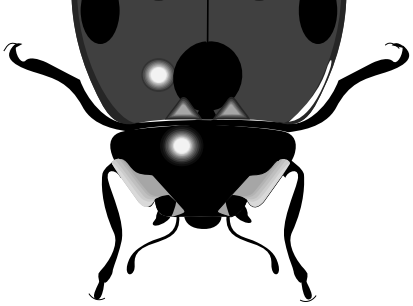

PEST MANAGEMENT & CROP DEVELOPMENT

BULLETIN

FOR IMMEDIATE RELEASE
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Executive editor: Kevin Steffey, Extension Entomologist

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In This Issue

INSECTS

Western Corn Rootworm Densities Reach Alarming Levels in Rural and Urban Areas

That's right, urban areas. Russel Higgins, IPM educator, Matteson Extension Center, received a report from a pest control firm in Chicago that indicated corn rootworm adults were being collected on the 49th and 50th floors of the Prudential Building. The individual that spoke with Russ Higgins also noted that the numbers of corn rootworm adults exceeded any he's observed in 13 years. We've received other reports that indicate western corn rootworm adults are being washed up on the beaches of Lake Michigan at bothersome levels (at least to beach dwellers). This phenomenon has been observed periodically over the past several decades. This event is seemingly caused when large densities of rootworm adults migrate from cornfields and are subsequently caught in downdrafts triggered by the development of certain atmospheric conditions. Additional observations passed along to us from suburban residents indicate that "hordes" of western corn rootworm adults have devastated cucurbit and sweet corn crops produced within family gardens. These observations parallel the very impressive levels of corn rootworm injury reported by producers in many areas of central, east-central, and northern Illinois.

The intensity of corn rootworm injury experienced by many producers also was reflected in our soil insecticide trials this year. Root ratings are provided in Table 1 for our insecticide experiments that were located at DeKalb, Monmouth, and Urbana. Root-injury ratings exceeded 5.0 (two nodes of roots completely destroyed) at each of the three sites. These studies offer good insight regarding the performance of products challenged by large densities of corn rootworm larvae. At DeKalb, the driest of the sites, only the band application of Force 3G kept the average root injury below a rating of 3.0 (moderate pruning, but never the equivalent of an entire node). Counter CR, historically one of the most consistent soil insecticides, had average root injury (3.93) that approached a rating of 4.0 (one node of roots destroyed) at DeKalb. Applications of Fortress 5G (furrow, smart box) and Regent 4SC (microtube) failed to keep root injury below a rating of 4.0.

At the Monmouth site, favored by more generous precipitation, soil insecticide performance fared somewhat better, despite very high levels of injury in the control plots (5.43). Several products kept root injury below a rating of 3.0 and included Aztec 2.1G, Counter CR, Lorsban 15G, and Nufos. The insecticides Capture 2EC (band, 0.1 lb a.i./acre) and Fortress 5G (band and furrow applications) failed to keep root injury below a rating of 4.0. Product performance at the Urbana site was generally better, even though the injury rating (5.5) in the control was the greatest of all three experiments. For a more thorough discussion of the root-rating results in Urbana, refer to issue no. 18 of the *Bulletin*.

Table 1. Preliminary root-rating[1] results for corn rootworm trials, DeKalb,[2] Monmouth,[3] and Urbana,[4] Illinois, 2001.

Insecticide	*Rate*[5]	*Application*	*DeKalb*	*Monmouth*	*Urbana*
Aztec 2.1G	0.15	Band	3.27	2.70	2.4
Aztec 2.1G	0.15	Band (smart box)	3.05	2.60	3.1
Aztec 2.1G	0.15	Furrow	3.40	2.50	2.4
Capture 2EC	0.082	Band	3.35	3.55	3.4
Capture 2EC	0.1	Band	3.40	4.30	3.5
Capture 2EC	0.082	Furrow	3.60	3.60	3.3
Capture 2EC	0.1	Furrow	3.45	3.75	3.7
Counter CR	1.3	Band	3.93	2.30	2.2
Force 3G	0.13	Band	2.93	3.00	2.9
Fortress 5G	0.16	Band (smart box)	3.95	4.33	2.9
Fortress 5G	0.16	Furrow (smart box)	4.40	4.50	2.9
Furadan 4F	1.0	Broadcast	--	--	4.8
Lorsban 15G	1.3	Band	3.95	2.70	3.3
Nufos	1.3	Band	3.40	2.65	2.8
Prescribe	1.34	Seed treatment	3.60	3.67	4.5
ProShield	1.2	Seed treatment	3.60	3.05	3.9
Regent 4SC	0.13	Microtube	4.03	3.40	3.7
Control			5.23	5.43	5.5

[1]Iowa State University 1 to 6 root-rating scale used: (1 = no visible damage or only a few minor feeding scars, 2 = some roots with feeding scars but none eaten off to within 1.5 inches of the plant, 3 = several roots eaten off to within 1.5 inches of the plant but never the equivalent of an entire node of roots destroyed, 4 = one node of roots destroyed or the equivalent, 5 = two nodes of roots destroyed or the equivalent, and 6 = three or more nodes of roots destroyed.
[2]Plots were planted with Pioneer 34G81 on May 4, 2001, in a field that had been planted to a trap crop of corn in 2000.
[3]Plots were planted with Pioneer 34G81 on May 3, 2001, in a field that had been planted to a trap crop of corn in 2000.
[4]Plots were planted with Pioneer 34G81 on April 24, 2001, in a field that had been planted to a trap crop of corn in 2000.
[5]Rates are specified as lb a.i./acre, except for seed treatments that are expressed as mg/seed.

Consistency ratings for the soil insecticides for each site are provided in Table 2. We measure consistency as the percentage of roots with a root-injury rating less than 4.0 (one node of roots destroyed). Plants that have at least one full node of roots pruned are more susceptible to lodging. If plants lodge, yield losses can be more substantial. So, consistency rankings may be viewed along with actual root ratings to get an overall impression of product performance. Products can vary considerably in their consistency from year to year and from location to location (within a year). An excellent example of this point is Counter CR in 2001. The consistency of this product varied from 33% (DeKalb) to 100% (Urbana) despite the fact that larval pressure was comparable at each site. For 2001, Aztec 2.1G and Force 3G offered the most consistent root protection across the three experimental sites. For many of the other products, the odds of finding root injury that equaled a root rating of 4.0 were no better than 50:50, worse for several insecticides. These data point out the fact that achieving a high level of consistent root protection is not a sure bet for any product in any given year.—*Mike Gray*

Soybean Aphids Are Headline News in Toronto

If misery loves company, then we should be in soybean aphid heaven. Last week, several Canadian newspapers featured the soybean aphids' invasion of Toronto. The airborne pests were so thick they caused home plate umpire Tim Welke to request the roof of the Skydome be closed during the third inning of the Toronto Blue Jays/Baltimore Orioles baseball game. William Babin reported, "They are so thick it almost looks as if the game is being played out during a light snowfall." Most Toronto residents accepted the occurrence as a simple annoyance, but Rosetta Powell, who was quoted in the Toronto Star, had another idea: "I think it's a plague coming down on the city. It's because we're too sinful." Canadian soybean producers in southwestern Ontario may have lost 25% of their crop as a result of the soybean aphid. Eric Richter, Syngenta Seed, London, Ontario, described field conditions for a reporter from *The Star:* "It's almost like the locust plague in Africa. In some fields, if you tried to put on another aphid it would fall off, there's that many."

For more information on the soybean aphid invasion, visit the following Web sites.

The Star carried three articles:

"Toronto invaded by swarms of aphids"

< http://www.thestar.com/NASApp/cs/ContentServer?pagename=thestar/Layout/Article_Type1&c=Article&cid=996789891809&call_page=TS_News&call_pageid=968332188492&call_pagepath=News/News&col=968793972154>

"Aphids devastate Ontario soybean crops"

<http://www.thestar.com/NASApp/cs/ContentServer?pagename=thestar/LayoutArticle_Type1&c=Article&cid=996876668446&call_page=TS_News&call_pageid=968332188492&call_pagepath=News/News>

Table 2. Preliminary consistency percentages[1] for corn rootworm trials, DeKalb,[2] Monmouth,[3] and Urbana,[4] Illinois, 2001.

Insecticide	*Rate[5]*	*Application*	*DeKalb*	*Monmouth*	*Urbana*
Aztec 2.1G	0.15	Band	60	100	100
Aztec 2.1G	0.15	Band (smart box)	85	100	75
Aztec 2.1G	0.15	Furrow	75	95	100
Capture 2EC	0.082	Band	55	55	55
Capture 2EC	0.1	Band	50	20	60
Capture 2EC	0.082	Furrow	47	60	70
Capture 2EC	0.1	Furrow	60	45	60
Counter CR	1.3	Band	33	95	100
Force 3G	0.13	Band	87	75	87
Fortress 5G	0.16	Band (smart box)	45	15	80
Fortress 5G	0.16	Furrow (smart box)	25	15	85
Furadan 4F	1.0	Broadcast	--	--	15
Lorsban 15G	1.3	Band	35	90	75
Nufos	1.3	Band	53	95	90
Prescribe	1.34	Seed treatment	50	37	20
ProShield	1.2	Seed treatment	50	80	53
Regent 4SC	0.13	Microtube	32	50	50
Control			5	5	0

[1]Consistency is measured as the percentage of roots examined with a root rating less than 4.0.
[2]Plots were planted with Pioneer 34G81 on May 4, 2001, in a field that had been planted to a trap crop of corn in 2000.
[3]Plots were planted with Pioneer 34G81 on May 3, 2001, in a field that had been planted to a trap crop of corn in 2000.
[4]Plots were planted with Pioneer 34G81 on April 24, 2001, in a field that had been planted to a trap crop of corn in 2000.
[5]Rates are specified as lb a.i./acre, except for seed treatments that are expressed as mg/seed.

"Return of the aphids"

<http://www.thestar.com/NASApp/cs/ContentServer?pagename=thestar/Layout/Article_Type1&c=Article&cid=996876671732&call_page=TS_News&call_pageid=968332188492&call_pagepath= News/News>

The City Pulse News site features a short video clip of the invasion at <http://www.pulse24.com/News/Top_Story/20010803-005/page.asp>.

Reports like this help us put our problems in perspective. As Kevin indicated last week, symptoms of injury are beginning to show up in some fields with high densities of soybean aphids and low soil moisture. The number of alate (winged) soybean aphids in the suction traps continued to increase, with counts for the week ending August 3, 2001, as follows:

Location of suction trap	*Number of soybean aphids*
Orr Research Center	5
Monmouth	4
DeKalb	51
Freeport	137

As we continue to receive reports of greater infestations to the north, data provided by Larry Pedigo and Marlin Rice, Iowa State University, may explain the distribution and infestation levels. Ideal environmental conditions for soybean aphid development are temperatures between 72° and 77°F, with a relative humidity of less than 78%. When temperatures reach 81°F, the aphids' reproductive capacity is reduced by 25%. Perhaps the hot, humid conditions we are experiencing across the state are having an impact on soybean aphid populations.—*Sue Ratcliffe*

Remember to Submit your 2001 WCR Monitoring Data

Based on calls during the last several weeks, many of you are deploying Pherocon AM sticky traps in soybean fields to predict the need for soil insecticides in 2002 first-year corn. We encourage you to forward your monitoring data to us again this year. Last year's monitoring data are located at <http://ipm.uiuc.edu/publications/rootworm-2000/index.htm>. Data from 1999 are located at <http://ipm.uiuc.edu/publications/rootworm-1999/index.htm>. The data located on these Web sites should only be used as general guidelines for western corn rootworm densities, not to predict the need for a soil insecticide in 2002 first-year corn. The only way to accurately predict the need for a soil insecticide is to monitor fields yearly and make your decision on a field-by-field basis.

Monitoring data for 2001 may be submitted on-line at <http://ipm.uiuc.edu/agriculture/corn/wcrscout/wcrscout.html>, or you may e-mail your reports to sratclif@uiuc.edu. If you do not have access to the Internet or e-mail, please mail your reports to Susan Ratcliffe, University of Illinois, 1102 S. Goodwin Avenue, Urbana, Illinois 61801.—*Sue Ratcliffe*

Don't Underestimate Potential Impact of Insect Injury to Soybean Pods

The second week of August signals that 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 able to cause yield losses in soybean fields during the pod-fill stage of development. So, although it has been a long, hot summer already, don't neglect to scout soybeans now and well through early September for these insect pests.

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. Insecticides that are labeled for both bean leaf beetles and grasshoppers in soybeans include *Asana XL, dimethoate, *Lorsban 4E, *Penncap-M, Sevin XLR Plus, and *Warrior. Please consult the product labels for the amounts of product that may be applied for the control of each insect pest. Those insecticides preceded by an asterisk are restricted-use products and may be applied only by certified applicators.

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

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 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. *Penncap-M is labeled for control of stink bugs at 1 to 3 pints of product per acre. *Penncap-M is a restricted-use product and may be applied by certified applicators only.—*Mike Gray*

PLANT DISEASES

Diplodia Ear Rot of Corn

Diplodia ear rot was one of the most severe and noticeable diseases that affected corn in many parts of Illinois in the 2000 growing season. We have received questions concerning whether this ear rot disease will be common again this year. It is still too early in the season to typically see Diplodia ear or stalk rot in most of Illinois. We

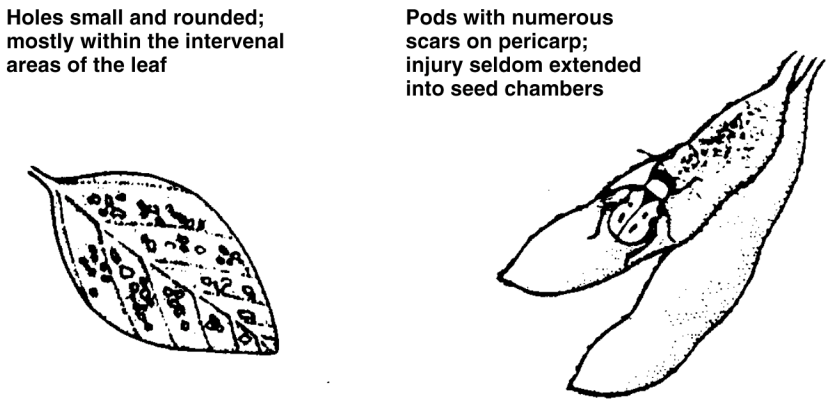

Figure 1. Bean leaf beetle defoliation and pod injury.

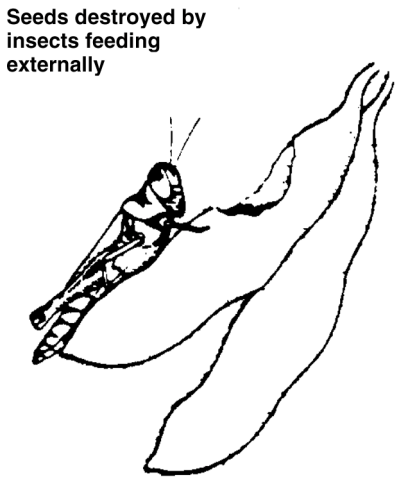

Figure 2. Grasshopper injury to soybean pods.

have, however, received reports of Diplodia ear rot in southern Indiana, and Diplodia stalk rot has been reported from east-central Illinois. Although we don't have a good way to predict whether Diplodia ear rot will be a problem, a review of this disease may help to clarify some of the factors that contribute to its development.

Diplodia ear rot appears to be influenced strongly by certain management and environmental factors. It was a common ear rot disease in the Midwest from the early 1900s to late 1950s but became uncommon in the 1960s as fall plowing became widely used. Diplodia ear rot has been returning to Illinois as minimal tillage has become adopted and as Diplodia stalk rot has become more prevalent. Diplodia ear rot was a significant problem in 2000, apparently in part because there was wet weather at flowering and dry conditions earlier in the spring and summer.

The fungal pathogen that causes Diplodia ear rot is *Stenocarpella maydis*, also called *Diplodia maydis*. This fungus not only causes ear rot but can also cause stalk rot and seedling blight of corn. Corn is the only host for this pathogen. *S. maydis* survives over winter on diseased stalk and ear tissues that have not been buried. In the spring the fungus reproduces on the plant debris and produces spores

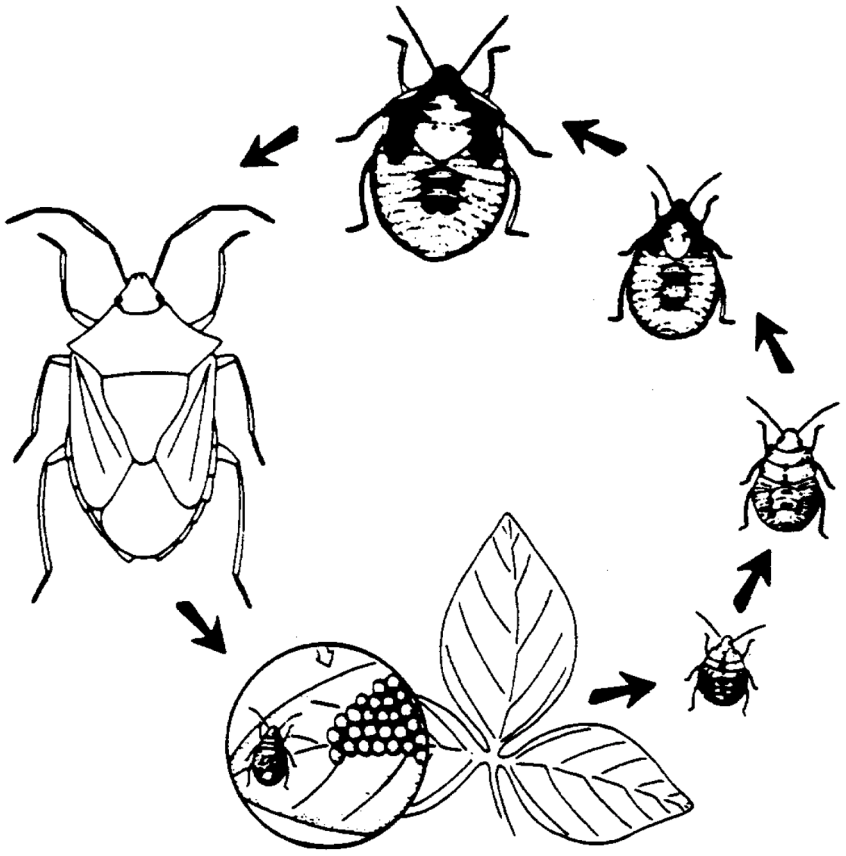

Figure 3. Life cycle of a stink bug.

that are moved by rain and wind to the new crop. The fungal spores land on the plant and commonly infect at the base of the ear if sufficient water is available. Symptoms of Diplodia ear rot frequently begins as tan spots on the base of the husk and ear leaf, which expand over much of the ear; and as the disease progresses, a white mycelial (fungal) growth spreads over and between the kernels.

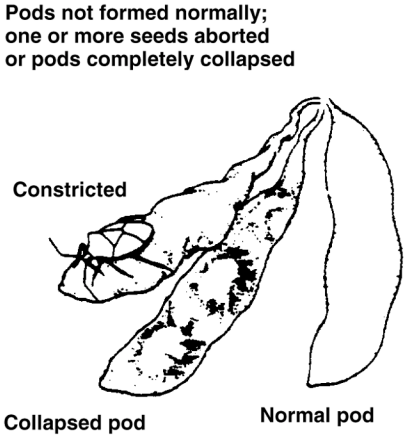

Figure 4. Stinkbug injury to soybean pods.

Although a key to the disease cycle for Diplodia ear rot is movement of the pathogen from infested corn debris on the soil surface to growing plants and vice versa, infection appears to be highly dependent on wet weather for 2 to 3 weeks after flowering. Another factor that contributes to this disease is the amount of Diplodia stalk or ear rot in the previous crop and the quantity of infested debris that remains on the soil surface. Some hybrids are more resistant to Diplodia ear rot than others, which may affect severity of this disease as well as the number of spores that are produced on infested residue.

Options for managing Diplodia ear rot are limited. Fields should be scouted for this disease between now and harvest to help determine if and where it occurs, and to determine if there are

differences in resistance among hybrids under your conditions. Resistance to Diplodia should be considered in selection of hybrids, especially in areas where this disease has been a problem. Unfortunately, some high-yielding hybrids are susceptible, and the risks of potential yield loss from Diplodia must be considered relative to potential yield loss from lower-yielding but more resistant hybrids. Another key to management of this disease is rotation out of corn because the fungus seems to survive poorly over time on infested debris. The potential benefits of fungicides to control Diplodia ear rot are still uncertain. Researchers at the University of Illinois at Urbana-Champaign are investigating resistance and fungicides for control of Diplodia ear rot, and in the near future we hope to have more information to help you manage this disease.—*Dean Malvick*

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

Rainfall throughout the area last week was variable, as some areas received more than 2 inches and others received 2 tenths or less.

Reports have been received of several soybean fields being treated for soybean aphids. Some of the treated fields had not expressed any visible symptoms prior to being treated. A LaSalle County soybean field has been monitored for soybean aphid populations weekly for the past 6 weeks. Aphid populations last week averaged about 200 per plant, compared to more than 1,000 per plant the previous week. Refer to last week's issue of the *Bulletin* regarding treatment decisions for soybean aphids.

Spider mite damage has appeared throughout the region, primarily along field borders. However, spider mite populations appear to have naturally "crashed" in several fields that had showed damage.

Dave Callan, LaSalle County FS, reports several instances of soybean SDS in southwest LaSalle County. To date, SDS is limited to this area and parts of Putnam County.

Southern Illinois

Southern Illinois has been hazy, hot, and humid for the last week. High daytime and nighttime temperatures continue to stress the crop and may potentially affect yield. Corn is R4–R5, and producers have called expressing concern about poor pollination and/or kernel abortion. Gray leaf spot and smut are being found in some fields, and early symptoms of anthracnose stalk rot are beginning to appear.

Soybeans are R4, and scattered reports of SDS are coming in from I-70 all the way to the southern tip of the state. There have been reports of poor weed control, primarily waterhemp, prickly sida, giant ragweed, and nightshade, in some soybean fields where post applications were delayed.

The primary insect problem continues to be potato leafhopper in alfalfa.

West-Central Illinois

High temperatures and dry weather continued during the week. The prolonged hot weather is threatening the once-anticipated high yields for corn and soybean.

The extended high temperatures are thought to be causing some yield reduction in corn. Additional "firing" of plants in some fields has been observed, and ear fill and kernel depth may be curtailed. No major pest problems have been reported; however, some leaf diseases, such as gray leaf spot, can be found in some fields.

Late-season weeds have emerged through the canopy of some soybean fields; they include primarily waterhemp, giant ragweed, and velvetleaf. SDS and spider mites can be found in some fields also.

Farmers and their families are making plans to attend the Illinois State Fair in Springfield, August 10–19, and Agronomy Day at the University of Illinois, August 23.

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