



Crop Diversification and Intensification through Community Vegetable Production Trial in a Village of Dingaputa Haor

M. M. Karim¹, M. S. U. Bhuiya² and S. M. A. Hossain¹

¹ LIFCHASA project, ²Department of Agronomy, Bangladesh Agricultural University, Mymensingh

Abstract: A study was conducted at Purba Tethulia village, in Dingaputa *haor* of Mohanganj Upazila in Netrakona district during the period from April 2011 to March 2012. The objective of the study was to diversify and intensify crops in the research site, to utilize waste/fallow area of homestead land and to utilize family labour during the lean season. The study included community production trials on year round vegetable (Indian spinach, sweet gourd, ash gourd, snake gourd, country bean, bottle gourd) covering all 462 households of the research site. The highest gross margin (Tk 640 farm⁻¹) was obtained from country bean during the winter and Tk 399 farm⁻¹ for snake gourd during the summer. The homestead vegetables production round the year may be extended to the *haor* areas of similar environment for food security as well as for the income generation of the poor and extreme poor people.

Key Words: Community, Diversification, Food security, Haor, Homestead, Intensification

Introduction

Bangladesh claims to be self-sufficient in rice production. But other foods are deficit to a large extent. Even the rice food security is not achieved at the household level in many poor and extreme poor families in urban and rural areas including those of the highly food in secured areas of Bangladesh of which the flood prone areas of the Sylhet *haor* basin can be mentioned although the *haor* is a surplus area of rice and fish.

The *haor* of Bangladesh covers the districts of Kishoreganj (eastern part), Netrakona, Sunamganj, Habiganj, Moulabibazar and part of Sylhet and Brahmanbaria. The *haor* area extends as many as 43 upazilas of the aforesaid districts. The area of the *haor* is about 932793 hectares (*Haor Task Force Report*, 1985). The *haor* goes under flooding (5-10 m) from late May to October while looks like a sea. There is only one cropping season in *haor* i.e. the *Rabi*, when *Boro* rice, potato, groundnut, sweet potato, mustard and pulses are grown. Sometimes in some years the crops of the *haor* areas are affected by natural calamities like flash flood, hailstorm and insect pests. The *haor* is a vital supplier of inland fresh water fisheries with a fishing area of 114793 hectares (Hossain *et al.*, 1987). The main communication to the *haor* is by boat with or without engine.

Crop diversification can be a useful means to increase crop output under different situations. Out of 5.38 decimals average homestead areas in Purbo Tethulia, the research site, about 1.57 decimals areas remain fallow/waste land. On the other hand, the homestead area that is being used for vegetable and fruit cultivation is only 0.81 decimal only (LIFCHASA, 2010). Therefore, there is an ample opportunity to increase

vegetable production in the homestead waste/fallow land by proper utilization of the waste/fallow land of homestead area.

Intensification of crops is an agricultural production system characterized by a low fallow ratio and the high use of inputs such as capital, labour or heavy use of pesticides and chemical fertilizers relative to land area. Bangladesh has, by 2010/2011, achieved an estimated cropping intensity of about 191 percent (BBS, 2011). Out of the net cropped area of 9.23 million hectares, about 43 percent is double cropped and approximately 14 percent triple cropped. However, about 30 percent is still single cropped (BBS, 2010). Since all the suitable land is already under cultivation, raising the intensity of land use is needed.

As evident in Benchmark Survey (LIFCHASA, 2010), crop species diversity in Purbo Tethulia is negligible. Although vegetable is important food item for daily consumption, the area under vegetable cultivation in Purbo Tethulia is limited and the yield status of different vegetables is also low. As a result people taking fewer amounts of vegetables.

A study was, therefore, undertaken in Purbo Tethulia, a village of Dingaputa *haor* with the following objectives.

- i. To diversify and intensify crops in the research site
- ii. To utilize waste/fallow area of homestead land and to utilize family labour during the lean season.

Materials and Methods

The study was carried out at Purbo Tethulia village situated in the eastern side of Mohanganj upazila of Netrakona district, a village and ward of Tethulia union in Dingaputa *haor*, during the period from April 2011 to March 2012. Community vegetable production trial was conducted in the homestead area of Purbo Tethulia covering all 462 households for diversification and intensification of crops. Six types of vegetables were selected for community trial. In the summer, Indian spinach (cv. Puishak shabuj), sweet gourd (cv. Shotabdi), ash gourd (cv. Super Star), snake gourd (cv. Kobra) and in the winter, country bean of three varieties Knoldog, Knoli, IPSA-1, three varieties of bottle gourd Hi-green, Martina, Madhumoti (Hybrid) were grown. In the summer, seeds of vegetable were distributed among the 462 households on 1st week of April 2011. Before seed sowing pits were made with a mixture of well decomposed cowdung and soil in equal proportion. Seeds were sown on 7-17 April 2011. Improved management practices including manuring, thinning, watering, etc. were done. Malathion was used to control epilachna beetle and Ektara for Thrips. Harvesting started from June 2011 and completed on September 2011. In the winter, seeds of country bean and bottle gourd were distributed among the 462 households in the end of July 2011. Seeds of bottle gourd were sown on 1-10 August 2011 and country bean on 5-15 August

2011. Improved management practices including manuring, thinning, watering, etc. were done as and when necessary. Malathion was used to control epilachna beetle. Harvesting of bottle gourd was started from 15 November 2011 and completed on 17 March 2012 and country bean was started on 3 December 2011 and completed on 22 March 2012. Total production and gross return per farm was recorded through monitoring and data recording. Data was collected on total production farm⁻¹ through monitoring from 25 households by calculating of consumption, sales and gift amount.

Results and Discussion

Performance of Indian spinach, sweet gourd, ash gourd, snake gourd, bottle gourd and country bean is presented in Table 1. The production of Indian spinach, sweet gourd, ash gourd, snake gourd, bottle gourd and country bean was 37.00, 63.80, 65.33, 23.99, 60, 48.00 kg farm⁻¹, respectively. Gross margin from Indian spinach, sweet gourd, ash gourd, snake gourd and bottle gourd was Tk290, 239, 312, 399, 400 and 640 farm⁻¹ with benefit cost ratio of 4.62, 3.98, 4.90, 5.98, 6.00 and 9.00, respectively. Cultivation of country bean during the winter season seemed to be the better option providing 9.00 benefit cost ratio and for summer snake gourd providing benefit cost ratio 5.98. On the other hand, sweet gourd showed the lowest benefit cost ratio (3.98).

Table1. Agro-economic productivity of summer and winter vegetable in the homestead, Purbo Tethulia, 2011-12

Vegetable	Production farm ⁻¹ (kg)	Total variable cost (Tk farm ⁻¹)	Gross return (Tk farm ⁻¹)	Gross margin (Tk farm ⁻¹)	Benefit cost ratio (undiscounted)
Indian spinach	37.00	80	370	290	4.62
Sweet gourd	63.80	80	319	239	3.98
Ash gourd	65.33	80	392	312	4.90
Snake gourd	23.99	80	479	399	5.98
Bottle gourd	60.00	80	480	400	6.00
Country bean	48.00	80	720	640	9.00
CV(%)	15.42	0.00	15.8	15.95	19.37
S_x	3.48	0.00	3.51	2.34	2.34
Level of significance	**	ND	**	**	**

Sweet gourd @Tk5 kg⁻¹, Ash gourd @Tk6 kg⁻¹, Snake gourd@ Tk 20 kg⁻¹, Indian spinach @Tk10 kg⁻¹, Bottle gourd @ Tk 8.00 kg⁻¹ and country bean @ Tk 15 kg⁻¹

** = Significant at 1% level of probability

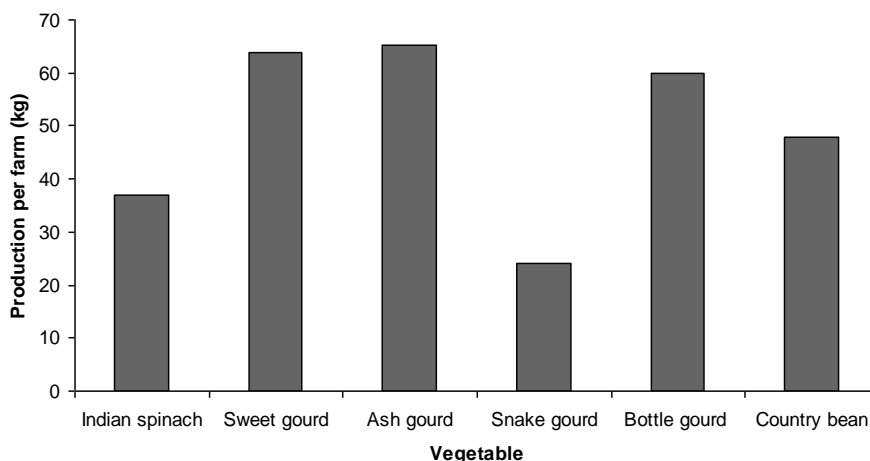


Fig. 1. Agro-economic productivity of summer and winter vegetable in the homestead, Purbo Tethulia, 2011-12

Homestead vegetable was sporadically cultivated before intervention. During the lean period (May-September) the *haor* people pass their time almost jobless except fishing in the open water. Male, female even school going boys and girls were involved in the year round vegetable cultivation. As a result, generated employment and income opportunity and improved food security through consumption of vegetable.

Conclusion

Based upon research findings, it may be concluded that homestead production of vegetable round the year were found successful and the programme may be extended to the *haor* areas of similar environment for food security as well as for the income generation of the poor and extreme poor people.

References

- BBS (Bangladesh Bureau of Statistics). 2010. Statistical Yearbook of Bangladesh. Bangladesh Bur. Stat., Stat. Div., Minis. Plann., Govt. People’s Repub. Bangladesh. Dhaka. pp. 125-139.
- BBS (Bangladesh Bureau of Statistics). 2011. Statistical Yearbook of Bangladesh. Bangladesh Bur. Stat., Stat. Div., Minis. Plann., Govt. People’s Repub. Bangladesh. Dhaka. p. 18.
- Haor* Task Force. 1985. Report of the *Haor* Task Force 1985. Dept. Agril. Exten. Kishoreganj.
- Hossain, S. M. A.; Alam, M.M.B.A and Kashem, A.M. 1987. Research Activities 1986-87. Frmg. Syst. Res. and Dev. Prog., Bangladesh Agril. Univ., Mymensingh. pp. 2-3.