GREEN CHARCOAL

TO FIGHT DEFORESTATION IN CAMBODIA

Efficient production of an improved wood charcoal

OBJECTIVES

- Establish sustainable, efficient charcoal production models in rural areas
- Improve the quality of life of impoverished Cambodian families
- Reduce deforestation and greenhouse gas emissions through the use of improved charcoal kiln designs
- Support innovative charcoal by-product collection and research

BENEFICIARIES

- Small and medium-scale rural charcoal producers
- Forest-dependent communities

BACKGROUND

In Phnom Penh, Cambodia's crowded capital, 40% of the population relies on charcoal for their daily energy needs. The amount of wood required to fill this need adds up to 6,000 football fields of local forest lost every year, and is a significant reason why Cambodia has one of the highest deforestation rates in Asia (source: State of the World's Forests, UN FAO, 2007).

All of this wood is harvested unsustainably from natural forests, primarily by small, subsistence-level farmers and workers to supplement their meager incomes. The use of inefficient, traditional production techniques means that charcoal production is wasteful, time-consuming and hazardous to workers' health. Also, these poor producers are often forced to pay a significant amount of their income as fines, and risk having their product confiscated. This increases their vulnerability, and prevents even successful producers from attempting to scale up or improve their operations.

In 2004, GERES Cambodia introduced the Yoshimura kiln, a charcoal production kiln developed in Japan. This kiln produces a higher quality of charcoal in half the time, using 30% less wood. The result is a more standardized, reliable product which reduces producers' risks and increases their profits.

An additional benefit of using improved kiln technology is the ability to collect charcoal by-products. Wood vinegar (pyroligneous acid), which is collected by condensing smoke produced by the charcoal production, is used internationally as a fertilizer, pesticide and compost catalyst. With minimal production required, wood vinegar is a natural, biodegradable agricultural product which can increase producers' profits and support local farming communities.

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ISSUES AND EXPECTED OUTCOMES

Economic and social impacts

- The adoption of new technology allows **producers to increase their profit** margins (more charcoal produced in less time, with less wood) **while decreasing their risks** (less time spent in the forest collecting wood, less exposure to smoke, less waste).
- **15% higher calorific value, made with 30% less wood in 50% less time**
- Improved charcoal quality also allows them to directly increase their profits, charging **a higher price for a better product.**
- Charcoal producers are also able to **supplement their income by collecting and selling wood vinegar**.

Note: The use of wood vinegar in local agriculture provides an organic, biodegradable substitute to the use of expensive, imported petroleum-based fertilizers which can pollute groundwater.

Environmental impacts

- The reduction in wood harvesting for charcoal helps **preserve natural forests**
- **2 kg of wood saved** for every 1 kg of green charcoal produced
- Dissemination of the Yoshimura kiln **can save up to 1,300 hectares of forest per year**.
- The use of less wood also means **less greenhouse gas emissions,** helping to save both the local and global environment. **3.7 tons of greenhouse gas emissions are saved per kiln annually.**

Note: GERES Cambodia is also researching the possibility of producing charcoal from sustainably managed community forests, which would preserve the natural forests while providing for people's needs

ACTION PROGRAMME 2008 - 2012

Sustainable charcoal production

Through cooperatives and partnerships with charcoal producers, woodlot owners and community forests.

Improve living conditions for producers

By working with the government to develop an effective, fair wood management policy and certifications for sustainably harvested wood products.

Improve local agriculture

Through research into effective wood vinegar use and distribution.

Chevith Baitong Wood Vinegar

PARTNERS

- Community Forestry Mix-Development Association, Tramkak District, Takeo
- Forestry Administration, Cambodia
- CIRAD, France
- Ministry of Industry, Mines and Energy, Cambodia
- ISC, Dept. of Energy, Cambodia
- Eco-Biz

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