

A few years ago, we published an article written by Rezaul Haq, Tapan Kumar and Pritam Ghosh, called “Cultivating wetlands in Bangladesh”.

This article looked at the work of a small NGO promoting “soil-less floating agriculture” in the south-western region of Bangladesh. This method was described as being highly productive and ecologically sound, especially considering that large areas of Bangladesh are continuously flooded. Due to the many advantages presented, we decided to ask the authors how their project is doing now.



Photo: T.K. Ghosal

Soil-less agriculture gains ground

Back in 2004, Rezaul Haq, Tapan Kumar and Pritam Ghosh reported on their attempts to revive an old Bangladeshi farming system: soil-less floating agriculture. This is a smart method of growing food in flooded areas. The system is particularly useful in their country, as many parts of it are continuously flooded. For hundreds of years, villagers have been using locally available paddy straw, water hyacinths and other invasive aquatic plants for making beds. These beds become “floating islands of organic material”, on which different crops are grown (to understand more about how to do this, see Box). Their article described the implementation of the “Reducing vulnerability to climate change” project in Chandra, a village on the bank of the river Kopotaksha. This project ran from 2003 to 2005 with the support of the Canadian International Development Agency.

Benefits of cultivating wetlands

Through extensive e-mail contact, Rezaul Haq and Wadud Nawaz let us know that their activities had continued and developed. “Our initial objective was to familiarise all villagers with soil-less farming, analyse its potential, and actively involve farmers in producing crops. The implementation of this 3-year project clearly showed us the advantages of this approach.” Among the many benefits, the authors highlighted the fact that agricultural production is fully organic, while yields are as high (and in some cases even higher) as those reported for “conventional” agriculture in the area.

The work of their organisation, the Wetland Resource Development Society, together with the farmers’ efforts, showed that soil-less agriculture can help the country’s wetlands become highly productive without altering the natural environment. “Our analysis showed that

the context was favourable for further disseminating the method: materials for producing the beds are easily available, there is a large unemployed labour force, and a growing local and national market for organic vegetables.” The 2003-2005 experience was then seen as the first phase of a process which had to continue.

What happened since the article was published?

“We continued with a second phase supported by ActionAid. This was framed as a project called ‘Adapting to waterlogging situation through the promotion of floating gardens’, running between 2007 and 2008.” This project worked with four unions: Nehalpur, Hariduskaty, Chalisa and Shundoli, all of them in the Jessore district, an area well known to their organisation. And although the project lasted for a relatively short time, it had immediate results. The farmers in Chalisa, for example, were able to grow onions and sell them at a high price (having been produced off-season). The farmers of Shundoli grew and sold papaya seedlings. When the whole region was hit by hurricane Sidr, the participating farmers saw no negative impact on plant growth (in spite of seven days of continuous rainfall). They were then also able to get a higher price for their products.

As Rezaul Haq and Wadud Nawa told us, “the work in these unions showed four major advantages in soil-less agriculture. The first is that this system enhances agricultural production and food security: every inch of space can be used for growing crops. A second point is that soil-less agriculture helps keep the wetlands alive, conserving their biodiversity. It can also help control the aquatic invasive plants that obstruct



Photo: Rezaul Haq

Multiple advantages: floating beds create more areas for agricultural production while also controlling the invasive plants which obstruct navigation and fish breeding.

Constructing floating beds

Making a floating bed requires bamboo poles, a boat and a simple tool to cut the weeds. The bed is built with layers of aquatic weeds, most commonly water hyacinths (*Eichhornia crassipes*). Organic materials like paddy stubs, straw and coconut husk are also added. Construction starts at the beginning of the monsoon season (June-July) when the aquatic weeds are collected, and it continues up to late autumn. Farmers put a long bamboo pole (as long as they want the bed to be) over a collected mass of fully matured water hyacinths. To build one bed, water hyacinths growing in an area roughly five times larger than the bed itself are required. Mature water hyacinths are preferred because they decompose slower than immature plants. The first layer of water hyacinths acts as the base of the floating bed and maintains the stability, buoyancy and thickness of the bed. A man then stands on the bamboo pole lying over the water hyacinths and starts to pull water hyacinths together from both sides of the bamboo. He proceeds towards the end of the bamboo and compacts the accumulated hyacinths under his feet. This process is continued until the desired height and length of the bed is obtained. When the construction of the bed is complete, the bamboo is removed. After 7 - 10 days a second round of water hyacinths are dumped on the bed. The bed is then left to decompose before being planted. The top of the floating bed needs 15 - 20 days to decompose before sowing seed or planting seedlings. To further improve conditions for the young seedlings, the seeds are sometimes placed inside a ball made of composted manure and aquatic creepers (locally called tema), before being planted on the floating bed. This method ensures smooth germination and sufficient nutrients for the plant to establish itself. There are no fixed rules about the size and shape of the floating beds, but generally the villagers construct beds that are 4 ft x 3 ft x 30 ft.

navigation and the breeding of fish. A third point is that soil-less agriculture can help farmers adapt to climate change: soil-less farming is an 'energy saving agriculture' (even if labour intensive). Floating beds also provide shelter during flood. People can use floating mats to some extent, to save their dwellings and

household assets. Farmers are also able to produce –and sell– large quantities of compost, resulting in extra income. Finally, the experience has shown that soil-less agriculture enhances social equity: as flooded lands are treated as a common property, it provides opportunities for landless people to produce crops.”

Into the future

Although Bangladeshis are used to living with water, waterlogging is an increasingly serious problem. To an extent, this is one of the results of the large scale infrastructure projects in the 1960s. They aimed to turn the seasonally flooded coastal wetlands of Bangladesh into reclaimed land for permanent agricultural production. As the authors told us in their original article, these projects “ignored the agro-ecological system of the south-west region and disrupted the ecologically complex and highly productive coastal wetland ecosystem. The reclaimed land is now isolated from the river and does not receive any silt to improve its fertility. The silt load is instead deposited in the river, blocking the drainage of the area and leading to permanent waterlogging”. Since then, this problem has only been getting worse. Estimates from the government’s Water Development Board report that 4000 hectares become permanently waterlogged every year. The Jessore, Khulna and Satkhira districts have seen the total waterlogged area rise from 28 000 hectares in 2004 to more than 200 000 today. This is having serious consequences, as human settlements and crop fields are all inundated.

This difficult context has convinced the Wetland Resource Development Society to continue promoting the soil-less model. They realise that, at the same time, they must tackle a challenge they had not thought of at first. “One of the most important lessons of our work has been that the success of soil-less agriculture as a sustainable and environment friendly farming system, lies in organising small-scale and poor farmers at grass-root level, and building up their capacity as small-scale entrepreneurs.” The positive results seen during the second phase of their

work showed that the high profitability of soil-less farming encourages rich entrepreneurs to try it out, invest time and resources and obtain profits. “Without a doubt, this is a good sign, but at the same time it is a threat, as poor farmers could lose the possibility of participating – and benefiting.

Soil-less floating agriculture uses invasive plants to make Bangladesh’s wetlands become highly productive

“Without the development of farmer organisations it is difficult to sustain poor farmers’ rights to common property and ownership of technology. There are plenty of water bodies, infested with invasive aquatic plants like water hyacinth, which are treated as common property. However, these are likely to be grabbed by the upper levels of the rural and urban society, if extensive and persistent advocacy is not considered by the NGOs.” Approximately half of Bangladesh is covered with wetlands, and remains non-productive. In addition, aquatic invasive plants are a great menace to biodiversity and agriculture. There is potential for enormous productivity if wetland resources can be developed by NGOs and research institutes working together with farmers. Farmers may also need support such as for capacity building and establishing farmers’ organisations. This would help them to benefit more in the future, building on what they have already achieved. These are the core elements of the Wetland Resource Development Society’s third phase project, which they hope to start soon. (JCT)

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The article written by Rezaul Haq, Tapan Kumar and Pritam Ghosh appeared in Vol. 20.4, December 2004, of the LEISA Magazine. As all other articles, this one is available through <http://ileia.leisa.info>

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