

Enriching soil with biochar

Customised stoves produce biochar as household by-product that improves soil fertility, crop yields

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Rizia Begum in her tomato field in Manikganj's Chhoto Kushtia village. The 65-year-old woman said she got a bumper harvest by using charcoal-based biochar, a combustion by-product, which can increase fertility of poor quality soil. Photo: star

Equipped with fuel-efficient Akha stoves, 160 struggling farming families in Manikganj, Naogaon and Dinajpur are discovering how household cooking can improve soil quality.

The metallic stoves, fuelled with any available organic matter such as straw, leaf litter, cow dung, rice husks or water hyacinth, are unique in producing viable quantities of charcoal-based biochar, a combustion by-product that can nurse poor quality soil back to health.

“I grew tomatoes on forty decimals of land and chillies on fourteen,” says Rizia Begum, 65, of Chhoto Kushtia village in Shivalaya upazila of Manikganj. “I added biochar to half of each crop. Biochar produced a bumper harvest and the vegetables were larger.”



charcoal-based biochar, a combustion by-product, which can increase fertility of poor quality soil. Photo: Star

Sohan Mia, another farmer of a nearby village, said, “I grew cauliflower on two decimals last winter, adding biochar to one. Cauliflowers grown with biochar weighed over three kilograms on average, while those grown without it barely reached 2.5 kilograms. Biochar reduces the need for irrigation, fertilisers and insecticides too, which saves on costs.”

Non-government organisation Christian Commission for Development in Bangladesh has provided the stoves, as a pilot project to evaluate the potential benefit of biochar to farming communities.

“In many areas nationwide, soil health has deteriorated quite drastically over the last few decades,” notes Mohammad Masuduzzaman, a senior scientific officer of the soil science division at the Bangladesh Agricultural Resource Institute. “There should be about five percent organic matter in soil but recent testing in Shivalaya upazila found just one percent.”

Rich in carbon, biochar lasts in the soil for thousands of years. Not only does it rejuvenate soil with improved fertility, it also acts as a natural carbon sink, storing carbon that would otherwise be released into the atmosphere as global warming contributing carbon dioxide.

“The good thing is that biochar is resistant to decomposition,” explains Jayanta Adhikari, executive director of the non-government organisation involved. “It can enhance soil quality and ensure better crop yields for many years.”

In the kitchen meanwhile, the Akha stove reduces the health risk of smoke inhalation.

“Our kitchen was always smoky, the walls were caked in oil and black stains,” says household manager Monkhusi Halder, 35, from Amdala Jelepura village in Shivalaya. “Since June 2016 we have used an Akha stove. It ignites easily and doesn’t emit much smoke. From the stove we get forty kilograms of biochar each month, which I sell for around Tk 800.”

Four leading agricultural universities have extended support for the trial. The primary findings of tests by soil scientists are encouraging.

Christian Commission for Development in Bangladesh (CCDB)

<http://ccdbbd.org/whatwedo/prfsl/biochar>

Bangladesh Biochar Initiative

<http://www.biochar-bangladesh.org/world-soil-day-bangladesh-soils-low-in-organic-matter/>