

Biochar: An eco-friendly fertiliser

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Published at 03:18 AM December 11, 2016

Last updated at 03:20 AM December 11, 2016

URL to article: <http://www.dhakatribune.com/bangladesh/2016/12/11/biochar-eco-friendly-fertiliser/>
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Figure 1 The environment-friendly TLUD stoves, produce a by-product named bio-char which can be the eco-friendly and cheaper alternative to the chemical fertilisers currently used in food production around the country (Abu Siddique)

The newest innovation in biomass cooking stoves will revolutionise rural cooking as it makes an eco-friendly by-product which can be used as fertiliser.

This by-product is known as bio-char, which is the environment-friendly alternative to the regular char (charcoal) produced by stoves in rural Bangladesh.

These stoves are called top-lit updraft gasifier (TLUD) which are experimentally being used under a project by Bangladesh Bio-Char Initiative called Akha.

Bio-char could significantly change the approach to agriculture in Bangladesh as food poisoning from fertiliser is one of the biggest concerns of daily consumers

In Manikganj, Monkhusi Halder has been using them for a few months and she sells the bio-char to farmers as fertiliser, making some extra cash along with dinner.

“I have been using this stove for the last few months and sold 75kgs of bio-char for Tk10 per kg, reducing the cost of fuel,” Monkhusi told the Dhaka Tribune while using her Akha stove.

Khorshed Ali, a farmer in Manikganj, was visibly excited about the new bio-char fertiliser.



Having used it for some time now: “I have been cultivating aubergine, cabbage and cauliflowers with this bio-char and it helps produce the same amount of crops as regular chemical fertiliser does.”

This could significantly change the approach to agriculture in Bangladesh as food poisoning from fertiliser is one of the biggest concerns of daily consumers.

Khorshed, hopeful about bio-char's prospects, said if it yielded the same result this year, he would switch over to it permanently as it was also cost-effective.

Programme officer of the initiative, Krishna Kumar Shingha, said Akha uses clean-burning fuel and it is also fuel-efficient and produces a constant heat without stoking.



He explained how it works: “The stove produces a different type of byproduct which can easily be used as a fertiliser because of the burning process of the stove. This is how it only burns the gas of the biomass but not all the matter.”

However, what really sets the Akha apart from other biomass stoves is its ability to make char at the same time as cooking. Producing char maximises the utility of the wood, because we can get more energy if we burn the char as charcoal, or we can increase agricultural productivity if we use the char as bio-char.

Apart from this, the soil quality improvement testing is being conducted by Bangabandhu Agricultural University along with some other institutions to see the effects of the bio-char on the top soil.

However, the major difference between the traditional and bio-char producing stove is that it only burns wood.

Regarding the shortfall, Krishna Singha said: “Since we are in the experimental phase, the TULD only burns wood, but we are trying to add a list of biomass cooking materials the stove can use.”

The Akha is a semi-permanent installation that can be easily disassembled and moved. The essential components are a fuel cylinder (reaction chamber) and a gas burner on top that supports a cooking pot.

There is also the base that contains an air flow regulator, and a trap-door grate for removing char from the bottom of the fuel cylinder.

The operator loads the fuel cylinder with small pieces of wood, then lights the fuel at the top.

The Akha works by burning a batch of fuel from top to bottom, using a small amount of air supplied through the grate at the bottom of the fuel cylinder.