



Agroforestry increases soil organic carbon in agricultural fields

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Miguel Salceda collects a soil sample using a push probe from watersheds at the Greenley Jr. Research Center of the University of Missouri. Inset: Soil sample from the 0- to 10- (top) and 10- to 20- (bottom) cm depth. Photos courtesy of Miguel Salceda.

Unsustainable agricultural practices deplete soil organic carbon, enhancing climate change and affecting land productivity. Agroforestry practices help to sequester carbon in above- and below-ground reservoirs; however, long-term studies evaluating the effect of agroforestry on carbon sequestration in soils are limited.

In *Agronomy Journal*, researchers report spatial and temporal variations in soil carbon after a multi-year study of three adjacent watersheds in northeastern Missouri. The study watersheds are located in the claypan region under no-till corn-soybean rotation management with 23 years of agroforestry buffers.

This study indicates that trees and grasses significantly increase soil organic carbon compared with row crop areas and that agroforestry buffers continue to build up soil organic carbon with time. The team found that agroforestry buffers have increased carbon in soils at a greater rate during the 23-year study period than the other management practices. The establishment of agroforestry buffers within agricultural fields can help to mitigate climate change, increase soil productivity, and enhance nutrient and sediment retention. In addition to the benefits mentioned, agroforestry buffers offer the opportunity to diversify agricultural production by cropping different plants and wood production.

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Salceda, M., Udawatta, R.P., Nelson, K.A., Mendis, S.S., & Bardhan, S. (2021). Spatial and temporal variability of soil organic carbon on a corn–soybean watershed with 23 years of agroforestry. *Agronomy Journal*. <https://doi.org/10.1002/agj2.20948> (in press)

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