

Pacific Biochar



It comes down to the soil beneath our feet. It's complexity is akin to the galaxies above us.
It's about the air we breath, the water we drink.
That's why.

A simple and natural means of
improving plant growth
promoting characteristics of
biochar materials.

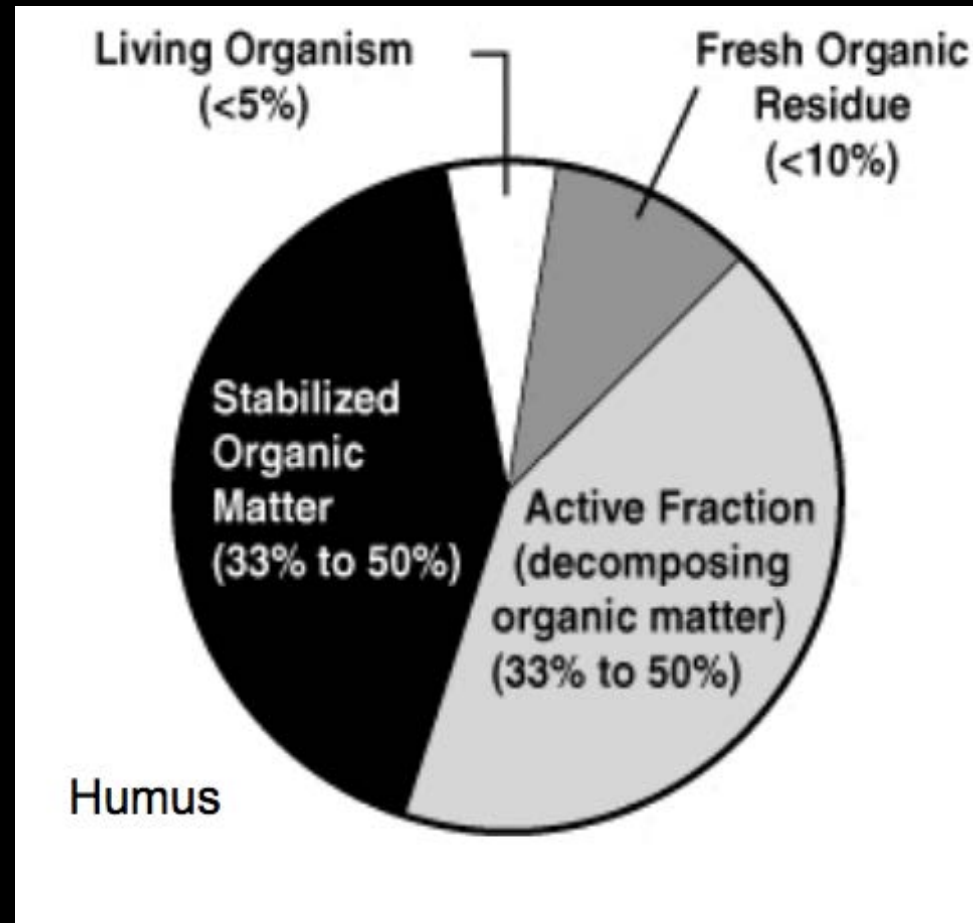
By

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A definition of biochar:

- Biomass charcoal when used or found in soil.











Chemical and biochemical characterisation of biochar-blended composts prepared from poultry manure

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ABSTRACT

The aim of this study was to assess the effect of a 2% (v/v) addition of biochar on the quality of a composting mixture prepared with poultry manure and different local organic wastes (rice husk and apple pomace). Compost quality was evaluated in terms of typical stabilisation indices, the microbial biomass and selected enzymatic activities related to the C, N and P cycles. The main effects of biochar were a 10% increase in C captured by humic substance extraction and a 30% decrease of water-soluble C, due to an enhanced degradation rate and/or the sorption of these labile compounds into the biochar. The urease, phosphatase and polyphenol oxidase activities of the biochar-blended compost were enhanced by 30–40% despite the lower amount of microbial biomass. Denaturing gradient gel electrophoresis revealed a higher diversity of fungi in biochar-amended compost, suggesting a change in microbial composition compared to the unamended compost.

OPEN

Plant growth improvement mediated by nitrate capture in co-composted biochar

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Soil amendment with pyrogenic carbon (biochar) is discussed as strategy to improve soil fertility to enable economic plus environmental benefits. In temperate soils, however, the use of pure biochar mostly has moderately-negative to -positive yield effects. Here we demonstrate that co-composting considerably promoted biochars' positive effects, largely by nitrate (nutrient) capture and delivery. In a full-factorial growth study with *Chenopodium quinoa*, biomass yield increased up to 305% in a sandy-poor soil amended with 2% (w/w) co-composted biochar (BC_{comp}). Conversely, addition of 2% (w/w) untreated biochar (BC_{pure}) decreased the biomass to 60% of the control. Growth-promoting (BC_{comp}) as well as growth-reducing (BC_{pure}) effects were more pronounced at lower nutrient-supply levels. Electro-ultra filtration and sequential biochar-particle washing revealed that co-composted biochar was nutrient-enriched, particularly with the anions nitrate and phosphate. The captured nitrate in BC_{comp} was (1) only partly detectable with standard methods, (2) largely protected against leaching, (3) partly plant-available, and (4) did not stimulate N₂O emissions. We hypothesize that surface ageing plus non-conventional ion-water bonding in micro- and nano-pores promoted nitrate capture in biochar particles. Amending (N-rich) bio-waste with biochar may enhance its agronomic value and reduce nutrient losses from bio-wastes and agricultural soils.

Plant Growth Characteristics

- Plant available nitrogen
- Surface Function
- pH



















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