

Partnership Matters

ISU Research and Extension

PARTNER
IOWA STATE UNIVERSITY
CORN AND SOYBEAN
INITIATIVE

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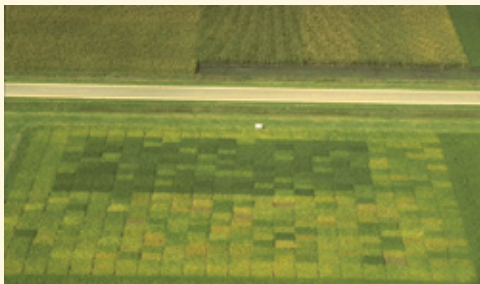
RESEARCH BRIEF —

Resist the cyst

What's new. The soybean cyst nematode (SCN) is a microscopic, parasitic worm that feeds on soybean roots and was first discovered in Iowa nearly 30 years ago. Once discovered, management of SCN is accomplished primarily through use of SCN-resistant soybean varieties in rotation with nonhost crops, such as corn. In the late 1980s, SCN caused extensive yield reduction to soybean throughout the state. It has been several years since widespread devastating losses from SCN have occurred in Iowa. But in recent years, several areas of Iowa have experienced severe losses from SCN, sparking renewed interest in evaluation and comparison of SCN-resistant soybean varieties.

ISU research. Since 1990, ISU nematologist Greg Tylka and his research staff have been evaluating public and private SCN-resistant soybean varieties for agronomic performance and nematode control at multiple locations throughout Iowa.

The work is funded by ISU and the Iowa Soybean Association as well as by fees paid by companies entering varieties into the trials. The ISU SCN-resistant Soybean Variety Trial



Field plots of SCN-resistant soybean varieties

Program is one of the few in the United States that assesses the nematode control offered by SCN-resistant soybean varieties in the field and is the only program that determines the SCN population density in each research plot at planting and again at harvest. Such detailed information about SCN population densities helps with understanding yield results and indicates the usefulness of varieties in managing the pest. SCN commonly occurs at very high population densities in soils with high pH (7.5 or greater). Therefore, the ISU SCN-resistant Soybean Variety Trial Program evaluates soybean varieties for reaction to iron-deficiency chlorosis, which is associated with high pH soils. Optimizing yield, maintaining performance on high pH soils, and suppressing SCN reproduction are critical for sustaining long-term productivity of soybeans in Iowa fields infested with SCN.

What's next. Research in the ISU SCN-resistant Soybean Variety Trial Program continues to provide comprehensive assessment of the agronomic performance, tolerance to iron-deficiency chlorosis, and control of SCN population densities of SCN-resistant soybean

—continued

RESEARCH BRIEF —

P and K in the zone

What's new. Phosphorus (P) and potassium (K) fertilizer placement and tillage are two considerations for producers in search of more profit. Using different tillage systems changes the physical root environment over time, and in many conservation tillage systems, crop residue, P and K can all become stratified—not mixing well throughout the root zone.

ISU research. These issues have been studied since the mid-1990s. Dozens of field trials have been established in many counties to study P and K stratification in soils and the response of corn and soybean to fertilizer placement methods. The trials included evaluation of broadcast, planter- and deep-band fertilizer placement methods for no-till, ridge-till and chisel-plow/disk tillage systems using granulated or fluid fertilizers. Five experiments have been evaluated continually for 12 years.

Results. Recent findings confirm earlier data used to establish the ISU general guidelines for P and K placement published in extension publication PM 1688 (2003) and the *Integrated Crop Management* newsletter. There is considerable P and K stratification in soils, especially in fields with long histories of no-till management but also when chisel-plowed. In no-till, broadcast P and K tend to accumulate within the top 2 or 3 inches of soil while with chisel-plow tillage, they accumulate in the top 4 or 5 inches. Results show that the currently recommended 6-inch

sampling depth is appropriate for all tillage systems and that a different sampling depth does not consistently improve the value of soil testing; benefits of sampling and analyzing soil from multiple depths do not offset the extra costs. Yield data show that nutrient stratification seldom is a problem with broadcast P but can be a problem



Residue on the soil surface with no-till

with broadcast K under no-till and ridge-till management, although the benefit of deep-K placement (at 5- to 7-inch depths) is greater and more consistent with ridge-till. Deep-K banding every second year works as well as annual applications, and benefits are often gained even with deep banding every fourth year. These results confirm the value of local research because in other regions of the United States with less productive soils more costly sampling and fertilizer placement methods may be needed.

—continued

Resist the cyst, *continued*—

varieties for Iowa soybean growers and agribusinesses. In 2006, there are nine experimental locations, three each in northern, central, and southern Iowa. Recent upgrades in harvest equipment will speed completion of end-of-season data collection, and complete results will be available in December. A report of the results of the 2006 ISU SCN-resistant soybean variety trials will be sent directly to partners of the ISU Corn and Soybean Initiative in December 2006 and also will be disseminated to Iowa soybean growers through major agricultural print media.

Learn more. The results of the ISU SCN-resistant soybean variety trials are available on the Internet at www.isuscnavarietytrials.info. This website contains individualized reports of the most recent year's results by district (northern, central, and southern Iowa) as well as comprehensive, annual reports of all results since 1996. Visitors to the site can request copies of the results be sent to them via e-mail, and forms are available for seed company representatives to enter varieties into future trials. For specific question about the trials, contact Greg Gebhart (515-294-5896, ggebhart@iastate.edu) or Greg Tylka (515-294-3021, gtlylka@iastate.edu).

P and K in the zone, *continued*—

What's next. One project that began last year compares broadcast P fertilization on no-till corn and soybean and studies the potential for P runoff losses. Another project will begin in 2007 to focus on effects of in-furrow, starter-K fertilization with or without broadcast K fertilization for corn. These new experiments, coupled with intensive soil sampling for P and K, together with other projects (such as the ongoing Corn and Soybean Initiative Potassium Project) should provide additional information to better understand the issues and improve P and K management for corn and soybean in Iowa.

Learn more. The nutrient recommendations are available from extension publication PM 1688, downloadable at <http://www.extension.iastate.edu/Publications/PM1688.pdf>.

ISU PROFILE —

Kyle Jensen

Extension field crops specialist,
southwest Iowa

Origin

Neola, Iowa (Pottawattamie County)

Training

- M.S., Soil Science (Soil Fertility), Iowa State University, 2003
- B.S., Agronomy, Iowa State University, 2000

At ISU

- Extension field crops specialist, August 2006–present
- Research assistant, January 2001–December 2003

Notable achievements

- Have been an Iowa Certified Crop Adviser since 2005
- Conducted extensive research work using swine manure and nitrification inhibitors in crop production
- Have private-sector experience, working with producers on new topics and problems/concerns with crop production in southwest Iowa as agronomist/operations manager, Underwood Farms Supply, January 2001–August 2006

Personal

- Enjoy spending countless hours working on the family farm in crop and livestock production
- Have avid interest in many outdoor activities

Quotable quote

“The earth's moon is more than 200,000 miles away, and the earth's soil is less than an inch below our feet. Still, we know a lot about the moon and very little about one of our most important resources that is just below us.”



IMPORTANT ISU DATES —

Agribusiness Education Program (fall and winter)

Integrated Crop Management Conference and Expo (Ames)..... November 29 and 30

2006 Agricultural Chemical Dealer Update meetings

Iowa City.....	November 21
Calmar, Waterloo.....	December 4
Ames.....	December 6
Mason City.....	December 7
Spencer.....	December 8
Denison, Lewis.....	December 18
Osceola.....	December 19

Prep course, Certified Crop Advisers Exam.....January 22 and 23

2007 winter crop schools (all in Ames)

Soil Fertility.....	February 6 and 7
Forages.....	February 12
Soil and Water Management.....	February 14 and 15
Alfalfa.....	February 19
Corn.....	February 20 and 21
Herbicide Physiology.....	February 22
Soybean Production.....	February 27 and 28

For more information, see www.aep.iastate.edu.

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... and justice for all

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