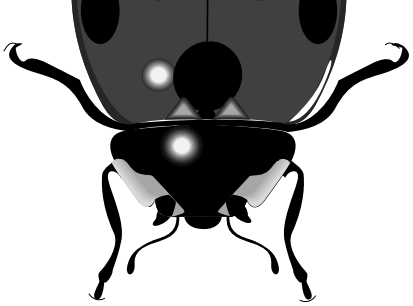

PEST MANAGEMENT & CROP DEVELOPMENT

BULLETIN

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Also in This Issue

INSECTS

Fall Armyworms in Southern Illinois

Fall armyworms are making themselves known in many late-planted cornfields in southern Illinois. Approximately 1-1/4 inches long, these larvae vary in color from light brown to green and have three yellow stripes down their side. The fall armyworm can be distinguished from the true armyworm by a white or yellow inverted "Y" on the head of the fall armyworm.

The fall armyworm is a migratory insect; moths overwinter in the southern states and migrate northward during the summer months and early fall. Moths lay eggs on corn leaves at night. Each egg mass may contain as many as 150 eggs. Larvae feed during the day in the whorl tissue or ears. Damage to the ear by the fall armyworm resembles injury caused by the corn earworm, except that an entry hole will be visible with fall armyworm injury.

Treatment for the fall armyworm is often questionable. Injury caused by the fall armyworm is predominantly cosmetic and rarely economic. Recommended thresholds for fall armyworm vary; a general recommendation found in the *Illinois Agricultural Pest Management Handbook* is to treat when 75% of the plants have whorl damage and the armyworms are still present. It's important to remember that treating for fall armyworms is difficult because of their placement in the whorl. Insecticide just broadcasted onto the foliage has little hope of controlling the worms, as they do not leave the whorl of the plant. To be more effective, insecticide needs to be directed into the whorl. Also, once the fall armyworm has entered the ear tip, treatment is ineffective. Insecticides labeled for control of fall armyworm are Ambush*, Capture 2EC*, Lorsban 4E*, Mustang Max*, Pounce 3.2EC*, and Tracer 4SC. Insecticides followed by an asterisk are restricted use pesticides. Please follow all label instructions.—*Kelly Cook*

Areas Infested with Soybean Aphids Expanding

Reports of soybean aphid activity are still coming in. In fact, reports are indicating that the problem area is no longer limited to northeastern Illinois. Several people have called in with economic infestations in northwestern Illinois and northeastern Iowa. Kevin Black, Growmark, has received word of infestations near Jerseyville (20 miles north of St. Louis) and Beardstown (70 miles southwest of Peoria). Overall, densities are still the highest in northern Illinois. Rod Winter, FMC, is finding 500 to 1,000 aphids per plant in fields in Lee, Ogle, and Winnebago counties. Chet Hetrick, FMC, sent these per-plant counts of soybean aphids: Manteno, 250 to 400; Kankakee to Rte. 24, 150 to 200; Rte. 24 to Rte. 9, 50 to 100; Rte. 9 to I-74 (Ogden), 25 to 100. Although 25 to 100 soybean aphids per plant does not necessarily meet the recommended thresholds for treatment, fields need to remain under watch, as densities can increase up to 10-fold in just 1 week. As soybean aphids are being found in more central and southern areas of the state, keep in mind these recommendations for insecticide applications when scouting:

1. a density of 25 or more aphids per leaflet (also monitor for natural enemies)
2. an increase in pest numbers from the first to second sampling period
3. alatoid (winged) nymphs make up less than 50% of the population
4. soybean stage is R1 or R2

For more information on soybean aphids, please refer to the soybean aphid update from issue no. 17 (July 18, 2003) of the *Bulletin* (http://www.ag.uiuc.edu/cespubs/pest/articles/200317i.html).—*Kelly Cook*

Defoliators Abundant in Many Soybean Fields

Growers in northern Illinois are keeping careful watch in their fields for the presence of the soybean aphid. And although it is indeed wreaking havoc during these summer months, don't forget those pesky soybean defoliators. Defoliation during the critical time of pod fill can reduce yield. Japanese beetles, bean leaf beetles, grasshoppers, woollybear caterpillars, and green cloverworms all fall into the category of "soybean defoliators." In areas of central and east-central Illinois, the western corn rootworm beetle may also fall into this category.

The percentage of defoliation and stage of soybean development are both factors considered in economic thresholds for soybean defoliation. Soybean plants can generally withstand 35% to 40% defoliation during vegetative growth stages (or before bloom). The threshold is only 20% to 25% during the critical stages of bloom through pod fill. These thresholds can be adjusted depending on growing condition and even soybean prices. An example of this is to lower thresholds when soybeans are moisture stressed or soybean prices are high.

During vegetative stages, when plants are growing and producing new leaves, soybeans can tolerate considerable defoliation without any yield loss. The same is true after pods are completely filled. As soybean plants enter reproductive stages, they become more sensitive to defoliation. Yet even during the most critical period, pod development, soybean plants can still lose 20% of their leaf area before yield is affected. In general, defoliation tolerance varies with the stage of plant growth, overall plant vigor, and the adequacy of growing conditions.

Figure 1 illustrates the general relationship between defoliation at four growth stages and probable yield reduction. The four stages are vegetative growth (VC to the beginning of R1), blossom development (R1 to R2), pod development (R3 to R5), and seed maturation (R6 to R8).

To accurately assess the percentage of defoliation, be sure to scout the entire field! Don't estimate defoliation from a few plants near the field edge. They may not necessarily represent the amount of defoliation in the rest of the field. As you walk through the field, scan the plants from top to bottom. A simple procedure to estimate the percentage of defoliation follows:

1. Without looking at the plants, stretch your arm out and randomly collect 20 leaflets each from the top, middle, and bottom thirds of scattered plants in the field for a total of 60 leaflets. At this time of year, you can probably focus on the top and middle thirds.
2. Compare the leaflets against Figure 2, which illustrates insect-produced defoliation at six different percentages.
3. Record your estimates of the percentage of defoliation for each of the 60 leaflets, and take the average (add all the estimates and divide the total by 60). The result is the overall level of defoliation in your field.

Another method to estimate defoliation is the grid system developed by entomologists at the University of Nebraska. Use the grid (Figure 3) to measure the length in grid units of each leaflet, and estimate the number of missing squares in each sampled leaflet. With this method, collect leaflets from several areas of the field. Determine the length and number of missing squares for each leaflet, and then refer to Table 1 to determine the percentage of defoliation for each leaflet. Record results for each leaflet. Calculate the average percentage of defoliation by dividing the sum of percentages by the number of leaflets examined.

Although these thresholds are standard for all insect defoliators, remember to

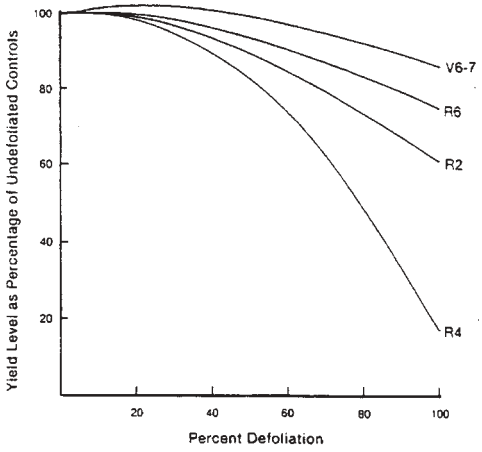

Figure 1. Effects of defoliation on soybean yields at four growth stages.

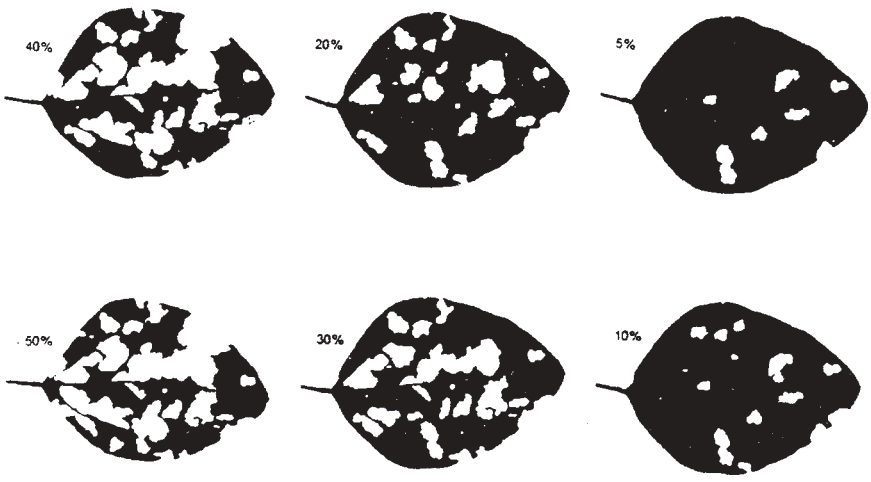

Figure 2. Examples of levels of insect defoliation of soybean leaflets.

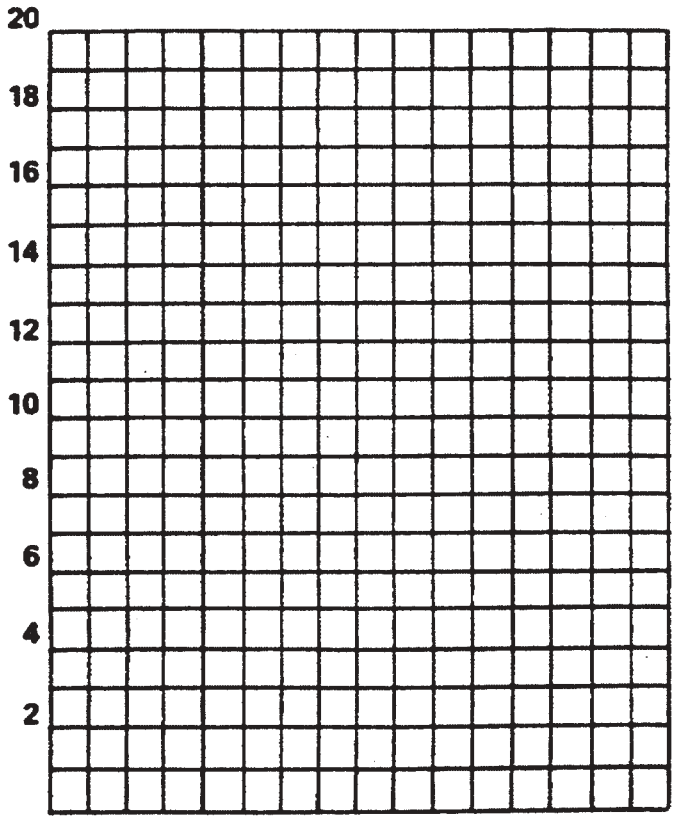

Figure 3. Grid for estimating soybean leaflet length (in grid units) and defoliation.

Table 1. Estimates of the percent of soybean defoliation using the "grid system" developed at the University of Nebraska.

Leaf length (in grid units)	*Percent defoliation associated with this many missing squares*											
	1	*2*	*3*	*4*	*6*	*8*	*10*	*15*	*20*	*25*	*30*	*40*
8	2	5	7	9	14	18	22	34	45	56	67	90
10	2	3	5	7	10	13	17	25	33	42	50	67
12	1	2	4	5	8	10	12	19	25	31	38	50
14	1	2	3	4	6	8	10	15	20	25	30	40
16	1	2	2	3	5	7	8	12	17	21	25	33
18	1	1	2	3	4	6	7	11	14	18	21	29
20	1	1	2	2	4	5	6	9	12	16	19	25

identify the insect causing the injury. Different insecticides are labeled for different insects, and rates of application also can vary.—*Kelly Cook*

PLANT DISEASES

Sudden Death Syndrome and Septoria Brown Spot in Illinois Soybean Fields

The much-discussed disease sudden death syndrome (SDS) is now appearing in central Illinois soybean fields. The symptoms usually appear in the flowering growth stage, which indicates we are on schedule this year for appearance of the disease. Although SDS, like most diseases, is difficult to predict because of the many environmental and other variables that influence its development, in some Illinois areas the conditions seem to have been favorable for development of SDS. This disease is often severe where yield potential is high. In addition, SDS appears to be favored by early planting, compacted soil, poor drainage, soybean cyst nematode, and heavy rainfalls throughout summer.

SDS is caused by the soilborne fungal pathogen *Fusarium solani* f.sp. *glycines*. The foliar symptoms are most obvious. Chlorotic spots develop between the veins on leaves, and the leaves may become cupped or curled. The spots typically enlarge to become brown lesions surrounded by yellow areas. The leaves often detach from the petioles as the disease progresses. Gray to light brown discolored areas develop inside the root and in the vascular tissue of the lower stem. Roots often rot, and plants may then be pulled easily from the ground. The foliar symptoms can appear very similar to brown stem rot (BSR) symptoms, but the pith remains white in plants infected with SDS while the pith becomes brown, especially at the nodes, in plants infected with BSR.

SDS is difficult to manage. Yield losses can be minimized by planting cultivars with relatively high levels of tolerance or partial resistance to SDS. Crop rotation has not shown consistent benefits. It may also be beneficial to plant SCN-resistant cultivars and plant later than normal where SDS has been a problem. Deep tillage may help reduce disease severity in compacted areas. Information on SDS tolerance/resistance for commercial varieties from Illinois trials can be found at Web sites from the University of Illinois (http://web.aces.uiuc.edu/VIPS/v2home/vips2home.cfm) and Southern Illinois University (http://www.siu.edu/%7Esoybean/).

In addition to SDS, Septoria brown spot is present in many Illinois soybean fields. This common and usually insignificant disease is caused by the fungal pathogen *Septoria glycines*. The pathogen can be spread and may overwinter on infected plant debris; it also may be seed transmitted. Septoria brown spot is favored by warm, wet weather; continuous soybeans; and minimum tillage. It often first appears on young leaves early in the summer and progresses to other leaves and plant parts throughout the season.

Infections begin on lower leaves and progress upward to develop later on

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upper leaves. Small, dark brown spots (pinpoint to 1/5 inch in size) develop on both surfaces of leaves; the spots may grow together to create irregular brown patches. Infected leaves turn brown and yellow and may drop prematurely. Because this disease is usually minor and causes insignificant damage, no special effort is usually required for disease management. Resistant varieties are not available. Rotation with nonlegume crops is recommended, and under severe conditions, tillage and fungicides may be warranted.—*Dean Malvick*

REGIONAL REPORTS

Northern Illinois

Moderate temperatures continue throughout the region. Rainfall has been spotty the past 3 weeks, and many areas would welcome some precipitation.

Soybean aphid populations have increased this week. However, widespread insecticide treatment has not occurred. Aphid populations continue to be variable within a single field, and growers are encouraged to scout the entire field before deciding on an insecticide treatment.

Reports continue to be received of rootworm larvae damage in first-year corn even though some fields had an insecticide applied at planting. However, the root pruning from rootworm larvae is not as severe in the region as was experienced in 2002.

Southern Illinois

Rainfall amounts over the past weekend were quite variable, ranging from zero in some areas to 2 inches in others, along with hail damage. Cooler temperatures and rainfall will definitely increase the yield potential for late-planted crops.

The latest planted corn is approaching pollination. Reports of Japanese beetle silk feeding are winding down, but there are still reports of fall armyworm feeding damage to grain sorghum and late-planted corn. Scouting for second-generation European corn borer should also be done now.

Graziers who intend on stockpiling tall fescue for deferred grazing this winter will want to apply nitrogen fertilizer now in order to obtain maximum forage growth.

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