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New publication offers rationale for nitrogen use in corn production

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New publication offers rationale for nitrogen use in corn production

Abstract

A new publication is available through Iowa State University Extension that explores a recently developed regional Corn Belt approach to nitrogen rate guidelines. *Concepts and Rationale for Regional Nitrogen Rate Guidelines for Corn* was developed jointly by soil fertility specialists from University of Illinois, Iowa State University (ISU), University of Minnesota, The Ohio State University, Purdue University, and University of Wisconsin.

Disciplines

Agricultural Education | Agricultural Science | Agriculture | Agronomy and Crop Sciences

Numerous factors enable fewer producers to get over their acreage earlier than ever before, while still only taking 6 to 8 weeks overall to plant. Wider planters coupled with more cold-stress tolerant hybrids, improved seed treatments, and reduced tillage systems have each contributed to this change. As producers farm more acreage, they must naturally start earlier if they want the majority of their corn planted around the optimum planting window for their region. This is based on the fact that producers face a larger yield reduction by planting too late rather than too early. The trend to earlier corn planting in Iowa does not appear to be slowing.

One wonders, though, how early we can plant corn and still achieve optimum yields. Recent planting date data from two ISU research and demonstration farms were presented in the March 13, 2006, issue of *ICM Newsletter*, (pages 61–62). Planting dates as early as mid- to late March were included. Yield potential was reduced at Nashua but not at Crawfordsville. Due to positive yield data like this, we expect to see earlier planting dates at least in some parts of Iowa in the future.

*Roger Elmore is a professor of agronomy with research and extension responsibilities in corn production.
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Announcements

New publication offers rationale for nitrogen use in corn production

by Jean McGuire, Iowa State University Extension Communications and Marketing

A new publication is available through ISU Extension that explores a recently developed regional Corn Belt approach to nitrogen rate guidelines.

Concepts and Rationale for Regional Nitrogen Rate Guidelines for Corn, was developed jointly by soil fertility specialists from University of Illinois, Iowa State University (ISU), University of Minnesota, The Ohio State University, Purdue University, and University of Wisconsin.

Using recent nitrogen (N) rate trial data from multiple states, this publication illustrates a suggested approach for developing corn N rate guidelines. The approach uses an economic evaluation of N application rates, called the maximum return to N (MRTN). The goal of the regional effort was not to develop one N rate recommendation for the region, but rather to explain the science behind corn N use and fertilization requirements, and develop an approach to N guidelines that could provide more consistency between states.

“This publication is targeted for agronomists, crop consultants, and agency personnel, but producers should also find it interesting,” said John Sawyer, ISU Extension soil fertility specialist and co-author of the publication.



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“The timing of this publication is important because of the uncertainty in appropriate rates due to historically high N prices. While economic return to N application has been a part of N rate recommendations, this publication brings a timely focus back to that question,” said Sawyer.

The publication primarily deals with N use in rain-fed conditions, with corn following soybean and continuous corn. The publication also addresses the question of determining N rates with ever-increasing corn yields. Instead of relying on yield goal, this publication outlines an approach that uses yield increase to N application and determines maximum economic return. Nitrogen application rate is critical because it improves corn yield dramatically but also is one of the largest corn production expenses.

Another outcome of the regional effort is a Web-based tool called the *Corn Nitrogen Rate Calculator*. Producers in Illinois, Iowa, Minnesota, and Wisconsin can use this tool to calculate the MRTN rate, profitable N rate range, net return, percentage of maximum yield, and other information directly from N response trial databases for each respective state. The calculator is located at <http://extension.agron.iastate.edu/soilfertility/nrate>.

Copies of the publication may be ordered through any ISU county extension office, on the Web through the ISU Extension Distribution Center at www.extension.iastate.edu/store or by calling (515) 294-5247. An electronic copy of this publication is available at www.extension.iastate.edu/Publications/2015.pdf.

Jean McGuire is a communications specialist with responsibilities for agriculture and natural resources extension.

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