



PARTNER
IOWA STATE UNIVERSITY
CORN AND SOYBEAN
INITIATIVE

Partnership Matters

ISU Research and Extension

July 2006

RESEARCH BRIEF —

Soybean plants sensitive to fungicide

What's new. Production practices for soybean growers have been evolving with the advent of herbicide-tolerant cultivars, the emergence of insect pests like bean leaf beetles and soybean aphids and now the risk of soybean rust. Never before has widespread soybean acreage in Iowa been sprayed with foliar fungicides. Available fungicides for management of soybean rust include QoI fungicides (strobilurins) and triazoles. Phytotoxicity will occasionally occur when spraying one of the triazole fungicides, tebuconazole, during hot and dry conditions and the addition of surfactants will increase symptoms. Also, there seems to be a varietal difference; a study at the University of Illinois suggests that approximately 25 percent of cultivars are susceptible to this phytotoxicity. The symptoms of tebuconazole phytotoxicity are very similar to sudden death syndrome (SDS) and brown stem rot (BSR) foliar symptoms (yellowing and browning between the veins). However, symptoms of tebuconazole phytotoxicity will be more uniform across the field than either SDS or BSR, which occur in irregular patches.

ISU research. For the past few years, ISU agronomist Palle Pedersen and plant pathologists Alison Robertson and X.B. Yang have conducted field experiments across Iowa to evaluate fungicides and their effect on soybean diseases and yield. This season, ISU Extension plant pathologist Daren Mueller, in collaboration with scientists at two other universities, is conducting field experiments to determine if there is yield loss associated with tebuconazole injury. The cultivars used in the 2006 field experiments possess differing levels of tebuconazole sensitivity, based on data from an experiment in Illinois in 2005.

—continued



Tebuconazole injury to soybean plants

RESEARCH BRIEF —

Variant corn rootworms

What's new. Corn rootworm has been considered the most economically important pest of corn in Iowa since the 1950s. Crop rotation has been an effective rootworm control tactic in Iowa because most eggs laid in corn fields resulted in larval hatch in soybean, where young larvae find no suitable host and die.

During the past decade, two variant types of corn rootworms have appeared that can reproduce within the corn-soybean rotation. The first is "extended diapause" northern corn rootworm. Extended diapause means that instead of larvae hatching the year following egg laying, at least some of the hatch is delayed to the second year when the field is rotated back to corn. Extended diapause northern corn rootworm was first reported in northwest Iowa but now has been found in most areas of the state.

In the late 1990s, entomologists in Illinois documented a strain of western corn rootworm that laid eggs in soybean. The eggs hatched the next spring when the field was back in first-year corn. Populations of this variant have now been reported in eastern Iowa.

ISU research. In 2005, a survey was conducted to determine the presence or absence of the western corn rootworm variant and extended diapause northern corn rootworms in eight eastern Iowa counties (Delaware, Dubuque, Jones, Jackson, Cedar, Clinton, Scott and Muscatine).



Evaluating root damage, a key to corn rootworm research

Emergence traps were placed in 19 first-year corn fields; sticky traps were placed in 14 rotated soybean fields; and roots were evaluated from nine first-year corn fields. Extended diapause northern corn rootworms were present in all counties surveyed and variant western corn rootworms were present in seven of eight counties. However, the populations were not likely large enough to cause economic damage to corn planted in 2006. In 2006, this monitoring program expanded to include 14 counties extending from Clayton County on the north to Lee County in the south and extending 2–3 counties west from the Mississippi River. These data will give a better indication of how widespread rotation-resistant rootworms are.

—continued

Soybean plants sensitive to fungicide, *continued*—

When conditions become favorable for tebuconazole phytotoxicity to occur, the plots will be sprayed with labeled rates of tebuconazole plus a surfactant. Data will be collected on disease presence before and after fungicide application, levels of injury due to the fungicide and yield.

What's next. There has been no need to apply tebuconazole on soybean in Iowa, but if soybean rust arrives, tebuconazole may be widely used, and thus, the associated injury may become an issue. Currently, it is not known if tebuconazole phytotoxicity affects soybean yield, but data from these field experiments will reveal if there is a yield reduction and how prevalent the damage is among soybean cultivars.

Learn more. For more information on fungicide use for management of soybean rust, go to www.soybeanrust.info.

Variant corn rootworms, *continued*—

What's next. Reports of high numbers of northern corn rootworm beetles in soybean in 2005 raised the question, are northern corn rootworms laying eggs in soybean like the variant western corn rootworm? If yes, this would be a significant shift in the biology of the northern corn rootworm. To answer this question, emergence cages were placed in nine corn fields across Iowa that have not been planted to corn for at least three years (for example, soybean for three years prior to corn or alfalfa and soybean multiple years then corn). Soil samples will be taken from rotated soybean fields at three times during the season to determine if egg laying is occurring there. In addition to emergence traps and soil sampling, sticky cards will be placed in the soybean fields in August to monitor adult activity.

Learn more. If you would like more information about the western corn rootworm variant or to learn how to monitor for the variant in soybean fields, see the University of Illinois western corn rootworm website at www.ipm.uiuc.edu/fieldcrops/insects/western_corn_rootworm.

For questions about the ISU research results from the studies described above contact Patricia Prasifka at Iowa State University's Department of Entomology, 515-294-9346, anderpl@iastate.edu.

ISU PROFILE —

Brian Lang

Extension field crops specialist, northeast Iowa



Origin

Wisconsin

Training

- B.S., agronomy and soil science, University of Wisconsin, 1980
- Agronomist with Midland Cooperatives, Easton, MN, and Beaver Dam, WI, 1980–1983
- M.S., agronomy, University of Wisconsin, 1985
Thesis research covered studies on the effects of potassium fertility on alfalfa and red clover.

At ISU

- ISU Extension crop specialist, 1990–Present
Develop and conduct row crop, forage and pasture management extension program for ISU Extension in Howard, Chickasaw, Winneshiek, Fayette, Buchanan, Allamakee, Clayton, Delaware and Dubuque counties
- ISU Extension associate—forage specialist, 1989

Notable achievements

- Began a weekly crop update informational e-mail 16 years ago, called *Crop Notes*, which now reaches nearly a thousand farmers, agricultural providers and media sources in northeast Iowa
- Initiated research and dissemination of information on soybean aphid in 2001 when first discovered to be a serious pest in northeast Iowa
- Initiated research and dissemination of information on sulfur deficiency in alfalfa with farmers in northeast Iowa improving net returns by an average of \$50 per acre

Personal

- Enjoy attending an auction now and then, doing a little antiques
- Have strong horticultural interests, but time doesn't allow for pursuing them as much as desired

Quotable quote

“Work like spending hour after hour in fields counting aphids may not be the most fun time, but it is important work, so as a popular comedian would say, ‘git'er done!’”

Partnership Matters is published electronically once a month for partners of the Corn and Soybean Initiative, with funding from the College of Agriculture and support from Iowa State University Extension. Brian Meyer, College of Agriculture, is executive editor of *Partnership Matters*; Keven Arrowsmith, Extension Communications and Marketing, is managing editor; and Donna Halloum, Information Technology Services, Iowa State University, is production designer.

To learn more about the Corn and Soybean Initiative contact

Greg Tylka gtylka@iastate.edu 515-294-3021
Rich Pope ropope@iastate.edu 515-294-5899

For questions or comments about the newsletter, contact

Keven Arrowsmith karrows@iastate.edu 515-294-2405

... and justice for all

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or family status. (Not all prohibited bases apply to all programs.) Many materials can be made available in alternative formats for ADA clients. To file a complaint of discrimination, write USDA, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call 202-720-5964.

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Jack M. Payne, director, Cooperative Extension Service, Iowa State University of Science and Technology, Ames, Iowa.

ISU BY THE NUMBERS —



ISU western bean cutworm trapping network

United States Department of Agriculture, Iowa State University cooperating

Year initiated	2001
States with cooperators in first year	1
Cooperator traps monitored in first year	6
Cooperator traps monitored in 2006	362
States cooperating in 2006	8
Most moths captured, one trap season (2005).....	3,054
Economic threshold, percent plants with egg masses	8
Iowa counties reporting any trap captures (7-28-06).....	75
Iowa counties reporting no captures (as of 7-28-06).....	5

For more information, visit www.ent.iastate.edu/trap/westernbeancutworm.

For county level trap data click on “trap sites.”