

Partnership Matters

ISU Research and Extension



June 2006

RESEARCH BRIEF —

Weed management for the long run

What's new. There has been widespread adoption of glyphosate weed management programs in corn and soybean production systems in Iowa. Currently, it is estimated that > 90 percent of the soybeans and 35 to 45 percent of the corn planted for 2006 in Iowa was glyphosate resistant. While effective for control of many weeds, weed scientists and others are concerned about development of weeds that are resistant to glyphosate.

ISU research. Weed scientists from six states, Mississippi, North Carolina, Nebraska, Indiana, Illinois and Iowa, will conduct related studies over a four-year period at on-farm sites to determine the viability of various cropping management strategies for glyphosate programs as an effective tool for weed control.

The specific objectives of the research project are to:

- determine practices used by growers when adopting glyphosate-based cropping systems,
- evaluate the sustainability and profitability of the continued use of glyphosate-based cropping systems,
- assess the risks of glyphosate-based cropping systems for the evolution of glyphosate-resistant weed populations and weed community shifts,
- discover alternative tactics that can be used to support the glyphosate-based cropping systems as a foundation for managing herbicide resistance and weed shifts

What's next. Selected farmers were contacted to establish alternative management strategies on their farms over the next four years. The growers were chosen based on results of a grower survey conducted to determine trends. A total of 30 field experiments were established on farmer fields in Iowa in 2006 comparing Roundup Ready® corn/Roundup Ready® soybean, conventional corn/Roundup Ready® soybean, and continuous Roundup Ready® corn cropping sequences. Shifts in weed populations, changes in weed species present and levels of weed control will be monitored, as well as yields and economics over several years with the various rotation systems.

Learn more. The results of the research will be posted on the Iowa State University Extension Weed Science web page, www.weeds.iastate.edu. For specific questions about the project, contact Mike Owen, ISU Extension weed scientist, at 515-294-5936, mdowen@iastate.edu.

RESEARCH BRIEF —

Western bean cutworm: Watch 'em fly!

What's new. Western bean cutworm (WBC) is a relatively new economic pest of corn. A big challenge in management of WBC is to understand their behavior in Iowa. WBC has expanded its range in recent years, and that, coupled with how the moths distribute themselves in the field while mating and laying eggs each season, are of interest. The dynamics of WBC moth flight is a key to both issues and is one of the research topics addressed by ISU entomologists.



ISU research. Research conducted by Marlin Rice, extension entomologist, and his graduate student Dave Dorhout adds to an understanding of WBC behavior, providing clues to how populations are established and the range expands. How both male and female adult moths fly is of interest. Only male moths are attracted to pheromone traps; the flight ability of females can determine the range that egg-bearing moths can disperse and lay eggs, measured using a device called a flight mill. In a flight mill, healthy moths are tethered with a tiny harness to a flight arm that allows the moths to fly in countable, 3.28-foot-diameter tethered circles. Because WBC are night fliers, the distance the moths flew in 12 hours of darkness was tested.

Female WBCs can fly farther than males (16.3 and 10.5 miles, respectively). Assuming that the distance that males can fly is the "normal" flight potential for this insect, a biological advantage probably favors females with better flight stamina. One possible explanation is that when a female mates and flies beyond the range of the other females, more of her offspring are able to survive because there isn't as much competition for food from other western bean cutworms. In addition, age or mating status does not affect female flight potential—newly emerged virgin females fly comparably to older, mated females.

Male flight potential decreases after they are three to four days old. This is probably because most wild males are able to find enough females and mate with them in the area that they can fly and that there isn't any factor selecting for male flight stamina.

—continued



What's next. The WBC trapping network will be expanded this year to cover most of the Corn Belt, which will help in understanding how the species is expanding its range. Another study in progress at Iowa State looks at the capture effectiveness of different types of pheromone traps. Better scouting and management systems can be developed as we learn more about WBC behavior.

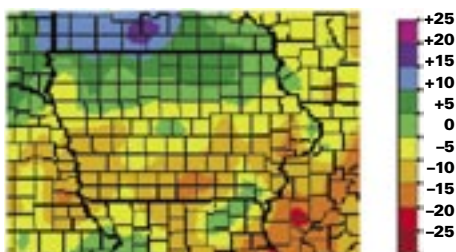
Learn more. An extension publication on WBC in Iowa will be released this summer, and the pheromone trap data are available at www.ent.iastate.edu/trap/westernbeancutworm.

IOWA WEATHER —

The climate year leading up to the 2006 growing season is interesting in retrospect.

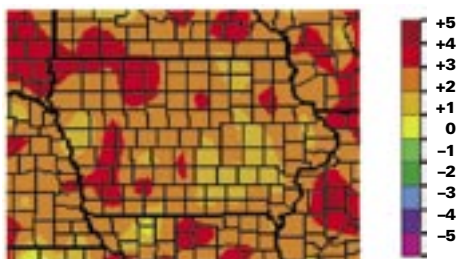
The two maps, generated from data at the High Plains Climate Center, show the annual departure from long-term average temperatures and precipitation in Iowa from May 1, 2005 to April 30, 2006.

Rainfall—Although Iowa received about normal rainfall on average, the map illustrates why statewide averages can be misleading. The northern third ranged from average to about 10 inches above normal, while much of the southern third got 5 to 12 inches below normal. Of course, total rainfall is just part of the story because timing—when the rain or snow comes—is important as well.



Precipitation Departure from Normal (Inches), May 1, 2005–April 30, 2006

Temperature—Talk of warmer than usual temperatures in Iowa is borne out in the map. For the year, temperatures ranged from 1 to nearly 5 °F above normal. Again, the time of temperature events is important, but crop-related effects range from winter survival of some insect species to seasonal selection of weeds and crop diseases that are favored by warmth.



Temperature Departure from Normal (°F), May 1, 2005–April 30, 2006

ISU PROFILE —

Carol Pilcher

- Interim Coordinator, Pest Management and the Environment Program
- Coordinator, Iowa Pesticide Applicator Training (PAT) Program
- Coordinator, Iowa Integrated Pest Management (IPM) Program
- Lecturer, Department of Entomology



Origin

- Born in Syracuse, Kansas
- Raised on a crop and livestock farm in southeastern Colorado

Training

- B.A., political science, Colorado State University
- M.S., entomology, Iowa State University
- Ph.D., entomology and agricultural education, Iowa State University

At ISU

- Graduate student (1994–2001)
- Postdoctoral research associate (2002–2004)
- Lecturer (2004–present)
- Involved with PME program 11 years
- Member of American Association of Pesticide Safety Educators (AAPSE)
- Member of the Entomological Society of America
- Current duties include overall coordination of the PME program
- Current research includes working on the regional and national level to complete program evaluations for IPM. Efforts will result in the development of a framework to conduct outcome level evaluations to measure the impacts of IPM.

Notable achievements

- Current chair of the National IPM Interagency Subcommittee on Evaluation
- Graduate Research Excellence Award (2001)

Personal

- Husband is also an entomologist
- Enjoy outdoor activities, especially collecting insects and gardening

Quotable quote

“When I tell people I’m an entomologist, I often get a strange look and then I usually say, ‘Yes, I work with insects!’ I then tell people, ‘I have the greatest job! When I was a child, I used to spend hours outside playing with insects. And now, I am allowed to *work* with insects. Every day I enjoy my job because a part of my position allows me to do something that I have enjoyed since I was a kid. . . .’”

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.