

Char application restores soil carbon and productivity

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Application of char with about 30% C changed the color of the soil. Credit: Michael Kaiser.

Intensively tilled soils have lost up to 50% of their original C with the attendant degradation in soil properties and productivity. Restoring the C

lost with current conservation practices (i.e., no-till, cover crops) often takes decades. Applying high-C coal combustion residue from sugar beet (*Beta vulgaris L.*) processing factories, known as char, may rapidly restore soil C and productivity in degraded croplands.

In a recent *Journal of Environmental Quality* article, researchers in the Nebraska High Plains evaluated soil and crop response to char containing about 30% C applied at different rates ranging from 0 to 67.3 Mg ha⁻¹ to two relatively low C soils (soil physical properties nor crop yields).

Findings suggest that this industrial by-product can be a potential strategy to rapidly restore C in degraded agricultural soils, but additional long-term (> 2 years) research with char application exceeding 67.3 Mg ha⁻¹ under different soils and climates is needed to fully understand how char impacts [soil properties](#) and crop yields.

More information: Humberto Blanco-Canqui et al, Can char carbon enhance soil properties and crop yields in low-carbon soils?, *Journal of Environmental Quality* (2020). [DOI: 10.1002/jeq2.20111](https://doi.org/10.1002/jeq2.20111)

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