New N Mineralization Factors for Estimating Plant-Available N in Biosolids. (S11-jacobs110034-Poster)

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Abstract:

Computer simulation was combined with laboratory and field research to characterize the amount of plant available N (PAN) released by mineralization when biosolids are land applied. In the laboratory, biosolids were incubated in soil collected from land application sites established in Arkansas, Michigan, Virginia and Washington. No relationships between the biosolids treatment process and decomposability were found except for composted biosolids and biosolids stored in lagoons for an extended time, which had much slower decomposition. Biosolids application rates at the field sites had a mean value of 10.6 Mg ha-1 (dry basis), and a relationship between fertilizer N rate and crop response was used to estimate observed PAN. Predicted PAN using the computer model, DECOMPOSITION, actual growing season weather, actual analytical data, and laboratory decomposition kinetics compared well with observed PAN. GIS maps of the U.S. based on average weather at 140 U.S. locations show the expected mineralized PAN released during the 1st, 2nd, 3rd and 4th growing seasons following biosolids application.

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Presentation Information:

Presentation Date: Tuesday, November 12, 2002
Presentation Time: 9:00-11:00 am
Poster Board Number: 2332

Keywords:

biosolids, N mineralization, PAN