

Oregon Department of Forestry's (ODF) Urban and Community Forestry Program is collaborating with an interdisciplinary, cross-sector team of partners to improve local production capacity and utilization of biochar, a charcoal-like substance used to amend soils and sequester carbon in urban and peri-urban settings. Soils amended with biochar are known to have far greater water- and nutrient-holding capacity and to support better tree growth and resilience than unamended soils. Biochar is made from burning low-value woody biomass in a controlled, low-oxygen, and relatively smoke-free environment. Use of biochar in urban settings can make an important contribution to improving urban soil structure and functionality and promoting better tree health and longevity.

ike many other Western states, the resilience of Oregon's urban and community forests is currently being put to the test by many serious challenges related to climate change, severe weather, catastrophic wildfires, destructive pests and pathogens, and unsustainable development.

These various challenges are all interrelated and hard to tease apart; resolving them will necessitate a wholesystems approach. ODF and its coalition of partners are doing just that, using biochar as the primary tool in the effort. Due to the recent discovery of emerald ash borer (EAB) in Oregon, the urgency of this effort has increased exponentially. Over the next decade, Oregon expects to lose tens of millions of ash trees to EAB in its urban and peri-urban forests.

Although biochar has great potential to serve as a carbon-sequestering

technology that can help stressed urban landscapes regain their health and resilience, there are several economic and regulatory barriers that have historically limited its production and use in Oregon. Two of the biggest barriers for biochar production are material hauling and air quality permit costs. It has always been cheapest and easiest for forest managers to either chip up trees or burn forest debris/waste products in open slash piles on the sites where they came from to avoid hauling costs and air quality permitting fees. The drawbacks to these types of treatment are many: wood chips quickly release their carbon back into the atmosphere, and open pile burning is known to release significant amounts of smoke, ash, and black carbon particulate matter into the atmosphere (up to 80% more than in a biochar production unit); open pile burning cannot be done within city

limits due to smoke and wildfire risks; and open pile burning does not produce an acceptable quantity or quality of biochar by-product.

Thanks to recent technological advancements with portable biochar production units known as air curtain burners, it is now possible to process large quantities of woody biomass directly on work sites within city limits and avoid material hauling costs, while also minimizing air quality impacts and fire risks. ODF is actively working with coalition partners to remove barriers and create more market-based incentives for biochar production and use, and to educate stakeholders about the numerous benefits of biochar for urban and community forests.





Header: Coalition partners from ODF, Oregon Dept. of Environmental Quality, USDA Forest Service, Sustainable NW Woods, Oregon Forest Industries Council, and Valley Environmental participate in a field demo of a portable biochar production unit/air curtain burner. Photo: Scott Altenhoff, ODF. **Far Left:** An overhead view of the air curtain burner shows the nearly smokeless firebox. Photo: Marcus Kauffman, ODF. **Left:** Coalition partners watch the portable air curtain burner in operation. Photo: Scott Altenhoff, ODF

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