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## Farmers And Environmentalists Alike Are Excited About Biochar

*This article is part of [The State of Science](#), a series featuring science stories from public radio stations across the United States. This story, by Murray Carpenter, was originally published by [Maine Public](#).*

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In a former biomass plant in Greenville, wood chips are flowing from hoppers into long tubes about three feet in diameter.

Pat Jones is the president of Clean Maine Carbon, which burns wood in high-temperature, low-oxygen conditions known as pyrolysis.

“It starts out as wood” he said. “And as you can see when we come over here what comes out the other end is biochar.”

In the quest for climate solutions, Jones is among the Maine entrepreneurs banking on this charcoal-like substance. They say it can bind up carbon for decades, and improve agricultural soils at the same time.

The end product has high carbon density, and is very stable, so less of the carbon will be released into the atmosphere than if it were left to decompose. So while Jones is making biochar, his business plan is focused on selling carbon credits to corporations.

“So somebody will say, ‘Would you like to sell credits to XYZ company?’ And we’ll say, ‘Yeah, what’s the price?’ They will pay on a per-ton basis, whatever the agreed value, based on carbon content and everything else,” Jones said. “And that’s the end of it, they never get the biochar and they don’t do anything. They get to use those credits to help reduce their footprint, their carbon footprint.”

Most of the biochar Jones has sold from the Greenville plant has been for agricultural applications. And he’s not yet certified to sell carbon credits, but pending the completion of an audit, he said he’ll be able to sell credits even on the biochar he’s already shipped.

Scientists and advocates debate the true value of carbon sequestration as a response to climate change. Jonathan Foley is executive director of Project Drawdown, a nonprofit that focuses on science-based climate solutions.

Foley says 95% of climate solutions should focus on reducing emissions by driving more efficient cars, for example, or insulating houses. But he said there’s also value in removing carbon from the atmosphere. And while there’s no silver bullet, biochar could be seen as a piece of silver buckshot.

“And we can put that in farm fields, we can bury it in old mines, we can bury it in the ground, and it should last for hundreds, if not thousand of years under the right circumstances,” Foley said. “So it’s a pretty clever kind of hybrid of nature and some engineering that might be a pretty good little piece of silver buckshot.”

And researchers are looking for ways to put biochar to use. As a soil additive, for example. University of Maine associate professor YongJiang “John” Zhang said the physical structure of biochar allows it to hold water like a sponge during periods of heavy precipitation, and release it slowly. It can also hold nutrients, and Zhang said these qualities can be beneficial when applied to the sandy soils of blueberry barrens.

“But if you have the biochar, it can hold more water, and hold the nutrients to increase the water use efficiency, and nutrient use efficiency,” he said.

Zhang said other research is looking at biochar’s benefits to potato crops, and its ability to lock up particles of PFAS in contaminated fields and prevent them from being taken up by plants.

Jones said he plans to produce about 1,200 tons of biochar annually with the current setup. But he’d like to scale up, using more and bigger equipment, to create more biochar and also put the excess heat from the process to work.

“So that it becomes more economical and practical to extract hot air and hot gasses for lumber drying for power generation, any number of things that could be done with this very clean, high-temperature gas,” he said.

Meanwhile, a second biochar facility, Standard Biocarbon in Enfield, hopes to start production in the next few months, and aims to produce about 1,200 tons annually.