Soil Carbon Sequestration in an Agroforestry Alley Cropping System. (S11-udawatta120112-Poster)

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Abstract:

Agroforestry practices have the potential to store significant quantities of carbon in the mineral soil and woody products for long periods of time thus reducing atmospheric CO2 concentration. Three adjacent watersheds in northeast Missouri designated as control, agroforestry, and contour strip were used to test the hypothesis that agroforestry practices sequester significant amounts of CO2 and store it as soil organic carbon. Soil samples were collected at depths of 0-7.5 and 7.5-15 cm using a Haugland auger from grass waterways, agroforestry strips, contour grass strips, and crop areas on concave and convex transects. Results showed that almost 100% of the total carbon in the mineral fraction was in the form of organic carbon. The waterways, agroforestry, contour strips and crop areas contained 22.7, 19.3, 18.6 and 17.6 mt ha-1 total carbon in the surface 0-7.5 cm depth, respectively. The total carbon content at the 7.5-15 cm depth for grass waterways was 11% higher than for the other three areas. These findings are especially significant given the relatively short time that treatments have been in place. Agroforestry and contour strip practices sequester and store significant soil organic carbon in a corn-soybean rotation on a claypan soil.

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