Bioavailability and Chemical Characterization of Soil Organic Matter in Arctic Soils. (S03-dai111636-Poster)

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Abstract:

The purpose of this study was to evaluate bioavailability and chemical characteristics of soil organic matter (SOM) in Arctic tundra soils. Laboratory incubation method was used to determine CO2 evolution from the soils. The cumulative CO2 respired from the samples during the incubation period was used as index of bioavailability of SOM. Cross Polarization Magic-Angle-Spinning (CPMAS) 13C NMR and pyrolysis-gas chromatography/mass spectrometry (Py-GC/MS) techniques were used to characterize SOM. The laboratory incubation study indicated that temperature had a positive effect on the CO2 evolution from these samples, and the tundra soils would have higher potential to contribute to greenhouse gas emissions with elevated temperature. CPMAS 13CNMR and Py-GC/MS exhibited great potential for evaluating the relative quality of SOM. Together with the laboratory incubation method, these techniques can be used to identify the chemical composition of SOM, and to establish correlations between the chemical composition and bioavailability of SOM.

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