

Organic sack garden ensuring nutrition and improve the food security on small scale households

Hossain, S.T.¹, Akter, S²

Key words: food security, homestead, income generation, organic

Abstract

An experiment was conducted in Gazipur district of Bangladesh in 2009 to study the effect of sack/bag gardening method for the first time in Bangladesh and to observe the suitability and opportunities of the method in context of Bangladesh that one of the most vulnerable country in the world with recent climate change. The peoples who are disadvantaged and living in unfavourable ecosystems can be able to grow and cook their own vegetables and have more diversity in their diet by growing high nutritional products. The overall objective is to improve peoples ability to be food secure and more specifically are to increase the household food consumption and production also to increase their income through these activities. From the study it was observed that the vegetable production by sack gardening method was a effective technology and received a attention from the household communities. It was also observed that the households consumption pattern has changed in some extent with practicing the technology.

Introduction

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 and also Food security defined as for a household means access by all members at all times to enough food for an active, healthy life (World Food Summit 1996). Food security includes at a minimum (1) the ready availability of nutritionally adequate and safe foods, and (2) an assured ability to acquire acceptable foods in socially acceptable ways that is, without resorting to emergency food supplies, scavenging, stealing, or other coping strategies. In National Strategy for Accelerated Poverty Reduction, 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. Bangladesh obtains food through domestic production, imports and food aid. As the food aid is decreasing in recent years, the country has no alternative way but to increase the domestic agriculture production including high value vegetables and non-rice crop. The area of vegetable production in Bangladesh is 0.279 million ha and production is 2.05 million MT. The present consumption rate is 45 gm/day/person, where the recommended figure is 220 gm/day/person (BBS 2004). As per recommendation our requirement vegetable production is 11.24 million MT. The consumption poverty line is defined in terms of calories, leaving out minimum levels and requirements of vitamins and minerals. In Bangladesh the consumption rate of vegetables are 17 kg/year, whereas in neighboring India the figure is 84 kg and in China is 107 kg. The majority of the population of Bangladesh depends upon rice which is the staple food. Bangladesh has reached near self sufficiency in grain

¹ Friends In Village Development Bangladesh. E-Mail : tanveer107@yahoo.com

² Padakhep Manabik Unnayan Kendra, Dhaka, Bangladesh

production. However; the poorest people have problem to have a diversified diet. The population is plagued with deficiency related diseases associated with inadequate intake of minerals, essential amino acids, poor quality fat and vitamins. Due to recent climate change, Bangladesh is affecting in various ways. Un-even rainfall, flooding, salinity increase, water stagnate are causing different problems for crop and vegetable production. The sack gardening method was adopted by Solidarites in the slum areas of Sudan (Pascal & Mwende). It was assuming that the technology might be applicable and effective for Bangladesh.

Materials and methods

By the means for innovative approaches by bag-gardening offers an alternative to start vegetable gardens by utilizing small land areas or space and the individual families who can grow many varieties of vegetables with minimum expenditure and can transfer the bags from one place to other if needed. Research of bag-gardening in bags (size: 2.6"×1.2"×3.5") were used in both top of the bag and three layers of the side with the different combination of vegetables in different treatments. For the preparation each sack, the soil and cowdung was mixed well at the ratio of 2:1. Some quantity of ash was also mixed with soil. Dry leaves (one-sixth of total amount of soil) were putted in the lower of the sack for keeping balance the moisture. Some gravels were placed in a plansic pipe and later the pipe removed from the sack so that irrigation water can reach easily to the lower part. Vegetable saplings were placed in the bag in top and the whole of side layers. The treatments were (i) Red amaranth, Kangkong, pumpkin (sack no. 1), (ii) Green amaranth, Spinach, Kangkong (sack no.2), (iii) Green amaranth, Spinach, Kangkong, Lady's finger(sack no.3), (iv) Red amaranth, Spinach, Kangkong, pumpkin (sack no.4) and (v) Kangkong, Spinach, Lady's finger (sack no. 5). The treatments were replicated in three times.

Table 1. Panting and harvesting date of different sacks.

Sack No.	Type of vegetables	Planting date	Harvesting date starts
Sack-1	Red amaranth	March19,2009	April 18,09
	Kangkong	Do	April 18,09
	pumpkin	Do	Apri 25. 09
Sack-2	Green amaranth	March19,2009	April 18,09
	Spinach	Do	April 12,09
	Kangkong	Do	April 12,09
Sack-3	Green amaranth	March19,2009	April 18,09
	Spinach	Do	June 02,09
	Kangkong	Do	May 05,09
	Ladys finger	Do	June 02,09
Sack-4	Red amaranth	March19,2009	April 18,09
	Spinach	Do	May 25,09
	Kangkong	Do	May 12,09
	pumpkin	Do	June 08,09
Sack-5	Kangkong	April 05,2009	May 09,09
	Spinach	Do	June 08,09
	Ladysfinger	Do	June 28,09

Table 2. Harvesting and revenue generated from different sacks.

Sack no.	Type of vegetables	No of harvesting /bag / month			Weight of vegetable harvested /month(g)			Revenue generated per month(Tk.)			
		Ap	Ma	Jun	Ap	Ma	Jun	Ap	Ma	Jun	Total
Sack -1	Red amaranth	1	1	1	750	800	1000	34	51	68	153
	Kangkong	1	2	2	200	450	400				
	pumpkin	-	1	2	-	500	1000				
Sack -2	Gr.amaranth	1	1	1	450	600	900	9	27	45	81
	Spinach	-	1	2	-	500	600				
	Kangkong	-	2	2	-	300	900				
Sack -3	Gr.amaranth	1	1	1	650	800	1000	20	43	37	100
	Spinach	1	2	2	200	750	400				
	Kangkong	-	1	1	200	500	450				
	Ladys finger	-	1	1	-	100	100				
Sack -4	Red amaranth	1	1	1	850	1000	900	36	74	86	196
	Spinach	-	1	2	-	400	600				
	Kangkong	1	2	2	350	550	600				
	pumpkin	-	2	2	-	1000	1500				
Sack -5	Kangkong	-	1	2	-	470	900	-	18	35	53
	Spinach	-	1	2	-	400	1100				
	Ladysfinger	-	1	2	-	120	100				

Results

It was observed that quick growing leafy vegetable is more suitable for sack-gardening method compared to non-leafy vegetable. There were none of any insect or disease has been seen. It was succeeded to able harvest many kinds of vegetables from a small piece of land at the same time.

It was also observed that the combinations of Red amaranth, Spinach, Kangkong and Pumpkin (sack no. 4) altogether produced the higher yield (7.5 kg/three months) followed by Green amaranth, Spinach and Kangkong (4.25kg) combination (sack no.2). The highest rate of return (Tk. 196) was achieved from sack no. 4 than that of sack no.2 (Tk. 84). (Tk. 70 = 1 US\$).

After received the preliminary research findings, a pilot studies were conducted in Sylhet (eastern part of Bangladesh) areas to know the farmers reaction about the technology. It was observed that farmers have keen interest on this method particularly in such homesteads where they have very limited space for vegetable production. The technolog has high positive impact on food security, nutrition, economy, women participation in balance food and sustainable development that revealed from farmers survey result.

Discussion

Homestead food production (HFP) programming in Bangladesh faces several challenges. Changing people's preferences for producing and consuming food are quite difficult. Bangladeshi farmers, for example, are used to growing rice, and have sometimes hesitated to devote more time and attention to the production of

vegetables because this appears risky. Advancing sustainable changes in people's dietary patterns requires effective communications to promote food choices and the beneficial ways of allocating food and other resources among household members. The recent rise in food prices of basic foods has sent a shock wave through the world community, particularly poor people, arousing individuals and institutions from years of complacency about the state of the agricultural sector. The technology can improve the communities' local food production systems by creating year-round gardens with micronutrient-rich vegetables. The vegetables from the sacks ensure the availability of vitamins and minerals essential for proper immune system function and full physical, intellectual and cognitive development. Food-based strategies, including homestead food production not only increase food security but also have an impact on reducing micronutrient deficiencies and empowering women (Bushamuka *et al.* 2005).

This sack garden vegetable production method has also empowers women, who organize and care major part of the gardens. The women begin contributing to the economic stability of their families and make sure their children consume the nutritious food they grow. The program was designed to target households represented by women. Women perceive themselves as making greater contributions to household income because of gardens. Moreover, the vegetables were mostly consumed rather than sold, particularly by children. From the survey it was noticed that children in households with sack gardens were consumed more vegetables than that of before.

Conclusions

It was found that the technology had high potentiality and suitability in the homestead vegetable production purposes for improving the nutritional status, reducing poverty and improving household food security in Bangladesh. This technology can easily be adapted in the urban slum, roof gardening and in the haor and river basin areas.

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