# Stocks and Dynamics of Soil Organic Carbon as affected by Land Management. (S03-puget145120-Poster)

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# Abstract:

There is a need to assess and refine the effects of management practices on Soil Organic Carbon (SOC) stocks and dynamics if agricultural lands are to be used for C sequestration. We quantified SOC stock under five managements in a silt loam soil of the Appalachian Piedmont in Ohio and established the distributions of SOC among soil physical fractions and their implication for SOC dynamics. SOC stock in the top 20 cm equivalent mass basis, was 56 Mg C ha-1 under forest, 40 for meadow, 43 for notill (NT) continuous corn, 41 for NT corn soybean rotation and 34 Mg C ha-1 for plowtill (PT) continuous corn. When compared to SOC in forest, PT corn had lost 40 % of its C and N stocks while NT corn lost only 25 % of C and 12 % of N. Cultivation and tillage intensity also reduced aggregate stability. Macroaggregates (> 0.25mm) resistant to slaking were less numerous in cultivated soils than in forest and meadow soils (50 vs. 70% in mass), the sharpest decrease was observed in PT. Stable macroaggregates were enriched in SOC vis-a-vis bulk soil and microaggregates, and significant differences were observed between management. SOC stocks and their distribution among aggregates confirmed that less soil disturbance favor SOC sequestration within aggregates.

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