Changes in Soil Organic Matter and Biogenic Gas Production after Plowing a Soil under Long-term No-till. (S03-gregorich215318-Poster)

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Abstract:

No-till concentrates organic matter near the soil surface and has been suggested as a practice to improve soil quality and increase C sequestration. The objective of this study was to evaluate the effects of plowing a no-till soil on soil organic matter levels and biogenic gas production. Field plots that had been under no-till for 10 yr and cropped to continuous maize, continuous soybeans, or maize/wheat/soybean rotation were either plowed or left under no-till. Soil C was measured prior to, and 5 months after, plowing. Surface CO2 fluxes were measured through the summer in both the plowed and the no-till plots. Soil temperature and volumetric water and O2 content were monitored continuously at 5-, 10-, 20-, and 30-cm depths in the soil profile, and soil air N2O, CO2, CH4, and O2 concentrations were measured weekly at 10-, 20-, and 30-cm

depths. Concentrations of N2O and CO2 increased with depth in the profile and were highest under continuous maize and no-till. Later in the season there was a noticeable increase in N2O concentrations and in the variability of the N2O measurements. Surface CO2 fluxes and changes in soil C will be discussed.

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Presentation Information:

Presentation Date: Tuesday, November 12, 2002
Presentation Time: 10:00 am-12:00 pm
Poster Board Number: 1918

Keywords:

soil organic matter, biogenic gases, no-till, tillage