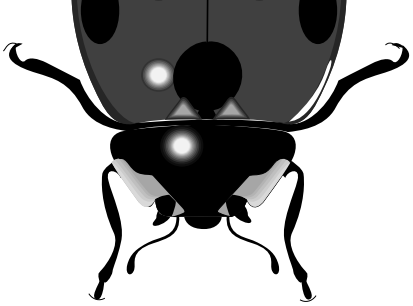

PEST MANAGEMENT & CROP DEVELOPMENT

BULLETIN

FOR IMMEDIATE RELEASE
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Executive editor: Kevin Steffey, Extension Entomologist

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Also in This Issue

INSECTS

Update on Heat Unit Accumulations for Corn Rootworm Larval Hatch

To date, we have not received any confirmation that corn rootworm larvae have hatched in Illinois. Soil heat unit accumulations (base 52˚) at the 4-inch level, from January 1 through May 19, 2003 (Figure 1), suggest that late May is still a good general target date for larvae to begin their hatch. As we've reported previously, after 380 to 426 soil heat units have accumulated, from January 1, approximately 50% of corn rootworm larvae should have hatched. Across the southern third of the state, we have accumulated the necessary number of heat units for this annual event to begin. However, the southern one-third of Illinois is not typically an area of the state where corn rootworms are considered a primary insect threat. For sure, corn rootworms may cause damage in any area of the state; however, their economic threat in southern Illinois is more sporadic in nature.

By late May, I anticipate receiving a few reports that larval hatch has occurred across central Illinois counties. As Figure 1 depicts, heat units in the northern one-third of Illinois are expectedly well behind even those in central areas of the state. I do not anticipate reports of larval hatch in northern Illinois counties until sometime during the first week of June.

We look forward to your observations from the field regarding the corn rootworm hatch.—*Mike Gray*

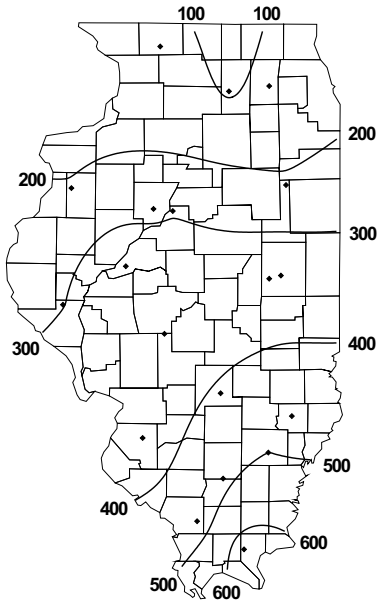

Figure 1. Actual soil degree-day accumulations (base 52˚F) at the 4-inch level, from January 1 through May 19, 2003. (Map courtesy of Bob Scott, Illinois State Water Survey.)

Update on Stalk Borer Heat Unit Accumulations

In last week's *Bulletin* (issue no. 8, May 16, 2003), we provided suggested management strategies for stalk borers and an update on heat unit accumulations for this insect pest. Dispersal of stalk borer larvae (generally fifth to seventh instars) from weed hosts begins when approximately 1,100 heat units (base 41˚F) have accumulated since January 1. Heat unit accumulations depicted in Figure 2 indicate that movement of stalk borer larvae from their weed hosts is under way across the southern one-half of Illinois. In extreme southern Illinois, decisions regarding the need for an insecticide treatment should be made in the very near future.

For a complete discussion regarding the management of stalk borers, please take a look at last week's *Bulletin* (issue no. 8, May 16, 2003).—*Mike Gray*

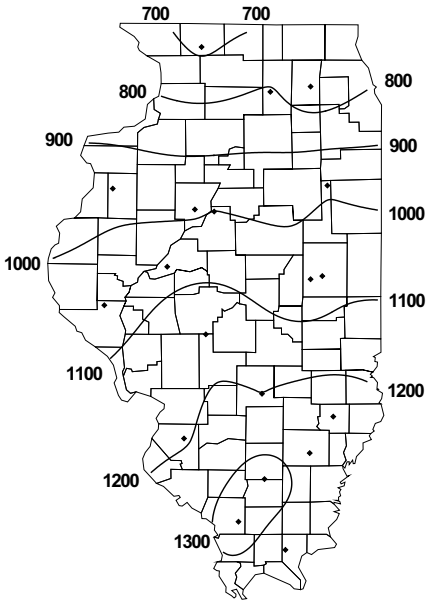

Figure 2. Actual degree-day accumulations (base 41˚F), from January 1 through May 19, 2003. (Map courtesy of Bob Scott, Illinois State Water Survey.)

Getting Reacquainted with Potato Leafhoppers

Last week, I mentioned that potato leafhoppers had been spotted in several counties across the state. Potato leafhoppers are small, pale-green insects that are "wedge shaped." Only about 1/8 inch long, these insects may cause quite a bit of damage. Potato leafhoppers migrate from southern states, arriving in Illinois during the spring. Females lay two or three eggs in the stems and veins of plants each day. Nymphs hatch after 7 to 10 days and mature in about 2 weeks. Three to four generations are observed each year in Illinois.

Injury caused by the potato leafhopper is due to its piercing and sucking activities. Fluids are removed from alfalfa plants, and toxic substances are injected into the vascular system. Symptoms of this injury, hopper burn, are identified by the yellow, V-shaped area at the leaf tip. Disease and nutritional deficiencies are similar to hopper burn, but these disorders generally begin at the leaf margins. Damage caused by leafhoppers may not become apparent for a few weeks. Consequently, symptoms will be found on older leaves. Severely injured plants also are stunted and bushy in appearance because the internodes stop growing normally.

Alfalfa fields should be monitored on a weekly basis following the first cutting of hay. Using a 15-inch sweep net, make 20 sweeps in five locations of the field. Be sure to avoid sweeping wet fields; results are not necessarily representative of the damage potential of the field. Calculate a field average of potato leafhoppers per sweep. Randomly collect 20 alfalfa stems across the field to determine the average stem length. Table 1 provides the economic thresholds for potato leafhoppers. Potato leafhopper infestations will persist in fields until hard frosts occur in the fall.

Insecticides suggested for control of potato leafhoppers in alfalfa are listed in Table 2. Please follow all label directions and precautions.

Table 1. Economic thresholds based on alfalfa height for potato leafhoppers.

Alfalfa height (in.)	*Leafhoppers per sweep*
< 3	0.2
3 to 6	0.5
6 to 12	1.0
>12	2.0

First Flight of European Corn Borer Well Under Way in Southern Illinois

The spring flight of European corn borer moths is under way in southern Illinois. Ron Hines, senior research specialist at Dixon Springs Agricultural Center in Simpson, Illinois (Pope County), monitors flights of several insect pests with pheromone traps at this location. I encourage you to visit his Web site at http://www.ipm.uiuc.edu/pubs/hines_report/. For the trapping week that ended on May 20, Ron reported the following captures of

Table 2. Insecticides recommended for control of potato leafhoppers.

Insecticide	*Amount of product per acre*	*Pre-harvest interval*
*Ambush	3.2 to 12.8 oz	14 days
*Baythroid 2	0.8 to 1.6 oz	7 days
dimethoate	See product label	
Imidan 70W	1 to 1-1/3 lb	7 days
*Lorsban 4E	1/2 to 1 pt	7–14 days
*Mustang Max	2.24 to 4.0 oz	3 days
*Pounce 3.2EC	4 to 8 oz	14 days
Sevin XLR Plus	1 qt	7 days
*Warrior	1.92 to 3.2 oz	7 days

*Restricted use pesticides.

European corn borer moths: Massac County, 47 moths; Pope County, 65 and 30 moths (two separate locations); and Pulaski County, 95 moths.

Early-planted corn is most at risk to economic infestations of first-generation European corn borers. We'll keep you posted on the first flight of European corn borers as it progresses northward throughout the state.—*Mike Gray*

Corn and Soybean Injury Caused by . . . Slugs?

Corn and soybean plants may be injured by insects and noninsects alike. Slugs, although sporadic, are noninsect pests of both corn and soybeans. Research conducted by Ron Hammond, Ohio State University, has shown that primarily four species of slugs are numerous enough to be considered of potential economic importance. The gray garden slug is the predominant slug species found in fields, followed by, in order of abundance, the marsh slug, the dusky slug, and the banded slug. Slugs are more commonly associated with conservation tillage practices such as no-till, especially when growing conditions are cool and wet.

Slugs overwinter as both adults and eggs. Egg hatch occurs in late May to early June; feeding by juveniles soon follows. Slugs feed mainly at night, hiding in cool, moist places (under debris) during the day. The telltale sign of slug feeding is the presence of slime trails from their movement across the foliage. Slugs rasp the surface of the seed or plant foliage when they feed. This causes the streaks or holes on both the seed and leaves. Injury to plants may occur before emergence, reducing stand establishment. Slugs may hollow out germinating seeds, causing injury similar to wireworms. Stunted, lower-yielding plants may result from slug feeding, and heavy defoliation may result in plant death and stand losses. Planting into wet soil often causes the failure of seed furrows to close completely and increases the potential for slug damage.

Slug activity is generally greatest in late spring and early summer. As conditions become hot and dry, slugs enter an inactive state and then become active again in the fall before hibernating in the winter. Overall, slugs will likely cause little injury in most fields. Both corn and soybeans can tolerate some injury from slugs; however, it is important to note that there are very few economically viable rescue treatment options for slugs. Limited spot treatments with a molluscicide (metaldehyde) may be an option in severely infested areas of fields.

Switching to a reduced or conventional tillage program the following year will help decrease slug populations. Overall, it is important to correctly identify any problems that might be occurring in cornfields and soybean fields this spring, saving yourself from treating the wrong problem, or a problem that isn't there.—*Kelly Cook*

PLANT DISEASES

Winter Wheat and Head Scab

The 19th annual soft winter wheat tour is scheduled for May 19 (tomorrow, as I write). Those participating in the tour will be well into our field visits by the time you get the electronic copy of the *Bulletin* this week. The tour serves the purpose of getting a rough estimate of yields for the crop and a visual determination of the state of health of the crop. The more agronomically inclined will be madly counting tillers, but disease types will be looking for the presence of some key pathogens this time of year. One of the primary diseases we'll be looking for is head scab.

Head scab (a.k.a. scab or head blight) is caused by fungi in the genus *Fusarium*. Principally the pathogens are *Fusarium graminearum, F. avenaceum, F. culmorum,* and *F. nivale*. These Fusarium species are all asexual forms that produce only conidia. The sexual stage is known as *Gibberella zeae*. Scab-infected wheat seed that is planted may develop root rot as well. These Fusarium fungi are ubiquitous and unfortunately also can cause a seedling blight and stalk, ear, and root rot of corn.

Symptoms. Typical symptoms of scab infection occur soon after flowering. Spikelets appear bleached and light-straw colored and will ripen prematurely. The heads may be sterile, or if kernels are produced, the berry is small, shriveled, and off color. You will see the typical white, bleached, scabbed heads scattered throughout a field. The Fusarium spores are produced during warm, wet weather and only infect wheat flowers that are blooming. So it is not unusual to see only half a wheat head infected or scattered spikelets on a head infected. It is dependent on the blooming pattern of the wheat variety and the presence of the spores. If you carefully examine the bases of the glumes on an infected head, you may see the diagnostic pink-to-salmon-colored Fusarium mycelium.

Disease cycle. Scab fungi survive and reproduce in and on the soil as spores, as mycelium, or in sexual fruiting structures (perithecia). The asexual spores (conidia) are produced during warm, moist weather. The sexual spores (ascospores), produced in the perithecia, are discharged into the air during warm, moist weather in the spring and early summer. Wind and splashing rain carry the ascospores and conidia to the wheat spikelets. The spores germinate in a film of moisture and first invade the flower parts. Infections are most frequent and serious at anthesis. Scab symptoms develop within 3 days after infection, when temperatures range between 77 and 86˚F and moisture is continuous.

Planting scab-infected seed generally results in very poor stands. Scabby kernels are often dead or else germinate weakly. If a sprout manages to emerge from the soil, it frequently decays before it can become established.

Wheat seedlings also may be infected; these infections result primarily from seedborne mycelium and spores. When the soil temperature is above 60°F, seedlings from clean seed also may become infected from mycelium in decaying crop residues on or in the soil. Note that head infections occur independently of seedling blight and root rot because the fungus cannot grow for any distance within the cereal plant.

Mycotoxins. The growth of the Fusarium fungi in infected grain produces serious mycotoxins that cause muscle spasms, acute vomiting, nausea, dizziness, diarrhea, and soreness in humans, young chickens and ducklings, pigs, dogs, horses, and other nonruminant animals with simple stomachs. In swine feed, 3% or more of scabby grain causes vomiting, and then the swine refuse to eat the mixture. Cattle, sheep, and mature poultry (except pigeons) do not react to scabbed grain. Because one of the mycotoxins involved has some estrogenic activity, scabby grain should not be fed to breeding animals. The mycotoxins apparently remain stable for years in stored grain.

Heavily scabbed wheat kernels are generally very lightweight and easily removed by modern cleaning equipment. In other words, turn the blower up on the combine.

University Recommendations for Management of Scab

1. Rotate small grains and corn with legumes, allowing at least a 1-year break in cereal, grass, or corn cultivation. Plant small grains as far as possible from old cornfields.

2. Sow only plump, small-grain seed that has been thoroughly cleaned to eliminate all lightweight seed and then treated with a protective, broad-spectrum fungicide or fungicide mixture. Proper seed treatment controls seedling damage from infected seed but will not control the head-blight or scab, foot-rot, and stem-blight phases of the disease.

3. Sow adapted and recommended small-grain varieties in a fertile, well-prepared seed bed.

4. Delay the sowing of winter cereal grains until the temperature is 60°F or below, to reduce the chances of severe seedling blight. Sowing spring cereal grains early tends to reduce losses from seedling blight, crown rot, and head blight.

5. Where feasible, cleanly and deeply plow under all infected stubble debris and straw of small grains and weed grasses, cornstalks, and rotted ears. Complete coverage of crop residues helps reduce head-blight infections. Sanitation is most effective when it is done on a communitywide basis. Manure containing infected straw or cornstalks should not be used for top dressing.

6. No highly resistant varieties of wheat, oats, barley, or rye are available. Some varieties are infected less frequently, apparently due to physical barriers to the infection of florets and spikelets. Not all differences in the incidence of head blight among wheat or barley varieties growing in adjacent fields are genetically based. The time of anthesis and prevailing weather conditions at flowering can also influence the development of scab.

7. Store grain at a moisture level of less than 14% to prevent the growth of the fungus and the possible production of additional mycotoxins.—*Suzanne Bissonnette*

CROP DEVELOPMENT

Corn Planting Winds Down for Most

With what looks like a break (finally) in the wet weather pattern, many producers in the southern part of Illinois will at least get started on corn planting this week, and many people in other parts of the state will be able to finish up. We are fast approaching the time when producers tend to throw caution to the winds and get out and plant as long as the equipment doesn't get stuck or make tracks that are too deep. Last Friday I saw some planting getting under way in the northwestern part of Illinois, where rainfall has been very heavy. Most of the fields were in a condition that would have kept tractors out of the field if this were April and not approaching the end of May. I won't call that a "mistake" at this point, but if the weather pattern is favorable for more dry days ahead, an extra day or two of drying on marginal fields will probably be rewarded by a crop with better potential.

Planting into less-than-ideal conditions will work out if rainfall patterns are good for the whole season, but corn that is planted into soils that are too wet typically has a few strikes against it that can come back to hurt the crop if it undergoes stretches of dry weather later in the season. Such soils always have some level of compaction from equipment, including the planter units, that decreases air content and increases physical resistance to penetration by plant roots. This resistance may not impede roots if the soil stays moist and therefore softer, but the loss of pore space (air-holding capacity) will tend to decrease the successful proliferation of roots simply because they can't get oxygen fast enough.

If compacted soil dries out, physical resistance to penetration increases rapidly and will often "repel" roots wherever they encounter this barrier. This includes the planter opener track, where "sidewall compaction" (probably more accurately termed "sidewall smearing") can help restrict roots and reduce the number of roots that penetrate out into the bulk soil. Once we have planted, about all we can do is watch for this problem and hope for rain to soften the soil. There isn't an effective "cure," though row cultivation can help aerate soils. Cultivation will, however, break some roots unless it's done when plants are very small.

Corn planted here on April 23 has three or four leaf collars visible now. Bob Nielsen has data showing that it takes about 125 growing degree-days (GDDs) for plants to emerge, about 85 GDDs per leaf stage up to the 10-collar stage (typically about waist to chest high), and then 50 GDDs for each additional leaf stage up to tasseling. We have accumulated about 350 GDDs since April 23, and the crop emerged in about 120 GDDs. So there have been about 230 GDDs since emergence, which would predict that the crop would have about three leaf collars. That's close enough, but you should expect GDD-based predictions to often miss by a leaf stage or two, depending on temperature fluctuations in soil and air and other factors that we don't always understand very well.

Except for the serious wind-related injury that emerged fields experienced on May 3 and 4 and some water-related injury, though, the crop is developing fairly well in most fields. The pale color of leaves in many fields is related to cool, cloudy, wet conditions and should improve quickly with sunshine and warmer temperatures, though night temperatures in the upper 30s and lower 40s will slow the return to normal green color. Remember that leaf area of the first leaves to emerge is quite small, and as long as they can be replaced by newer, larger leaves, the growth of the plant should continue without much interruption.

One recurring question that I get in small numbers each year is what to do about planter errors (we'll blame the planter here, not the operator!) that result in very high populations. One of the interesting questions this week was about a planter unit, one of 16 on the planter, that somehow dropped about five times the normal population in one row over about 30 acres. One concern in this case was on the possible effect of this row on adjoining rows. I doubt that would be a problem, because plants that are only an inch or so apart in a row will compete so much with each other that they probably won't compete much more than usual against adjoining rows. They will use water faster, though, and this could be a problem if water is limited, at least through pollination. We would not expect such a row to produce high grain yields, though, because of the excessive population.

I suggested that it might be a good place to creatively use a (probably retired) weed buggy and wipe plants with Roundup on some sort of repeating pattern to kill 80% of them or so, as long as that can be done without leaving long gaps; ideally, there ought to be two undamaged plants per foot of row and no partially damaged ones that will still compete. Doing this with a hoe or some other mechanical device would be more certain, probably, but would tend to damage roots of standing plants. Our past studies have shown that plants like this probably can be thinned up to knee high or so and still yield like a normal population. In this particular case, there was less than two acres of corn at the high population, so that might limit the amount of time and expense that can be spent trying to fix the problem.—*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.

Southern Illinois

Fieldwork was finally resumed on a limited basis late last week and still continues on a field-by-field basis. Planting is occurring in some areas, while at the same time other fields are too wet for wheel traffic.

Head scab is beginning to appear in wheat fields, but it is still too early to tell what the extent of infection will be.

First cutting of alfalfa is finally getting under way, with producers having to weigh the priority of cutting hay late versus planting corn late. Early-planted corn looks good, with no major problems reported.

Ron Hines, at Dixon Springs, continues to report intense captures of black cutworm moths as well as heavy catches of European corn borer moths. The earliest-planted non-Bt corn will need to be scouted in the next couple of weeks for ECB, while corn going into the ground now will need to be monitored for black cutworms.

West-Central Illinois

Despite wet soil conditions in many areas, good progress was made in the field by many producers within the past week. Local estimates indicate that corn planting is nearly complete, with only localized reports of replants being made. In some areas, soybean planting is completed, while in other areas it has just begun. Emerged soybeans look good and stands seem

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adequate in most places. Most alfalfa is in the bud stage, and harvest has begun on a limited basis.

Although the extent is minor, reports of insect feeding are filtering in, with the most widely reported incidences being attributed to wireworms and black cutworms. Alfalfa weevil feeding has become more evident within the last 2 weeks, but we have received few reports of treatments being applied.

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