

Floating Vegetable Bed Cultivation

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Floating Vegetable Bed Cultivation. (photo: Atiq Rahman / Muslem Uddin Miah, BCAS)

Adaptation to climate change and risk reduction

A vast area of Bangladesh is situated more than two meters below mean sea level and vulnerable to high tides. Flooding and water logging is a common problem in Bangladesh. Climate change will aggravate this problem. There is evidence already of these adverse impacts, which affect the livelihood of people by reducing crop production and increasing food insecurity. Many communities have developed *baira* cultivation as an adaptive strategy to reduce their vulnerability.

Floating Vegetable Bed Cultivation, an Adaptive Option in Coastal Bangladesh

The Bangladesh Centre for Advanced Studies (BCAS) and its local partners promote floating vegetable beds, which grow in water logged and salinity prone areas along the coast. This provides employment, income, food and nutrition for the farming families and local communities. Furthermore, it helps the coastal flood prone population adapt to the changing environment, which is increasingly influenced by global climate change. Floating vegetable bed cultivation has been a local practice in some villages for many years. It involves planting crops such as water hyacinths and other aquatic plants on soil-less rafts on water and is called a 'floating garden', locally known as *baira*. The platform provides a base to raise seedlings, vegetables and crops on it. The plants grown on *baira* get nutrition and food either from composted organics or from the water. During periods of flood and water logging field crops often perish, but crops on *baira* can survive. The local practice was improved with scientific and technological input in close cooperation with local communities. This resulted in longer and stronger beds, cultivation of diversified vegetable and crop rotation. This is now widely practiced in hundreds of project villages. The BCAS project on 'Climate change adaptation' played a key facilitation role for local innovation and extension of the practices across many villages.

Material for floating beds locally called Baira

In addition to water hyacinth, deep water rice straw and different types of aquatic vegetation (e.g., *Kochuripara-Eichhornia crassipes*, *Khudipara-Lemna trisulca*, *kuti pana-Azolla pinnata*, *Shayala - Bluxa japonica*) and pieces of bamboo are required to make a *baira*. Initially, the farmer lays a bamboo

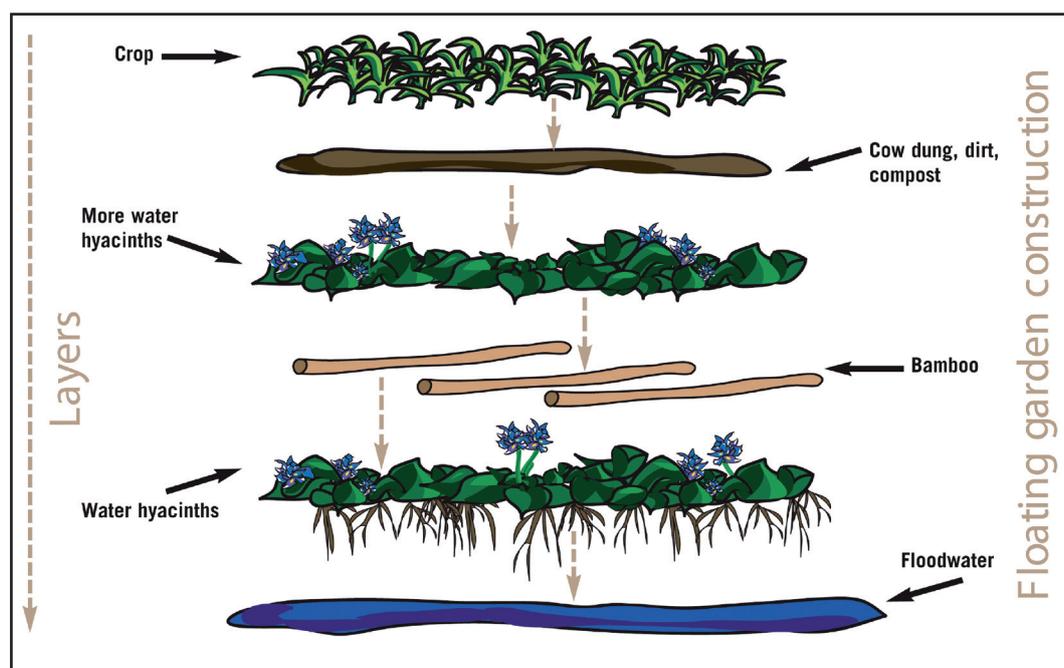


Figure 1: Layered floating garden construction. (source: Practical Action: www.practicalaction.org)

pole on dense water hyacinth to stand on and then piles more water hyacinth to make it compact. The thickness depends on the duration of water logging, as it needs to float for the whole time of inundation. The *baira* is movable so the farmer can choose suitable locations for better management. After selecting a good location, the *baira* are usually fixed with bamboo poles. After 10-15 days, the farmers may transplant seedlings or broadcast vegetable seeds. They usually also plant additional crops between the main cultivation and can harvest crops 2-3 times a year from one *baira*. There is no need to use chemical fertilisers for growing crops on *baira*.

Crops and vegetables on Floating Beds

Crop cultivation varies in seasons. However, more than 20 varieties on vegetables like red amaranth, Indian spinach, coriander leaves, cauliflower, cabbage, tomato, lady's finger, cucumber, bitter, gourd, bottle gourd, snake gourd, ash gourd, sweet pumpkin, bean, radish, brinjal (eggplant), potato and spices including chilli, onion, garlic, turmeric and mustard are grown on *baira* in different locations in Bangladesh. The formation of a *baira* and cultivation starts in the month of June and continues until November. However, *baira* cultivation on permanent water bodies can continue round the year.

Multiple Benefits: Food, nutrition and employment

During flooding and water logging, many people suffer from shortage of food and lack of nutrition due to loss of standing crops and of income. Importantly, people can get food and nutrition from their own grown vegetables on *baira*. In the dry season, composted material from *baira* is used as organic manure for field crops. Usually, there is no employment available during flood periods and life of the poor is difficult. However, by cultivating various crops on *baira*, it is possible for people to meet their household food requirements and earn an additional income.

BCAS with local NGOs provide training and material to local communities to improve the practice of floating bed cultivation. This helps increase the productivity of the bed cultivation, and thus reduces seasonal food insecurity for the flood-prone inhabitants of coastal villages in Bangladesh.

For more information

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