

Summary/Abstract

Washington State University

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“Yardsticking the impact of biochar formulations on soil carbon durability and agronomic performance in hemp-based crop rotation systems”

The Objectives of this project are to increase the yields of commodity crops, while maintaining crop quality and improving soil health, removing sources of carbon from the atmosphere, and decreasing the overall emissions of greenhouse gases during crop production. These goals will be accomplished by advancing three technologies: 1) production of novel “biochars” and biochar products by heat-treatment of waste wood; 2) growing hemp in rotation with commodity crops; and 3) developing a novel tool to measure carbon in the soil. To develop the suite of biochar products, Washington State University will partner with Myno Carbon, a start-up company constructing facilities to produce large quantities of specialty biochar products from logging waste wood.

The biochar products will be applied to farm fields, thereby trapping the wood’s carbon and preventing it from reaching the atmosphere for 100s to 1000s of years. We will develop a novel instrument, the Yard Stick Probe, to measure the amount of soil carbon in seconds, rather than days. The biochar applications will be combined with growth of hemp in rotation with commodity crops, as hemp is known to improve soil fertility, while providing a source of fiber and oil for valuable construction and energy applications. These farming technologies will be tested in fields in four diverse regions of Washington State, to define the optimal type of biochar for each region to produce maximum crop yields and soil health. The project will take place in fields managed by Tribal and underserved groups, increasing the income and promoting the use of improved technologies by these groups. Summer internships will also be offered to high school and undergraduate students in rural areas. The project therefore will provide a means to improve the income of underserved residents of rural areas by increasing crop yields, soil quality, the number of valuable crops grown in each field per year, and educational opportunities.

The major participants in the project include at least eight research professors and their lab members from Washington State University and the University of Connecticut, US Biochar Initiative, Yard Stick PBC, the Yakama Nation and Confederated Tribes of the Colville Reservation. Additional services will be provided by Restoration Fuels, Oregon Biochar Solutions and Renovo Sustainable Products.