

Shelton-Mason County Journal - Dedicated to the citizens of Mason County, Washington since 1886

Biochar is slash pile gold

Harstine Island News · September 10, 2020 · Page A-9



By Alex Féthière

Photo in the print edition: This excavated wedge trench has the conical shape that encourages a slow buildup of char from the poorly-ventilated bottom towards the top. (Journal photo by Alex Féthière)

Biochar is among the panaceas of regenerative agriculture. This charcoal produced for soil amendment enhances most solutions to waste disposal, carbon capture, liming, soil health, and water retention.

Any kind of organic matter that undergoes pyrolysis (from lysis “cracked” by the action of heat — “pyro”) can become biochar. The trick is to control the burn to exclude oxygen, so that the volatile portions of the feedstock off-gas and the adsorptive carbon latticework is left behind. One folk method for checking its quality is how it sounds: a crystalline tinkling means thorough pyrolysis.

For home or farm production, burning in a trench or barrel is good enough. I personally prefer burning in a barrel because the smoke is easier to tolerate. I know of another person on Harstine who uses a similar approach. He uses an open-top barrel that he manually feeds prunings from an apple tree, damping oxygen by stacking fuel. I close mine with a lid and ring to minimize smoke and focus the pyrolysis gases out of a small opening in the top. Some folks in Belfair are working with a trench setup that I plan to visit.

While these practices don’t produce the finest biochar, they still retain 33-50% of the carbon in the feedstock, preserving it for millennia as a useful soil additive.

We know that biochar lasts for millennia from discovering historical deposits in the Amazon basin and the soils of midwestern U.S. plains, where indigenous burning practices filled the soil with carbon that helped account for the generations of grassland fertility. Because cattle have shown a preference for grass grown in previously-charred fields, this probably concentrated buffalo populations for more convenient hunting.

The “Terra Preta do Indio” of the Amazon basin, made by the mass burial of charcoal, animal bones, pot fragments and human waste, sustained large populations in marginal soil until the arrival of European explorers. The Amazon’s soils are lashed with heavy seasonal rains like our own.

Via its cation exchange capacity, biochar retains nutrients, like ammonium and potassium cations, that might otherwise be leached out. It also provides safe harbor to the microbial life that maintains nutrient cycles. Plant roots and fungal mycelia can still access them through their own electrochemical exchange processes.

Biochar users assert that their turnips double in size, and tomatoes yield twice as much. Corn produces at least two more improved cobs per plant, broccoli has 30% larger and tastier heads, and cabbage is twice the size with the same shelf life.

The same carbon matrix that gloms on to nutrients also stores water. One biocarbon researcher found biochars to have internal surface areas of 100 square meters per gram (~30,500 square feet per ounce)! These chambers adsorb moisture when water is abundant and release it when scarce.

As water shortage grips vineyards in the Willamette and smoky skies set us all sneezing, one winery that had cleared a hillside rented a \$600,000 CONEX-sized kiln that produces 12.5 cubic yards of biochar every day, all without significantly polluting the atmosphere. Other vintners have been inspired by biochar's benefits and are in talks to rent the "Carbonator-500."

Smaller-scale production requires only a trench or barrel, but it is dirtier. I make a brush fire and pack dried maple limb prunings into a barrel with a ring-locking lid. The lid has a bung in the top, and when the brush fire is roaring I roll the barrel into it. Once the contents are pyrolyzing a jet of gases blasts from the bung, which can be aimed into the wind and down toward hot coals to accelerate the burn. After the vapors cease, the can is rolled out and stood upside down to plug the hole. The next morning the barrel can be opened and the char removed.

Once made, the char must be "charged," or else it will adsorb nutrients from everything around it, including your plants. Aging it for 2-8 weeks with compost (many mix it in to their aging compost), grass clippings, worm castings, fertilizer teas like comfrey or nettle, urine or manure will fill it with microbes and nutrients to kickstart the food web anywhere you place it.

■ *Alex Féthière has lived on Harstine Island long enough to forget New York City, where he built community gardens and double-dug his suburban sod into a victory garden. He can be reached at onlandist@gmail.com.*

Originally published in the print edition of the Shelton-Mason County Journal, September 10, 2020, page A-9.

Transcribed from the page scan in the SmallTownPapers archive: <https://smc.stparchive.com/Archive/SMC/SMC09102020P09.php>