An Estimate of Soil Organic Carbon Changes in Agricultural Ecosystems of Brazil. (S05-zinn161959-Poster)

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Abstract:

Soil organic carbon (SOC) pools of agricultural / native soil pairs in Brazil were compared using data from a literature review. Non-intensive land use systems (no annual tillage: pastures, no-till and perennial crops) caused mean SOC loss of 1.88 and 1.82 Mg ha-1 for the 0-20 and 0-40 cm depth, respectively. For intensive systems (involving annual tillage) mean SOC loss was higher, 6.74 and 3.6 Mg ha-1 for 0-20 and 0-40 cm, respectively. However, results for 0-40 cm depth indicate the effect of mixing high-SOC topsoil in the plow layer. This is not true for the 0-20 cm, thus resulting in overestimation of SOC losses for that layer under intensive systems. For non-intensive systems at 0-40 cm depth, soils with <200 g clay kg-1 had a mean SOC loss of 15.5 Mg ha-1; those with >500 g clay kg-1 and Oxisols gained 6.2 and 2.8 Mg SOC ha-1, respectively. Estimates of SOC changes for ecoregions were made on the basis of land use history, which is generally more accurate for the recently-reclaimed Amazon and Savanna regions. These regions are more SOC-conserving than expected. Pastures are the most SOC-conserving land use system, gaining 7 Mg C ha-1 for soils with >200 g clay kg-1 (0-40 cm depth).

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