

Climate resilient farming: year-round vegetables cultivation in sacks

Practical
ACTION





Figure 1 Brinjal, chili and bottle gourd plants in Sacks

Background:

Successive cyclones made communities poor in Satkhira district. They have less access to economic opportunities particularly in monsoon season. Growing vegetables in the open field in monsoon season is very difficult as most of the vegetable crops cannot tolerate excessive soil moisture. Moreover, the salinity is a major threat in dry season and scarcity of irrigation water for crops. However, by constructing low-cost sack based cultivation can be an option for the flood prone and salinity prone areas. Satkhira district of Bangladesh have scarcity of water and often faces water-logged conditions. The main purpose of this Climate Resilient technique was to provided information a year-round vegetable on cultivation and an opportunity of this techniques to be used in flood and saline prone districts. This is cost-effective and easy approach of producing vegetables year-round. Previously, farmers were not able to cultivate vegetables in rainy season due to water-logged conditions. For increasing the production of vegetables in lean season, 25 farmers were engaged in cultivation during this study done in Kaligonj & Shyamnagar upazilas on Climate Resilient Sack Cultivation Technique. Therefore, this cost-effective climate resilient technique is essential and farmers could able to

produce enough vegetables for family need and to allow people to sell in excess for income generation.

Purpose:

This study emphasized increased production in lean season as well as to maintains the year-round production for family need and income. This technique contributed to the objective to develop a sustainable technique to produce enough vegetables through climate resilient, easy to establish and at a cheaper price.

The Innovation:

To address water-logged and saline condition in poor productive soil/land, a process known as Sack Gardening works best. This is done by adjusting the sack height above the mud level. This is done when traditional technique does not work. Each of the sack is filled with soil and cow dung which is mixed in 2:1 ratio. Additionally, wood ash was mixed with soil too. A small portion of the sack towards the bottom is filled with dry leaves for holding moisture. Some brick or gravel is placed at the bottom for good drainage. Lastly, using green manure with fresh water (ratio of 1:1) once or twice in a week which enhances fast growth of plants.

The result:

The technical key aspects of such technique were already testing in the field of 2 mentioned upazilas with further development scope on its performance measures. At field, the performance of Sack Cultivation with different data is collected to produce vegetables which was used to understand scope and benefits through economic viability and risk mitigation strategies. In 2 upazilas, there were 25 farmers who tested this technique, in which average 1-3 sacks uses by each farmer and the growth of the vegetables were very satisfactory. Bamboo, rope, sack, soil and compost were applied as materials. Duration was run between November to December 2021 for this technique. Mainly poor women are engaged in the sack cultivation. Plants such as brinjal, bottle-gourd, cucumber, pumpkin, green chili, creeper vegetable, cucurbitaceous plant, ladies finger, beans and etc. are seen growing in the sacks via this process. Sack Cultivation can also be the most effective way of cultivation of crops in the wetlands and waterlogged area that does not disrupt and hamper the ecology and ecosystem. Sack cultivation has already begun in the study area and people believe that it will be a successful system in future.

It was observed that the growth of the vegetables was in good and healthy condition. Farmers get good yield of vegetables compared to the production they got during the waterlogged lean season in those areas. Major investments on this process were pieces of bamboo, ropes, sacks, soil and compost which costed around 250 BDT. As the home of the women farmers were closer to the cultivation area, for that, they could play a vital role in managing the technique. The technique may be tested using various size and shape of sacks to ascertain its further economic viability.

Lessons:

During that cultivation time some lesson can learnt those are as follows-

- Regular watering and composting is important for proper growth rate of the plants.
- Our learning innovation confirmed that this method was appropriate and sustainable solution in regular waterlogged areas.
- To establish trellis is mandatory for the vine type vegetables and this involve cost which may cause less interest for farmers.
- This technology can be adopted in community development initiatives and programs aiming to address community vulnerabilities in flood prone and cyclone prone areas.
- Sack method is less costly than ring method (i.e cement made ring or ring method is a kind of a planter box for safe planting and plant's growth). Moreover, sack method is easy to relocate in early stage of growth.
- In sack method, vertical holes could be made for sowing cabbage, cauliflower or any leafy type vegetables which is not possible in case of cemented ring.



Figure 2 Bottle Gourd plants in sacks

- Selection of vegetable species, as warranted by climate and market, could be an important criterion of its sustainability.
- Linking weather forecast to this technology helped in economic viability through judicious use of watering.
- According to FAO, Field Survey (2021), bottle gourd yield 223-243 kg/decimal and brinjal yield 162-182 kg/decimal by Sack method. About 60 brinjal plants can grow in one decimal land by following sack method.
- A garden of eight to ten sacks can provide a household with a regular year-round supply of vegetables.
- It's economical. One good-sized sack can be used over and over to plant different crops.

Way Forward:

With farmer's own interest or accessing low cost and more convenient method for start-up the technique can be scaled up in existing and other water-logged areas. There is also great potential to take it to saline prone areas and poverty affected riverbank areas. Sack gardens are advantageous where female headed households and elderly headed households due to their low physical requirements.

Reference:

FAO, Homestead Gardening Guidance Note, Cox's Bazar Food Security Sector, 2021.

<https://unfccc.int/climate-action/momentum-for-change/activity-database/organic-sack-gardening-in-bangladesh>