



Organic sack gardening for increased agricultural productivity and household incomes

Vegetables are rich in vitamins, minerals, and fiber essential for human health. Some, like spinach and other leafy vegetables, can help prevent cancer. The minimum daily recommended vegetable allowance for adults is 220–275 g. In many countries, however, vegetable consumption is very low; for example, in Bangladesh it is about 45–70 g daily. Malnutrition is a serious problem in the majority of developing countries, with adverse effects on children even before they are born. To reduce malnutrition, dietary diversity is important. Households that grow their own vegetables can easily eat a rich, varied diet, although many lack sufficient land. To resolve this, growing vegetables in bags or sacks is an effective alternative.

Sack gardening technology

Sack gardening is a simple, low-cost, technology for those who have very limited or no space for vegetable production. It allows the disadvantaged and people living in unfavorable ecosystems (such as char or basin areas) to grow vegetables, providing greater diversity and nutrition to their diets. It also improves food security and can increase household incomes. The sack gardening method was successfully adopted by Solidarités International, a France-based NGO, in urban slum areas in Kenya. It was introduced in Bangladesh in 2010, where it attracted widespread media attention and has been accepted by farmers and city dwellers.

Sack gardening does not require much land. A square meter is sufficient, depending on household requirements and preferences. If enough nutritious vegetables are grown, the needs of a family can be met, while saving hard-earned cash and shopping time. The sacks can also be relocated, allowing families with no permanent residence to cultivate vegetables.

Preparing a sack garden

It only takes a few hours of labor and minimum expenditure to set up a sack garden. Durable used bags, like grain sacks or livestock feed bags, should be selected so that they do not easily rot. A biodegradable synthetic one is ideal, since each sack should last for at least two growing seasons. A 50-kg sack requires the following inputs: 20 kg of soil; 20 kg of dry animal dung or compost; 5 kg of stones (20–40 mm in diameter); 3 kg of dry leaves or straw; and 2 kg of ash. Different sizes of sacks can be used, as long as the proportions of inputs remain the same.

As shown in Figure 1, first, place a hollow PVC pipe approximately 15 cm in diameter and long enough to reach nearly to the top into the center of the sack. Drop the stones in the pipe, which will allow irrigation water to spread throughout later. Put the dry leaves/straw in the bottom of the sack to maintain the moisture balance. Mix the ash, compost, and soil and add the mixture to the sack. Then remove the pipe, leaving the stones in place. Place different vegetable seeds or shoots in the soil on top of the bag and along the sides. Leafy vegetables, gourds and squash, okra, herbs, peppers, onions, tomatoes, and many others can be grown in sacks.

Benefits

General: The benefits of sack gardening are numerous. Monocropping or mixed vegetables can be produced. Depending on the climate and crop, each sack can produce continuously for 7–9 months. The grower's initiative is the main capital, and this is a simple, low-cost method that is easily mastered. Sack gardening does not require chemical fertilizers or pesticides. Organic urban waste can be converted into compost for sack gardening, while gray water from washing can be used for irrigation. The technique has a positive impact on food security, nutrition,



Figure 1. Steps in setting up a sack garden.

climate change, women's participation in feeding families, and sustainable development. It can improve community food production systems by creating year-round gardens. Vegetables from the sacks ensure the availability of vitamins and minerals essential for proper immune system function and full physical, intellectual, and cognitive development.

Helping the planet: Recycling urban organic trash and water comprises a form of permaculture that reduces waste and resource use within cities. Utilizing space and recycling resources in cities result in less pressure on dwindling farmlands. Since sack gardening does not use fertilizers or pesticides, it causes less water and land pollution.



Sack gardening technology visited by Bangladesh State Minister of Finance M.A. Mannan (4th R), and Dr. Shahidullah Talukder (far R), former Vice Chancellor, Sylhet Agricultural University.

Helping people: Households benefit from better nutrition and potential supplementary income when surplus produce is sold or bartered. Women in particular are empowered, as they generally organize and tend urban gardens. Sack gardening encourages new urban farmers to cooperate, share knowledge and experience, and discuss issues of interest such as nutrition, health, and marketing of products. It can help communities adapt to changes resulting from increasing populations and climate change. Since the sacks can be transferred from one location to another, this is convenient for areas with increasing numbers of climate refugees.

Spillover effect: Sack gardening has been successful in Bangladesh, Uganda, and Kenya. The technique was disseminated via producer-to-producer visits, publicity materials, and mass media. The practice also spread spontaneously among neighbors as they saw the many rewards.

Economic benefits: On average, in Bangladesh each household could increase its weekly income by US\$5.00 by selling surplus vegetables and reducing the amount spent to purchase them from the market.

Applicable around the world: Urban agriculture has great potential. If managed correctly, sack gardens can provide food for families throughout the year. Shared or communal gardens could be established on high-rise apartment building rooftops. Properly designed sack gardens can be entirely self-sufficient by harvesting rainwater, using solar power, and applying manure or kitchen waste as organic fertilizer. Once set up, sack gardens require minimal effort to maintain. They are also a great way to teach children about the environment and ethical farming.

Several case studies that show the success of organic sack gardening are available at <http://www.new-ag.info/en/research/innovationItem.php?a=2982>.

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Photos courtesy of Friends In Village Development Bangladesh, Bangladesh.



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