MOA Missouri Organic Association

We are currently enrolling farmers to participate in a USDA-funded project that measures the effects of biochar on specialty crops, row crops, livestock and poultry farms.
If you're interested and would like to learn more, please visit our website at biochar.moaorganic.org.

To reach someone directly, you can email info@moaorganic.org or call Jackie Casteel at 573-260-2691.

What is Biochar and What is it Good For?

Biochar is a carbon-rich material that resembles charcoal. It's made by putting biomass through pyrolysis, a low-oxygen thermal process. Some common feedstocks for biochar are wood chips, brush, crop debris and animal manure. Humans have used biochar for thousands of years to improve the water- and nutrient-holding capacity of poor soils. Below you'll find some of the agricultural benefits biochar can have as a soil amendment. Results will vary depending on the type of biochar used and the type of soil it's used in. If you'd like more information on the science behind biochar, we'll be curating a small collection of studies on our website at biochar.moaorganic.org. Below you'll find a short list of the effects biochar.

- **Biochar can increase the water holding capacity of soils and improve drought resistance.**
- **Biochar can reduce soil compaction by up to 10%.**
- **Biochar can increase Cation Exchange Capacity of soils, helping to make nutrients like phosphorus and potassium available to plants.**
- **Biochar provides habitat and nutrients for soil microorganisms, which can lead to increased diversity of microorganism communities.**
- **Several field studies showed that biochar application to agricultural soil considerably decreased the leaching of N, NO_3^-, K, P, Mg, Na, and Ca.**
- **Some field studies have shown yield increases up to 143% in the second, third and fourth year after application. Most of the increases happen in poor or degraded tropical soils. Richer soils in temperate areas tend to show less improvement.**
- **Increased yields in studies of corn and mustard fields amended with biochar are correlated strongly with plant-available phosphorus, potassium, total organic carbon percentage, pH and cation exchange capacity.**
- **Biochar application can be a means of sequestering carbon in the soil long-term, which can help mitigate climate change.**
- **Biochar is alkaline and could be used as a more environmentally friendly substitute for agricultural lime, which requires a lot of energy to mine and pulverize..**

Source: Review of Large-Scale Biochar Field-Trials for Soil Amendment and the Observed Influences on Crop Yield Variations. Front. Energy Res., 30 August 2021 Sec. Carbon Capture, Utilization and Storage. Volume 9 - 2021

Five Soil Services of Biochar

Sponge - Absorbs and holds water
Structure - Aggregates soil and increases pore space
Storehouse - Captures and holds nutrient ions
Substrate - Harbors microbial communities
Sequester - Retains carbon in the soil for decades