Methane Oxidation in Agricultural Soils: A Comparison Between Conventional and Organic Cropping Systems. (S11-suwanwaree113444-Poster)

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Abstract:

Methane oxidation in soils is a small but significant sink of atmospheric methane; previous work has shown oxidation to be lower in agricultural than in native forest or prairie soils. We examined methane oxidation in two corn-soybean-wheat cropping systems in southwest Michigan, one managed organically with compost vs. one managed conventionally. Fluxes were measured once (non-growing season) or twice (growing season) per month with static chambers, and daily oxidation rates ranged from -4 to 10 ug CH4-C/m2/h (negative fluxes indicate methane production, which occurred in some soils following heavy rainfall.) Overall we found little difference in overall oxidation rates between the two management systems, but rates of methane uptake varied by crop and season. Uptake rates were highest during the wheat portion of both rotations, during which uptake did not much vary seasonally. Average uptake was lowest in soybeans, owing mainly to very low uptake in midsummer. Seasonal differences in oxidation rates may be related to differences in soil nitrogen availability.

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Presentation Information:

Presentation Date: Tuesday, November 12, 2002 Presentation Time: 2:00-4:00 pm Poster Board Number: 2219

Keywords:

methane oxidation, greenhouse gas, conventional and organic agriculture