



PEST MANAGEMENT & CROP DEVELOPMENT

BULLETIN

FOR IMMEDIATE RELEASE
No. 21 / August 16, 2002

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Available on the Web at
<http://www.ag.uiuc.edu/cespubs/pest/>
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Last Seasonal Issue of the Bulletin for 2002

This issue of the 2002 *Bulletin* is the last one that will be published before September. Issue numbers 22, 23, 24, and 25 will be published on September 6, October 4, November 8, and December 6, respectively.

This has been another summer to remember. As is so often the case, weather captured most of the headlines during this crop season, with lots of cool, wet weather in the spring, followed by hot, dry weather for much of the summer. The weather affected the crops directly and had a major influence on the impact of many pests that also affected crops. Throughout the fall and winter, we crops and IPM specialists will be reviewing the crop and pest conditions that prevailed in 2002, with a nod toward using what we learned in 2002 to plan for 2003. Watch for announcements of educational materials and meetings over the next several months.

Thanks to all of you who provided reports throughout the growing season. As I have stated before, your observations and cooperation are invaluable for our development of the information we disseminate. It means a great deal to us that you are willing to share your information with us and, through us, with so many others. Thanks also to all of the readers who continue to show support for our efforts by either subscribing to the print version of the *Bulletin* or logging on to our Web site. For the months of May, June, and July 2002, our Web site had an average of 2,946 successful requests per day. It's always nice to learn that people read our stuff!

On behalf of the other authors who contributed to the *Bulletin*, I thank you for your support this year. I also want to take this opportunity to thank Stacey Krejci, the editor who works so diligently every week to get both the print and electronic versions of the *Bulletin* ready for you. If you think about it, drop him a note of thanks (s-krejci@uiuc.edu). He works behind the scenes, but he's the guy who makes it all come together. Thanks, Stacey.—
Kevin Steffey

Wheat Seed Treatments for Fall 2002

Many variables come into play when deciding whether or not seed treatments pay off, including seed cost, seed treatment cost, crop value, seed condition, seed bed condition, time of planting, anticipated disease and insect pressure, intended crop use, and options for disposal of excess treated seed. Because many of these variables are difficult to predict with much accuracy before planting, most folks looking for “cheap insurance” either plant wheat a little heavier or use an inexpensive seed treatment. Just like car insurance, you buy the coverage you need based on product performance, your particular situation, and your desired comfort level. For a review of the viral and insect problems that were prominent in the Illinois wheat crop this past spring, refer to the following articles that appeared in the *Bulletin*: “Winter Wheat Disease Portrait” (April 12, 2002), “Virus in Winter Wheat” (April 26, 2002), and “Several Reports of Aphids in Wheat” (April 26, 2002). In addition, stay tuned for an upcoming article regarding Hessian fly management.

Many different seed treatments are registered for use on wheat. As with most pesticides, each active ingredient has strengths and weaknesses, which is why premixed fungicide products are so common. In addition, an insecticide may be included or used alone to control insect pests. Typically seed treatments will last only about 10 to 14 days beyond planting. However, certain active ingredients can protect the seedlings considerably longer when applied at the highest labeled rate. For example, difenoconazole and triadimenol can protect against fall-season foliar disease such as powdery mildew and rust. In addition, imidacloprid may be included or used alone to control aphids that transmit the barley yellow dwarf virus. Although these long-lasting systemics offer a good deal of protection, they are relatively expensive.

Common seed treatment active ingredients and the fungi they control are listed in Table 1. Table 2 provides a current, but likely incomplete, list of seed treatment pesticides labeled for treating wheat seed. Check with local dealers to determine what products are

available in your area and at what cost. Also, consult the *Illinois Agricultural Pest Management Handbook* for further information. Several of these products are only available to commercial seed treaters. Although many convenient combination products are in the market, should you decide to create your own combination, be sure to read and follow the labels of each product and contact the manufacturer(s) if you need clarification.

To learn more about the biology of seed and seedling pests, consider purchasing the current *Field Crop Scouting Manual*, available at your local University of Illinois Extension office. For a comprehensive seed treatment resource, consider purchasing *Illinois Pesticide Applicator Training Manual: Seed Treatment (SP 39-4)*, also available through your local University of Illinois Extension office.

The seed treatment manual was revised in November 2001 and addresses common seed and seedling pests, seed treatment active ingredients, safety issues, and seed treating equipment and calibration.—Bruce Paulsrud and Wayne Pedersen

INSECTS

Survey of First-Year Corn Rootworm Damage Continues

To date, our campus research team and the IPM and Crop Systems Extension Educators have completed first-year corn rootworm damage surveys in more than 20 counties. We intend to continue this survey for the next few weeks. By analyzing these data, we hope to improve our understanding of the continuing spread of first-year corn rootworm problems across much of the state. In addition to the results from this research, we continue to review data from our insecticide trials at DeKalb, Monmouth, and Urbana. In our early September issue of the *Bulletin*, we'll share these findings with you.—Mike Gray

What's the Scoop on Soybean Aphids?

It's no secret to anyone that populations of soybean aphids have failed to build to very large numbers this year throughout most of the Midwest. Even our neighbor states to the north—Michigan, Minnesota, and Wisconsin—have had few threatening populations of soybean aphids. As you will recall, populations of soybean aphids in those three states were quite large in 2001. Interestingly, Marlin Rice, extension entomologist at Iowa State University, recently reported that it was not uncommon to find thousands of aphids per plant in small areas of fields in central Iowa. These populations are more the exception than the rule for most of the rest of the Midwest. Although no one has a definitive answer for the lower numbers of soybean aphids this year, a lot of finger pointing at the hot, dry weather is occurring. Indeed, weather probably has played a major role in suppressing populations of this invasive species in 2002. However, only after considerable discussion among the experts will we learn why soybean aphids were so "quiet" this year.

Table 1. Numbers of soybean aphids per 50 plants from 14 soybean fields in Kendall County, July and August, 2002.

Field number	Number of soybean aphids per 50 plants, July 23, 2002	Number of soybean aphids per 50 plants, August 12, 2002
1	83	792
2	598	2,678
3	333	3,603
4	226	968
5	119	4,453
6	58	1,703
7	160	2,264
8	188	2,041
9	792	1,319
10	758	2,337
11	126	309
12	19	971
13	78	230
14	22	393

Table 2. Comparison of wheat seed treatment fungicide active ingredients.

Active ingredient	Fall foliar diseases						
	General seed/ seedling pathogens	Pythium	Loose smut	Common bunt	Seedborne scab	Powdery mildew	Rust
captan	G-F	P	N	P	F	N	N
carboxin	F-P	P	G	N	P	N	N
difenoconazole	G	N	G	G	P	G	G
fludioxonil	G	P	N	N	G	N	N
imazalil	F	N	N	N	G	N	N
mefenoxam/ metalaxyl	N	G	N	N	N	N	N
PCNB	G-F	N	N	F-P	F	N	N
tebuconazole	G-F	N	G	G	G	G	N
thiabendazole (TBZ)	G-F	N	N	G	G	N	N
thiram	G	P	N	F	G-F	N	N
triadimenol	F	N	G	G	F-P	G	G

Ratings: G = Good, F = Fair, P = Poor, N = No activity.

Despite the relatively low numbers of aphids in most of areas of Illinois, we have news to report. Marion Shier, Extension Educator in Crop Systems in Livingston County, sent us some photographs of soybean aphids distributed along the stems and on the leaves of soybean plants in fields in his area. Based on these photographs, the threshold of 25 or more aphids per leaflet was exceeded, at least in the field in which the photographs were taken. However, you'll note that many cast skins are evident, and it's not clear what percentage of the aphids are alatoid nymphs that will develop into winged adults and fly away. Additionally, the soybeans probably have matured to a stage that will not encourage much more growth of soybean aphid populations.

The soybean aphid research team, headed by David Onstad, Department of Natural Resources and Environmental Sciences, and David Voegtlin, Illinois Natural History Survey, continues to sample intensively for soybean aphids in some northern counties. Ron Estes, Research Specialist in Agriculture working for Drs. Onstad and Voegtlin, has led a crew of summer interns who have taken repeated measures of soybean aphid populations within townships of some counties. In each field they sample 25 plants in each of two transects (30 meters apart) from the edge of the

field to 50 meters into the field. One plant is sampled every 2 meters.

The populations of aphids they found in Kendall Township in Kendall County (Table 3) show that numbers of soybean aphids have increased from 1.7- to 51-fold from July 23 to August 12. On the per-plant basis, the numbers are not very large. However, because of the increases in densities of soybean aphids in all 14 fields, it's important to keep watching soybean fields for at least the next couple of weeks. Although predators (e.g., multicolored Asian lady beetles) and development of alatoid nymphs may prevent populations from reaching threatening levels, we shouldn't turn our backs on soybean aphids yet.

On Friday, August 9, John Shaw, Research Scientist at the Illinois Natural History Survey, established an insecticide efficacy trial for soybean aphids in a field in Stephenson County. Although the average number of aphids per leaflet (approximately 10 aphids per leaflet) on August 9 was below threshold, we deemed the population density large enough to make it worth the time and energy invested in the trial. Overall, John found an average of more than 200 aphids per plant throughout the plot area. He applied 16 different insecticide treatments and included two untreated check plots within each of four replications.

On Sunday, August 11, John observed that the population density in the untreated check plots had increased to an average of about 14 aphids per leaflet; numbers of aphids in the insecticide-treated plots had decreased dramatically. John will sample aphid populations in the trial area again at 7 and 14 days after treatment. When the results become available, we will share them with you.

It's unlikely that soybean aphid populations will build to economic levels in most fields in most areas of Illinois this year. However, continue to monitor soybean fields for aphids throughout August, especially later-planted fields. A sudden surge in aphid numbers could change our outlook.—
Kevin Steffey

Don't Ignore Injury to Soybean Pods

By mid-August, it's time to begin checking soybean fields for pod injury that can be caused by a variety of insect pests. Bean leaf beetles, grasshoppers, and stink bugs are all capable of causing yield losses in soybean fields during the pod-fill stage of development. So although it has been a long, hot summer, don't neglect to scout soybeans now and well into early September for these insect pests.

Table 3. Incomplete list of common wheat seed treatment fungicides and insecticides.

<i>Product</i>	<i>Application notes</i>	<i>Active ingredient(s)</i>	<i>Company</i>
Allegiance Dry	drill-box (dry)	metalaxyl	Trace
Allegiance FL, Apron FL	mist/slurry	metalaxyl	Gustafson
Allegiance LS	mist/slurry, drill-box (liquid)	metalaxyl	Gustafson
Apron XL LS	mist/slurry	mefenoxam	Syngenta
Baytan 30 ²	mist/slurry ¹	triadimenol	Gustafson
Captan 30-DD, 400, 400-C	mist/slurry	captan	Gustafson
Cruiser 5FS	mist/slurry	thiamethoxam*	Syngenta
Dividend	mist/slurry	difenoconazole	Syngenta
Dividend Extreme, XL, XL RTA	mist/slurry	difenoconazole, mefenoxam	Syngenta
Enhance	drill-box (dry)	captan, carboxin	Trace
Enhance Plus	drill-box (dry)	carboxin, lindane*, maneb	Trace
Flo-Pro IMZ	mist/slurry	imazalil	Gustafson
Gaucho 480, 600	mist/slurry	imidacloprid*	Gustafson
Gaucho XT	mist/slurry	imidacloprid*, metalaxyl, tebuconazole	Gustafson
Grain Guard	drill-box (dry)	mancozeb	Trace
Grain Guard Plus	drill-box (dry)	mancozeb, lindane*	Trace
Kodiak	mist/slurry	Bacillus subtilis GBO3 (biological)	Gustafson
Kodiak HB	drill-box (dry)	Bacillus subtilis GBO3 (biological)	Trace
Lindane 30C	mist/slurry	lindane*	Gustafson
LSP	mist/slurry ¹	thiabendazole (TBZ)	Gustafson
Maxim 4FS	mist/slurry	fludioxonil	Syngenta
Mertect LSP	mist/slurry	thiabendazole (TBZ)	Syngenta
Prevail	drill-box (dry)	carboxin, metalaxyl, PCNB	Trace
Raxil MD, XT	mist/slurry	mefenoxam, tebuconazole	Gustafson
Raxil MD Extra	mist/slurry	imazalil, mefenoxam, tebuconazole	Gustafson
Raxil-Thiram	mist/slurry	tebuconazole, thiram	Gustafson
Rival Flowable	mist/slurry ¹	captan, PCNB, TBZ	Gustafson
RTU Baytan-Thiram	mist/slurry ¹	triadimenol, thiram	Gustafson
RTU Flowable Fungicide	mist/slurry	TBZ, thiram	Gustafson
RTU-PCNB	mist/slurry	PCNB	Gustafson
RTU-Vitavax Extra	mist/slurry	carboxin, imazalil, TBZ	Gustafson
RTU-Vitavax-Thiram	mist/slurry, drill-box (liquid)	carboxin, thiram	Gustafson
Terra-Coat LT-2N	mist/slurry ¹	PCNB	Gustafson
Thiram, many names	varies	thiram	Many
Vitavax 34	mist/slurry	carboxin	Gustafson
Vitavax 200; Vitaflo 280 ¹	mist/slurry	carboxin, thiram	Gustafson
Vitavax-PCNB	mist/slurry ¹	carboxin, PCNB	Gustafson
Vitavax T-L	drill-box (liquid)	carboxin, thiram	Trace
Vitavax-Thiram-Lindane	mist/slurry	carboxin, lindane*, thiram	Gustafson

¹ For use by commercial seed treaters only.

² Treatment may result in slightly slower emergence—do not plant deeper than 1.5".

* Insecticide.

The last generation of bean leaf beetles will begin to feed on soybean pods after the leaves become too old (begin to lose some green coloration). The beetles scrape off the green tissue on the pods (Figure 1) but do not chew through the pod wall. The resulting scars on the pods provide an opening for entry of spores of various fungal diseases that are normally blocked by

the pericarp. Mild infection results in seed staining; severe infection may result in total seed contamination.

Grasshoppers cause more direct injury to the soybean seeds. Because they have impressive chewing mouthparts, grasshoppers often chew directly (Figure 2) through the pod wall and take bites out of or devour entire

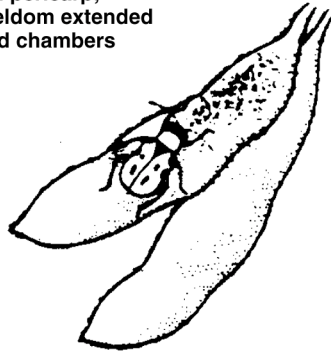
seeds. If more than 5% to 10% of the pods are injured by grasshoppers or bean leaf beetles, an insecticide application may be warranted.

Many field observers tend to overlook stink bugs and the potential injury they can cause, even though they may be the most important pod feeders in Illinois. Watching for stink bugs, espe-

Holes small and rounded; mostly within the interveinal areas of the leaf



Pods with numerous scars on pericarp; injury seldom extended into seed chambers



Seeds destroyed by insects feeding externally

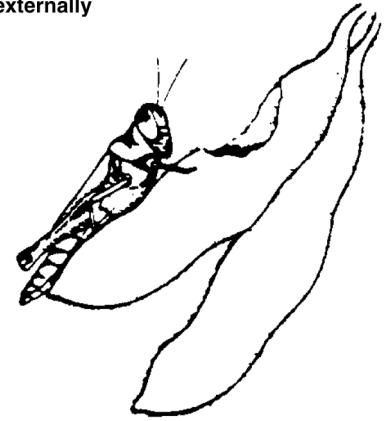


Figure 1. Bean leaf beetle defoliation and pod injury.

Figure 2. Grasshopper injury to soybean pods.

cially in the southern half of the state, should be a high priority for soybean producers.

Green stink bugs are believed to migrate northward from overwintering sites (wooded areas beneath leaf litter)

as adults. During the early months of summer, the adults feed on berries in trees, especially dogwoods. Stink bugs are first found in soybean fields during August. They undergo incomplete metamorphosis (immature bugs re-

semble the adults), which requires approximately 45 days from egg hatch to adult emergence (Figure 3). Illinois usually has only one generation of green stink bugs per year.

Immature stink bugs (nymphs) have a flashy display of black, green, and yellow or red colors and short, stubby, nonfunctional wing pads. The adults are large (about 5/8-inch-long), light green, shield-shaped bugs with fully developed wings. Both adults and nymphs have piercing and sucking mouthparts for removing plant fluids.

Stink bugs feed directly on pods and seeds; however, their injury is difficult to assess because their mouthparts leave no obvious feeding scars. Stink bugs use their mouthparts to penetrate pods and puncture the developing seeds (Figure 4). They inject digestive enzymes into seeds, and the feeding wound provides an avenue for diseases to gain entry into the pod. Seed quality also is reduced by stink bug feeding, and beans are more likely to deteriorate in storage.

Other species of stink bugs also occur in soybeans. The brown stink bug has feeding habits and a biology similar to those of the green stink bug. The brown stink bug should not be confused with the beneficial spined soldier bug. Adult brown stink bugs are brown and have a yellow or light

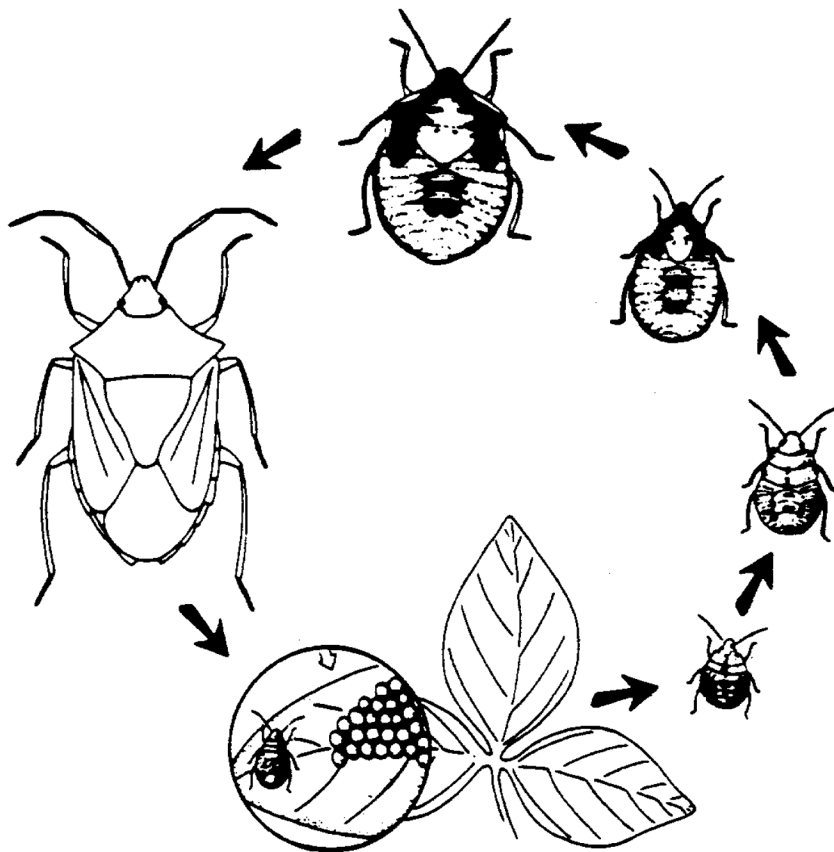


Figure 3. Life cycle of a stink bug.

Pods not formed normally;
one or more seeds aborted
or pods completely collapsed

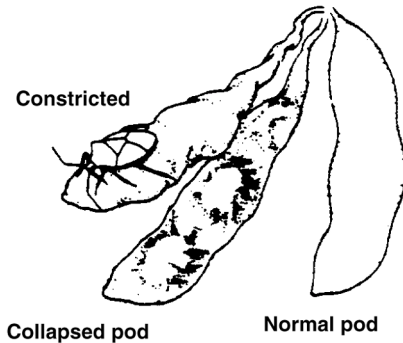


Figure 4. Stinkbug injury to soybean pods.

green underside and the “shoulders” are rounded. Spined soldier bugs also are brown and have a white to cream-colored “belly.” However, their “shoulders” are sharp pointed. Be sure you are aware of the species present in a soybean field before making a control decision.

An insecticide application for control of stink bugs may be warranted when the level of infestation reaches one adult bug or large nymph per foot of row during pod fill. Insecticides that are labeled for bean leaf beetles, grasshoppers, and stink bugs in soybeans include *Asana XL, *Lorsban 4E, *PennCap-M, and *Warrior. Please consult the product labels for the amounts of product that may be applied for the control of each insect pest. Also, carefully read the product labels for required restrictions related to preharvest intervals following a treatment. Those insecticides preceded by an asterisk are restricted-use products and may be applied only by certified applicators.—Mike Gray

PLANT DISEASES

Sudden Death Syndrome— What’s Up with Those Roots?

It will be interesting to see the impact sudden death syndrome (SDS) has in soybean fields this season. In many

areas of the state, foliar symptoms of SDS have not yet begun to appear and may not appear in fields planted late in May or early June.

The foliar symptoms produced by SDS begin as chlorosis and necrosis of the interveinal tissue of soybean leaves, which then coalesce, forming large yellow and brown areas between the green midvein and green lateral veins. Infected plants in the field prematurely turn yellow and then brown, whereas healthy plants remain green. Other symptoms include rotting of roots, necrosis of the crown, discoloration of the vascular tissue in roots and stems, premature defoliation of the soybean plant, and abortion of the flowers and pods. The effects of root infection are not as apparent and usually remain unnoticed unless the blue-colored spores of *Fusarium solani* f. sp. *glycines*, the causal organism, are observed on the roots of mature plants.

Results from our 2000 and 2001 field research on SDS show that infection of the soybean root system occurred without the presence of observable foliar symptoms. Disease pressure (foliar symptom severity) was higher in 2000 than in 2001, but colonization frequency by the fungus on the roots was greater in 2001.

Currently, foliar symptoms are not visible in this year’s field study, and foliar symptoms may not develop due to the late planting date. However, the fungus has already been isolated from root systems of plants in both infested and noninfested plots collected during June and July.

In addition, our previous research shows that when severity of SDS is low to moderate, foliar symptoms are not always a good indication of yield potential. Yield of the six resistant soybean cultivars in 2000 decreased by 5% to 20% when inoculated with the causal organism, even though they had relatively low levels of foliar disease severity. In contrast, the yields of two susceptible cultivars were similar in the infested and noninfested plots, even though they showed mod-

erate foliar symptoms in the infested plots. The implications of our results are that the fungus causing SDS colonizes the soybean root system and can potentially cause reductions in yield even though the plant is showing no foliar symptoms.

This explains, in part, why this disease is difficult to control. This pathogen still has many unknown factors about how it is causing disease on soybeans. Our research shows that the root system plays an important role in soybean plants' resistance to SDS; however, more research is needed to specifically identify that role.

In the meantime, it is best to try to manage this disease by lessening the impact of SDS:

1. Learn to identify SDS in the field, as symptoms may appear similar to more common diseases such as brown stem rot or stem canker.
2. Select soybean varieties that mature at different times. Either use either different maturities within a maturity group or use different maturity groups. Early-maturing cultivars appear better.
3. Delay planting or extend planting time so that all soybeans are not at the same growth stage at the same time. However, do not wait past the suggested time for your area of the state.
4. Use cultural practices to improve drainage in low spots, reduce cyst nematode populations, and reduce soil compaction.
5. Crop rotation is of limited value because this organism can persist in the soil for many years. However, planting continuous soybeans is *not* recommended because this can increase other diseases.—Loretta Ortiz-Ribbing

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

The region received variable amounts of rainfall last Monday evening through Tuesday, with reported amounts from 0.1 inch to more than 5 inches.

Additional reports have been received concerning rootworm larvae damage in first-year corn in LaSalle County. Incomplete pollination has been observed in numerous fields from previous silk clipping by rootworm beetles.

Insecticide treatment for spider mite infestation continued throughout the region, with most treated acreage being border rows and a few entire fields. Spider mite infestations increased last week in spite of the cooler temperatures.

Soybean aphid infestations have been observed in LaSalle and Bureau counties, with one report of an insecticide treatment. Sudden death syndrome has been observed in Will County. Additional activities last week include late-season herbicide applications in soybeans.

West-Central Illinois

Spotty showers fell here and there early in the week, with only small areas receiving significant accumulations. Subsoil moisture is still in short supply.

Most corn is at or near the dent stage, but a few producers in the southwest part of the region have begun to chop silage from earlier-planted fields. Western corn rootworm beetle numbers are high in many cornfields. However, rootworm damage in first-year corn has not been found, except in the extreme eastern portions of the region. Heavy flights of second-generation corn borer are still being reported but appear to be tapering off.

Despite shorter canopy heights, soybeans appear to be tolerating the dry weather well. Additional precipitation

would likely help to fill pods and improve test weight. Spider mite activity seems to have picked up in the southeastern part of the region. Reports of widespread treatment have not been received.

The Northwest Research Center in Monmouth will hold its annual agronomy research tour on August 20. The tour will begin at 8:00 a.m. and is open to the public. To get to the research farm take U.S. 67 just north of Monmouth and follow the sign to the west.

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*The Pest Management & Crop
Development Bulletin* is brought to you
by University of Illinois Extension and Information
Technology and Communication Services,
College of Agricultural, Consumer
and Environmental Sciences,
University of Illinois at Urbana-Champaign.
This newsletter is edited by Erin Cler
and formatted by Oneda VanDyke,
ACES/ITCS.

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