

BIOCHAR

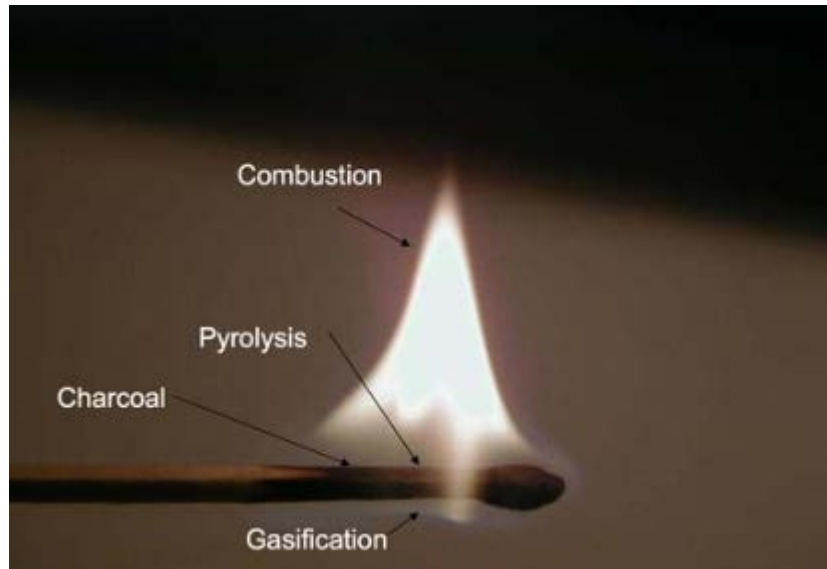


What is biochar?

Biochar is commonly defined as charred organic matter, produced with the intent to deliberately apply to soil to sequester carbon and improve soil properties. Produced through an energy conversion process called pyrolysis, which is essentially the heating of biomass in the complete or near absence of oxygen. Pyrolysis of biomass produces biochar, oils and gases.

Biochar is different from charcoal in that the biochar product is created for use as a carbon soil amendment. Biochar can be produced from a variety of biomass feedstocks, but is generally designated as biochar only if it produces a useable product for soil improvement.

This 2,000 year old practice converts agricultural waste into a soil enhancer that can hold carbon and increase soil biodiversity. The process creates a fine-grained, highly porous charcoal that helps soils retain nutrients and water.



The carbon in biochar resists microbial degradation, unlike compost and can hold carbon in soils for hundreds to thousands of years. Biochar is not intended to be soil applied without nutrients; it requires preloading of fertilizer onto the carbon so once in the soil it provides a carbon reef system for microbial organisms as housing and a source of nutrients.

Additionally, biochar can be applied in animal operations for odor control and reducing toxic ammonia levels in confined animal housing. Due to the loose housing of poultry, animals in coop systems live in constant contact with their excrement. The extremely nutrient-rich and moist feces create conditions for the multiplication of pathogenic microorganisms. Added to this, the microbial decomposition of the excrement leads to significant emissions of ammonia. The gas is harmful to the animals because it irritates the mucous membranes, attacks the lungs, weakens the immune system and even accumulates in the blood. Besides the effect on animal welfare, animal performance also deteriorates.

The use of biochar as a feed additive and as litter additive can minimize the problems described with regard to animal health and environmental performance.

Good litter management and proper ventilation are critical to preventing footpad dermatitis and maintaining health in poultry flocks. With the addition of biochar footpad dermatitis in poultry can be prevented within a matter of days. For many years, the feet (or “paws”) of broiler chickens received little attention, but that all changed when the overseas market turned the feet into the third most valuable part of the chicken, behind the breast and wings.

Application of Biochar to Bedding

The biochar, depending on the type of litter, can be mixed 5-10 percent volume with the usual litter. The char is first moistened to prevent dust formation.

If silage is used as litter, the biochar can already be added at the ensiling stage. In this way, dust formation can be avoided and the low pH of the silage kills off pathogens. Mixed into silage, the biochar is bound and no longer rubs off onto the animals' feet.

Treating liquid manure with Biochar before land application

The high surface area and cation exchange capacity of biochar makes it efficient in binding ammonium and ammonia substances. Through the use of biochar most of the nitrogen in the manure can be stored available for plants. The leaching of manure nutrients in the soil is slowed significantly, which not only protects the groundwater, but also and in particular prevents the acidification of the soil.

Biochar-treated liquid manure promotes soil activity and humus formation.

Overall, the fertilizer efficiency of liquid manure may nearly double with biochar.