Evaluating Nitrate Leaching Characteristics for various Nitrogen Management Strategies on Irrigated Corn along the Lower Arkansas River, Kansas. (S04-gehl165635-Oral)

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Abstract:

Leaching of nitrates to groundwater is an environmental concern on irrigated alluvial and aeolian soils in the Great Plains. Field experiments were conducted at seven irrigated corn (Zea mays L.) locations in Kansas to evaluate the effects of fertilizer and water management on nitrate leaching and grain yield. An investigation of N flux under two water application rates was conducted at one location. Treatments were arranged in a randomized complete block design and included a control; 125, 185, and 250 kg N/ha (split applications); and 250 and 300 kg N/ha (applied at planting). Tensiometers were installed at depths of 30, 135, and 165 cm. Solution samplers were installed at 150 cm depth. Soil samples were collected at planting, at the V6 growth stage, and post-harvest. Water samples were collected throughout the growing season. Maximum grain yield was achieved with N rates generally less than currently recommended, especially at higheryielding sites. Additional irrigation contributed considerably to N leaching, and post-harvest soil NO3-N (10 mg/kg) was not indicative of N leaching. Continual downward water flux moved NO3-N below the root zone during the growing season.

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