# Increasing Soil Carbon and Nitrogen Stocks under Restored Tallgrass Prairie: Influence of Soil Type. (S03-matamala115822-Oral)

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## Abstract:

Conversion from native vegetation to cropland leads to a rapid depletion of soil organic matter (SOM). Restoration of degraded soils and ecosystems is a major strategy for reversing SOM losses and enhancing soil carbon sequestration. Because the restoration of SOM is a slow process, chronosequence approaches offer unique opportunities to study the dynamics of SOM accrual. The series of prairie restorations at Fermilab (IL) was initiated in 1975 on soils that had been cultivated for over 100 years. We measured carbon and nitrogen stocks for two chronosequences consisting of cultivated soil, 9 restored prairies, and a virgin prairie remnant. These chronosequences differed in soil type as defined by texture, and soil moisture. Results show that the prairie was highly effective at rebuilding soil carbon stocks. Carbon accrual in the wetter soil exponentially increased at a rate of 0.5 g C Kg-1 y-1 in the surface 10 cm of the soil. Drier soils had a lower rate of C accrual. Carbon inputs were dominated by root production. We conclude that tallgrass prairies can rapidly restore SOM lost through cultivation and have the potential to sequester relatively large amounts of C in the soil.

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