Mitigating Global Warming Through Soil Carbon Sequestration. (S11-lal133053-Oral)

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Abstract:

Soils of agricultural and forestry ecosystems now contain less carbon (C) than their potential capacity because of historic losses of soil organic carbon (SOC) caused by inappropriate land use and soil mismanagement with attendant depletion of SOC by erosion, mineralization and leaching. The SOC pool can be increased by enhancing SOC density, increasing depth distribution, and improving aggregation through conversion of plow till to conservation tillage with cover crops, use of integrated nutrient management and manuring, elimination of summer fallow, restoration of degraded soils, controlled grazing and improved pastures, and recommended methods of tree establishment. The gross SOC sequestration potential of the U.S. is 121 to 303 Tg C/yr for 25 to 50 years. The strategy of SOC sequestration, a voluntary alternative to the Kyoto Protocol for educing emissions of greenhouse gases, is a truly win-win strategy. In addition to being a cost-effective option, it is also a bridge to the future. While improving soil quality and reducing the rate of enrichment of atmospheric concentration of CO2, it buys us time during which alternatives to fossil fuel take effect.

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