

# BIOCHAR USE IN THE FIELD

**B**iochar enhances soils. When added to soils, biochar's impressive capacity to retain nutrients can reduce fertilizer requirements while increasing crop yields. It can also be used for commercial potting soils. Research is now confirming benefits that include:

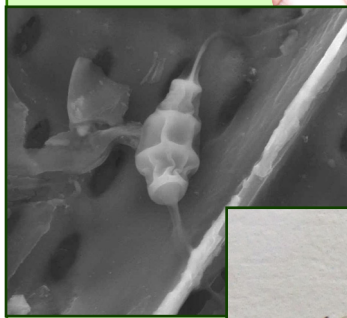
- Reduced leaching of nitrogen into ground water
- Possible reduced emissions of nitrous oxide
- Increased cation-exchange capacity
- Moderating of soil acidity
- Increased water retention
- Increased number of beneficial soil microbes

Biochar can improve almost any soil. Areas with low rainfall or nutrient-poor soils will benefit the most.



Above: Biochar field trial in China.

Right: A closer look at biochar.



Above: Soil microbe on biochar.

Right: Fine roots show affinity for biochar.



## Biochar and Terra Preta Soils

Biochar production is modeled after a process begun thousands of years ago in the Amazon Basin, where islands of rich, fertile soils called *terra preta* ("dark earth") were created by indigenous people. Anthropologists speculate that cooking fires and kitchen middens along with deliberate placing of charcoal in soil resulted in soils with high fertility and carbon content, often containing shards of broken pottery. These soils continue to "hold" carbon today and remain so nutrient rich that they have been dug up and sold as potting soil in Brazilian markets. Photos courtesy of Julie Major and Bruno Glaser.

## Rural and Developing Country Applications of Biochar Systems

Biochar systems can reverse soil degradation and create sustainable food and fuel production in areas with severely depleted soils, scarce organic resources, and inadequate water and chemical fertilizer supplies. Low-cost, small-scale biochar production units can produce biochar to build garden, agricultural and forest productivity, and provide thermal energy for cooking and drying grain. With the addition of an engine or turbine, these systems can produce kinetic energy for grinding grain or making electricity.