Stimulation of Greenhouse Gas Production from Agricultural Fumigants. (A03-spokas162100-Oral)

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Abstract:

Methyl bromide, the most widely used agricultural fumigant, is scheduled for a complete phase out in developed countries by 2005 under the Montreal Protocol due to the ozone depleting characteristics. Therefore, alternatives to methyl bromide have been actively researched. Two of the successful replacements have been chloropicrin and metam-sodium in terms of pathogen efficacy control. The purpose of this research project is to examine the overall greenhouse gas fluxes in the field and in laboratory incubations to attempt to quantify the effect of different treatment strategies (water versus plastic seal) as well as two different replacement fumigants (chloropicrin and metam-sodium) on the eventual greenhouse gas emissions. Maximum production rates seen in laboratory incubations following fumigation have been 1.80 mg CO2/kg_soil/hour and 104 ug N2O/ kg_soil/ day. These rates represent a 360% increase for CO2 and a 5200% increase for N2O over non-fumigated basal respiration rates. These laboratory results will be compared to field flux values taken from a recent fumigation research study in Hayward, Wisconsin.

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