Nitrogen Fertilization Effects on Yield and Simulated Nitrogen Budgets. (S06-strock105020-Oral)

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Abstract:

Long-term experiments, where management and climatic interactions are expressed over time, provide an opportunity for evaluating sources of yield variation. This project was conducted to evaluate the factors influencing corn yield variability and nitrogen budget for continuous corn. An experiment to evaluate nitrogen source, time of application, and rate for continuous corn was initiated in 1960 at the Southwest Research and Outreach Center, Lamberton, MN on a Normania loam soil (fine-loamy, mixed, mesic Aquic Haplustoll). Preliminary results suggest that nitrogen treatments accounted for less than 20% of corn yield variability while soil and climatic variables accounted for more than 80% of corn yield variation. The process-oriented computer simulation model NCSWAP was used to simulate nitrogen and carbon transformations, and the flow of water in the soil profile from 1986 to 1995. The results of such modeling have potential benefits for making nitrogen fertilizer recommendations to farmers or to provide predications of likely environmental effects given a specific set of soil conditions, management practices, and climatic conditions.

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