figure 8. Annual income distribution

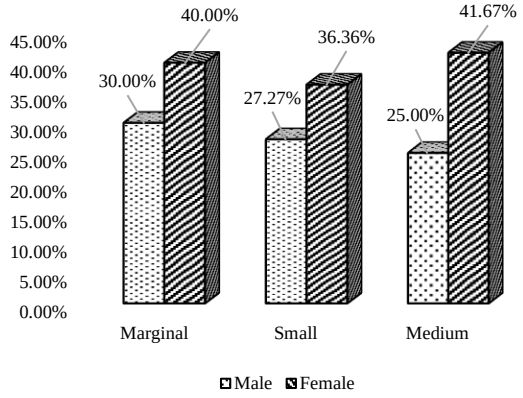

Figure 9. women participation on homestead vegetable production

Table 11. Homestead vegetable production, income and BCR

Types of farmers	Total production (kg/year)	Total production Cost (USD)	Total Own use (kg)	Total Distribution (kg)	Total Sale (kg)	Total income (USD)	BCR
Marginal	25,514	1468.54	3,420	1,818	20,208	4708.80	2.21
Small	39,445	4406.79	6,080	2,281	30,600	8852.21	1.01
Medium	63,732	6923.54	8,450	4,142	51,840	19267.67	1.78

Homestead Vegetable Production and Vegetable growing season

Homestead vegetable production mostly depends on the climatic and edaphic factors. In case of edaphic i.e., land classifications, land profile, drainage system of the land etc. are the major factor for the selection of crop suitability. The study area Cumilla Sadar Dakshin has high to medium high land area and for this reason, different types of vegetables are produced here not only in homestead but also in large scale, which covers about 80% of the total arable lands. Other crops like sugarcane, mustard, maize is also grown in the area. According to the primary data collected from 150 farmers, they produce different vegetables in homestead in different seasons for their own consumption and selling in the market (Table 12).

All the farmers produced vegetable in both season though most of the farmers are produce vegetables for both selling at local market and family consumption. Mainly spinach, okra, ash gourd, bitter gourd, sweet gourd, kalmishak, Sajina etc. in summer and bottle gourd, country bean, yard long bean, red amaranth, tomato, brinjal and sometimes cauliflower was produce in winter season (Table 13).

Net income from homestead vegetable production

Farmers having relatively large homestead area including pond produces higher number of vegetables. Farmers are earning high (53.3%) and medium (33.3%) income through selling vegetable in local market after meeting family demand. Only 13.3% farmers were found in this category had low income from homestead vegetable production (Table 14).

(Per Month) Zero income= 0 USD, Low income= 14.61 USD- 48.70 USD, Medium income= 48.71 USD – 97.40 USD, High income = 97.41 – 194.81 USD.

Visit of village outside

Farmers are visiting outside from their village, union council, Thana head quarter and district town for their own needs. It was found that 66.7% of farmers visited another village frequently, while 46.7% to union council rarely. Most of farmers (56.7%) never visited Thana head quarter but occasionally visited district town (66.7%) (Table 15).

Women participation and Time spent in homestead vegetable production

From (Figure 09) it has been shown that women contribution in homestead vegetable production is high in three categories of farmers marginal, small and medium are 40.00%, 36.36%, 41.67% women respectively.

Most of the farmers (140) spent their time ranged from 0 to 3.0 hours/day for homestead vegetable production and only 10 farmers spent 3.1-6.0 hours/day for homestead vegetable production. Interestingly none of the farmers spent above 6 hours per day for homestead vegetable production and household activities (Table 16). These data also shown that from total respondents most of their were women and their participation was 64.25% (0-3.0 hours) and 60.00% (3.1-6.0 hours) on vegetable production rather than men 35.71% (0-3.0 hours) and 40.00% (3.1-6.0 hours) respectively.

Table 12. Homestead vegetable production

Summer	Winter	Year round
Lady Finger	Bean	Papaya
Wax gourd	Tomato	Chilli
Bringal	Radish	Lemon
PuiShakh	Cabbage	Plantain
KalmiShakh	Cauliflower	
Cucumber	Bringal	
Dhudol	String bean	
Red amaranthus		
Sweet gourd		
Bitter gourd		
Bottle gourd		
Ribbed gourd		
Data Shakh		

Table 13. Vegetable growing season

Season	No. of respondents	Percentage (%)
Summer	0	0
Winter	0	0
Summer + Winter	150	100

Table 14. Net income from homestead vegetable

Categories of farmers	No. of respondents	Percentage (%)
Zero income	0	0
Low income	20	13.3
Medium income	50	33.3
High income above	80	53.3
Total	150	100

Table 15. Visit of village outside

Place of visit	Frequently	Occasionally	Rarely	Never
Visit outside your village	100 (66.70%)	30 (20.0%)	20 (13.30%)	0 (0.0%)
Village to Union council	30 (20.00%)	50 (33.30%)	70 (46.70%)	0 (0.0%)
Visit to Thana head quarter	5 (3.30%)	10 (6.70%)	50 (33.30%)	85 (56.70%)
Visit in district town	30(20.00%)	100(66.70%)	20(13.30%)	0(0.0%)

Frequently = 5 or more days/month; Occasionally = 3 to 4 days/month;

Table 16. Total time spent per day for homestead vegetable production

Hour/day	No. of respondents	Men	Women	Total Percentage
0-3.0	140	50 (35.71%)	90 (64.25%)	66.7%
3.1-6.0	10	4 (40.00%)	6(60.00%)	33.3%
Above 6.0	0	0	0	0

Table 17. Contact with extension and other personnel

Place of visit	Frequently	Occasionally	Rarely	Never
Contact with extension officials	130 (86.7%)	10 (6.7%)	10 (6.7%)	0 (0.0%)
Contact with BADC officials	0 (0.0%)	20 (13.3%)	30 (20.0%)	100 (66.7%)
Contact with input dealers	10(6.7%)	70 (46.7%)	50 (33.3%)	20 (13.3%)
Visit to Agril activities	10 (6.7%)	50 (33.3%)	90 (60.0%)	0 (0.0%)

Table 18. Habit of reading newspaper

Habit	No. of respondents	Percentage (%)
Frequently	5	3.3
Occasionally	10	6.7
Rarely	60	40.0
Never	75	50.0

Table 19. Percentage of enjoyed agricultural Fair, TV/Radio program

Category	No. of respondents	Percentage (%)
Frequently	10	6.7
Occasionally	30	20.0
Rarely	90	60.0
Never	20	13.3
Total	150	100

Table 20. Training on homestead vegetable production received by the farmers

Receiving training	No. of respondents	Percentage (%)
Yes	20	13.3
No	130	86.7

Table 21. Problems faced in homestead vegetable production

Problems	Severity of problems			
	Greatly	Moderately	Partially	Not at all
1. Lack of quality seeds	100 (66.7%)	30 (20.0%)	20 (13.3%)	0 (0%)
2. High input cost	140 (93.3%)	10 (6.7%)	0 (0%)	0 (0%)
3. Lack of capital	60 (40.0%)	50 (33.3%)	40 (26.7%)	0 (0%)
4. Shortage of irrigation water in dried period	120 (80.0%)	30 (20.0%)	0 (0%)	0 (0%)
5. Lack of technical knowledge on veg. prod	10 (6.7%)	50 (33.3%)	80 (53.3%)	10 (6.7%)
6. Insect pest attack on vegetables	130 (86.7%)	20 (13.3%)	0 (0%)	0 (0%)
7. Lack of marketing facilities	0 (0%)	5 (3.3%)	30 (20.0%)	115 (76.7%)
8. Homestead vegetables damaged by flood	0 (0%)	0 (0%)	10 (6.7%)	140 (93.3%)

Contact with extension and other personnel, habit of reading newspaper and enjoyed agricultural fair, TV/Radio program

Government and non-government officials play an important role in technology dissemination. This work needs visit and contacts with these officials at regular interval. In our study the extension personnel and officials were found most forceful for maintaining the contact frequently (86.7%) with farmers compared with other officials. Very few farmers only 13.3% went to BADC officials occasionally, (Table 17) where 46.7% farmers are also contact occasionally with input dealers for purchasing different fertilizer, pesticide and insecticide.

Habit of reading newspaper and Enjoyment of agricultural fair, TV/Radio Program

Most of the farmers (40.0%) reading newspaper rarely where only 3.3% farmers had habit of reading newspaper frequently and few farmers (6.7%) had habit to read newspaper occasionally (Table 18). Most of the farmers (60.0%) visited rarely to different agricultural activities arranged by different agricultural organizations and watching TV/radio program (Table 19).

Training

Training develops people's skill, reduce their mistakes during implementing job and make it perfect. Unfortunately, most of the farmers (86.7%) had no training on homestead vegetable production. Only 13.3% farmers got training on vegetable production (Table 20).

Problems faced in homestead vegetable production

While asking about different problems for homestead vegetable production they mentioned about the lack of quality seeds (Table 21) where about 66.7% farmers faced the problem greatly. About 40.0% farmers partially talked about the lack of their capital for vegetable production. Again, the input cost problem was also highly mentioned by 93.3% farmers. This cost included not only pesticide or fertilizers but also the different things needed for intense management. Insect & pest attack moderately disturbed their vegetable production. About 86.7% farmers talked on this topic as a great problem. Finally, the positive matter was they did not have any problem for marketing and their vegetables did not damage by flood found in this study.

Data express as number of respondent and within parentheses represent as percentage of respondent.

Problems faced by the farmers

- Unavailability of vegetable seeds from dealers at proper time.
- Market instability and very low price at production season.
- Lack of storage facility.
- EPZ effluents hampers the productive environment of crop and damages of land by industrial wastes.
- Intensive fish culture in water reservoir restrict drainage.
- Indiscriminate use of Pesticide.
- Traditional food habit.
- Minimum awareness to health hygiene.
- Inadequate loan or credit facility for poor farmers.
- Lack of technical training.

Conclusion

On the basis of findings and its logical interpretation it can be conclude that most of the farmers of Cumilla Sadar Dakshin Upazila were middle aged having different size family and farm. The study area is basically vegetable producing zone, where rice, sugarcane, maize are also prevailing. Beside vegetable production in large scale the homestead vegetable production is also found for not only family consumption but also income generation through sell them. Extension personnel especially SAAO has most of the contact with them compared to other one. They rarely visit to different agriculture related program or fair and also some have little training about crop and vegetable production. Most of them produce both summer and winter vegetables. Lack of quality seed and irrigation water are the main constrains mentioned by them whereas high input cost also highlighted. Some management techniques were also followed by some farmers but they were oblivious of the new ones. The simultaneous impact of home gardening programs in terms of giving women a voice and promoting their full participation in domestic life can make an important contribution to the overall development of communities as well as national income level. Under such circumstances, this survey was undertaken to investigate the homestead vegetable production and its impact on food security, family nutrition and income generation of the family throughout the year involving employment of female members. Lack of education and knowledge about the technology is one of the main problems. They need to understand why vegetable production is important. More training, demonstration and publicity on vegetable production can help to create awareness among them. Emphasis should be given for solving the quality seed supply and irrigation problem especially in winter to encourage themselves for vegetables production. Government and policy makers should make some new strategies that can motivate more and more people for homestead vegetable production. Though the village had some limitation of rural development but the social structure and livelihood pattern was standard.

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