Soil Carbon Changes after Pasture to Forest Conversion in tropical Ecuador. (S05-dekoning112252-Oral)

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Abstract:

The potential of forestry projects for carbon sequestration in tropical Ecuador was evaluated. Two forest systems were considered: secondary forests and laurel (Cordia alliodora) plantations. In 40 selected sites, changes of soil organic carbon (SOC) after pasture to forest conversion were analysed by means of paired comparisons. SOC changes depended on soil characteristics, especially soil mineralogy. The most dominant factor however, was pasture age. Compared to young pastures, forests generally have less SOC. Compared to pastures older than 20 years, which are generally degraded, forests have up to 15 Mg/ha more SOC. Higher mineralisation rates in pastures play an important role. 13C isotope analyses indicated rapid decay of forests SOC in pastures, and pasture SOC in forests, and allowed for estimation of stable and labile SOC fractions. The data were used in an economic analysis with which costs of carbon sequestration projects were calculated. Costs depend mainly on physical site characteristics and opportunity costs. With proper site selection, SOC increase after pasture to forest conversion can significantly reduce costs.

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