Coastal Livelihoods Adaptation Project (CLAP)
Climate Resilient Horticulture Demonstration Farm in Kakchira

Atiqur Rahman Heru is an activist who has been trying to improve the lives of marginalised farmers in the coastal districts of Bangladesh for most of his life. But what he saw when he toured the district of Barguna after Cyclone Sidr in 2007 almost broke his heart: hundreds had died, and those who had survived the catastrophic storm had lost everything, their homes, crops, animals, and tools. He pondered how to help these desperate people.

Heru is also a self-taught agriculturalist and horticulturalist, a passion he discovered early in life and developed through decades of experimentation and observation. So, together with Ratan Sarkar, the founder and Executive Director of INCIDIN Bangladesh (Integrated Community & Industrial Development in Bangladesh), Heru hit upon an idea. All these farmers needed to rebuild their lives and their farms, but they needed to do so in a way that made them stronger, more resilient, more able to cope with the risks to the area posed by climate change.

However, farmers in Barguna are quite conservative; their subsistence livelihoods do not leave a large margin for error, and they are not likely to try out every new idea that comes their way. Heru knew he had to do: show them what could be done. INCIDIN drew up a proposal. The proposal was approved by the project, Adaptation to Climate Change and Rehabilitation of Livelihoods in Selected Districts of South Bangladesh (CLAP), which is funded by the German Federal Ministry for Economic Cooperation and Development (BMZ) and implemented by the Bangladesh Ministry of Agriculture (MoA) in cooperation with the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.

Today, Heru on behalf of INCIDIN, as part of CLAP, is maintaining a horticultural demonstration farm, a stunningly beautiful oasis on 2.5 acres of land in Kakchira Union in the district of Barguna. Every day, 60-70 people visit the farm to see what’s growing. And there is plenty to see: more than 240 varieties of timber and fruits tree, 50 varieties of vegetables, 52 different medicinal plants, and a wide variety of flowers.

But perhaps even more importantly than pointing out plants and trees that visitors had never heard of or did not believe would grow in the region’s somewhat saline soil, Heru and his team are also providing a guided tour through agricultural techniques that diversify the sources of farm income, improve family nutrition, and protect crops from climate-related threats like salt water intrusion and storm surges.

Every question is patiently answered, and Heru or a member of his team frequently accompanies visitors to their own farms to evaluate the possibilities and work with them to implement new techniques - often in conjunction with officers from the Department of Agricultural Extension, Government of Bangladesh.

The demonstration farm is thus having an enormous ripple effect throughout the region. A second demonstration farm for fruit and timber trees is now being planned.

Climate-resilient cropping techniques and saline-tolerant varieties

Kakchira Union is only 12 kilometres from the Bay of Bengal, so storm surges from cyclonic storms and saline encroachment into surface and ground water and the soil are major problems for local farmers. The storm surge that accompanied Cyclone Sidr in 2007 completely devastated the entire district of Barguna, while Cyclone Aila in 2009 breached various embankments and flooded many fields with salt water, destroying the crops and leaving much land unfit for farming.

The basic architecture of the demonstration farm already takes these threats into account: A number of ponds were excavated throughout the farm to harvest rain water. The ponds are 3 metres deep and generally about 4 metres wide and 20-30 meters long. The soil from the ponds was used to raise the rest of the land by 2.5 metres, as higher elevation is the first line of defence against storm surges and flooding.

The rain that fills the ponds during the rainy season not only provides water to irrigate the entire farm all year round, but also keeps the surrounding soil moist and thus able to repel the saline which otherwise tends to leach into dry soil during the non-monsoon seasons. The banks of the ponds are planted with a wide variety of vegetables, many of which creep over the lattices constructed over the ponds, thus shading the water and preventing evaporation. The ponds themselves are stocked with fish. Fish and vegetables are sold in the local market and help cover the farm’s operating costs.
A rainwater-filled trench, 30 cm deep, around the entire periphery of the farm, serves as a further barrier against saline encroachment from the outside. Compost and organic matter are used to improve the structure of the clay soil that otherwise bakes so hard in the dry season, helping it to better retain nutrients and moisture and, again, resist saline intrusion.

The farm is today home to hundreds of varieties of fruit and lumber trees, vegetables, medicinal plants, and flowers. Many are native to the area. The first thing that Heru and his team did after renting the plot in Kakchira was to call in knowledgeable local farmers with whom they combed every centimetre of the land and identified all the plants already growing there. Is it a medicinal plant? What is it good for? Is it a weed? If so, is it perhaps a useful weed, one that injects nitrogen into the soil? All the useful plants that were already there were meticulously labelled and preserved on the farm.

Preserving traditional varieties; introducing new ones

However, Heru has spread a wide net and is experimenting with varieties from all over Bangladesh, and even some collected at the International Green Week 2014 in Berlin, to see how they do in the saline soil of Barguna. For example, from his years of poking around the plot in Kakchira was to call in knowledgeable local farmers with whom they combed every centimetre of the land and identified all the plants already growing there. Is it a medicinal plant? What is it good for? Is it a weed? If so, is it perhaps a useful weed, one that injects nitrogen into the soil? All the useful plants that were already there were meticulously labelled and preserved on the farm.

Among other crops, the farm has introduced and tested varieties of cucumbers, beans, spinach, small leeks, kohlrabi, radishes, capsicum, turmeric, onions, garlic, green chili, spearmint, fennel, dill, eggplants, carrots, strawberries, turnips, pumpkins, cauliflower, ar potatoes, summer tomatoes, and, yes, even lettuce.

No one expected that lettuce could grow in this hot, humid environment, and even if it did, who would eat it? The farm proved them wrong on the both counts. The right variety of lettuce does in fact grow in southern Bangladesh, and many residents of Barguna who worked for a time in the Middle East or Malaysia, where they learned to appreciate it, are today planting it on their own land.

Trees can also serve as a safe haven for some vegetables in the case of flood – a number of climbing vines, such as beans, can be grown in a cement bag filled with soil at the base of a tree, also by people who have very little land. The vines climb into the trees, and the bags can be tied up several metres above ground if need be. The farm raises a wide variety of saplings and sells them to interested farmers. It has also supplied local schools with orange and almond trees.

And then there are the 25 varieties of flowers, luminous colour that catches the eye in all corners of the farm. But the flowers are not just there for the sake of beautification; last year they earned BDT 15,000 (EUR 150) for the farm. People come from all the surrounding villages when they need flowers for weddings, holidays such as Bangla New Year or International Mother Language Day, and the Hindu festival of Durga Puja.

The farm even sent flowers and lumber trees to the village of Kuakata, the southernmost tip of Bangladesh, for the reopening of the Misirpara Seema Buddha Bihar temple. The Buddha Bihar, the largest Buddhist temple in Bangladesh and an important symbol of the ancient tradition and cultural heritage of the Rakhaine people, was badly damaged in the 2007 and 2009 cyclones. It was renovated with the assistance of German development cooperation, and flowers from the demonstration farm graced the occasion.

The demonstration farm is urging farmers to diversify their crops away from monoculture rice production to a wide variety of fruit and vegetables – and even flowers – in order to improve nutrition, especially for women, mothers, and children; earn additional income by selling excess products in the local markets; and protect themselves against climate disaster – it is far safer to grow a variety of crops year round, using the irrigation water provided by farm ponds, than to count on only one rain-fed crop of rice a year.

At the same time, Heru has worked tirelessly to recover local biodiversity and document the medicinal and other properties of traditional crops. The Black auburn type of rice, for example, contains zinc and helps to prevent diarrhoea. He believes that preserving such varieties is a matter of farmers’ rights. That is also why he grows only non-hybrid varieties, which the farmers can propagate by recovering the seeds. And why he uses and teaches integrated pest management techniques such as pheromone traps and the use of neem pesticides, which avoid heavy input of synthetic pesticides and, at the same time, safeguard the environment.

The United Nations has declared 2014 the International Year of Family Farming, recognizing that, although they are among the world’s most vulnerable people, the world’s 500 million family farmers are crucial for sustainable development. They must be empowered to alleviate rural poverty and ensure food security for all, manage and protect natural resources, preserve traditional food products, and safeguard the world’s agro-biodiversity. Atiqur Rahman Heru has always been a passionate believer in the future of the small family farm. Maybe the world is finally catching on.

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