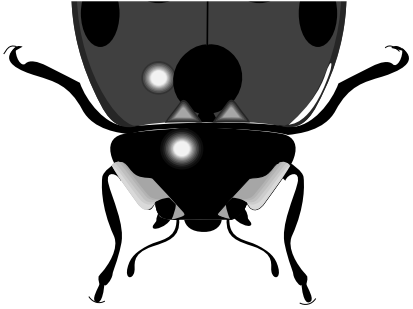

PEST MANAGEMENT & CROP DEVELOPMENT

BULLETIN

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Also in This Issue

INSECTS

Time to Begin Scouting for Corn Rootworm Adults in Soybean and Corn

On July 13, I spent a very enjoyable morning visiting with producers at the Northern Illinois Research and Education Center located near Shabbona, Illinois. We discussed several entomological topics of interest this growing season; however, most of our conversations focused on corn rootworms and performance issues related to soil insecticides and insecticidal seed treatments.

Following our discussion, we examined root systems from our insecticide evaluation trial at this location. Many in attendance, including me, were surprised to see the level of root injury among the various treatments. A cursory look at the plot revealed seemingly uninjured plants. No plant lodging was evident. After a few plants were removed from each treatment and the soil was washed away from the root systems, significant root pruning became readily apparent.

On the way back to Champaign-Urbana, I encountered heavy rain, hail, and wind, particularly in LaSalle County. I suspect this storm may contribute to lodging in fields with moderate to heavy root pruning in this area. In the next few weeks, I won't be surprised to learn of increasing reports of corn rootworm problems and concerns related to performance issues of soil insecticide products.

Many producers indicated that corn rootworm adults are now common inhabitants of cornfields and soybean fields. This includes even those fields that received a soil insecticide application this spring. Frequent readers of *the Bulletin* may recall that previously we've discussed the fact that soil insecticides are not population suppression tools. Adult emergence between corn rows (areas outside of the insecticide band) occurs each season.

Monitoring Cornfields to Prevent Excessive Silk Clipping

Controlling corn rootworm adults to prevent egg laying and controlling adults to prevent silk clipping do not overlap in time. The great majority of corn rootworm eggs are laid after the time when treatments to prevent silk clipping would be necessary. Densities of at least five adults per plant typically are required to affect pollination in commercial cornfields.

Seed-production fields are likely to be at greater risk to economic losses caused by silk clipping. In addition to noting the number of adults observed on plants, pay close attention to the amount of silk tissue protruding from the tips of ears. When 1/2 to 1 inch of fresh silk remains and soil moisture is abundant, successful pollination is likely occurring. Many insecticides are labeled as rescue treatments to prevent excessive silk clipping (Table 1).

Control of Corn Rootworm Beetles to Prevent Egg Laying in Cornfields

Controlling corn rootworm adults to prevent them from laying eggs is recommended only for corn planted after corn, not for corn planted after soy-

Table 1. Insecticides labeled as rescue treatments for corn rootworm adults to reduce silk clipping.

Insecticide products	*Amount of product per acre*
*Ambush	6.4 to 12.8 oz
*Asana XL	5.8 to 9.6 oz
*Baythroid 2	1.6 to 2.8 oz
*Capture 2EC	2.1 to 6.4 oz
Dimethoate 4EC	2/3 to 1 pt
*Lorsban 4E	1 to 2 pt
*Mustang Max	2.72 to 4 oz
*Penncap-M	1 to 2 pt
*Pounce 3.2EC	4 to 8 oz
Sevin XLR Plus	1 to 2 qt
*Warrior	2.56 to 3.84 oz

*Use restricted to certified applicators.

bean. Scout for corn rootworm adults in corn from mid-July through early September to determine the potential for rootworm larval damage in 2005. The requirements that must be met for a successful beetle-suppression program are complex. Scouts must identify both species of corn rootworm adults (western and northern), distinguish between the sexes, and also determine whether the females are gravid (have eggs present).

Frequent scouting trips in corn over a lengthy period of the hot summer are essential. Although one properly timed adult-suppression treatment should replace a soil insecticide the following season, some fields require two insecticidal sprays. Two adult treatments or a spray plus a soil insecticide the following spring may hasten the development of insecticidal resistance.

If you choose to use an adult-suppression program, apply an insecticide when the number of beetles reaches or exceeds 0.75 per plant and 10% of the females are gravid. Continue to monitor fields weekly after a treatment has been applied for the beetles. A second insecticide application may be necessary if the number of beetles reaches or exceeds 0.5 beetle per plant. Adult-suppression programs to prevent egg laying have worked very well for many years, particularly in some western states of the Corn Belt, such as Nebraska. However, these broadcast treatments have led to the development of insecticidal treatments.

Scouting Cornfields to Determine the Need for a Soil Insecticide Next Season

If you intend to grow corn after corn and if rootworm beetles averaged 0.75 or more per plant in continuous corn or 0.5 per plant in first-year corn (for any sampling date), consider the use of a soil insecticide during planting in 2005. Fields that will be planted to corn in 2005 should be scouted weekly between mid-July and early September. Examine two plants selected at random in each of 25 areas of a given field. Count all the western and northern corn rootworm adults each time. These scouting efforts require about 45 minutes in a 40-acre field. As you approach a given plant, avoid disturbing the beetles as much as possible. Count the beetles on the entire plant, including the ear tip, tassel, leaf surface, and behind the leaf axils.

Scouting for Western Corn Rootworm Adults in Soybean Fields

An adult-suppression program to prevent egg laying by the western corn rootworm variant in soybean fields is *not* recommended. Scouting protocols and thresholds in soybean fields are designed to aid producers in making more-informed decisions regarding the potential need for a soil insecticide in first-year cornfields the following season.

Yellow sticky traps (Pherocon AM) should be deployed in soybean fields during the last week of July and for each of the first three weeks of August. Old traps should be replaced with fresh traps on a weekly basis. Twelve traps should be evenly distributed across a given soybean field. The cost of traps for the season is approximately $50 (roughly $1 per trap). If trap averages for the 4-week period equal five beetles per trap per day, growers should anticipate the potential for economic injury the following season in first-year corn and may elect to use a soil insecticide. For more details on this management approach, please consult the following Web site: http://www.ipm.uiuc.edu/fieldcrops/insects/western_corn_rootworm/index.html. —*Mike Gray*

PLANT DISEASES

Gray Leaf Spot of Corn Causing Concern in Illinois

Gray leaf spot (GLS) can be one of the most significant diseases on corn in the Midwest. Weather and other conditions have been favorable recently for development of gray leaf spot in Illinois. Numerous fields with significant levels of this disease have been reported in the past week. Information about this disease and management options are discussed.

Symptoms and effects of gray leaf spot. Lesions of GLS begin as small, necrotic spots with halos. The spots can be oval to elongated. As the lesions grow and mature, they become rectangular in shape. Mature lesions typically have distinct parallel edges and a gray appearance, and they appear opaque when held up to the light.

GLS can have several effects on corn. Yield reduction has been shown to occur due to smaller ears, unfilled kernels, and reduced kernel size. Losses from GLS have also been reported to occur due to increases in stalk and root rots.

Disease cycle and infection period. GLS is caused by the fungal pathogen *Cercospora zeae-maydis*. GLS infections are initiated from fungal spores that are produced on infested corn residue on the soil surface. Large numbers of spores of the GLS pathogen can be produced on residue beginning in May or June. After the spores are disseminated by wind and rain to the new crop, there may be a 2- to 3-week lag (latent) period before lesions fully develop. Infection may occur within about 1 week after spores arrive on a leaf surface under favorable environmental conditions, but mature lesions may not develop for another week for susceptible hybrids or 2 weeks for moderately resistant hybrids.

Conditions favorable for GLS. To cause significant damage, GLS generally requires high humidity (>95%) for at least 24 hours, warm temperatures (75˚F to 85˚F), and susceptible inbreds or hybrids. The disease typically occurs from silking to maturity. The GLS pathogen overwinters in corn debris on the soil surface; hence the disease appears to have historically increased along with increases in no-till or minimal-till field management practices. Corn appears to be the only known host of this pathogen. Corn-on-corn rotations may favor GLS.

Management options. Management for future reductions in GLS should focus on resistant corn hybrids, although crop rotation should also be considered. Immediate concerns with GLS when it occurs in the field are often focused on fungicides. Many trials in the midwestern and eastern United States, including in Illinois, have shown that fungicides can reduce GLS disease severity and increase yields when GLS is a problem. Fungicide decisions should take into account susceptibility of the hybrid (or inbred), stage of crop development, disease severity, and to some extent weather conditions. Studies (for example, a study from Iowa, Munkvold et al., 2001) suggested that three conditions are needed to maximize the probability that some fungicides will provide an economic return:

- An application at or before stage VT (tasseling)
- Hybrids susceptible to GLS
- High disease pressure and prolonged high humidity

Timing appears important to get maximum benefit from fungicides for GLS control. Several studies suggest that initial fungicide applications should occur no later than tasseling (VT) when GSL is developing. Later applications may also be beneficial, but studies suggest one application at or before VT may be important. For example, studies from Iowa (Munkvold et al., 2001) suggested that "optimal timing for one application is at VT (tasseling) and for two applications at V7-V8 and VT." Another study from Indiana (Shaner et al., 1998) suggested that an initial fungicide application at silking (R1) may have been too late to prevent much of the infection.

It has been very difficult to develop a threshold level of GLS infection for hybrids that should trigger fungicide applications, because disease levels at any one time have not been reliable predictors of subsequent disease development. For example, a threshold of 10% leaf area infected on the lower six leaves of susceptible hybrids at the V18/VT stage may work under some situations and may not work under others. There are no hard and fast rules, but GLS can be destructive and should be managed with resistant hybrids and perhaps with properly timed fungicides where a susceptible hybrid is planted, the yield potential is high, disease pressure is high, and the environment is favorable for GLS. —Dean Malvick

WEEDS

Pesticide Residue Testing Labs

We commonly get questions about where to send plant and soil samples for analysis of pesticide residues. The following list of labs may provide some assistance. Please be sure to contact individual labs regarding specific compounds for testing. *—Dawn Nordby*

A & L Great Lakes Laboratories
3505 Conestoga Dr.
Ft. Wayne, IN 46808-4413
(219)483-4759
www.algreatlakes.com

Animal Disease Lab
9732 Shattuc Rd.
Centralia, IL 62801
(618)532-6701
www.agr.state.il.us/AnimalHW/labs/centralialab.htmlwww.agr.state.il.us

APT Labs Inc.
1050 Spring St.
Wyomissing, PA 19610
(610)375-3888
www.aptlabsinc.com

Midwest Labs, Inc.
13611 B St.
Omaha, NE 68144-3693
(402)334-7770
www.midwestlabs.com

Environmental Science and Engineering, Inc.
8901 N. Industrial Rd.
Peoria, IL 61615-1589
(309)692-4422

Environmental Micro
40N East St., Suite B
Woodland, CA 95776
(530)666-6890
www.emalab.com/

Soil–Plant Analysis Lab
University of Louisiana at Monroe
Chemistry and Natural Sciences Building
Room 117
Monroe, Louisiana 71209-0505
(318)342-1948
www.ulm.edu/spal/

DLZ Lab
1425 Keystone Ave.
Lansing, Michigan 48911
(517)393-4444
www.dlzlabs.com/

Agvise Laboratories
Northwood, ND
(701)587-6010
johntlee@polarcomm.com

Harris Laboratories
621 Rose St.
P.O. Box 80837
Lincoln, NE 68501
(402)476-2811
www.mdsharris.com

Hazelton Environmental Services
525 Science Dr.
Madison, WI 53711
(608)232-3300

NDSU Diagnostic Lab
Waldron Hall, NDSU 58105
(701)231-7854
cruby@ndsuect.nodak.edu

Professional Service Industries
4820 W. 15th St.
Lawrence, KS 66049
(800)548-7901

Minnesota Valley Testing Lab
1126 N. Front St.
P.O. Box 249
New Ulm, MN 56073-0249
(800)782-3557
www.MVTL.com

Olson Biochem Labs
P.O. Box 2170 134 ASC
Brookings, SD 57007
(605)688-6171

CROP DEVELOPMENT

A Few Bumps in a Smooth Road

While the overall condition of corn and soybean crops in Illinois continues to be good, no season is without its problems, including this one. On the positive side, warm temperatures continue to push development, and many parts of the state have already received as much rain as normally falls during the entire month of July. We have almost never had low corn yields when July rainfall is above normal, and the fact that the crop is so far ahead of normal is even more positive. It appears that pollination was successful in most areas, though reductions in kernel number due to silk clipping by insects can be a hard-to-see problem. If you have any reason for concern, remove husks about 2 weeks after silking, and see whether silks easily pull off kernels. If they remain attached, they were not fertilized.

There are areas damaged by excessive water that are not visible unless you take to the air to see them. But the spell of dry weather before early July allowed some recovery, and leaf color, which is a prime indicator of overall plant health and activity, is very good in most fields. One of the best ways to assess general potential of a corn crop now is to see how much sunlight is getting through the canopy and hitting the ground. The best crop has very little sunlight getting through the canopy; it should be almost dark on the soil surface at noon on a sunny day.

Storms have done some damage this week in some Illinois cornfields. Coupled with some root systems injured by corn rootworm, it's likely that parts of some fields are lying flat, some for the second time. Plants that lodge before tasseling often can "gooseneck" at least partly back upright and can be quite productive, though they suffer from some root dislodging and so can be more subject to dry weather. If the crop has pollinated when lodging occurs, plants have much less ability to grow back upright, due to increased "woodiness" of the lower stem. This woodiness is important for stalk strength and standability, and so is generally positive; it does, though, mean that the stalk becomes "set" and less flexible.

Once plants are flat on the ground at or after the "roasting ear" stage (R3), they often fail to function very well, and their yields are often low. Usually only part of the root system is still engaged in the soil, and much of the leaf area is shaded. If some stalks stay standing while their neighbors lodge, they will compensate some. But the general prognosis for corn plants lodged during grain fill is not positive.

Soybean plants in most fields continue to grow rapidly, and flowers are present at most nodes in most fields. Some of the flowers that appeared in early June have developed into pods, giving stems the rather unusual feature of larger pods near the base and flowers only at younger nodes. This confuses the staging a bit, but the new flowers represent the real yield potential of most of these plants, and we probably should consider them in R2 (full flower), even if lower pods suggest that they're in R3 or even later.

Pods near the base of the stem often do not fill very well if rapid growth results in large leaves in the upper canopy that then shade the lower leaves. Most of the sugars to feed each pod come from the leaf attached nearest that pod on the stem, so shaded leaves mean unfilled pods. In 2003, canopies ended up very dense in many cases, and lower pods often aborted or failed to fill seeds as a result. Leaf growth has been more modest in 2004, at least up to now, and the more favorable temperatures this year will likely mean more timely pod development and a better "balance" between pod and canopy development.

Illinois wheat yield is pegged in the July report at 58 bushels per acre. Not a record, but still quite good given the warm, wet weather of May and the early harvest. Variety test reports will soon be posted at http://vt.cropsci.uiuc.edu. —*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

Corn in the southern and central area of the region has been tasseling/silking for more than a week. The northern area of the region was not in full tassel as of July 14. Numerous reports have been received concerning rootworm larvae damage in first-year cornfields located in Marshall, Putnam, and Bureau counties. Many of the fields had an insecticide applied at planting or seed-applied. From the reports, it appears larvae feeding on insecticide-treated first-year corn occurred on a wide variety of insecticide products.

Soybean aphids have been a hot topic of discussion during the last week, but from a different perspective. The discussion has focused on individuals scouting soybean fields and having difficulty finding any aphids.

Also, there is some concern about gray leaf spot infestations. Several reports have been received of fungicide-treated cornfields in Bureau County.

West-Central Illinois

Concern in the region quickly shifted from rootworms in first-year and continuous cornfields to gray leaf spot. Reports and rumors pertaining to fungicide applications intended to manage this disease abound. Many question whether this disease can really have an intense areawide impact, with much of the corn crop now only a few weeks from hard dough stage.

In addition to the rectangular lesions associated with gray leaf spot, an abundance of moisture in much of the west-central region has allowed lesions associated with other foliar blights to appear in corn, such as the brown “cigar-shaped” lesions symptomatic of northern corn leaf blight.

Soybean fields continue to show signs of foliar disease, as many suffer from a little too much moisture. Septoria continues to hold its own on the lower part of the plant. In addition to fungal disease, occasional (noneconomic) viruslike symptoms are being encountered while touring bean fields. Root rot observations continue as well.

Still observed at intense levels in various parts of the region are Japanese beetles in corn and bean fields, rootworm beetles in corn (with western corn rootworm variants filtering into beans), grasshoppers well within the borders of cornfields and bean fields, and potato leafhoppers in alfalfa and bean fields.

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