Site-Specific Nitrogen Management Zones: Utilization of Yield Map and Soil Properties. (S08-hornung114459-Oral)

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Abstract:

Site-specific Management Zones (SSMZ) has shown to account for soil's spatial variability, improve nitrogen (N) management, and reduce potential environmental degradation. A new technique of delineating SSMZ was developed and evaluated on two irrigated continuous maize (Zea mays L.) sites in northeastern Colorado during 2001. The objectives of this study were: (i) determine the effectiveness of the new SSMZ technique in managing in-field variability via variable rate nitrogen application, and (ii) compare the new SSMZ method to an existing Soil Color Management Zones (SCMZ) technique. The SSMZ approach was delineated based on: 1) bare-soil imagery, 2) soil organic matter, 3) cation exchange capacity, 4) soil texture, and 5) previous years yield map. The SCMZ method is based on: 1) bare-soil imagery, 2) field topography, and 3) farmer's management experiences. The two management zone approaches were compared to a grid soil sampling N application and two uniform N rates. Spatial statistical methods are being used to arbitrate treatment differences on grain yield, biomass, and nitrogen use efficiency. Results and conclusions of the study will be discussed at the ASA meeting.

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Presentation Information:

Presentation Date: Wednesday, November 13, 2002
Presentation Time: 3:15 pm

Keywords:
Precision Agriculture, Managment Zones, Variable N Application, Yield Monitor Data