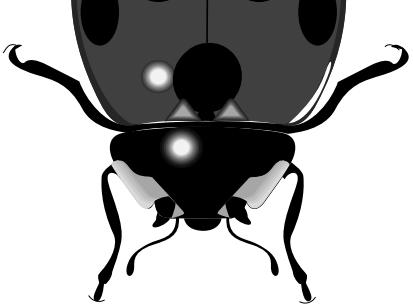

PEST MANAGEMENT & CROP DEVELOPMENT

BULLETIN

No. 18 / July 24, 2009

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Available on the Web at www.ipm.illinois.edu/bulletin
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UNIVERSITY OF ILLINOIS EXTENSION

Also in This Issue

Thanks for the Input

I wanted to thank all of *the Bulletin* readers who took the time to respond to my article (issue 15) on "Changing Communication Methods in Agriculture." Many long-time readers offered excellent insights on the importance of changing with the times while continuing to provide the tools and services that are still effective. Impressively, these comments came from growers, agronomists, managers, agribusiness owners, extension personnel from other states, and other states' newsletter editors. The comments represented several angles of thought, were well articulated, and were generally just excellent comments and ideas. If you didn't respond but would like to, it is never too late to send me your thoughts on ways to improve our extension services (davisv@illinois.edu). I know we will continually adapt in providing valuable and timely crop development and pest scouting information as we move into the future. Some new methods of communication are in development for my soybean production systems program, and I will let you know about these soon. Stay tuned!—*Vince M. Davis*

Brownstown Agronomy Research Center Field Day: July 30

The U of I Department of Crop Sciences will host the 2009 Brownstown Agronomy Research Center Field Day on Thursday, July 30, beginning at 9:00 a.m. A five-stop field tour on shaded wagons will highlight some of the latest agronomic research being conducted by the department.

Every cropping season presents unique challenges, and 2009 is no exception. Extremely wet conditions throughout the counties surrounding the research center have resulted in delaying planting and in crops that are far behind normal developmental stages. Crop production research conducted at research centers such as Brownstown is locally relevant to the growers farming in those areas, because it represents the unique soil types and growing conditions of the area.

These topics will be covered this year:

Statewide Soil Fertility Survey: Implications for Management—Dr. Fabián Fernández

New Nitrogen Guidelines for Wheat—Dr. Steve Ebelhar

Have the Weeds Finally Won?—Dr. Aaron Hager

Prospects for Late-Planted Corn: Can We Repeat 2008?—Dr. Emerson Nafziger

Managing Soybean and Corn Diseases with Fungicides—Dr. Carl Bradley

A free lunch will be provided following the tour. CCA-CEU credit in the following categories has been approved: NM, 1; IPM, 1; CM, 0.5. The last tour will start no later than 9:30, so be sure to come early. For more information, or if you need a reasonable accommodation to participate in this program, call 618-692-9434.—*Robert C. Bellm, extension educator, crop systems*

Illinois Forage Expo on July 31

The 2009 Illinois Forage Expo will be held on Friday, July 31, at Meier Farms, 205 North Dakota Road, Ridott, in Stephenson County. The expo will start at 9:00 and conclude at 4:00. Meier Farms is a family-operated 300-head dairy confinement operation with 345 acres of alfalfa.

The Forage Expo will offer field demonstrations of forage harvesting equipment and commercial displays of forage-related products and equipment. Educational sessions will focus on using autosteer in forage systems, economics of alfalfa production, managing risk with hay insurance, and nutrient management planning and how EQIP can help. Also, Dr. Mike Hutjens, University of Illinois Extension dairy specialist, will discuss forages and today's milk price. The presentations and exhibits will be held in Meier Farms' new hay shed.

A quality hay and haylage contest will be available for producers to enter 2009 harvested bales and haylage. Entries must be delivered to the site between 9:00 and 10:00 a.m. There is no entry fee, and free NIRS analysis will be provided. Bales weighing over 100 pounds will need an official scale weigh ticket.

From the west, Meier Farms can be reached by exiting US Route 20 at the Route 75 (Freeport/Dakota) exit. Turn right and go south 3/4 mile on Route 75, then turn left (east) and go 2 miles on River Road, then turn right (south) on Dakota Road and go 1/2 mile. If you approach from the east, go west on US Route 20 to Rock City Road. Turn right (north) and go 2 miles, then turn left (west) on River Road and go 3 miles, then turn left (south) on Dakota Road and go 1/2 mile. Watch for signs.

Lunch will be available at the expo site. Additional information is available at web.extension.uiuc.edu/stephenson. If you are interested in a commercial display, contact Nikki Keltner, University of Illinois Extension, Stephenson County, Freeport, at 815-235-4125.

The Illinois Forage Expo is sponsored by Illinois Forage and Grassland Council, Blackhawk Hills RC and D, and Illinois EPA, with support from University of Illinois Extension, Stephenson County Farm Bureau, Stephenson County Soil and Water Conservation District, Northwestern Illinois Forage and Grassland Council, USDA Natural Resources Conservation District, and Illinois Grassland Conservation Initiative.—*Dale Baird, extension educator, crop systems*

INSECTS

Monsanto and Dow AgroSciences Complete Regulatory Authorizations for SmartStax Corn Hybrids

Monsanto and DowAgroSciences, in a cross-licensing agreement, announced on July 20 that they have received registration approval from the U.S. Environmental Protection Agency (EPA) and a regulatory authorization from the Canadian Food Inspection Agency (CFIA) to commercialize SmartStax corn hybrids in 2010. The hybrids will express the following insecticidal proteins: Cry3Bb1 (event MON88017), Cry34/35Ab1 (event DAS-59122-7), Cry1F (event TC 1507), and Cry1A.105+Cry2Ab2 (event MON89034).

In addition to targeting corn rootworms and the lepidopteran complex, SmartStax hybrids will provide herbicide tolerance to glyphosate and glufosinate. The US EPA and CFIA approvals will enable producers in the US Corn Belt and Canada who use the hybrids to reduce refuge size from 20% to 5%. Cotton Belt producers will be able to reduce their refuges from 50% to 20%. In a joint news release, the companies indicated they intend to introduce SmartStax hybrids across 3 to 4 million acres in 2010.

This week we begin our annual root digs and look forward to sharing the rating results of various treatments, including a SmartStax treatment, later this summer.—*Mike Gray*

Soybean Aphid Densities Remain Low in Illinois Through Mid-July

Despite the very mild temperatures across Illinois this summer, soybean aphid densities remain low. This observation is based on the lack of confirmed economic infestations in producers' fields and an analysis of weekly sampling data from sentinel plots throughout the state. A review of the USDA PIPE (Pest Information Platform for Extension and Education) website confirms very low densities of soybean aphids across much of the north-central region of the United States through July 21. I encourage readers to check out this valuable website for information on both soybean aphids and soybean rust: sba.ipmpipe.org/cgi-bin/sbr/public.cgi?host=All%20Legumes/Kudzu&pest=soybean_aphid.

Even though we are in good shape right now with respect to this insect pest of soybeans, I encourage producers to remain vigilant and continue scouting their soybean fields and to be ready to respond if the economic threshold of 250 aphids per plant is reached, 80% of the plants are infested (R1 through R5 stage of development), and natural enemies are not adequately suppressing the aphid population.—*Mike Gray*

Western Bean Cutworm Captures on the Increase in Some Northern Illinois Counties

Within the past week, western bean cutworm moth captures have increased in some areas of northern Illinois. Dale Baird, crop systems extension educator, reported increasing numbers of moths caught in Lee County from July 19 through July 21. Producers are encouraged to scout fields for this insect pest and be ready to apply a rescue treatment if needed. For details on the biology, life cycle, and manage-

ment of western bean cutworm, see ipm.illinois.edu/fieldcrops/insects/western_bean_cutworm.—*Mike Gray*

WEEDS

Preharvest Intervals for Postemergence Soybean Herbicides

Most postemergence soybean herbicide labels specify a preharvest interval or a soybean developmental stage beyond which applications should not be made. Labels of some products, such as Pursuit and Extreme, indicate both a developmental stage (before soybean bloom) and a preharvest interval (85 days).

Preharvest intervals indicate the amount of time that must elapse between herbicide application and crop harvest. These intervals are established to allow sufficient time for the herbicide to be broken down or metabolized in the plant. Additionally, the preharvest interval reduces the likelihood of herbicide residues remaining on the harvested portion of the crop. Failure to observe the preharvest interval may result in residue levels in the crop that exceed established limits.

There also are restrictions on many postemergence soybean herbicide labels about whether the soybean crop may be used for livestock feed or if treated fields may be grazed as forage. **Table 1** details preharvest intervals and grazing restrictions for multiple postemergence soybean herbicides.—*Aaron Hager*

Table 1. Preharvest intervals and grazing restrictions for several postemergence herbicides used in soybean.

Herbicide	*Preharvest interval*	*Forage or grazing?*
Aim EW	Broadcast: V10 soybean Harvest aid: 3 days	No
Assure II	80 days	No
Basagran	30 days?	Yes, after 30 days
Cadet	60 days	No
Classic	60 days	No
Cobra or Phoenix	45 days	No
Extreme	85 days	No
FirstRate	65 days	Yes, after 14 days
Flexstar, Flexstar GT	45 days	No
Fusilade DX	60 days	No
Fusion	Prebloom	No
Ignite	70 days	No
Roundup PowerMax[a]	Broadcast: through R2 Harvest aid: 14 days	Yes Yes, after 14 days
Harmony GT XP	60 days	No
Poast or Poast Plus	75 days	Hay
Prefix	90 days	No
Pursuit	85 days	No
Raptor	Prebloom[b]	No information on label
Resource	60 days	No
Scepter	90 days	No
Select or SelectMax	60 days	No
Sequence	90 days	No
Storm	50 days	No
Synchrony XP	60 days	No
Ultra Blazer	50 days	No

[a]Data, taken from the Roundup PowerMax label, are for broadcast applications in glyphosate-resistant soybean varieties. Intervals change for applications (spot treatment and preharvest) made to nonglyphosate-resistant soybean varieties. Forage and grazing allowances can vary among glyphosate-containing products. Consult the respective glyphosate product label for specific information on forage and grazing restrictions.

[b]The Raptor label indicates there is no preharvest interval for any crop, but applications must be made before soybean bloom.

PLANT DISEASES

Conditions Favorable for Sclerotinia Stem Rot (White Mold) on Soybean

White mold (aka Sclerotinia stem rot), caused by the fungus *Sclerotinia sclerotiorum*, is a disease of soybean and other broadleaf crops. Historically, white mold on soybean has been observed sporadically in central Illinois, more frequently in northern Illinois, and rarely in southern Illinois. Cool (temperatures below 85 °F) and wet conditions, especially when soybean plants are blooming, are favorable for the development of white mold. These cooler-than-normal and wet conditions have been occurring in central and northern Illinois the last couple of weeks, increasing the risk of white mold in these areas.

White mold gets its name from the fuzzy white growth that can be observed on affected soybean plants. This growth is the mycelia of the fungus that causes the disease. Symptoms include wilting leaves, stems that appear to be "bleached," and shredding of the stem tissue. Small black structures known as sclerotia can be found on and inside plants that have been affected by white mold.

The disease cycle of white mold is complicated, and favorable environmental conditions and soybean growth stages must intersect for the disease to occur. The fungus overwinters in the soil as sclerotia. These sclerotia can survive in the soil for many years. Under wet soil conditions, the sclerotia germinate and form small mushroom-like structures known as apothecia. Airborne spores (ascospores) are discharged from the apothecia and land on soybean plants. Ascospores that land on senescing petals of soybean flowers are the most likely to cause infection. As the soybean flower petals senesce, the ascospores begin to germinate, grow, and infect the stems. If wet and cool conditions continue, the disease continues to develop throughout the plant. Eventually, sclerotia will

form on and inside the affected plants. Many of the sclerotia will be blown out of the back of the combine during harvest, adding more "inoculum" back into the field.

Management of white mold in soybean is difficult, and multiple practices must be integrated to achieve the best control. These management practices include the following:

• Growing partially resistant varieties. No soybean varieties are completely resistant to white mold, but some are less susceptible than others. These partially resistant varieties will be less affected by white mold than susceptible varieties. Many seed companies have ratings available for the susceptibility of their varieties to white mold. Information about susceptibility of some varieties can be found at the VIPS website (www.vipsoybeans.org).

• Row spacing and seeding population rate. In areas where white mold is a severe problem year in and year out, wider (30-inch) row spacings may reduce the disease's impact. Because wider spacing could impact the yield potential of soybean, it is recommended for white mold control only in areas where severe white mold is observed frequently. High plant populations can decrease the airflow through the canopy, which can increase the spread of white mold. For effective management, it is important to follow recommended seeding rates and to avoid high seeding rates.

• Foliar fungicides. Currently, two foliar fungicides are registered for control of white mold in soybean. Topsin M (and other thiophanate-methyl products) and Domark are registered for use on soybean and include white mold on their labels. Topsin M has been evaluated in University of Illinois soybean white mold trials in the past; however, we have not tested Domark on soybean under white mold disease pressure. In the University of Illinois trials, Topsin M was effective at controlling white mold, but timing was critical (**Table 2**). Also, the yield benefit of controlling white mold with fungicides is only fully realized when disease incidence is moderately high. A research trial ongoing this year at the U of I Northern Illinois Agronomy Research Center near DeKalb is evaluating several foliar fungicide products, including Domark and Topsin M, for control of white mold.

• Avoiding bin-run seed. The white mold fungus can be seedborne, so to avoid bringing the pathogen into your fields it is important not to plant bin-run seed.

• Biological control. A biological control product marketed as Contans WG is available for control of white mold. This product contains the fungus *Coniothyrium minitans,* a parasite of the white mold fungus's sclerotia. Contans WG has not been evaluated in University of Illinois research trials, though research at North Dakota State University indicated it is effective at colonizing and killing sclerotia. But depending on the level of sclerotia present, disease incidence may not be affected: in fields with a high load of sclerotia in the soil, enough sclerotia may survive to still cause a substantial level of disease. It is important to note that Contans WG should not be applied to flowering soybean plants. Rather, it should be applied to the soil in the fall after harvest or in the spring prior to planting.

—Carl A. Bradley

Table 2. Effect of Topsin M fungicide on white mold control and soybean yield at Urbana, IL, 2001 and 2002.

		2000		2001	
Treatment	Timing	Disease (%)	Yield (bu/A)	Disease (%)	Yield (bu/A)
Untreated		42 a	62 a	49 a	45 a
Topsin M	R1	6 b	77 b	37 b	53 b
Topsin M	R3	44 a	60 a	50 a	47 a

Note: The white mold fungus was inoculated onto plants at the R2 growth stage in this trial.

CROP DEVELOPMENT

Identifying Nutrient Deficiencies in Soybean

At the end of June I wrote about manganese deficiency in soybeans in high pH soils. Today I will address how to recognize other nutrient deficiencies in soybean and possible ways to correct any problems. Nitrogen (N), potassium (K), and iron (Fe) are additional nutrients that are known to cause deficiency problems for soybean in Illinois.

Wet conditions and cloudy (low light intensity) days combined with unusually low temperatures recently are causing some soybean fields or parts of fields to show nutrient deficiencies. As I have written previously, the fact that plants look deficient does not mean that you should get overly concerned and immediately seek to solve the apparent problem by adding additional fertilizer. Most of the deficiencies we are seeing this year relate to growing season conditions and not to inadequate soil fertility.

As growing conditions improve, most symptoms will disappear without additional fertilization. However, since growing season conditions this year accentuate problems that might not be as evident in other years, this is a good opportunity to learn about field conditions and management practices that can be adjusted to prevent or at least lessen problems in the future.

Some of the most obvious nutrient problems I have observed this year are in fields with insufficient drainage, compacted soils, and marginal nutrient levels. Fields with insufficient drainage show a pattern of better crop growth in the area where tiles are installed and problem areas where tiles are not installed or where the distance between tiles is too large to effectively drain the soil. I have seen deficiency symptoms in fields where a compacted layer is present or where the crop was planted in wet soil. Planting under such conditions created sidewall com-

paction. Drainage and compaction problems limit root exploration of the soil and limit the capacity of roots to take up nutrients. Fields with marginal fertility that might not show the deficiency under good growing season conditions are showing it this year because the soil conditions have made nutrients slightly less available and because the roots of the crop are not as active to compensate for the reduction in nutrient availability.

Once nutrients enter the plant, some are mobile and others are not. Mobile nutrients will cause deficiency symptoms to develop in the older leaves of the crop. This is because nutrients present in the older leaves will move to the new leaves to maintain the new growth. On the other hand, immobile nutrients will cause the new leaves to show greater deficiency symptoms while older leaves might be completely green. Deficiency symptoms for many of the essential nutrients have not been verified, or are very rare, in Illinois, so I will not address them here. Mobile nutrients that are known to cause deficiencies in soybean include N and K. Besides Mn, Fe is the other immobile nutrient.

N deficiency makes older leaves turn pale or yellowish-green. Deficiency develops commonly because of poor nodulation, which can be the result of insufficient inoculum in the soil or wet or cool soil temperatures. Typically, if soybean has been grown in the field in the recent past, there should not be a problem related to insufficient bacteria present in the soil to properly inoculate the roots. If you suspect this is the problem, however, it would be important for the future to plant inoculated seeds. Most often, inoculation problems are related to poor growth conditions. Soybeans do not grow very well in wet soils; ensuring adequate soil drainage is probably one of the best ways to reduce the problem of poor nodulation.

K deficiency is observed as yellowing or browning and necrosis (death) of the edge of older leaves. When the problem persists, this deficiency will continue to move up from older to newer leaves, while the top leaves may look completely green. Even though rapid K uptake does not occur until reproductive stages, under marginal soil K levels or inadequate growing season conditions, K deficiencies develop more often at early stages of development when the root system is small. Soybean cyst nematode problems can often be confused with K deficiency. The best way to determine the cause in these cases is to test plant tissues for nutrient levels and send root samples to be evaluated for cyst nematode presence.

Fe deficiency is observed as yellow coloration between leaf veins. Under more severe conditions, it is possible to see completely yellow leaves. Since the nutrient is immobile in the plant, the symptoms appear in the new leaves. The problem is most often observed in high-pH soils (pH >7.5), in soils with drainage problems, and when Fe-inefficient varieties are used.—*Fabián G. Fernández*

Illinois Wheat in 2009

The 2009 wheat season in Illinois will go down in the books as a rather average one, with the July yield estimate from NASS standing at 59 bushels per acre. Yields in northern Illinois averaged about 70, while in central Illinois they ranged widely, from only 46 in the west to 83 in the east. Yields were consistent across southern Illinois, averaging in the mid- to upper 50s in the four southern crop reporting districts.

The low yields in western Illinois are somewhat surprising, but acreage was down by nearly half there, and it's likely that much of the problem was related to late planting and planting into wet soils. The response of wheat to late planting varies a lot among years, and the penalty in 2008–09 was larger than it is in many years. Planting into wet soils didn't help. The winter and early spring conditions were not too stressful, though late-planted wheat needed more recovery time than the spring provided. Wet weather in the spring contributed to N loss and to problems with disease, especially Fusarium head blight, or scab.

The story in southern Illinois was more focused on grain quality than on yields, though the two were related. Yields were not particularly high in many fields, but they were better than in some poor years in the past. Test weights were as low as we have seen, and dockage due to low test weights was common. Some elevators tested for vomitoxin (DON) that is produced in grain by Fusarium, and docked according to level.

With constant rainfall during the flowering period, application of fungicides for scab control was either not feasible or not particularly effective. Many fields showed high levels of head blight early, and in many of those fields, kernels were very light, and many were likely blown out of the combine. This helped improve quality but couldn't cure all problems. At least some of the low test weight came, as it often does, from the crop's having gotten rainfall after maturity, with kernels swelling as they took on moisture and then drying again, but with lower density. It was not as wet when the wheat flowered in central and northern Illinois, so quality there was much better.

The wheat variety trials that we conduct at six locations in Illinois have been harvested, and regional results are now posted at vt.cropsci.illinois.edu/wheat.html. Yields were better than we had expected, with trial averages (bushels per acre) as follows: Dixon Springs, 75; Belleville, 87; Perry, 80; Urbana, 92; DeKalb, 99. We had some water damage problems at Brownstown and so are not including those results in the southern regional average. They will be available as an individual location soon, but the variability was high and the yields relatively low for that location, so results will need to be used with caution.

As in the previous year, we allowed the entry of insecticide-treated seed as long as untreated seed of the same variety was also entered in the trials. Seed treatment insecticide increased yields modestly in 2009, even in the northern region, where we have not normally seen much response. The effect was not consistent among varieties. We continue to think that response to seed-applied insecticide is likely to be greater in southern than in northern Illinois, due to the greater likelihood of viral disease transmission by aphids in southern Illinois.—*Emerson Nafziger*

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

Additional corn fields are beginning to tassel, but numerous fields are not exhibiting uniform tasseling. Pollination will be ongoing over the next 3 weeks. Japanese beetle populations are abundant in most areas, with some feeding occurring in soybean fields, but are far below economic infestation levels. Growers are encouraged to scout corn fields for potential silk clipping by Japanese beetles. There have been no reports of soybean aphids.

Wheat harvest is progressing between showers, with reported yields ranging from the 70s to the 90s. Lower wheat test weights have been reported. The wheat variety trials were harvested last week at the Northern Illinois Agronomy Research Center in DeKalb County. Average yields were near 100 bushels per acre; individual variety results will be available soon at vt.cropsci.illinois.edu/wheat.html.

Extension educators have been monitoring western bean cutworm moth traps. The first moth catches occurred July 6 in Whiteside County, July 13 in Winnebago and Stephenson counties, and July 15 in Lee County. Moth catch numbers have steadily increased since last weekend and may peak this week.

Southern Illinois

Rains continue, but storm fronts have been more scattered. Some areas remain extremely saturated, and uneven crop growth reflects it. Temperatures have averaged significantly below normal, which definitely does not benefit crops planted in late June and early July, which will be struggling to reach physiological maturity before the growing season runs out. Cool conditions and plenty of moisture have meant that corn is pollinating without stress thus far. Some fields, however, will not begin to tassel until early August. “Early”-planted soybeans are only at R2, approaching R3. Some fields have yet to receive a herbicide application, which will negatively impact yields even more.

West-Central Illinois

Most of the area has been receiving rainfall at fairly regular intervals, keeping soils well saturated with moisture. Some of the areas that had been missing rains finally received much needed moisture this past week. Adams, Brown, and Pike counties had not received appreciable rainfall since July 4, and some of the late-planted corn that had been planted in somewhat tough conditions was beginning to show stress, even with the cooler-than-normal temperatures.

Early-planted corn has completed pollination in excellent condition. Corn planted in May is now at pollination. Gray leaf spot can be found in most every field, with infections up to and above the ear leaf in some instances. Fungicide applications have taken place and more are scheduled. Japanese beetle numbers vary across the region.

Soybeans range in maturity from R3 to V5 (not including the few double-crop beans that were planted). In the Adams, Brown, Hancock, McDonough, Pike, and Schuyler county areas, yellow sticky traps have been placed for monitoring of the variant rootworm beetle.

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University of Illinois
at Urbana-Champaign
1917 S. Wright St. Ext., MC-710
Champaign, IL 61820

Published by University of Illinois Extension and
Information Technology and Communication Services,
College of Agricultural, Consumer
and Environmental Sciences,
University of Illinois.

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