**Don’t Forget to Register for the AGMasters Conference**

The registration deadline for the 2010 AGMasters Conference is just around the corner, on November 17—but to receive the advance registration fee of $300, register by November 5. The fee increases to $325 after that date. Remember that there are only 160 slots available, so please register now to ensure your participation.

This year’s conference will feature 12 advanced sessions with a great diversity of speakers and topics. Many speakers will be from other universities, enabling attendees to hear different perspectives on current issues. Continuing education units through the Certified Crop Adviser (CCA) and the Indiana Continuing Certification Hours (CCHs) programs will be available in the following categories: professional development (1.5), crop management (8.5), integrated pest management (13.0), nutrient management (2.0), and soil and water management (2.0).

See the conference website for more information about the speakers and their topics (www.cropsciconferences.com/AGMasters%202010). We look forward to seeing everyone at the I Conference Center—just south of the Assembly Hall on the University of Illinois campus—on December 2 and 3.—Mike Gray

**2011 Illinois Crop Management Conferences Present Current Agronomic Research Findings**

The latest research information on crop production and management issues will be discussed at four University of Illinois Crop Management Conferences this winter. These two-day conferences address a wide array of topics pertinent to crop production, pest management, and natural resources issues and provide a forum for discussion and interaction among participants and university researchers.

Certified Crop Advisers can earn up to 13 hours of CEU credit. Online registration will be available in mid-December. The fee for advance registration, no later than one week before each conference, is $130. Late and on-site registration is $150. Locations, dates, and people to contact for more information follow:

- **January 26–27:** Whittington, Rend Lake Conference Center (Robert Bellm, 618-692-9434, Ext. 13; rcbellm@illinois.edu).
- **February 2–3:** Springfield, Northfield Conference Center (Robert Bellm, 618-692-9434, Ext. 13; rcbellm@illinois.edu).
- **February 9–10:** Champaign, I-Hotel and Conference Center (Dennis Bowman, 217-333-4901, ndbowman@illinois.edu).
- **February 16–17:** Malta, Kishwaukee College Conference Center (Dale Baird, 815-978-2844, dlbaird@illinois.edu).
Topics for the 2011 Corn & Soybean Classics

On behalf of my colleagues, I would like to announce the program for the 2011 University of Illinois Corn & Soybean Classics. Our upcoming meetings will mark the 14th iteration of the Classics, an educational program that continues the tradition of providing the most current and timely information related to crop production and pest management. All involved have worked diligently to ensure that the 2011 Classics continue to meet the needs of our clientele.

The upcoming program, with a format that emphasizes crop production, pest management, economics, and the interactions among them, will begin at 9:00 and conclude by 3:30. Market updates will be provided throughout the day, and communication among speakers and participants is encouraged. Question-and-answer sessions are scheduled for both morning and afternoon. Lunch and a proceedings booklet with synopses of all presentations are provided to each registrant.

These are the dates and locations for this year’s Classics:

• January 5 (Wednesday): Springfield Crowne Plaza
• January 6 (Thursday): Mt. Vernon Holiday Inn
• January 7 (Friday): Champaign I Hotel and Conference Center
• January 10 (Monday): Bloomington DoubleTree Hotel
• January 11 (Tuesday): Malta Kishwaukee College
• January 12 (Wednesday): Moline i wireless Center
• January 13 (Thursday): Quincy Holiday Inn

The following speakers will be part of each meeting (though the order of presentations may vary):

Carl Bradley—Paying for Fungicides, or Making Fungicides Pay?

Gary Schmitkey—Corn and Soybean Margins

Emerson Nafziger—A “Formula” for High Corn Yield?

Vince Davis—Soybean Agronomics

You can register online for the Classics at www.cropsconferences.org. Preregistrations, at a cost of $60, are accepted through December 18. Registrations December 19 through 31 and on-site are $75. If you have any questions or comments, please contact us at 800-321-1296.—Aaron Hager

New Online Course on Crop Advising

The University of Illinois Department of Crop Sciences is offering a new online course, Principles of Crop Advising (CpSc 412), next semester (Spring 2011). Faculty will cover fundamentals in agronomic management of field crops, emphasizing crop production and protection. The course will help students prepare for careers in commercial agriculture and provide updates on current agronomic issues. The course will also help students preparing for the Certified Crop Adviser (CCA) examination or will provide CEUs to current professionals.

Lectures will be on Monday and Wednesday evenings from 6:30 to 9:45 and will be taught electronically using the Elluminate course delivery system (www.elluminate.com). No textbook will be required.

Because there will be two lectures a week (except for Monday, January 17), the course will conclude at midsemester on March 7, freeing students to continue preparations for the growing season.

The schedule of instructors and topics is as follows:

January 12: Howard Brown and Mike Gray—Course Orientation (not required, but encouraged)

January 19: Howard Brown—Physical, Chemical, and Biological Properties of Soil

January 24: Howard Brown—Soil Erosion and Management

January 26: Fabián Fernández—Nutrient Management

February 2: Vince Davis—Soybean Development and Function

February 7: Vince Davis—Management of Soybean Crop Systems

February 9: Emerson Nafziger—Grain Crop Plant Development and Diagnosis

February 14: Emerson Nafziger—Grain Crop Management

February 16: Mike Gray—Fundamentals of Integrated Pest Management (IPM)

February 21: Mike Gray—Management of Key Insect Pests of Field Crops

February 23: Aaron Hager—Integrated Management of Today’s Weed Spectrum

February 28: Terry Niblack—Elements of Plant Pathology and Disease Diagnosis

March 2: Carl Bradley—Principles of Epidemiology and Disease Management

March 7: All instructors—Course Wrap-up

If you are interested in this course but have not been formally admitted to a degree program at the University of Illinois, you need to register as a “nondegree”-seeking student. To do so, go to www.outreach.uiuc.edu. Choose “Registration” in the left-hand column, then choose the registration link in the nondegree student section. Registering as a nondegree student will enable you...
Plant Diseases

Frogeye Leaf Spot Pathogen with Reduced Sensitivity to Fungicides Found in Tennessee Soybean Field

Since 2008, the Illinois Soybean Association has been funding a project in my lab to monitor for fungicide-resistant *Cercospora sojina*, the causal agent of frogeye leaf spot of soybean. The research has focused on fungicides in the quinone outside inhibitor (QoI) class of fungicides, generally referred to as “strobilurins.” Strobilurin fungicide active ingredients registered for use on soybean include azoxystrobin, found in Quadris and Quilt (Syngenta Crop Protection); pyraclostrobin, found in Headline (BASF Corporation); trifloxystrobin, found in Stratego (Bayer CropScience); and fluoxastrobin, found in Evito (Arysta LifeScience).

At the start of the project, sensitivities of “baseline” isolates of *Cercospora sojina* to azoxystrobin, pyraclostrobin, and trifloxystrobin were determined using petri dish assays that measure inhibition of spore germination. These baseline isolates came from a historical collection of isolates that were all collected before strobilurin fungicides were registered on soybean, and had thus never been exposed to strobilurin fungicides.

The next steps included collecting and testing isolates of *Cercospora sojina* from commercial soybean fields and research plots where strobilurin fungicides had been applied. The project had focused primarily on *Cercospora sojina* isolates collected from Illinois. As better and more efficient lab methodologies were developed, we expanded the project and this year requested isolates from colleagues in other states.

Dr. Melvin Newman of the University of Tennessee sent us soybean leaves with frogeye leaf spot from his state. Some of the leaves came from a field where strobilurin fungicides had been applied twice, but the field continued to have severe frogeye leaf spot. Isolates from that field were obtained and tested using the petri dish spore germination assays. The assay results indicated that spores from these isolates germinated at high concentrations of azoxyystrobin, pyraclostrobin, and trifloxystrobin. It took approximately 200 to 7,000 times higher fungicide concentrations to achieve spore germination inhibition with these isolates compared to the “baseline” isolates.

**What Are the Implications of These Findings?**

So far, the only *Cercospora sojina* isolates confirmed to have reduced sensitivity to strobilurin fungicides have come from this single field in Tennessee. However, this does not mean that similar isolates are not elsewhere. In light of our findings, consider these recommendations for managing frogeye leaf spot:

1. Plant soybean varieties resistant to frogeye leaf spot. This tactic is the best way to manage the disease. Resistant varieties are available for Illinois growers. Check with your seed dealer and the Illinois Varietal Information Program for Soybeans (VIPS: www.vipsoybeans.org).

2. If you plant a frogeye leaf spot–susceptible variety and are considering application of a fungicide, apply an effective triazole fungicide for control. Fungicides in the triazole chemistry class (also known as demethylation inhibitors) have a different site and mode of action on pathogenic fungi than strobilurin fungicides, and strobilurin-resistant isolates should not be cross-resistant to triazole fungicides.

3. In situations where other foliar diseases may be present along with frogeye leaf spot and a strobilurin fungicide may be needed to control the other foliar diseases, do not spray a solo strobilurin product. Either apply a strobilurin-triazole tank-mix, or apply a product that contains both a strobilurin and a triazole product.

4. Only apply a foliar fungicide to control plant diseases. Every time a fungicide application is made, a “selection pressure” is applied that selects out individuals in the pathogen population that may have reduced sensitivity to fungicides. Applying a fungicide only when it is needed—based on disease risk and scouting observations—will reduce the selection pressure placed on the pathogen population and slow the development and spread of fungicide-resistant isolates.

The Illinois Soybean Association has continued funding of this project through 2011, and *Cercospora sojina* isolates collected from the 2010 growing season will continue to be assayed through the winter months.—*Carl A. Bradley*

**Request for Help Evaluating the Wheat Fusarium Head Blight Prediction System**

Fusarium head blight (FHB) of wheat has been an important problem in Illinois, with recent regional disease outbreaks occurring in 2009 and 2010. The disease causes significant yield loss, and damaged grain is often contaminated with the mycotoxin deoxynivalenol (DON), commonly known as vomitoxin. The disease is best managed through a combination of variety resistance and timely application of fungicides when weather conditions elevate the risk of disease development. In recent years, there has been considerable effort to predict the risk of FHB and the need for fungicide applications in wheat.

The web-based prediction tools (www.wheatscab.psu.edu/riskTool_2010.html) provide daily estimates of disease risk for 25 states east of the Rocky Moun-
tains. This multi-state effort requires considerable resources to maintain, and scientists involved in the project would like to gather some input to justify a continued investment of time, computing resources, and funds to sustain the effort.

If you have used these tools, the developers would like to hear from you.

Please take a few minutes by November 30 to complete an online survey (www.hostedsurvey.com/takesurvey.asp?c=2010Us121326) that will help them evaluate, improve, and maintain the system.—Carl A. Bradley

Crop Development

High-Yield Soybean Management Starts This Fall

The 2010 crop is almost completely harvested. The weather for harvest was favorable, and conditions for fall fieldwork are allowing for a lot of deep tillage, which is a much-needed change over the last few years.

I have been asked often over the last two seasons to discuss management practices for maximizing soybean yields. I want to remind everyone that high-yield management starts this time of the year. The first step is to make sure your records are complete for this year’s crop and to address any problem areas that may have excessive compaction, drainage issues, weed escapes, and so on. Second, collect soil samples for fertility and soybean cyst nematode (SCN) analyses so you can address crop nutritional needs and proper variety selection for SCN resistance. Weather conditions have been favorable for taking soil samples this year. Finally, take time to evaluate all available data before rushing to make your variety selection decisions.

The University of Illinois Crop Sciences Variety Testing yield data are now available on the website (vt.cropsci.illinois.edu/soybean.html). The data are available both in Excel spreadsheets for easy sorting and as Acrobat PDFs for easy printing. The data will also be posted at www.vipsoybeans.org soon, with the addition of efficacy ratings for SCN resistance and other important disease tolerances.

Good luck, and happy holidays between now and our December issue.—Vince Davis

Questions on Fall Nitrogen Application

This fall has offered nice opportunities to get crops out of the field, apply phosphorus and potassium fertilizers, and do tillage where needed to relieve some of the compaction created in recent years, when producers were forced to plant and harvest under less-than-ideal soil conditions. On the other hand, the lingering warm temperatures are trying the patience of farmers who want to apply some of the nitrogen for next year’s corn crop.


Nitrification inhibitors. Once NH$_4^+$ is nitrified to nitrate (NO$_3^-$), N is susceptible to loss by denitrification or leaching. Nitrification inhibitors such as dicyandiamide (DCD) or nitrapyrin (known by its trade name N-Serve) can retard this conversion, reducing loss potential. When properly applied, inhibitors can significantly affect crop yields. In one experiment, 42% of the applied ammonia remained in the NH$_4^+$ form through the early part of the growing season when the inhibitor was used, in contrast with only 4% when the inhibitor was not used. However, the benefit from using an inhibitor varies with soil condition, time of year, type of soil, geographic location, rate of N application, and prevailing weather conditions between N application and crop uptake. Yield increases of 10 to 30 bushels per acre are possible by using an inhibitor in years with excessive rainfall, but there is often no advantage when soil conditions are not conducive to leaching or denitrification.

Nitrification inhibitors are most often used with fall applications to help protect against N loss. In general, poorly or imperfectly drained soils that easily become water saturated and coarse-textured (sandy) soils with high potential for leaching probably benefit most from nitrification inhibitors. Moderately well–drained soils that undergo frequent periods of 3 or more days of flooding in the spring also benefit. Although
they are not commonly done, when springs are very wet and on nearly all types of soil from which N losses frequently occur, especially on sandy and poorly drained soils, spring preplant applications may benefit from the use of an inhibitor. Application of inhibitors is generally not recommended for sidedress applications. Soils typically do not stay saturated with water very long during the growing season after sidedress application, and only a few weeks elapse between sidedressing and rapid plant uptake, so there is little benefit to preventing conversion to nitrate. The longer the period between N application and absorption by the crop, the greater the probability that nitrification inhibitors will contribute to higher yields. However, the length of time that fall-applied inhibitors remain effective in the soil also depends partly on soil temperature. On a Drummer silty clay loam soil, an inhibitor application when soil temperature is 55 °F can keep close to 50% of the applied ammonia in NH$_4^+$ form for about 5 months. When soil temperature is 70 °F, the soil may retain the same amount for only 2 months.

Time of application and geographic location must be considered along with soil type when determining whether to use a nitrification inhibitor. Using inhibitors can significantly improve the efficiency of fall-applied N on the loam, silt loam, and silty clay loam soils of central and northern Illinois in years when the soil is very wet in the spring. At the same time, inhibitors do not adequately reduce the rate of nitrification in the low-organic-matter soils of southern Illinois when N is applied in the fall for the following year’s corn. The lower organic matter content and the warmer temperatures of southern Illinois soils, both in late fall and early spring, cause the inhibitor to degrade too rapidly. Furthermore, applying an inhibitor on sandy soils in the fall does not adequately reduce N loss because the potential for leaching is too high. Fall applications of N with inhibitors thus are not recommended for sandy soils or for soils low in organic-matter content, especially south of Illinois Route 16.

Nitrification inhibitors should be viewed as management tools to reduce N loss. Nitrification inhibitors are most likely to increase yields when N is applied at or below the optimal rate. When N is applied at a rate greater than that required for optimal yields, benefits from an inhibitor are unlikely, even when moisture in the soil is excessive. Finally, it is not safe to assume that the use of a nitrification inhibitor will make it possible to reduce N rates below the MRTN rate, because those rates were developed from fields where no significant amount of N was lost.

**Fall applications.**

Because of concerns over environmental degradation and reductions in economic return on N brought on by higher fertilizer prices, fall applications should be done only in soils and regions with low N-loss potential. Fall N applications should not be done in soils that are sandy, organic, or very poorly drained or that have excessive drainage, or where soils rarely freeze or temperatures decline very slowly from 50 °F to freezing. Nitrogen, other than that included incidentally with the phosphorus application, should not be fall-applied for corn on any soil south of a line that approximates Illinois Route 16, or the terminal moraine of the last glacier. Soil maps may be used to determine where within this boundary area fall N can be safely applied. Most of the incidental N in phosphorus fertilizers should not be expected to be available the next spring. However, the amount of N in a typical P application is small, and so its loss would rarely translate into a significant yield loss. When applied properly, fall N on wheat is acceptable.

Fall N applications are often preferred because they are more economical to farmers and the fertilizer industry. Fall applications often lower the cost of fertilization by reducing transportation and storage expenses and by requiring less storage and application equipment. They also provide logistical advantages, such as saving time in the spring to allow for early planting, better distribution of labor and equipment, and generally better soil conditions in the fall to protect soils from compaction during fertilizer application.

In places where fall application is environmentally acceptable, farmers should apply N in forms that do not contain nitrate. The preferred source for fall application is anhydrous ammonia, because it nitrifies more slowly than other forms. Manure and poultry litter can also be applied in the fall as long as they are incorporated in the soil and the guidelines are followed on soil temperature and soil conditions as described for fall application of inorganic N fertilizers. Urea-containing fertilizers, even when incorporated, are not as effective as fall-applied anhydrous ammonia or spring-applied urea.

Fall N applications should be done when daily maximum bare soil temperature at 4 inches is below 50 °F. On average, this temperature is reached after the first day of November in northern and central Illinois. However, this average date is not a satisfactory guide because of the great variability present from year to year. Current soil temperatures for different regions of Illinois are available at www.isws.illinois.edu/warm/soiltemp.asp. While these temperatures may be useful in most cases, soil temperature can vary due to many factors, including soil color, drainage, and amount of crop residue on the surface. For this reason the best method to determine soil temperature is direct measurement in the field to be fertilized. It is important to note that while the rate of nitrification is significantly reduced below the recommended 50 °F soil temperature, microbial activity continues until temperatures are below 32 °F. The 50 °F temperature for fall application is a realistic guideline for farmers. Applying N earlier risks too much loss. Waiting until later risks wet or frozen fields, which would prevent application and fall tillage.

In Illinois, most of the N applied in late fall or very early spring is converted to NO$_3^-$ by corn-planting time because of nitrification during the long periods when soil temperatures...
are between freezing and the mid-40s. In consideration of the date at which \( \text{NO}_3^- \) is formed and the conditions that prevail thereafter, the difference in susceptibility to denitrification and leaching loss between late fall and early spring applications of \( \text{NH}_4^+ \) sources is probably small. Both are, however, more susceptible to loss than is \( N \) applied at planting time or as a sidedress application.

Large amounts of residue generated from corn or other crops can create challenges for planting and field operations in the spring. There is also concern that the high ratio of carbon to nitrogen in the residue means a high potential for tying up \( N \) and making it unavailable for the following crop when it needs it. A common question has been whether application of \( N \), such as UAN, on the residue would help with the breakdown of corn stalks. Research has shown no benefit in fall application of \( N \) to increase microbial decomposition of corn residue or to improve \( N \) availability for the next crop. Typically, low temperature or dry residue, and not \( N \) availability, is the main limiting factor for microbial decomposition of residue in the fall.

**Regional Reports**

Extension center educators, unit educators, and unit assistants in northern, west-central, east-central, and southern Illinois prepare regional reports to provide more localized insight into pest situations and crop conditions in Illinois. The reports will keep you up to date on situations in field and forage crops as they develop throughout the season. The regions have been defined broadly to include the agricultural statistics districts as designated by the Illinois Agricultural Statistics Service, with slight modifications:

- **North** (Northwest and Northeast districts, plus Stark and Marshall counties)
- **West-central** (West and West Southwest districts, and Peoria, Woodford, Tazewell, Mason, Menard, and Logan counties from the Central district)
- **East-central** (East and East Southeast districts [except Marion, Clay, Richland, and Lawrence counties], McLean, DeWitt, and Macon counties from the Central district)
- **South** (Southwest and Southeast districts, and Marion, Clay, Richland, and Lawrence counties from the East Southeast district)

We hope these reports will provide additional benefits for staying current as the season progresses.

**Northern Illinois**

Harvest is complete in the region for all practical purposes, with only a few scattered fields remaining. Overall, corn yields were good to excellent, though numerous reports have been received of continuous corn yielding 20 or more bushels less than comparable first-year corn fields. Soybean yields were excellent for the most part.

Several days of sustained high winds last week resulted in broken, lodged corn stalks in some unharvested fields. Most of the region experienced the first killing frost late last week, which is several weeks later than normal.

Fall harvest weather has been excellent, with a large portion of the region being mostly rainfree for over a month until October 23–24. The weather has allowed fall tillage to be nearly completed and some field compaction issues to be addressed. The dry conditions have contributed to slow wheat emergence, which may contribute to poor winter survivability.

Anhydrous ammonia application started late last week as producers were waiting for soil temperatures to decline. This week’s activities have focused on finishing fall tillage and applying dry fertilizer and anhydrous ammonia.

**Southern Illinois**

Corn and soybean harvest are mostly complete except for a few scattered fields. Corn yields throughout the region were quite variable, ranging from excellent to awful. Sometimes both extremes were found in the same field. Soybean yields for the most part were higher than in the previous two years. Crop yields in the more southern areas of the region were negatively impacted by drought-like conditions starting back in August.

One advantage to this year’s early corn harvest is that grain scattered from the combines has had an opportunity to sprout and be killed by frost this fall, rather than becoming a weed in next spring’s planting.

Wheat planting was accomplished in a timely manner, and it will be interesting to see the acreage estimates for this crop. For the most part, stands look good, although some fields that remained extremely dry after seeding have thin areas.

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