Evaluation of Methods for Measuring Soil Carbon in Developing Countries. (S05-mccarty090830-Oral)

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Abstract:

With increasing interests in implementing projects within developing countries for sequestering carbon dioxide as soil C, there is need for methods that accurately measure soil C. Various indirect methods have been recommended for measuring soil C but more evaluation is necessary for the needs of accuracy in project monitoring. Infrastructure limitations in developing countries further restrict analytical options for within-country monitoring of soil C. Indirect methods for measuring soil C such as dichromate oxidation, loss-on-ignition (LOI), diffuse reflectance infrared spectroscopy hold advantages in being simple and/or rapid but ultimately they need to be evaluated against direct elemental analysis by combustion. Evaluation of these indirect methods to C by combustion for soil C measurement included comparisons on a set of diverse soils (1.2 - 7.7 g C / kg soil) collected from Mali in West Africa. Results showed that both dichromate oxidation and LOI were inaccurate for C determination. In contrast, accurate calibrations for soil C could be developed using infrared spectroscopy indicating that this approach holds promise as a technology for rapid soil C monitoring.

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