



# PUMPKIN GROWING USING SANDBAR

This brief describes a way of growing crops on the sandbars, created by river deposits in Bangladesh, can be done to increase crop production for marginalised famers.

## Introduction

Every year millions of people are affected by sudden shifts in river courses that destroy their crops, farms and homesteads. The sandbars that emerge each year as the rivers recede are not stable enough to support natural vegetative growth and remain as barren sand until the rivers rise again.

These sandbars can be made productive by growing pumpkins and other crops using the pit cultivation approach (by digging small pits and lining these pits with compost). Accessing these sandbars for cropping can help landless families diversify their incomes, help them overcome seasonal food shortages and facilitate a process of asset building alongside reducing the risks which threaten their livelihoods.



Figure 1: Farmer at the Practical Action project site, Gaibandha district, Bangladesh. Photo credit: Practical Action Bangladesh.

## What is sandbar cropping?

The areas, which are vulnerable to erosion, consist of the long river banks, charland (relatively stable places made up from the deposit of sand and soil on the river bed or on top of fertile land due to seasonal flooding over a period of time) and sandbars. Sandbars are large, temporary, barren lands made of the sand and silt deposited as the rivers flood and subside as well as when they change their course.

In the rivers of the northern areas of Bangladesh, sandbars appear in the dry season (mid-November to Mid-April) due to a decrease in water flow. These sandbars disappear again in the wet season (Mid-April to Mid-October). Most of the sandbars remain unutilized as they are mainly composed of sand; there are thin layers of silt in some areas of the sandbars which are used for cultivation. There are three broad categories of the sandbars: sandbars with sufficient silt cover that have sandy loam soil characteristics and retain moisture for longer periods. Sandbars with no silt cover that are not suitable for production and remain unutilised. Upstream sandbars that emerge in the North during the dry season are different from the sandbars that emerge

downstream in the South. Sandbars in the north are dried parts of the river bed and are prone to erosion whereas the sandbars in the southern part of Bangladesh are less likely to erode and are permanent in nature.

The sandbar cropping technique opens up these otherwise unproductive lands and is ideally suited to adoption by very poor, often landless households.

### Growing pumpkins using sandbar cropping

The season for pumpkin cultivation normally starts in October-November. After finding a suitable site, a pit is dug into the sandbar, approximately 1 metre deep and 1 metre in diameter. Pits are usually dug around two meters from each other. Pits are lined with compost which is a mixture of cow dung, soil and water. Jute sacks can be used in extreme geo locations where the ground is very poor (Figure 2). After a few days, seeds are placed into the pit. The compost pits are carefully monitored over the next five months while periodical nursing and irrigation are required.

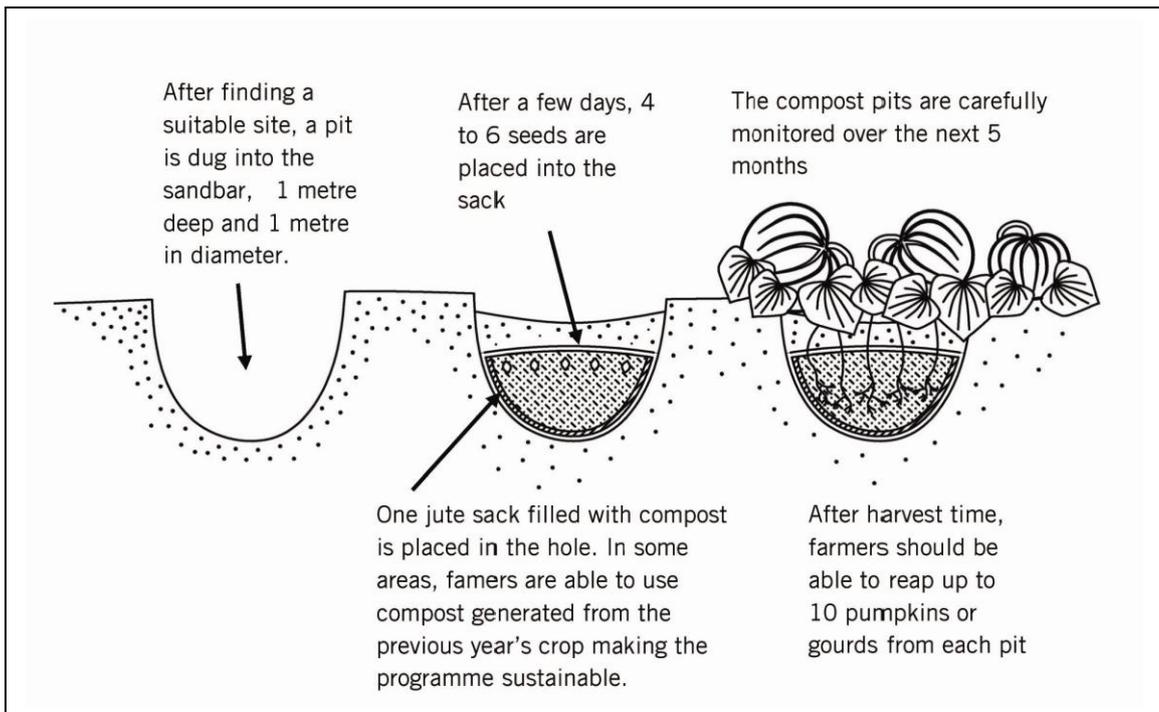


Figure 2: Pumpkin growing using sandbar cropping technique. Illustration: Neil Noble / Practical Action.

Large scale irrigation is not always necessary as the sandbars are usually close to the river and watering can be done by hand. In the initial stages, surface water is used for irrigation. (Where a source is available. e.g. water channels that are created as the river recedes. These water channels disappear in the dry season). Ground water can be used for irrigation when the surface water dries out. Pumpkin fields can be irrigated using a pump and borehole. A low-cost reservoir made with polyethylene sheet can be used for optimise water use. Water is pumped from the borehole to the reservoir through polyethylene pipe/hosepipe and farmers then use buckets to take water from the reservoir to water the individual pits. The quantity and frequency of irrigation depends on the type of soil and season (end stage of the production benefitted by rain water).



Figure 3: Pumpkins growing on sandbar (communal) land. Early in the season showing young plants emerging from planting holes. Photo credit: Practical Action Bangladesh.

The ripe pumpkins are often stored in the home, on high platforms that are made of bamboo. The pumpkins produced on the sandbars can be stored for over a year and can assist poor households with both income generation and food security.

### Practical Action Bangladesh Case Study:



Figure 4: Watering the pumpkin plants. Photo credit: Practical Action Bangladesh.

The agricultural production in barren and unproductive sandbars is an innovative, low cost technique that has been developed through a series of action research activities since 2005 in Gaibandha and Rangpur districts, Rangpur Division. Practical Action Bangladesh initiated a trial with 177 farmers in 11 sandbar spots in 2005 with the objective of ‘something is better than nothing’. The innovation was part of Practical Action Bangladesh’s *Disappearing Lands* project which went on to win the Asia-pacific (APFED) gold award in 2007.

The end results of this farm based trial showed highly significant impacts on the resource poor displaced communities providing opportunity for food production in barren lands, decent income, asset generation, increased food consumption, improved nutrition and alternative risk management strategies during lean seasons. The project successfully demonstrated that pumpkin growing, in small compost pits dug into the sand, is both possible and profitable. Sandbar cropping appears to be low risk yet while producing a significant financial return as shown in table 1.

Table 1: Cost-benefit analysis of sandbar cropping, Disappearing Lands project, Practical Action Bangladesh, 2005-2009.

Details	PY-2 05/06	PY-3 06/07	PY-4 07/08	PY-5 08/09	Total
No of Beneficiaries	177	460	1283	1353	3273
Total Area in ha.	7	71	211	502	791
Total Production (MT)	318	2244	10283	20760	33608
Total production cost (GBP)	2417	14561	40956	105484	1,63,418
Total income (gross) (GBP)	12532	136511	632851	1.6 m	2.38m
Cost benefit ratio	1:5.9	1:9.4	1:15	1:15.7	1:11.5

NB: The experience of Practical Action Bangladesh suggests that 100 pits per extreme poor household brings tangible benefits to these families. However, it could be doubled with the increased number of pits up to 200. The cost benefit ratio could be increased through mechanisation, cost sharing model, in case of marginal farmers, who are able to share compost from their own source, irrigation from natural sources for a certain period (i.e. from river channel), their own preserved seeds.

The approach has been widely replicated with the financial assistance of EEP (DFID-GoB), Shiree [project](#) namely *Pathways from Poverty Project* in the four erosion prone districts of North-West Bangladesh. Additionally, other international NGOs (e.g. CARE, Friendship International, and

Concern Worldwide) and other local NGOs (23 staff from 13 Local NGOs from 10 districts have been formally trained through Training of Trainers, ToT, courses) in the other parts of the country have replicated the practice with the technical assistance of Practical Action Bangladesh.

### External links and references

- Khan A.U.R, Reza I. 2012. *Accessing and Retaining Access to the Sandbars by the Extreme Poor: Experiences from the Practical Action Project. Shiree Working paper number 9.* Practical Action Bangladesh.
- Chowdhury A.N.I, Bepary N.C. 2009. *Transforming Lands, Transforming Lives. Sandbar Cropping: An Appropriate Solution for Millions Living on the Edge of Mighty Rivers in Bangladesh,* Practical Action Bangladesh.
- Shiree (Stimulating Household Improvements Resulting in Economic Development): [www.shiree.org](http://www.shiree.org)
- Coping with disasters: [http://practicalaction.org/docs/region\\_bangladesh/docs/region\\_bangladesh/coping-with-disasters-bangladesh.pdf](http://practicalaction.org/docs/region_bangladesh/docs/region_bangladesh/coping-with-disasters-bangladesh.pdf)
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- [http://www.youtube.com/watch?v=4HOf1Unv\\_IU&feature=player\\_embedded](http://www.youtube.com/watch?v=4HOf1Unv_IU&feature=player_embedded)
- <http://www.youtube.com/watch?v=4V4DMsPOSSY&feature=plcp>

*Pumpkin Growing using Sandbar Cropping* was written by Amruta Khatavkar with technical editing from AZM Nazmul Islam Chowdhury and Nirmal Chandra Bepary of Practical Action Bangladesh, July 2012.

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technical brief