

Winter Air Quality and Slowing Climate Change

With the first rains each fall, come the fragrant scent of the first burn piles. But due to our geology, and as the winter weather patterns set in, the heavy smoke of burn piles and wood stoves becomes a daily fact of life.

With the ever-increasing threat of wildfires, burn piles are a necessity; but do they have to create such a presence? In fact there is a way of creating and firing burn piles that not only can reduce the oppressive smoke (and its commensurate health effects) while also helping to reduce carbon in our atmosphere!

Because trees and plants pull carbon from the air to create their physical structures, if we can burn the material we harvest from them, without consuming that carbon, then spreading that carbon into our soils, we are sequestering or storing that carbon. In doing so, we are effectively removing carbon from the atmosphere and helping to slow climate change. This approach, one that results in biochar, is one of the leading candidates being studied by scientists for climate change remediation.

Biochar is a form of charcoal that is almost entirely carbon and is a valuable product, highly beneficial to our soils. Biochar is produced when plant material is burned in the absence of oxygen. While commercially this is done in specialized furnaces, there is a way of creating burn piles that perform nearly as well, while substantially reducing harmful smoke throughout our valley.

Does this take more work? Only slightly, and the resultant black chunks (biochar) are amazingly beneficial in your garden, fields or forest.

Basically, when gathering your material for your burn piles, you are going to create alternating 4-5 foot square 'rafts'. Laying material down in one orientation until you have a 4-5' width, then start the next layer with the material perpendicular. Continue creating layers until you have a 4-5' high pile. Lastly, place a mass of dry kindling-like material on the very top. When you light the pile, you will be lighting it on the very top, and as it burns you will be using a hose to spray out any fire that starts lower down.

What you are doing is a form of 'gassification', which is a process of heating material to the point it releases its volatile organics (VOCs), thus fueling the fire. In other words, the mass of kindling at the top heats up the next layer below, driving out volatiles that fuel the fire. Since these volatiles are directly fueling the fire, their smoky emissions are directly consumed. A properly built burn pile will actually roar with tall orange flames but little smoke. And if you listen closely you will hear this wonderful sound like a cross between rain drops and tinkling bells – the sound of bean sized pieces of biochar falling to the bottom of the burn pile. The fire burns fast, typically 15 to 20 minutes; but be careful, you do not want coals at the bottom (spray them out) as that is when the carbon starts being consumed.

When the fire is complete (remember, you are spraying down any coals), you will have a pile of roughly bean-sized jet black biochar with very little of the gray ash normally found after a burn pile. Spray this down completely until no more steam rises, then let it sit for a day or so. You can then shovel the biochar directly into buckets to broadcast on the soils in your garden, etc.

The weight of that biochar in those buckets is carbon you have effectively removed from the atmosphere. And the reduction or elimination of burn pile smoke has benefited everyone's lung health!

[Note, the technique described above was developed by Dr. Tom Reed, which he refers to as the "Pyrolysis Pyramid" method. For more information, look on the internet for "Biochar from Brush Piles" by Kelpie Wilson]

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