

Partnership Matters

PARTNER
IOWA STATE UNIVERSITY
CORN AND SOYBEAN
INITIATIVE

January 2006

RESEARCH BRIEF —

A look at double trouble

What's new. Soybean cyst nematode has spread throughout much of Iowa during the past 25 years. Left unmanaged, this nematode pest can reduce soybean yields by 50 percent. Similarly, during the past 5 years, the soybean aphid has spread and become a serious yield-reducing pest of soybeans in Iowa. The soybean aphid may decrease soybean yields by 30 percent or more if damaging infestations are not managed. Because both soybean aphid and the soybean cyst nematode are widespread in Iowa, knowledge of how they affect each other and interact to affect the soybean crop is needed. It is possible that soybean aphid infestations and resulting yield loss will be intensified by infection of host soybean plants with the soybean cyst nematode.

ISU research. A three-year research project, funded by soybean checkoff dollars through the Iowa Soybean Association, was started in late 2005 by ISU entomologist Matt O'Neal and nematologists Felicitas Avendano and Greg Tylka. The research goals are to:

- determine how soybean cyst nematode and soybean aphid affect development and reproduction of each other
- assess how the interaction of the two pests affects soybean yield losses
- determine whether management recommendations need to be altered based on the interaction of the two pests



Felicitas Avendano checks a soybean plant in a growth-chamber experiment.

Initially, growth-chamber and greenhouse experiments will be conducted to determine the basic aspects of the interaction of the soybean aphid and soybean cyst nematode on various soybean varieties. Field experiments will then be conducted to provide information about the interaction of the soybean aphid and soybean cyst nematode under the naturally occurring environmental conditions. The outcome

of this work will include information about how growers should manage the combined threat of soybean cyst nematode and soybean aphid.

What's next. During the summer of 2006, the interaction between the soybean aphid and soybean cyst nematode and the impact of these two pests combined on soybean will be established. To determine

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RESEARCH BRIEF —

Redefining soybean production guidelines

What's new. It is widely known that successful weed management is an important practice for economical soybean production. Significant questions about the management of this group of pests still persist and new questions have arisen from changes in weed management practices that have ensued from the wide use of genetically modified soybean varieties. Additionally, soybean cyst nematode (SCN) populations have been on the increase over the past 15 years, impacting soybean yields, even when visual injury is not obvious. Therefore, by investigating the interactions of weed management programs, SCN population levels and environmental factors, researchers at Iowa State University believe they can lessen the negative economic impact of these pests through the development of better-defined soybean production guidelines.

ISU research. Three ISU Extension specialists, Mike Owen (Department of Agronomy), Greg Tylka (Department of Plant Pathology) and Palle Pedersen (Department of Agronomy), in a collaborative effort, are combining their expertise. They are focusing on providing growers with knowledge that will allow more economically efficient and higher soybean production. From their integrated research, funded by soybean checkoff dollars from the Iowa Soybean Association, they are looking at providing production information describing the impact of weeds, herbicides, SCN, and secondary pests and pathogens (if present) on soybean production. The impact of pest complexes and management strategies on grain quality also will be determined. Research was initiated in 2004 and will be conducted in Iowa for three seasons on 10 grower fields each year. The research will provide answers about the interactions of environmental conditions,

—continued



Research is ongoing at the Iowa State University Curtiss Farm in Ames.

A look at double trouble, *continued*—

how environmental conditions affect the interactions between these pest, the studies will be repeated during 2007 and 2008. Additionally, experiments in the second and third years of the project will be expanded to investigate how the timing and varying abundance of soybean aphids might affect soybean growth and yield when plants are also suffering from SCN damage.

Learn more. Results of the research, new information and possibly modified management recommendations will be delivered directly to Iowa soybean growers at field days and grower meetings offered by ISU Extension. The results also will be disseminated to the agricultural press and provided to industry partners of the Iowa State University Corn and Soybean Initiative.

ISU PROFILE —



Joel DeJong

Extension field crop specialist, northwest Iowa

Origin

Grew up on a Sioux County crop and livestock farm (between Maurice and Orange City)

Training

- Masters of Professional Agriculture with a focus on soil fertility, Iowa State University, 1988
- BS, Ag Business, Iowa State University, 1980
- Certified Crop Adviser

At ISU

- Has served Iowa State University Extension for 24 years
- Responsible for improving profitability and reducing risk for crop producers in northwest Iowa
- Crop specialist, 1992–present
- Agriculturist and county extension director, Woodbury County, 1985–1992; Adair County, 1981–1985

Notable achievements

- Current co-chair, Crop Advantage Series planning committee
- Outstanding Service to Agriculture Award, LeMars Chamber of Commerce, 2005
- Excellence in Ag Extension Programs—Crops, 2002
- National Association of County Agricultural Agents Distinguished Service Award, 1999

Personal

- Wife Lorraine, a 6th grade teacher, and two daughters, Kaitlin and Mackenzie
- Enjoy boating on Lake Okoboji with my family
- Raise sheep and goats for 4-H livestock projects with my children

Quotable quote

“Going to Brazil in February 2005 was an eye-opening trip just to see how competitive producers in that country can be. I was amazed that 99 percent of the soybeans we saw were no-tilled. I think they recognized what most research here has shown—that soybeans really don’t care what tillage system they are in—they yield the same. The Brazilians know that no-tilled beans work, and they make more money by using that system. That is just one area where we need to look at improving what we do to stay competitive.”

Redefining soybean production guidelines, *continued*—

soil characteristics, weed management tactics and SCN population densities on soybean yields. Specific research objectives will be to determine in grower fields:

- the impact of SCN on soybean yield in response to soil characteristics
- if SCN and herbicide tactics interact, ultimately affecting soybean yield
- how different herbicide strategies affect weed populations
- the herbicide application tactic (timing and application frequency) that represents the least risk for effective weed control
- if herbicide injury significantly affects soybean yield parameters

What’s next. Experiments have been concluded for the 2005 season and the data are being analyzed. After the 2006 season, the cumulative data from the three-year project will be analyzed and production recommendations for a variety of conditions will be developed and released to the public.

Learn more. Data will be presented at extension winter meetings and in the *ICM Newsletter*.

ISU BY THE NUMBERS —



Iowa Manure Management Action Group (IMMAG)

Number of organizations supporting program	_____	18
Most website hits in one year (2001)	_____	1,038,342
Most visitors in one year (2004)	_____	62,417
Average length in minutes of each website visit	_____	12
Number of countries represented by visitors to website	_____	102
Number of people who work on the website	_____	2
Number of readers who receive monthly IMMAG e-mail newsletter	_____	800

For more information, visit <http://extension.agron.iastate.edu/immag/>

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To learn more about the Corn and Soybean Initiative contact

Greg Tylka	gtylka@iastate.edu	515-294-3021
Malcolm Robertson	malcolmr@iastate.edu	515-294-7192
Rich Pope	ropope@iastate.edu	515-294-5899

For questions or comments about the newsletter, contact

Keven Arrowsmith	karrows@iastate.edu	515-294-2405
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... and justice for all

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