Atmospheric Emissions of Fumigants Applied via Drip Irrigation. (S11-papiernik225742-Oral)

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Abstract:

Because of their effects of human and environmenal health, reducing volatilization of fumigant compounds following soil fumigation is important for their continued use. In these outdoor experiments, several fumigant compounds were injected by subsurface drip irrigation into a bedded soil configuration. Emissions from the bed top, side, and furrow were monitored for 7-10 days. Results indicated that total emissions were reduced by increasing the depth of application and tarping the soil surface with impermeable plastic. Surface application of ammonium thiosulfate, which reacts abiotically with halogenated fumigant compounds, reduced emissions of halogenated fumigants (1,3-dichloropropene and propargyl bromide), but not of a non-halogenated compound (methyl isothiocyanate). Other drip irrigation parameters, including emitter spacing and single vs. double drip lines had a smaller or insignificant impact on fumigant emissions. The depth of application and surface tarping also affected other emissions parameters, including the time and intensity of maximum flux and the proportion of total volatilization occurring through the bed top, side, and furrow.

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