United States Department of Agriculture

Natural Resources Conservation Service

Maine

Conservation Innovation Grant

Sustainable On-farm Biochar Production

Grantee Name: David McDaniel of Earth Dharma Farm
Agreement Number: 69-1218-11-16
Period Covered: July 2011-June 2014
Funded Amount: $9,587.44

Innovation: Harvest, through coppicing, locally abundant speckled alder as a source of regenerating biomass, and pre-dry the alder biomass in a solar kiln to reduce energy load. Use on-farm pyrolysis technology to convert biomass into biochar. Incorporate the biochar into the farm's composting operation for use as an agricultural soil amendment and reservoir of organic carbon in soil.

Focus: Develop and demonstrate a low-cost, on-farm model for producing high-quality biochar for use as an agricultural soil amendment and as a method of carbon sequestration.

The full project report is available online at:
www.earthdharmafarm.com/biochar.html

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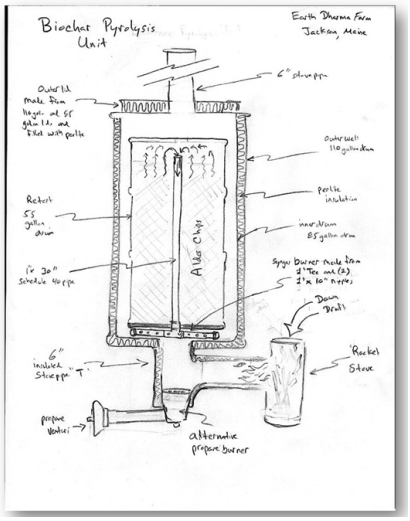
Conservation Innovation Grants (CIG) benefit agricultural producers by providing more options for environmental enhancement and compliance with Federal, State and local regulations

From 2011 to 2014 the project at the organic, off-grid, Earth Dharma Farm in Jackson, Maine, aimed to demonstrate methods and present data for sustainable, on-farm biochar production. Biochar is charcoal with a high carbon content, produced by heating biomass in the absence or near-absence of oxygen. When stored in the soil, biochar is thought to be a source of slow-releasing nutrients and a method of carbon sequestration.



Key findings from the project include:

- Biochar feedstock can be sustainably and cost-effectively harvested/prepared for production.

- Speckled alder (*Alnus incana*) is a practical and sustainable biochar feedstock for Maine farms.

- Chipping the alder and pre-drying it in a solar kiln is an efficient way to reduce fuel and time required to make biochar.

- A biochar pyrolysis (temperature induced decomposition) unit for small farm operations can be built with readily available materials at a reasonable cost.

- A wood-fired down draft "rocket" stove was more efficient at igniting and maintaining pyrolysis than using propane.

- Prices of commercial biochar can influence cost-benefit of making on-farm biochar.

Images courtesy of Earth Dharma Farm

www.me.nrcs.usda.gov