

## Sandbar Cropping

Hope for millions living on the edge of mighty Rivers in Bangladesh



# **Practical Action-Bangladesh**

## **Transforming lands, transforming lives**

### **Sandbar Cropping: An appropriate solution for millions living on the edge of mighty rivers in Bangladesh**

**By**

AZM Nazmul Islam Chowdhury<sup>1</sup>  
Nirmal Chandra Bepary

Practical Action Bangladesh

Agriculture production in barren and unproductive sandbar is an innovative low cost technology for the river eroded communities, whose villages and farms have been lost through river erosion in NW Bangladesh and who are forced to live illegally on flood protection embankments. The technology has been developed through series of action research since 2005-2009 in Gaibandha NW part of Bangladesh. The innovation was a part of Asia-pacific (APFED) gold award winning Disappearing Lands Project of Practical Action Bangladesh. The end results of this farm based trial has shown highly significant impacts on the resource poor displaced communities providing opportunity for food production in barren lands, handsome income, asset generation, increased consumption & nutrition and alternative risk management during lean season.

After each rainy season, large sandy islands appear in the main rivers of NW Bangladesh. These 'lands' are common property resources and some are privately owned but until now have not been used for any productive purpose. The project has successfully demonstrated that the growing of pumpkins in small compost pits dug into the sand is both possible and profitable. Since its initiation in November 2005 under Disappearing lands project 3273 beneficiaries have produced 33,608 metric tonne (from 791 ha. land by using 663,928 pits) of pumpkins worth £2.2m net return based on local market value and estimated value at urban market was £5.57m. The average net return per beneficiaries in four years stood £490 within 5-6 month in each year. The project monitored a representative sample of household's incomes over the period and calculated cost benefit ratios on a regular basis, which averaged a staggering 1:11.5

The sandbar cropping measures its achievements by the levels of adoption of the technology by trainees and the spread of the technology to new areas. No credit was supplied to subsidize production system, however minimum inputs i.e. seeds and quick composts/fertilizers were provided to the farmers to run the demonstration. However, the current project is supporting cent percent extreme poor project beneficiaries households with little different approach based on asset transfer mode of project operation (providing full costs demonstration), aiming to help extreme poor household to come out from extreme poverty, having two step graduation during the project cycle.

Based on its multidimensional impacts on the poorer livelihoods, the technology is replicating in wider areas in North-west and could replicate in similar geographical environment in Bangladesh to benefit wide range of people in the production, processing and marketing chain. The pumpkins produced on the sandbars can be stored in people's houses for up to 12-15 months and therefore greatly assist poor households from both income generation and food security perspectives. In addition to the pumpkins, the twigs and flowers of the plant can be used for food, and the entire plant fed to livestock at the end stage, or composted for the following year.

In the dry season in winter. Sandbar cropping transform a barren landscape and these 'mini deserts' into productive green fields which also support a wide range of insect, birds and other small animal species due to the habitat created.

The sandbars that emerge each year as the rivers recede are not stable enough to support natural vegetative growth and remain as a barren sand area until the river rises again. By digging small pits and lining these pits with compost, the project has demonstrated that these areas can be made productive. Large scale irrigation is not necessary as the sand bars are usually close to the river and watering is done

by hand in some spots, where water channel is active or water can harvest easily from underground as the layer is very close to the surface. Despite the limitations of hand irrigation sometime, vast sand bar areas have now come under production. Generally, no pesticides or huge application of inorganic inputs are necessary.

Bangladesh is desperately short of arable lands and struggles to feed its growing population. The technology would seem to have a much wider application in other dry areas and could even become an important coping strategy in some areas adversely affected by climate change. In particular flooding and siltation.

The sandbar cropping technology developed opens up otherwise unproductive lands and is ideally suited to adoption by very poor, often landless households. The technology appears to be low risk yet shows an impressive financial return. In addition it allows poor households who do not have enough rice, to 'spare' rice for consumption through mixing with pumpkin during lean season or in crisis period. The sand bar cropping idea is so simple and yet to our knowledge, no one had thought of this application until the project first experimented with the idea in 2005. However, this is just about the best development idea that could replicate to use barren resources and to benefit millions in the near future by formulating appropriate policy to support landless and helpless living and struggling for survival as extreme poor in below poverty line in fragile environment in rural Bangladesh.

Based on the consecutive successes over the period, the innovative solution has been replicating widely with the financial assistance of EEP-DfID, shiree project namely "Pathways From Poverty Project" in four erosion prone districts of North-west Bangladesh.

Key words: Sandbar, pumpkin, pits, APFED, coping, desert

**Further contact:**

Practical Action Bangladesh

House # 12/B, Road # -4

Dhanmondhi, Dhaka-1205

+88 02 8650439

+88 02 9674340

[nazmul@practicalaction.org.bd](mailto:nazmul@practicalaction.org.bd)

## **“ Technology challenging poverty for millions”**

### **“Sandbar cropping”**

*Agriculture production in barren and unproductive sand bar is an innovative technology for the river eroded communities. The technology has been developed initially in 2005 and tested by Practical Action in Gaibandha district the North-East part of Bangladesh. The initiative has shown very significant impact on the displaced communities in terms of food security, improved income and alternative risk management. Now **It can be commented that the technology could be an opportunity for many millions of displaced communities living on the edge of the mighty rivers in Bangladesh.***

#### **A history of success and a history of change**

##### **Saiful's Quote:**

***“The opportunity and the technology is a blessing for us, it has opened our eyes to see better life and new hope to live”.***

**Md. Saiful Islam**, son of Md. Mortuja Sarder a 30 years old day labor has become a model in the community within a season due to his huge success on sand bar cropping and national TV interview. He has been living with his wife and two children on flood protection embankment (at kalir khamar, Haripur union under Sundarganj Upazila) since 1992 (17 years).He has experienced 5 times displacement till to date starting at his age of 3.

His father Mr. Mortuza Sarder was a middle class farmer and had own homestead in a village and 3 acres of arable land and had a peaceful life.The home and business had washed away in early 80s by the river Tista when he was 3 years old baby. The family has experienced 5 times displacements in a decade. There was none to seek help and assistance. Finally his father took shelter on the adjacent flood protection embankment close to their eroded village. His family started to live hand to mouth. Thus the farm based family has become a day laborer and following by generation to generation.

Saiful separated from his father's family after his marriage and living in the same embankment. He maintains his family by selling labor inside and outside of the district. In this job he had to face lot of challenges i.e. low wage rate, force/advance sell of labor during lean season, forced migration to other district to cope with the situations. Thus the family members had suffered food deficit most of the time.



**Harvest at early stage (top) final harvest (bottom)**



Saiful enlisted his name as sand bar farmer in the project in May 2006 during need identification survey by the project partners AKOTA. Further he received day long field based practical training on sandbar cropping by the project expert in 2006/07 season. Additionally he supported with quick compost and quality seeds as project demonstration inputs.

As a first attempt in 2006/07 season he cultivated only in 50 pits in hired barren sand bar with confusion (whether it will be successful or not) rather than expanding it in a vast areas with many pits. The result was so promising and he became astonished to see the harvest. In his share he made a total net profit Taka 7250. Practical learning greatly motivated him to take the opportunity as an appropriate solution to maintain his family and fight against hunger & poverty as well as disaster risk management. Based on his enthusiasm and leadership capacity he further trained as rural community extensionist. Saiful had a very great role as an extensionist in replication of the technology inside and outside of the region. **He has provided extension support to 200 landless farmers in 32000 pits in the region. Additionally worked as a facilitator for the project in scaling up this technology for other NGOs in other districts.**

In 2007-08 he himself cultivated pumpkin in 433 pits as a share cropper in 1 acre sand bar (fallen land). He and his family were directly involved and tried heart and soul for best yield by using his previous learning and experience. Finally, he has got a very good harvest with a huge number of pumpkins and has earned a handsome amount.

#### Cost benefits analysis:

Saiful prepared all pits by himself with the assistance of his family members (wife and children). He has spent money a bit for fertilizer, irrigation and some operational purposes. On an average his production cost (including his own labor, seed, cow dung, quick compost, fertilizer, irrigation and transportation etc.) per pit was calculated taka 30. He has harvested a total of 3963 sweet gourds in his shared land and has got share 2809 pumpkins. The average weight per pumpkin was measured 7 kg. He has already sold major amount of produces and have earned Tk. 69832. He has already switched over the profit to other income generation field i.e. leased in 21 decimal arable land, fish seed production and beef fattening for higher income.

#### Cost benefits analysis: Saiful's production and income:

Cultivated crop	Total pits (No)	Harvested Sweet gourd of his share (in number)	Sold amount by (No. & Tk.)	Family consumption & it's value (Tk)	Distribution in relatives & it's values (Tk)	Stored amount (no) & value (Tk)	Total (Taka)
Sweet gourd	433	2309	(No.1247) 69832.00	(No. 92) 5152.00	(No. 279) 15624.00	(No. 691) 38696.00	129304.00
Second harvest		500	-	-	-	-	8000.00
<b>Total</b>		<b>2809</b>					<b>137304.00</b>

**Total production cost  $30.00 \times 433 = 12990.00$  Tk**

**Total return = 137304.00 Tk**

**Net profit =  $137304.00 - 12990.00 = 124314.00$  Tk**

#### Future Plan:

After two years of consecutive success Saiful and his cousins have made a plan to go in the remote sand bar island (their inherent land) completely fallen, barren and unused. They have a plan to run the production in 50000 pits as commercial basis and help community people as an local extension agent for its further dissemination in the region.

### Sand bar cropping cycle



*Hope for food security and hope for Monga protection*



## External visitors and Knowledge sharing





## Policy Advocacy and Influencing Extreme Poverty Day in Dhaka



Minister for Finance addressing to the audience



Simon Trace sharing his views with Azim Manji, the CEO, shree-DfID project



Minister for Agriculture Mrs. Motia Chowdhury (left) and Mr. Saber Hossain, Chairmen for Parliamentary Committee keenly listening the sandbar innovation and success

## Production statistics 2005-2009

### Disappearing Lands Project- Gaibandha

#### At a glance

<b>SAND BAR CROPPING PRODUCTION ECONOMICS 2005-2009</b>					
<b>Details</b>	<b>PY-2 05/06</b>	<b>PY-3 06/07</b>	<b>PY-4 07/08</b>	<b>PY-5 08/09</b>	<b>Total</b>
<b>No. Pits</b>	5801	59155	177480	421492	<b>663928 (0.6m)</b>
<b>No of Location</b>	09	14	25	30	<b>78</b>
<b>Total Area ha.</b>	7	71	211	502	<b>791</b>
<b>No of Beneficiaries</b>	177	460	1283	1353	<b>3273</b>
<b>Total Prod. cost</b>	£2417	£14561	£40956	£105484	<b>£1,63,418</b>
<b>Project contribution</b>	£451	£1169	£3233	£4456	<b>£9309</b>
<b>Total Gross income</b>	£ 12532	£136511	£632851	£1.6 m	<b>£2.38m</b>
<b>Net Return</b>	£11930	£121950	£591894	£1.5 m	<b>£2.2m</b>
<b>Av. gross profit</b>	£81	£297	£512	£1227	<b>£529</b>
<b>Av. Net profit</b>	£67	£265	£479	£1149	<b>£490</b>
<b>Cost benefit ratio</b>	1:5.9	1:9.4	1:15	1:15.7	<b>1:11.5</b>
<b>Urban market value</b>	£0.029	£0.27m	£1.27m	£ 4 m	<b>£ 5.57</b>
<b>Total Production MT</b>	318	2244	10283	20760	<b>33608 MT</b>



## **PUMPKIN REVOLUTION IN NORTH**



**No of Beneficiaries in PY-1: 553 and in PY-2 (this year) 6400 BHH in four districts**  
**No of sand bar pits: in PY-1 21 and in PY-2 (this year) 90**  
**PNGOS: UDPS, GUK, AKOTA, OVA and JSKS**  
**Period of Plantation: November 2010 and harvesting start in March 2011**



IF YOU CARE FOR US  
WE WILL CARE FOR  
YOU. BUT WE NEED  
YOUR SINCERE HELP





**Food Security and GDP??, may not be a big question !!!**



**WE NEED A GOOD POLICY ONLY, TO GROW MORE FOR YOU**



**WE ARE ENOUGH FOR POOR**







**THIS IS TOO HEAVY and I LIKE IT TOO MUCH**



WHAT NEXT??



## WHAT A HARVEST?





**SOLUTION FOR MILLIONS LIVING ON THE EDGE OF MIGHTY RIVERS IN BANGLADESH.  
WHERE LAND IS NOT AT ALL A MATTER!!! ???**



WHAT DO YOU THINK??



**WE CAN, IF YOU WITH US**







**STORAGE FOR FOOD SECURITY for LEAN SEASON MANAGEMENT DURING FLOODING**





**I WANT TO MOVE FORWARD, PLEASE HELP ME TO MOVE**





## WHY TO MOVE??





THANKS

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Further contacts:

**AZM Nazmul Islam Chowdhury**

**Head of PFP Project (DFID-shiree)**

**Practical Action - Bangladesh**

House # 12/B, Road # 4, Dhanmondi

Dhaka - 1205, Bangladesh

Phone : 88 02 8650439, 9675236, 9675243 Ext-158 Cell: 0171-5238662

nazmul@practicalaction.org.bd

<http://www.practicalaction.org>



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