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A CASE STUDY ON HOMESTEAD VEGETABLES CULTIVATION: FOOD SECURITY AND INCOME

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ABSTRACT

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A field survey was conducted at Raichow village under Comilla district during November to December, 2007 to investigate the homestead vegetable production and its impact on family nutrition and income generation and involvement of female members to this activity. A total of 125 randomly selected homesteads were surveyed for this purpose through questionnaire and focus group discussion. On the basis of farm category highest number of farmers are marginal (44%), followed by landless (28%). In respect of total cultivated percent of households are highest in marginal group (46.9%) followed by small (36.8%) and medium (28.9%) group. The highest amount of vegetables was produced by the large farmer (1230.20 kg/year) followed by small (780.67 kg/year) and marginal (540.50 kg/year) and landless (260.50 kg/year) farmer. Production, consumption and distribution of vegetables increased from landless towards large farmer while selling increased towards poor farmers. The highest total income (Tk. 15992.60/year) and net income (Tk. 14542.60/year) were obtained from large farmer followed by marginal and landless farmer.

Key words: *homestead, vegetable, production, income, food security*

INTRODUCTION

Malnutrition is a serious public health problem in Bangladesh. It retards child growth, increases the risk and duration of illness, reduces work output, and slows social and mental development. Malnutrition among women of reproductive age increases the risk of mortality during labor and delivery and puts their newborn children at risk of long-term deficiencies. Improving nutritional status, including micronutrient status, can lead to increase productivity, increase child survival and growth, and reduce maternal morbidity and mortality. Nutrition survey in rural Bangladesh reports that average intake meat only 80% of caloric 58% of vitamin A, 50% of riboflavin and 51 % of vitamin requirement (BINFS 1982). Though the trends of vegetables production are increasing in Bangladesh in the recent period, per capita consumption of vegetables is very low (about 32 gm/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). Helen Keller International's (HKI) recent national vitamin A survey in rural Bangladesh showed that children of households without a home garden were at greater risk of vitamin A deficiency than children of households with a home garden. 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). Diet diversification is arguably the most sustainable and affordable strategy to improve nutrition for the majority of the population particularly the poor. For poor households, vegetables and fruits are often the only source of micronutrients in the family diet. Homestead production of fruits and vegetables provides the household with direct access to important nutrients that may not be readily available or within their economic reach. Therefore, home gardening would be a good means to improve household food security. 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 can also increase the income of women, which may result in the better use of household resources and improved caring practices and empowerment. This empowerment of women also addresses a priority area of poverty alleviation and provides important socio-economic returns through lower health and welfare costs, lower fertility, and lower maternal and infant mortality rates. Thus, 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 family nutrition and income generation of the family throughout the year involving employment of female members.

MATERIALS AND METHODS

The survey was conducted in Raichow village under the district of Comilla during November to December 2007. The total population of the village is 1448 and total number of household is 232. Literacy rate of this village is 80% (CVDP, Raichow). Hundred and twenty five (125) farmers (head of the households) were selected randomly. In order to collect the required information on various aspects of the study, an interview schedule was carefully prepared to satisfy the objectives of the research. Direct question, focus group discussion, individual face to face interview and different scales were used to obtain reliable information. Primary data from the responded farmers

was collected through administering pre tested questionnaire. The pre tested interview schedule facilitated the researcher to examine the suitability of various question. The interview schedule was finalized after necessary correction, alternations and addition. Question was asked systematically and explanations were done whenever it was felt necessary. The respondents were interviewed at their own house in leisure time so that they could give accurate information in a sound mind. Excellent co-operation was received from all respondents during data collection. The information supplied by the respondents was recorded directly before on the interview schedule and checked carefully before leaving the study area in order to minimize errors. In order to process and analyze the data, simple mathematical tools like average, percentage and tables, were used to present the research findings in a meaningful way.

RESULTS AND DISCUSSIONS

Age of the respondents

The mean age of the respondents was 42 years. It revealed that 52% of the farmers belong to the age group of 36-50 and 2% belong to the age group of <20 (Table.1).

Table 1. Percentage of respondents according to age

Age (Years)	Frequency (n)	Percentage (%)
<20	10	8
21-35	30	24
36-50	65	52
50+	20	16
Total	125	100

Family size

The average number of family members in the surveyed area was observed 6.24 consisting of 2.34, 1.87 and 2.02 as adult male, adult female and children, respectively (Table 2). It was noted that the average family members was higher in large farmers where as higher percent of them were adult female.

Table 2. Average family size by different farm categories at Raichow village, Comilla

Farmer's categories	Adult male	Adult female	Children		Total
			Male	Female	
Marginal (Upto 0.50 ac)	1.73	1.26	0.93	0.86	4.78
Small (0.51-1.50 ac)	2.05	1.42	1.10	0.78	5.35
Medium (1.51-2.50 ac)	2.60	1.73	1.33	0.66	6.32
Large (2.51-3.50 ac)	3.00	3.09	1.45	1.00	8.54
	2.34	1.87	1.20	0.82	6.24

Figure in the parenthesis within bracket indicate percentage

Level of education

The level of education of the farmers varied widely. It revealed that about 80% of the farmers were literate and 44% were belonged to the group primary level of education. Only 20% of farmers are illiterate (Table 3). This is obviously a good sign of that village.

Table 3. Distribution of respondents by their level of education

Level of education	Frequency (n)	Percentage (%)
Illiterate	25	20
Primary (1-5)	55	44
Secondary (6-10)	20	16
Higher secondary (11-12)	15	12
Higher degree (12+)	10	08
Total	125	100

Occupation of the respondents

It was found that 52% of the farmers were involved only in agriculture and 20% of the farmers were involved both in agriculture and service and the rest portion of respondents was involved in both agriculture and business (Table 4).

Table 4. Distribution of respondents according to their occupation

Categories of the farmers	Frequency (no.)	Percentage (%)
Agriculture	65	52
Agriculture + service	25	20
Agriculture + business	35	28
Total	125	100

Income level

Income of a family is an important factor to determine the standard of living. It is very difficult to measure actual income because farmers may have dimensional source of income, which are not recorded regularly by them. It was found from the study that farmers of low income category were 44% and the highest number of farmers were in medium group of Tk 20,001 – 40,000 per annum (Table 5).

Table 5. Annual income distribution pattern of the respondents

Categories of the farmers	Frequency (no.)	Percentage (%)
Low income (Tk <20000)	55	44
Medium inc. (Tk 20001-4000)	60	48
High income (Tk>40001)	10	08
Total	125	100

Involvement of farmers in NGO

Involvement with NGO is a common phenomenon in Bangladesh villages. Some of the farmers of this village are involved with different type(s) of NGOs. 48% of the respondents were involved with one NGO and 12% of them have linked with more than one NGOs (Table 6).

Table 6. Distribution of the farmer's involvement with NGOs

Categories of the farmers	Frequency (no.)	Percentage (%)
No involvement	50	40
Involvement with one NGO	60	48
Involvement with more than one NGO	15	12
Total	125	100

Farmer's Involvement in Cooperative

It was revealed that about 84% of the farmers were involved with Raichow Sombay Samity Limited (CVDP) and no involvement of the farmers was found only 16% (Table 7).

Table 7. Distribution of the farmers' involvement with cooperative

Categories of the farmers	Frequency (n)	Percentage (%)
No involvement	20	16
Involvement with Cooperative	105	84
Total	125	100

Pattern of land ownership

The average land ownership of the farmers was 2.2 acres. The highest (44%) acreage of land possessed by the marginal farmers while the lowest (08%) possessed by the large farmers (Table 8).

Table 8. Pattern of Land ownership of the respondents

Land ownership category (acre)	Frequency	(%)	Percentage (%) of land owned	
			Cultivable land	Non cultivable land
Landless <0.5	35	28	-	-
Marginal (0.5-2.49)	55	44	75	25
Medium (2.5-7.49)	25	20	80	20
Large (7.50+)	10	08	76	24
Total	125	100	-	-

Farm size

Most of the people for Raichow village depend mainly on farm income. Measures of farm size were particularly limited on homestead area. Distribution pattern of homestead area among the same farmers was shown in Table 9. It was revealed that highest area of homestead was owned by large farmers having 0.57acre (20.5%) followed by medium farmers of 0.53 acre (28.9%) while the marginal farmers had the lowest homestead area by 0.23 acre (46.90%).

Table 9. Average farm size by different farm categories in acre at Raichow village

Farmer`s categories	Total homestead area	Housing	Cattle shed	Open deny place	Poultry house	Ponds	Others (Perennial sps. Etc.)	Total Cultivable land
Marginal (Upto 0.50	0.23 (46.9)	0.029	0.049	0.123	0.0002	0.073	0.0024	0.494
Small (0.51-1.50 ac)	0.46 (36.8)	0.039	0.054	0.296	0.0027	0.039	0.025	1.25
Medium (1.51-2.50	0.53 (28.9)	0.046	0.081	0.793	0.031	0.029	0.029	1.83
Large (2.51-3.50 ac)	0.57 (20.5)	0.098	0.012	0.247	0.0047	0.012	0.037	2.77
Average	0.44 (26.3)	0.054	0.049	0.308	0.0049	0.066	0.023	1.67

Figure in the parenthesis indicate percentage of homestead area within bracket in respect of total cultivable land

Vegetable cultivation status in Raichow village

Different vegetables were cultivated in Raichow village like tomato, radish, potato, lalshak, cabbage, brinjal, etc. Highest land occupied by bottle gourd cultivation followed by Lalshak i.e. 24.2% and 13.8% of cultivable land. The lowest land was occupied by cabbage i.e. 3.75%.

Table 10. Coverage of different vegetable cultivation in Raichow village

Farm categories	Area Coverage (acre)								
	Tomato	Radish	Potato	Lalshak	Cabbage	Brinjal	Bottle gourd	Bitter gourd	Bean
Marginal	0.0022 (5%)	0.0022 (5%)	-	0.0044 (10%)	-	0.0022 (5%)	0.0176 (40%)	0.008 (18%)	0.007 (17%)
Small	0.09 (8%)	0.11 (10%)	-	0.165 (15%)	-	0.11 (10%)	0.3 (27%)	0.11 (10%)	0.22 (20%)
Medium	0.31 (8%)	0.31 (8%)	0.77 (20%)	0.577 (15%)	0.1925 (5%)	0.31 (8%)	0.0962 (25%)	0.31 (8%)	0.31 (8%)
Large	1.53 (25%)	0.306 (5%)	1.53 (25%)	0.918 (15%)	0.612 (10%)	0.306 (5%)	0.306 (5%)	0.306 (5%)	0.306 (5%)
Average	0.483 (11.5%)	0.182 (7%)	0.58 (11.2%)	0.42 (13.8%)	0.20 (3.75%)	0.18 (7%)	0.18 (24.2%)	0.1835 (10.3%)	0.21 (12.5%)

Homestead vegetable cultivation status in Raichow village

The present vegetable cultivation status of Raichow village, highest land occupied by potato cultivation followed by tomato i.e. 20.79% and 18.28% of cultivable land. Cabbage, brinjal and bitter gourd i.e. 7.195 land of total cultivable land occupied the lowest land.

Table 11. Homestead coverage of different vegetable cultivation in Raichow village

Farm categories	Area Coverage (m^2)							
	Tomato	Radish	Lalshak	Brinjal	Bottle gourd	Chili	Bean	Total
Landless	-	2.0	1.5	1.0	4.5	0.5	1.0	10.5
Marginal	-	-	3.5	2.5	5.0	2.0	3.5	16.5
Small	-	2.5	3.0	3.5	7.0	2.5	6.5	25.0
Medium	3.5	3.0	4.8	5.2	6.5	3.8	7.2	34.0
Large	7.4	5.1	5.2	6.2	7.5	3.2	9.1	43.7

Table 12. Average total vegetable production and utilization pattern and net income of different group of farmers at Raichow village

Farmers group	Total production (kg)	Vegetable utilization (kg)			Cash income (Tk)	Total income (Tk)	Total cost (Tk)	Net income (Tk)
		Own consumption	Distribution	Sale				
Landless	260.50	180.30	34.00	36.20	470.60	3386.50	315.00	3071.50
Marginal	540.50	263.00	81.00	196.50	2554.50	7026.50	550.00	6476.50
Small	780.67	374.67	150.00	256.00	3328.00	10148.7	860.00	8428.70
Large	1230.20	580.20	280.00	370.00	4810.00	15992.6	1450.00	14542.60
Total	2811.87	1398.17	545.00	858.7	11163.10	36554.3	3175.00	32519.3

It was evident that the highest amount of vegetables was produced by the large farmer (1230.20 kg/year) followed by small (780.67 kg/year) and marginal (540.50 kg/year) and landless (260.50 kg/year) farmer. The result indicated that production, consumption and distribution of vegetables increased from landless towards large farmer while selling increased towards poor farmers. The highest total income (Tk. 15992.60/year) and net income (Tk. 14542.60/year) were obtained from large farmer followed by marginal and landless farmer.

Women participation in homestead vegetable cultivation

In homestead area mainly women participation was high 68%, both women and men participation was 32% but only men participation is zero (Table 13).

Table 13. Participation in homestead vegetable cultivation activities

Participants	Frequency (n)	Percentage (%)
Women	85	68
Women + Men	40	32
Men	00	0
Total	125	100

CONCLUSION

The production of homestead vegetables provides the household with direct access to important nutrients that may not be readily available or within their economic reach. In addition, home gardening increases the diversity of foods, which in turn leads to overall better utilization of nutrients. Vegetables often make other foods more palatable and can lead to overall increase food intake and in their aim to improve overall quality of the diet, home garden address multiple micronutrient deficiencies simultaneously. Home gardening has been shown to be a source of additional income for the household through the sale of garden produce after family consumption. Studies suggest that this additional income is generally utilized to purchase additional food items, further increasing the diversification of the diet. Finally, home gardening is especially important in overcoming seasonal availability of foods and promotes household self-sufficiency.

Women are the main caretakers of the garden, which empowers them, ensures better utilization of the income from the garden for food, and increases family welfare. All these benefits are important contributions towards poverty alleviation.

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