# Landscape Level Differences in Soil Carbon and Nitrogen: Implications for Soil Carbon Sequestration. (S07garten133518-Poster)

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### Abstract:

Our objective was to understand how land cover and topography act, independently or together, as determinants of soil C and N storage over a complex terrain. Generally, soils under pasture had greater N availability, greater C and N stocks, and lower C:N ratios than soils under transitional vegetation and forests. The effects of topography were secondary to those of land cover. Because of greater soil C stocks, and a greater allocation of soil C to mineral-associated organic matter (a long-term pool), we conclude that soil C sequestration, but not total ecosystem C storage, is greater under pastures than under forests. The implications of landscape level variation in soil C and N for C sequestration are discussed with reference to: (1) N limitations to soil C storage, (2) controls on soil C turnover as a result of litter chemistry and partitioning, (3) effects of land use history, and (4) statistical limitations to the quantification of soil C stocks. Research was sponsored by the U.S. Department of Energy's Office of Science Biological and Environmental Research Program under contract DE-AC-00OR22725 with Oak Ridge National Laboratory, managed by UT-Battelle, LLC.

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carbon sequestration, soil nitrogen availability, effects of land cover and topography, statistics of soil carbon measurement