Katoomba Incubator:

Biochar Feasability Assessment

Thousands of years ago, South Americans of the Amazon Basin began using charred animal waste and wood to make what the Portuguese called "terra preta" (black earth). The terra preta soil they created remains fertile for thousands of years, increasing agricultural yields and further reducing harmful emissions caused by inefficient farming practices and/or the excessive use of chemical fertilizers. Today, we call this "biochar" – a highly porous charcoal made from any form of organic waste – ranging from forest residues to manure – through a process known as pyrolysis, which is the chemical decomposition of organic material at high temperature in the absence of oxygen. Due to its high carbon content and porous nature, biochar can help soil retain water and make nutrients available to plants by providing excellent habitat for soil microbes, increasing crop yields in addition to acting as natural carbon sink by sequestering CO_2 and storing it in the soil.

At A Glance

Location	Costa Rica
Project Type	Biochar
Size	Pilot biochar production facility has capacity to produce approximately 100 tons of biochar per yar, enabling the sequestration of up to 66 tons of carbon per year
Proponent	Forest Trends and Blue Moon
CO2 (Est)	4800 tons over 20 years, excluding possible NOx emission reductions from reduced fertilizer application

Context

A significant amount of forest, timber plantation and crop residues in most traditional agroforestry systems is allowed to burn or decay, releasing carbon dioxide into the atmosphere. This biomass can instead be converted into char and incorporated into the soil to more permanently sequester significant amounts of carbon and to improve the soil's ability to retain nutrients and make them available to plants. The benefits for local farm yields and water quality, as well as global climate change mitigation can endure for hundreds of years.

Initial estimates indicate that if the price of carbon were to reach $37 per ton of CO_2, carbon markets alone could make soil sequestration of carbon in the form of biochar feasible. Below that level, other viable production of biochar will depend on revenues from the sale of biochar as an agricultural input.

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"Char-amended soils have shown 50-80 percent reductions in nitrous oxide emissions and reduced runoff of phosphorus into surface waters and leaching of nitrogen into groundwater. As a soil amendment, biochar significantly increases the efficiency of and reduces the need for traditional chemical fertilizers, while greatly enhancing crop yields."

--International Biochar Initiative

Biochar Feasability Assessment

On Costa Rica's Osa Peninsula, vast areas of land were planted with Melina trees which are now reaching the end of their rotation. Additionally, there are significant waste streams from oil palm plantations, including rachis, palm branches, and other material.

The purpose of the Biochar Feasibility Assessment is to develop a pilot biochar production facility, to test the agricultural response of plants to different doses and types of biochar, and to determine the potential revenues that can be generated from the sale of biochar as a soil amendment. A business plan will be generated for on-going biochar production at the pilot and/or an expanded facility, including the possibility of eventual carbon crediting for terrestrial carbon sequestration by means of biochar.

This project my not be certified, and is currently in a pilot implementation stage of development.

The Katoomba Incubator Is Providing Support for:

Project Design

Project Mangement

Feasability Assessment for Potential Scale-up

Status of Project Development

As of July, 2009, the project has achieved the following milestones:

1) Production and preliminary testing of biochar from small test kilns;

2) Design of agricultural research methodologies and selection of trial sites to measure and monitor plant growth with varying doses and types of biochar;

3) Selection of a 4 m^3 biochar kiln design, and kiln construction;

4) Collection of approximately 11 tons of forest and agricultural wastes for conversion to char; and

5) Initial construction of pilot facilities at the site of kiln operations, including preliminary biomass-drying facilities.

Partners

The project began in December 2008 with funding from the Blue Moon Fund as well as UNDP and GEF; it is expected to continue into 2011.

Partners include:

The International Biochar Initiative (IBI)

The Centro de Producción Nacional Más Limpia (CNP+L) of Costa Rica

Centro Agronómico Tropical de Investigación y Enseñanza (CATIE)

Project Contact Information

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The Katoomba Incubator is an initiative of Forest Trends

Partners

With support from: