# PLANT PEST *Newsletter*

MINNESOTA EXTENSION SERVICE UNIVERSITY OF MINNESOTA



PPST10 June 22, 1990

IN THIS ISSUE PAGE



## ALFALFA

**BLISTER BEETLES**—Blister beetles in alfalfa are usually of concern as potential toxicants to horses and livestock. However, in the aftermath of the grasshopper situation blister beetles have gradually been building up in high numbers (the larvae are predators of grasshopper eggs). The first species to appear in the spring is the ash-gray blister beetle. Counts have ranged from 10/50 sweeps to one/sweep in mature, flowering fields. Although there is always the potential for toxic reactions to livestock, the major problem right now is **defoliation to alfalfa**. With all of the newly-seeded alfalfa in the state, it is especially critical to scout fields for this insect. Beetle populations causing significant defoliation have been reported this week at the Becker Experiment Station and in Sherburne County.

Unfortunately, we have no treatment thresholds for blister beetle defoliation. Using % defoliation data for alfalfa weevil and considering the investment (seed cost, etc.) necessary for good stand establishment, I would recommend treat-

**For more information regarding the Plant Pest Newsletter contact Extension Plant Pathology at 612-625-6290**



UNIVERSITY OF MINNESOTA, U.S. DEPARTMENT OF AGRICULTURE, AND COUNTIES COOPERATING

ing for blister beetles at a 10-15% defoliation level. This will vary depending on the height of the crop. Beetles will often come in around field edges-so spraying the edge will also be a possibility. The only material that I have found to be labelled for blister beetle control is Sevin XLR Plus @ 1/2-1 quart/acre; use 25 gal. water/acre.

**POTATO LEAFHOPPER**—As indicated in last week's newsletter, there is considerable potential for economic infestations of PLH developing in the second crop. Spring-seeded alfalfa will be especially sensitive to PLH. Again, treatment (economic) thresholds for PLH have been developed for alfalfa at different stages of plant growth.

**PLH Economic Thresholds**

| PLH/Sweep* (Adults + Nymphs) | Alfalfa Plant Height (in.) |
|---|---|
| 0.3 | < 3 |
| 0.5 | 3-7 |
| 1.0 | 8-11 |
| 2.0 | > 12 |

*For new or spring-seeded alfalfa, reduce these thresholds by 1/2.*

Because of the toxin that PLH injects into the plant which inhibits photosynthesis and nutrient flow, both forage quality and yield are reduced. Yield reductions result from stunting of the plants and delayed maturity. A brief example of the impact on quality was observed last year in one of our insecticide trials in spring-seeded alfalfa. These results confirm the impact of PLH on protein quality. Hopperburn (visual evidence of yield loss) had been evident for 2 weeks prior to collecting these samples for quality evaluation.

**PLH (Adults + Nymphs)/10 sweeps**

| *Treatment/ac | Aug. 15th | Aug. 25 | % Protein |
|---|---|---|---|
| Ambush 2E 6.4 oz | 7 | 48 | 19.2 |
| Ambush 2E 9.6 oz | 0.3 | 17 | 21.1 |
| Malathion 2 pt | 12 | 156 | 16.1 |
| Untreated Check | 80 | 296 | 15.8 |

**Plots treated Aug. 11, 1989; % protein samples taken Sept. 6.*

Complete results of the 1989 insecticide efficacy trials are shown in the following table. When selecting a material, cost, applicator safety and preharvest interval should also be considered.

**Avg. PLH/10 Sweeps**

| | Aug. 15 | | Aug. 25 | |
|---|---|---|---|---|
| *Treatment/ac | Nymphs | Adults | Nymphs | Adults |
| Cygon 4E 1/2 pt | 0.5 | 3.8 | 20.5 | 14.8 |
| Cygon 1 pt | 0 | 5.0 | 6.2 | 8.5 |
| Lorsban 4E 1 pt | 0 | 12.8 | 2.2 | 22.0 |
| Lorsban 1 1/2 pt | 0.3 | 12.5 | 2.0 | 20.0 |
| Ambush 2E 6.4 oz | 4.3 | 2.3 | 29.2 | 18.7 |
| Ambush 9.6 oz | 0 | 0.3 | 9.0 | 12.0 |
| Penncap-M 2 pt | 0.3 | 4.8 | 24.0 | 8.8 |
| Penncap-M 3 pt | 0 | 4.5 | 1.0 | 11.0 |
| Malathion 5E 2 pt | 0 | 11.5 | 133.8 | 22.8 |
| Imidan 50WP 2 lb | 0.3 | 4.8 | 10.5 | 15.5 |
| Untreated Check | 26.0 | 53.8 | 214.0 | 82.5 |

**Plots treated Aug. 11, 1989; 20 gal. water/ac, 35 psi.*

Additional materials registered for PLH control, that were not included in this trial are: Guthion (50% WP only) @ 0.5-1 lb/ac, Sevin (XLR Plus) @ 2 pt/ac, Furadan 4F @ 0.5-1 pt/ac, Diazinon 4E (AG500) @ 1 pt/ac, Supracide 2E @ 2 pt/ac, Marlate 2E @ 4 pt/ac and Pounce 3.2E @ 2-8 fl. oz/ac (same active ingredient, permethrin, as Ambush 2E).

*—Bill Hutchison*
*Extension Entomologist*

## CORN

**SCOUTING FIRST-GENERATION EUROPEAN CORN BORER**—A quick check of light trap captures reveals continuing European corn borer (ECB) activity in southern Minnesota.

Captures are higher this trapping period and peak captures for most locations so far has occurred early this week. This information indicates the flight probably has not peaked yet. Activity is slowly picking up in central Minnesota. No captures have been reported yet in northern Minnesota.

After emergence from corn debris, adult moths move into grassy "action sites" to mature, drink dew or rain, and mate. Females usually mate about 48 hours later. Once mated, females seek out taller corn to lay egg masses. Each female lays an average of 2 egg masses/night (15-30 eggs/mass) for 10 nights if weather conditions permit. Warm, calm evenings with dew formation are extremely favorable for mating and egg laying. Eggs hatch in 3 to 7 days depending on temperature (100 degree days - base 50 F). Corn with an extended leaf height less than 16" contains higher levels of DIMBOA, a natural feeding deterrent that causes larval death. DIMBOA concentration decreases as corn grows. Most mortality occurs within the first 48 hours after hatch from DIMBOA, weather, and natural enemies. This mortality ranges from 75-85% in a 1986 and 1987 studies by Ross and Ostlie.

Scouting is extremely important when trying to make management decision about ECB. Timing of the flight with respect to corn development and mortality from weather and natural enemies vary from year to year and from field to field. Scout taller fields first where females prefer to lay eggs but any field over 17" extended leaf height can support larvae. Examine 20 plants in at least 5 locations throughout the field for signs of larval feeding (small pinholes in the leaves). At each location, unroll the whorls pulled from 2-3 plants and count the number of larvae in each plant. **Note:** This is only a rough approximation of larvae per infested plant since larvae may also be found in other locations (leaf axils, tillers,brace roots). Do not count larvae that have tunneled into midribs and stalks since these larvae are not susceptible to insecticides in these protected sites.

Two criteria exist for deciding whether or not to treat a field. Static thresholds suggest treating when more than 50% of the corn plants exhibit shotholing in dryland corn, 35% in irrigated corn, or 5-10% in seed corn. These thresholds do not take into account crop price, yield potential, or insecticide costs. The second approach realizes the importance of these factors in the treatment decision and compares insecticide cost against an estimate of preventable yield loss (See accompanying box). The treatment decision for each field can be calculated from two pieces of scouting information: proportion of infested or shotholed plants and larvae per infested plant.

Both granule and liquid insecticide formulations are recommended for ECB control. Granules are commonly regarded as performing better than liquids for first generation ECB control. A well timed application of Furadan 15G, Pounce 1.5G, Dipel 10G, and Lorsban 15G should provide 80-85% control. Next week I'll summarize insecticide performance over the last 6 years in Minnesota trials.

For further information on ECB consult AG-BU-2322 *European Corn Borer Development and Management* and AG-BU-0500 *Insecticide Suggestions for Field Crops in 1990.*

**CALCULATED TREATMENT DECISION FOR EUROPEAN CORN BORER**

**Step 1.** Calculate average borers per plant in field.
Borers/plant = proportion of plants infested X larvae per infested plant

**Step 2.** Estimate value of crop
Crop value ($/acre) = expected yield (bu/acre) X expected price ($/bu)

**Step 3.** Determine dollar value of loss per borer (assumes one larva/plant)
Loss per borer = crop value x 0.05

**Step 4.** Calculate expected loss for infestation
Expected loss ($/acre) = loss per borer X borers per plant

**Step 5.** Since all loss cannot be prevented by an insecticide application, correct by insecticide effectiveness.
Preventable loss = Expected loss X insecticide effectiveness

**Step 6.** Compare insecticide cost (including application cost) with preventable loss. If preventable loss is greater then treat the infestation.

**Example:** Assume you found 40% of the plants shotholed with 2.5 larvae per infested plant. Expected yield is 130 bu/acre and price is $2.25. Furadan granules cost ca. $15/acre.

**Step 1.** Field average = 0.4 X 2.5 = 1.0 borer/plant

**Step 2.** Crop value = 130 X 2.25 = $292.50/acre

**Step 3.** Loss per borer = $292.50 X 0.05 = $14.63/acre

**Step 4.** Expected loss = $14.63 x 1.0 = $14.63/acre

**Step 5.** Preventable loss = $14.63 x 0.85 = $12.42/acre

**Step 6.** Preventable loss is less than the cost of the insecticide.

**Decision:** Do Not Treat.

—*Ken Ostlie*
*Extension Entomologist*

## CORN & SOYBEANS

The wet season and cool temperatures favor seedling blights. Seed that rot and die in the soil—preemergence damping off are hardest to diagnose. Several fungi—Rhizoctonia, Pythium & Phytophthora are capable of causing these losses. Pythium and Phytophthora seed out and seedling blight are favored in wet spring. These two fungi have motile spores that swim in water to the plant and infect. Seeds may just rot in the soil or weakened plants may emerge and not grow well. The stem is brown to black, water soaked, and the plant wilts and dies. If you can't find plants in low or compacted areas suspect Pythium or Phytophthora. Pythium is mostly a seedling disease, however Phytophthora will continue to kill or stunt plants through the season.

Rhizoctonia seedling blight symptoms include reduced plant growth and pale green color. Herbicide injury is also often mistakenly diagnosed, as stands are uneven. Look for small reddish lesions at or just below the soil line on one side of the stem. A sunken cankered area develops at the point of infection, usually not a girdling lesion. These plants are restricted in early growth, and may also kill plants in future stress conditions.

Corn after several weeks of poor growing conditions has several possible problems. Seedling blights may cause wilting and death, but more often yellow show growing plants recover as new roots are developed and become active in taking up Nitrogen. Watch for stunted plants and depending on how much of the primary root system is destroyed, the plant will either die or survive. Crown root development is also an important factor in plant recovery.

Control is based on: well prepared seed beds, high quality seed, seedling vigor and pesticide application. Seed treatment of corn—usually 100% of seed corn is fungicide trialed-provide protection but can only last 10-20 days. Seed treatment of soybeans—usually little is treated—offer the best protection against Rhizoctonia as plants have little resistance to this fungus. Products containing PCNB, TBZ, carboxin or thiram should be considered when planting soybeans early into soils that are expected to remain cool and wet. Phytophthora and Pythium can be reduced by the fungicide Metalaxyl (Apron or Ridomil). It does not protect against other fungi and should be used in fields where Pythium and Phytophthora are known problems.

*—Ward C. Stienstra*
*Extension Plant Pathologist*

## SMALL GRAIN

**ARMYWORM ADULTS**—High numbers (30-50/night) of adult armyworms were collected last week in light traps at Morris and Crookston by Area IPM Agents.

Severe defoliation in small grain begins to appear about 21-24 days after these flights, provided conditions are suitable for egg hatch and larval survival. Sweeping small grain at 10-15 days post flight will give a good indication of presence or absence of armyworm larvae. In fields where small armyworms larvae are found when sweeping, continued observation for another two weeks should occur. Remember that armyworm larvae hide during the day so when making daytime counts you may underestimate populations. Fifty adult armyworms per trap night at widely separated locations suggests a pretty hefty flight. We have been quite preoccupied with grasshopper potential and do not want this pest to sneak up on us.

*—Dave Noetzel*
*Extension Entomologist*

## MISCELLANEOUS

**BLACKLIGHT TRAP CAPTURES**—The following table summarizes the captures made last week. June 14-20.

| District | Location | Nightly capture: European corn borer Average | European corn borer High | Armyworm Average | Armyworm High |
|---|---|---|---|---|---|
| NW | Crookston | -- | -- | 4 | 9 |
| WC | Fergus Falls | 3 | 5 | 23 | 31 |
| C | Glencoe | 1 | 26 | 8 | 14 |
| C | Olivia | 35 | 113 | 24 | 64 |
| SW | Lamberton | 23 | 36 | -- | -- |
| SC | Blue Earth | 36 | 92 | 17 | 48 |
| SC | LeSueur | 11 | 20 | 34 | 50 |
| SC | Montgomery | 12 | 15 | 13 | 23 |
| SC | Waseca | 9 | 23 | 13 | 21 |
| WC | Morris | 20 | 66 | 16 | 67 |

*—Ken Ostlie*
*Extension Entomologist*

**Minnesota Weed Tours:** The special bus tour of the wild proso millet and woolly cupgrass research plots on June 28 has been cancelled due to a lack of weeds. The tour at the Southern Experiment Station, Waseca is still scheduled for 9:00 am on June 28.

*—Beverly R. Durgan*
*Extension Agronomist - Weed Control*

## PLANT DISEASE CLINIC'S TOP THREE

**BARLEY YELLOW DWARF VIRUS (BYDV)/OATS—** BYDV on oats was confirmed by ELISA testing this week on samples submitted from Brown County. This disease is commonly referred to as red leaf when it occurs on oats since it causes reddening of the leaves. Reddening first occurs on the leaf tips and progresses downward on the leaf in a blotchy pattern. Plant stunting and excessive tillering are also commonly associated symptoms. BYDV also occurs on wheat and barley, often resulting in stunting and excessive tillering; however, the leaves turn yellow or chlorotic instead of red.

**ALFALFA/FOLIAR DISEASES—**Anthracnose, spring black stem and leafspot and Leptosphaerulina leaf spot have been frequently diagnosed on alfalfa this week. Timely harvest, prior to excessive defoliation and inoculum buildup, is suggested.

**CORN SEEDLING BLIGHT—**In addition to *Pythium* sp., *Fusarium* sp. has been confirmed to be associated with seedling blight on corn. Corn on corn rotations, in particular, favor the buildup of *Fusarium* sp. in the soil.

*—Jill Pokorny, Director*
*Plant Disease Clinic*

## DIAL U

County Agents: Please Alert Master Gardeners to the Following Items

**PLUM POCKETS** is an interesting fungal disease which appears on plums following wet springs. The disease first appears as small white blisters on the immature fruits. The blisters enlarge and soon envelop the entire fruit. The result is a fruit up to 10 times its normal size and lighter in color. The center of the fruit, now called a "pocket", is hollow because the seed does not develop. Infected fruits become covered with a powdery grey fungal growth, turn brown,then wither and fall off the tree. Plum pockets is seldom more than an oddity, but if the problem has been severe in past years, it can be controlled by a single application of Bordeaux mixture in the spring before the buds open.

**FLOODED TREES:** Many trees can withstand flooding and extraordinarily high water tables for several weeks. Trees thought to be generally tolerant of "wet feet" include red maple (*Acer rubrum*, not red-leafed Norway maples such as Crimson King), black walnut, cottonwood, willow, basswood, swamp white oak, river birch, hackberry, green ash, and American elm. Arborvitae, balsam fir and tamarack are the only water tolerant evergreens.

Sensitive trees include sugar and Norway maples, paper birch and most oaks, along with crabapples, apples, hawthorns and mountain ash. The heavier the soil they're growing in, the more likely they are to be damaged rapidly. Regardless of soil type, these trees' chances improve when flood waters subside rapidly.

**POST BIRCH LEAFMINER DAMAGE** continues to be our number one insect call. People usually describe their birch leafing out fine then suddenly turning brown. This is due to leafminers feeding inside the leaves. There is no control once the leafminers are finished feeding. In most cases the defoliation is cosmetic, affecting only the appearance and not adversely harming the tree's life. If control is desired next spring, spray acephate (Orthene) when the mines first appear.

**DEER TICKS/LYME DISEASE:** June and July are the months of highest risk for contracting Lyme disease. Because of increased awareness of Lyme disease and deer ticks, people are more frequently submitting ticks for identification. People should not avoid being outdoors because of deer ticks, but they should be aware of the potential problems and take preventative measures when outdoors. Wear long pants and long-sleeved shirts, preferably light-colored (to better see the dark-colored ticks), use repellents, such as DEET or Permanone (follow all label directions), and check yourself and others for ticks during and after trips to wooded or grassy areas where deer ticks may be. If a tick is found embedded in the skin, grasp it directly by the head with tweezers (don't squeeze the body) and gently but firmly pull it out. Place the tick in a film canister or similar container with a tightly fitting top and send it to Dial-U for identification. See *Lyme Disease in Minnesota*, AG-FS-3753.

**STORM-DAMAGED TREES:** Strong winds and lightning have damaged many trees in the Twin Cities area. In the case of a lightning strike, the extent of the damage is not always immediately apparent. If a limb is hanging down, prune it off, but don't put a lot of time or money into repairing the damage. The tree might continue to decline over the summer. If it hasn't obviously grown worse by fall, wait till next spring before investing much in its repair. By then you'll know whether it's worth saving. If it looks bad this fall, have the tree taken down.

Trees often split or crack down the crotch of a major "vee" in the branch structure. If the split goes down into the trunk itself, it may or may not be possible to save the tree, depending on the size of the trunk and how far the crack extends before reaching solid wood. In any event, this is a job for an experienced tree service.

When a branch breaks off, all you need to do is tidy up the wound so no jagged edges protrude. If the branch broke where it leaves a stub, you might want to recut it. Make the new cut close to the branch collar which is a ring of tissue at the base of the branch, where the branch comes out of the trunk. It should heal over faster at the branch collar.

It should not be necessary to use pruning paint or wound dressing. Research has shown they're not all that helpful, in most cases.

**ROSE SLUGS:** Despite their name, these insects are actually sawfly larvae. They skeletonize the upper surface of rose leaves, leaving it 'looking cleared.' They are a little over 1/2 inch when fully grown and do not feed on leaves past early July. It is unlikely that rose slugs do serious damage to roses. Acephate (Orthene) is effective against this insect if control is desired.

**PATHOLOGY BRIEFS:** Apple scab is still our number one call. Defoliation is heavy on susceptible varieties. Anthracnose on oak is quite obvious at this time, don't confuse it with oak wilt. Wet conditions are promoting leaf spots and mildews on many annual and perennial plants. Mushrooms abound. Ash rust has been confirmed. Cherry leaf spot is common on chokecherry and Canada red or Shubert chokecherry.

**OTHER COMMON CALLS INCLUDE** carpenter ants, cuke leaves turning white (we don't know why), lots of plant IDs, plus calls for landscaping selections (which trees, shrubs, flowers, and vines grow well in this climate?).

*Jeffrey Hahn* *Entomology* · *Cynthia Ash* *Plant Pathology* · *Deborah Brown* *Horticulture*

---



---

**Department of Plant Pathology**
**University of Minnesota**
**495 Borlaug Hall**
**St. Paul, MN 55108**

St. Paul Campus Library
Documents Department
University of Minnesota
St. Paul, MN 55108

MINNESOTA EXTENSION SERVICE
UNIVERSITY OF MINNESOTA
AGRICULTURE