Residue of Corn Stover Ethanol Production as a Soil Amendment. (S03-johnson134523-Poster)

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Abstract:

Ethanol can be produced from fermented corn stover, leaving a by-product, which is about 70% lignin. It was hypothesized that the return and incorporation of the by-product may offset some of the negative impacts of stover removal. The by-product was dried and incorporated into either a non-eroded soil or a severely eroded soil from a Svea catena. The soil was incubated at ambient temperature for 123 d, water-filed pore space ranged from 35 to 60%. A non-amended soil (control) and a corn stover amended were incubated. Biological, chemical and physical characteristics were measured. There were significant responses of biological parameters (CO_2 flux, soluble C and microbial biomass C) and chemical parameters (N mineralization, humic acid concentration), but no change in water holding capacity, bulk density due to the by-product. There were small improvements in aggregate stability and humic acid concentration only on the by-product-amended, severely eroded soils. Careful management of stover removal and selective placement of the by-product could contribute to a sustainable use of corn stover for ethanol production.

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