Partnership Matters

ISU Research and Extension

February 2007

RESEARCH BRIEF—

Watching for the black cutworm

What's new. Black cutworm is occasionally an economic pest in some Iowa corn fields. The black cutworm is a model species for integrated pest management in Iowa because the dynamics of the insect's life cycle are well understood, including how it overwinters in Gulf Coast areas, moves northward on storm systems in the early spring, mates and lays eggs. By learning when they arrive, agriculturalists can apply weather data and effectively and efficiently target scouting efforts. Black cutworm egg and larval development is driven by the accumulation of heat units; by knowing when eggs are laid and then measuring accumulated heat units, agriculturalists can target when to scout so that populations can be discovered and monitored to avoid economic losses. Prime areas to scout include low, wet and weedy patches in corn fields. By scouting, the producer saves time and money because economically effective rescue insecticide treatments are only needed where the problem exists.

ISU research. Iowa State University Extension has coordinated an annual network of black-cutworm-specific pheromone traps across Iowa since the mid-1980s. From these traps, researchers can determine the spring arrival time of black cutworms in Iowa and then generate scouting forecasts that show where and when producers should be scouting for black cutworms. These data are reported by cooperators to the website **www.ent.iastate.edu/trap/blackcutworm**. Approximately ten days to two weeks prior to the projected start date of cutting by larvae in Iowa, ISU entomologists prepare and publish a forecast. Several factors that vary each year drive the infestation. These include how spring weather system movement assists the migration of moths to Iowa and then the success in mating and egg laying once they arrive. Knowing how the environment affects larval mortality and how heat accumulates ties directly to the development of the black cutworms, allowing for improved management.

A pheromone trap

—*continued*

RESEARCH BRIEF—

Understanding soybean diseases

What's new. Most fungal pathogens of soybean are native to Asia and have been introduced to the Midwest. Since 1924 when soybean was first grown in Iowa, pests have slowly followed. Introductions of a pathogen to the United States from just a few sources can mean it may have limited genetic ability to develop new races that can overcome resistance. Understanding the genetic variability of pathogens allows scientists to plan for and develop long-term management tools.

ISU research. Researchers with Tom Harrington's laboratory in the Department of Plant Pathology are identifying genetic diversity in fungal pathogens of soybean to determine if pathogen strains might differ in aggressiveness to soybean cultivars. Once races are identified, learning their distribution can help soybean growers know what type of resistance they might need in the soybeans they plant.

Results. Early efforts have centered on two fungi present in Iowa soybean fields, the fungi that cause brown stem rot, *Cadophora gregata,* and the foliar disease frogeye leaf spot, *Cercospora sojina.* For the brown stem rot pathogen, variation has been discovered in both the U.S. Midwest and in Japan. The presence of the aggressive and mild races in the Midwest appears to be from two separate introductions from different sources of fungus. Because only one mating type of the brown stem rot fungus has been found in the Midwest, it should not be capable of sexual reproduction and is therefore incapable of producing new races rapidly. Most areas of western and northwestern Iowa only have the mild race, and therefore may not need brown stem rot resistance. For frogeye leaf spot, there is only one year's data, and more work will follow. Initial screenings detected considerable variation in the pathogen, probably from multiple introductions to the Midwest. Because sexual reproduction is possible with these multiple genetic sources, development of new races seems likely. Work on determining the diversity within these species continues.

Frogeye leaf spot

—*continued*

Watching for the black cutworm, *continued*—

What's next. ISU integrated pest management specialists are currently organizing the network of cooperators. Cooperators are provided instructions on where and how to place the traps, are asked to count captured moths at least every other day in April and May and to report those results to the website. From these collected data, ISU entomologists produce timely forecasts for potential cutting and also develop educational materials for use by Iowa agriculturalists.

Learn more. The website mentioned earlier contains explanations to examine how data are collected and presented. In addition, individuals can explore an image gallery of black cutworms, including images to assist in adult and larval identification. Note that all the information currently presented is from the 2006 spring season, and it will be updated in late March to gather 2007 seasonal data. If you would like to participate as a trap cooperator or would like other information, contact Rich Pope at **ropope@iastate.edu** or call (515) 294-5899.

ISU BY THE NUMBERS—

Doug Cooper, Market News director

Extension Communications and Marketing: Market News Office

ISU (WOI) first transmission of agricultural market reports	1917
First Market News director at Iowa State University	1943
Number of Market News directors in ISU history	3
Number of daily live Market News reports, weekdays, 2007	14
Number of extension radio segments distributed on CD weekly	12–17
Number of Iowa radio stations that use the programming provided weekly	58
Agricultural commodity market reports publicly archived daily	14

For more information or to access audio files and podcasts, go to **www.extension.iastate.edu**, and click on "Markets" under extension information (lower left side of the page).

Understanding soybean diseases, *continued*—

What's next. The work will continue, funded by the North Central Soybean Research Program. The Harrington lab also is studying the genetic diversity of Asian soybean rust with funding from Iowa State University.

Learn more. For more information, contact Tom Harrington at (515) 294-0582.

ISU PROFILE—

Lori Abendroth

Extension agronomy specialist, corn production (2005–present)

Origin

- Omaha, Nebraska
- Attended school in Omaha but worked summers on the family farm in northeast Nebraska; had the unique opportunity to be raised in both worlds, city (by Midwest standards!) and country

Training

- M.S., agronomy (crop production and physiology), University of Nebraska, 2004
- B.S., agronomy, University of Nebraska, 2001

Extension positions/other experience (University of Nebraska–Lincoln)

- Research and extension associate, corn and soybean (2004–2005)
- Graduate research and teaching assistantships (2002–2004)

Notable achievements

- Authored or co-authored numerous extension articles, publications and scientific papers
- Developed and manage ISU Corn Extension website
- Gamma Sigma Delta (Honor Society of Agriculture)
- Cornhusker Marching Band Key Award

Personal

- Have identical twin sister, Julie, a regional agronomist for the University of Missouri
- Enjoy spending time with family, friends and exploring God's creation by hiking, skiing in Colorado, biking, climbing

Quotable quote

"I believe we must attract the best and the brightest young people into the agricultural sciences. As agriculturalists, we have the unique ability to equip, teach and provide hope for people. We equip individuals and communities to break free from poverty; we advise and recommend practices for producing food economically; we are a part of the future in biorenewable resources."

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

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