

A SEED COMPANY PERSPECTIVE ON USE OF CROP CANOPY SENSORS FOR MAKING CORN NITROGEN FERTILIZER RECOMMENDATIONS

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Abstract

Current nitrogen (N) management practices for corn production typically include significant quantities (e.g., 200 to 250 lbs/A) of pre-plant applied N at field-uniform rates. These conventional practices can sometimes result in sizeable N fertilizer losses, especially in extremely wet springs in the Corn Belt. The lost N not only reduces grower profits through lost fertilizer and reduced yields in N deficient areas, but can also lead to environmental contamination through nitrate leaching or greenhouse gaseous losses. Risk of N losses has prompted growers to consider alternative N management strategies for improving N use efficiency (NUE), including use of recently developed crop sensor technologies for assessing crop N status and directing on-the-go and spatially-variable in-season N applications. Research results suggest this approach may allow growers to not only maximize yields and profitability, but enhance NUE and reduce potential for environmental degradation. Pioneer is interested in determining the potential value of crop sensor technologies to our customers, and how these tools may affect the performance of our various hybrid products. Current N recommendation procedures for crop sensors are not hybrid-specific. However, previous research suggests canopy reflectance readings as measured by crop sensors can differ significantly among corn hybrids, depending on soil N status and inherent hybrid chlorophyll content or canopy architecture. The goal of this presentation is to highlight these issues and suggest a need to conduct additional agronomic research to determine if crop sensor algorithms require additional adjustment to account for inherent hybrid differences so that yields are optimized for each hybrid.

PROCEEDINGS OF THE

40th

NORTH CENTRAL

EXTENSION-INDUSTRY

SOIL FERTILITY CONFERENCE

Volume 26

November 17-18, 2010
Holiday Inn Airport
Des Moines, IA

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Published by:

International Plant Nutrition Institute
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Web page: www.IPNI.net