

## The Technique

**Piles need to season.** This is the same principle as seasoning firewood - to reduce moisture. The material should be less than 20% moisture content. Ideally the vines are pulled after harvest, moved to a designated burn location on the property, and left to season until ready to burn. A wood moisture meter can be an inexpensive way of determining if the pile is ready for a successful burn.

**If rain is expected before burn day, cover the piles with tarps or plastic and make sure the kindling supply is kept dry.** Do not burn piles in the rain, wait for dry weather. Wet material will smoke and take much longer to burn.

**Piles should be free of dirt, plastic ties, and treated wood or coated metal.** Vines with roots covered in dirt will smoke so shake them out before piling.

**Small piles are better than big ones.** Each air district has its own rules regarding pile size limits, so be sure to check your local rules. We have found that piles about 10 feet in diameter by 7 feet tall are easy to manage and burn quickly. A large pile can make it difficult to light, is harder to manage, and makes it less likely the conservation burn process will work as desired.

**Pieces in the pile should be about the same size.** Vines are ideal as they are fairly uniform. The exception is kindling. Collect kindling size pieces from the material going into the stack. Place them on top once the pile is built. We call it a “birdsnest” and this material should be as dry as possible. Pieces of material of varying sizes will burn at different rates. Smaller pieces will turn to ash before the larger pieces have burned to char. Cut up large pieces to match the size of average pieces. We use a weed burner and a 5-gallon propane tank to light the fire, but if the material is dry enough some wadded up paper and a match is all you need. Always try to minimize the amount of fossil fuels propane used.

**Stack piles somewhat loosely, but not so loosely that the fire has a hard time spreading.** The conservation burn process requires air flow, but most normally stacked piles work just fine. It is important that air can flow to the kindling on top of the pile. Once the pile is burning well do not add any additional vines.

**Light the pile from the top, not the bottom.** If it is not windy, light the entire circumference of the top of the pile. If it is windy, light the pile from the downwind side of the pile. If the pile is difficult to light try adding more kindling to the top before resorting to additional accelerant.

**Put out the fire before everything turns to ash.** End the burn with water when most material has burned, the whole pile is covered in white ash, and there are no flames or red coals present. To reduce the amount of Carbon released into the atmosphere and

maximize biochar production it is crucial to put out the fire before the material turns completely to ash. This is as much an art as science and it will take a few burns to learn how to optimize the ratio of biochar production to partially burned vines. The more black material (charcoal) left at the end of the burn, the less Carbon that has been lost.

**Put out the fire with water from the upwind side.** Slowly rake out the charred material with McLeods and/or fire rakes as water is applied. This is the biochar. Hose down the area ahead of the workers. Worker safety is critical and make sure they are wearing heavy duty boots and (ideally) Nomex clothing, or all-cotton clothing at the very least. Be sure water is supplied to the area around and ahead of the workers' feet. This process is repeated across the pile until the fire is completely out—if the fire is not extinguished completely the biochar can reignite and burn to ash.

**Separate the uncharred material.** Spray down an area where uncharred material can be placed and stack this “torrefied” material to burn at a later date after it has dried out.

**Crush the charred material.** Once the material has cooled, run over the charred material with a piece of heavy equipment to pulverize it. The greater the surface area, the better. Crush the biochar to a size that is easy to work in a compost pile and spread. Always handle biochar wet or with a mask to eliminate dust, which can be hazardous if inhaled.

**Blend with compost.** The ideal time to add biochar to compost for spreading is early in the composting processing. We recommend a 10% to 20% ratio of biochar by volume blended into the compost.

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Content courtesy of Raymond Baltar of the [Sonoma Biochar Initiative](#).