

Cool-season insect control: know the symptoms

by J. KEVIN MATHIAS, Ph.D.

Prior to a turfgrass field day, a number of entries in a Kentucky bluegrass study were turning brown. The facility manager suspected herbicide drift and the turfgrass pathologist leaned toward summer patch. An entomologist found the real culprit: billbugs. It's important to properly diagnosis the cause of turfgrass damage.

When monitoring:

- ▶ you need to know key pests and key plants,
- ▶ use effective sampling techniques and
- ▶ become familiar with insect damage symptoms.

Key plants are plants most likely to be damaged by insects. For the cool-season turfgrasses, the non-endophytic grasses such as the Kentucky bluegrasses, creeping bentgrasses and some of the fine fescues are more likely to be damaged by surface-feeding insects such as chinch bugs, sod webworms and cutworms. Shallow or poorly rooted turfgrasses are also considered key plants since root-feeding insects will easily damage these plants.

Key insects are the insects which occur most often within a geographic region. In Maryland, the Japanese beetle and masked chafer grubs are the predominant white grub

species. In New York, the European chafer is one of the most damaging grubs in home lawns. Learn the key pest insects within your area. Sampling techniques such as irritant soap flushes, black light trapping, flotation, pit-fall traps, and soil sampling alert you to the presence of insects, but they can also help determine if action thresholds have been reached. Action thresholds are the number of insects per unit area, in which damage will

occur if some type of control action is not taken.

Action thresholds for turfgrass insects can vary due to differences in the host plants or the level of plant stress from environmental conditions or management practices. (See page 30 for monitoring, diagnosis and control strategies.) □

The author is associate professor of entomology at the University of Maryland.



Scouting for white grubs can be as easy as pulling back a piece of turf.

Some new control products

Talstar (bifenthrin) is a synthetic pyrethroid recently labeled for the turfgrasses. It joins other pyrethroids such as Tempo (cyfluthrin); Scimitar and Battle (lambda-cyhalothrin); Mavrik (fluvalinate) and Astro (permethrin). Talstar comes in different formulation and labeling (restricted and general use) for golf course and home lawn uses. Talstar will control surface-feeding insects such as chinch bugs, sod webworms, adult billbugs, adult annual bluegrass weevils, armyworms, cutworms and atae-nius adults. Nuisance pests such as ticks, fleas and ants are also covered in Talstar labeling.

MACH 2 (halofenozide) is available for the 1998 season. This product mimics the insects' molting hormone—ecdysone—and will cause premature molting. In field tests it has provided consistent and excellent control for a number of white grub species.

Like Merit, this product can be applied early (May-July) and provide season-long control. The level of control is greater on first instar grubs than on later instar grubs. It also has activity against lepidopteran pests, such as sod webworms and cutworms. RohMid will be marketing this product and it will be initially available as a ZSC formulation.

Conserve SC is a new product developed by DowElanco and is in a chemical family known as spinosyn. The active ingredient of this product consists of fermentation products or metabolites of a specific bacterium found to have insecticidal properties. Current labeling is for Conserve to be formulated as a soluble concentrate to control sod webworms, black cutworms and armyworms.

Conserve SC will be active against all larval instars with rates ranging from .08 lb. to 4 lb. of active ingredient per acre

Cruiser is a new nematode product from Ecogen labeled for white grub control.

Cruiser contains the nematode *Heterorhabditis bacteriophora* and has good to excellent activity against white grubs. Current recommendations are at the 1.0 to 1.5 billion nematodes per acre rate, and the product is effective on all larval instars. Supply was limited for Cruiser in 1997 with increased production planned for 1998. □

MONITORING, FIELD DIAGNOSIS AND CONTROL PROGRAMS, COOL-SEASON INSECTS

INSECT PEST

Billbugs

Field diagnosis/monitoring

Adults begin to move from overwintering sites into turf in April/May. Use pitfall traps to determine spring activity. Billbug larvae will bore into crown and stem tissue and then exit into the soil. Look for sawdust-like material in stems. Also, plants, when pulled will sever at the crown. Damage visible by June on key plants, such as Kentucky bluegrass, zoysiagrass.

Control action

Preventive applications if pitfall traps indicate high adult counts (2-5/day). Use Dursban, Tempo, Battle, Talstar and Scimitar for adult control in April/mid-May. Control difficult when larvae are in the stem. Vector or Merit can be used at this time. Soil insecticides such as Sevin, Turcam, Oftanol, Diazinon, Crusade, Mocap, Mainstay and Triumph are labeled. Cool, wet summers favor a fungal disease outbreak of *Beauveria* sp., which will reduce billbug populations. Plant endophyte enhanced grasses.

INSECT PEST

Black turfgrass ataenius

Field diagnosis/monitoring

Adults begin to move from overwintering sites into turf in late March/April. Adults are attracted to lights. Damage by first generation grubs will be seen by late June. Second generation grub damage will be seen by late July/early August. A serious problem on golf course turf where annual bluegrass and creeping bentgrass

are grown.

Control action

Preventive applications may be done if past history dictates it with Dursban and Talstar in April or Merit in May. Soil insecticides such as Proxol/Dylox, Turcam, Crusade, Triumph, Mocap, Oftanol and Mainstay are recommended in June to September period.

INSECT PEST

Chinch bugs

Field diagnosis/monitoring

Prefer warm, dry, sunny locations. Emerge from overwintering sites as temperatures reach 70 degrees F. Flotation sampling is effective. Damage symptoms are irregular brown areas, often seen from July through September. Fine fescues are very susceptible. Other key plants are the creeping bentgrasses and Kentucky bluegrasses.

Control action

Preventive application in April/mid-May for habitual problem sites. Dursban, Diazinon, Sevin, Triumph, Tempo, Oftanol, Mainstay, Battle, Talstar, Astro and Turcam are labeled for control. Cool, wet weather during summer favors fungal pathogens which control chinch bugs. Plant endophyte-enhanced grasses. Big-eyed bug is a beneficial predator.

INSECT PEST

Cutworms/armyworms

Field diagnosis/monitoring

Consists of five main species and may be seen (caterpillars and adults) from May to September. Turfgrass thins. Irritant sampling techniques

will flush insects to surface.

Common problem on bentgrass putting greens. Adults are attracted to lights.

Control action

The following are labeled for control: Sevin, Dursban, Battle, Diazinon, Proxol/Dylox, Scimitar, Tempo, Talstar, Crusade, Triumph, Mainstay. Biorational insecticides include: Steward, Dipel, Vector, Cruiser, and Turplex Bioinsecticide. Light irrigation to work material into thatch may be required for some of these. Plant endophyte-enhanced grasses.

INSECT PEST

Sod webworms

Field diagnosis/monitoring

More than 20 species of sod webworms in the U.S. Defoliation damage visible from May to September. Webbing and frass noticeable from larval feeding. High risk period is July to late Sept. Irritant sampling techniques flush larvae to surface.

Control action

Refer to insecticide list for cutworms and armyworms. Oftanol, Astro, Turcam and Orthene are labeled for sod webworm control. Plant endophyte-enhanced grasses.

INSECT PEST

Grubs: Japanese beetle, masked chafers, European chafer, Asiatic garden beetle, oriental beetle

Field diagnosis/monitoring

These white grub species cause root damage. Damage symptoms are brown turf which can be easily pulled up. Begin to monitor in late July to early August for the presence of

grubs at or near soil surface. Light trap or pheromone trapping can indicate potential high risk site area for some of these grub species.

Control action

Soil insecticides will give good to excellent control if watered in with half-inch of water. Product labeled are: Dylox/Proxol, Turcam, Mocap, Mainstay, Crusade, Oftanol, Sevin, Diazinon and Triumph. Can be applied mid August/September or in the spring, April-mid May period. Merit applications perform better if applied preventively or during egg laying period. The new nematode product Cruiser is labeled for white grub control.

INSECT PEST

Greenbug aphid

Field diagnosis/monitoring

Kentucky bluegrass is the major host for this insect. Worst outbreaks appear after mild winters followed by cool, wet springs. Feeding damage causes leaves to turn yellow-orange in color.

Control action

Orthene, Dursban and Diazinon for control in June-September period. Treat if yellowing occurs to turfgrass stand. □

SOURCE: DR. MATHIAS. OMISSION OF ANY PRODUCTS IS UNINTENTIONAL. PRODUCTS LISTED FOR INFORMATION ONLY, AND ARE NOT CONSIDERED TO BE ENDORSEMENTS.

Warm-season turfgrass insect management: monitor often for pests

R.L. BRANDENBURG / Turf Entomologist,
N. C. State University

The twolined spittlebug problem has been increasing on warm-season turfgrasses over the past 10 years. This may be due to the increasing population in the South, the increased use of centipedegrass, and extensive plantings of hollies in landscape (a host for spittlebug adults).

Despite this general increase in the abundance of spittlebugs we have seen in recent years, we were not prepared for such high numbers in many areas



Twolined spittlebugs, if conditions allow, can damage centipede turf. Turfgrass managers in the south should scout for them.

during 1996. High populations were observed on many species of both cool and warm-season grasses. This phenomenon appeared to be a reflection of a wet, cooler-than-normal summer. Does this mean twolined spittlebugs will be a serious problem in 1998? It's difficult to predict this pest for the summer season. Undoubtedly, higher-than-normal populations of spittlebugs overwintered, but we don't know if this will translate into above-normal populations this summer. Be prepared and scout centipedegrass frequently for this pest.

The southern chinch bug is a pest of St. Augustinegrass particularly in hot, dry weather. De-

spite rainfall that in some areas was more than twice the normal average, we observed damage from chinch bugs. In fact, we saw some of the heaviest infestations we had observed in the past five years. Was this contrary to our accepted understanding of chinch bug outbreaks? Yes, it certainly was, but it also emphasized the need to continually monitor turfgrass despite what conventional wisdom might tell you. Time spent monitoring the turf helps avoid surprises. The same could be said for bermudagrass mites which also prefer hot, dry weather. Wet weather doesn't mean you can forget about them.

White grubs are generally less of a problem in areas of warm-season turf compared to the cool-season zones, particularly the Northeast. However, wet soil during July and August may contribute to more grubs this spring. The adult beetles of white grubs generally lay their eggs in late June through July. These eggs must be laid in moist soil that remains moist throughout the development of the very small first stage grubs. If the soil is dry the eggs don't hatch or the very small, newly-hatched grubs die.

Many areas last year had enough rainfall to keep the soil moist during this critical period for egg and grub survival. As a result we probably had above average survival of white grubs over a wider area (especially non-irrigated areas) and those above average numbers overwintered to damage turf in the spring. This may well be reflected in the number of moles attracted to turf areas to feed on these grubs. It may also result in more beetles, such as Japanese beetles to feed on certain ornamental plantings next season. **LM**

PRODUCTS FOR CONTROL OF WARM-SEASON INSECT PESTS

Southern chinch bug:

bendiocarb (Turcam, Dycarb); ethoprop (Mocap); cyfluthrin (Tempo, Decathlon); permethrin (Astro); diazinon; chlorpyrifos (Dursban); isofenphos (Oftanol); isazofos (Triumph); fonofos (Crusade, Mainstay); lambda-cyhalothrin (Scimitar, Battle); acephate (Orthene); fluvalinate (Mavrik)
Timing: apply as needed during hot, summer months.

Thorough coverage is critical. Irrigate immediately after application of granules. Avoid over-fertilizing.

Leafhopper/twolined spittlebugs:

acephate (Orthene); bendiocarb (Turcam, Dycarb); chlorpyrifos (Dursban); diazinon; carbaryl (Sevin); isazofos (Triumph); fluvalinate (Mavrik).
Timing: begin monitoring and treat damaging populations in early summer.

Cutworms, armyworms:

azadirachtin (Turplex); lambda-cyhalothrin (Scimitar, Battle); acephate (Orthene); carbaryl (Sevin); diazinon; isofenphos (Oftanol); chlorpyrifos (Dursban); fluvalinate (Mavrik); cyfluthrin (Tempo, Decathlon).
Timing: monitoring/treatment may be necessary in early spring-late fall.

Mole crickets:

chlorpyrifos (Dursban bait); propoxur (Baygon bait); carbaryl (Sevin bait); bendiocarb (Turcam, Dycarb); chlorpyrifos (Dursban); isofenphos (Oftanol); fonofos (Crusade, Mainstay); acephate (Orthene); ethoprop (Mocap); fluvalinate (Mavrik, Battle); entomogenous nematodes (Vector MC, others); imidacloprid (Merit).
Timing: soap flushes to monitor egg hatch. Treat nymphs in early summer.

White grub:

bendiocarb (Turcam, Dycarb); diazinon; isofenphos (Oftanol); isazofos (Triumph); fonofos (Crusade); ethoprop (Mocap); imidacloprid (Merit); entomogenous nematodes (Cruiser) trichlorfon (Proxol, Dylox).
Timing: treat small grubs in late summer and fall for best control.

Ground pearls:

No known effective chemical controls. Follow proper turf management practices and irrigation.

Not all trade names are mentioned, and the ones listed are used as examples. No endorsement of product is intended nor does omission of any product imply criticism.

**PLCAA—
GROWING LEADERS FOR SUCCESS**

The Professional Lawn Care Association of America is in the business of "Growing Leaders." Growing your career, your company and your industry. That's our mission. From all parts of the United States, Canada and around the world, PLCAA members are dedicated lawn and landscape professionals, grounds managers, industry suppliers, and students committed to professionalism and success.

Invest in your success, join PLCAA today! As a member, you can take advantage of:

- > Year-Round Business, Legal and Technical Advice
- > Discounts on a University-Directed Industry Certification Program
- > Comprehensive Benefits Package Including Insurance & Retirement Planning
- > Discounts on Educational Products, Conferences & Workshops
- > Discounts on Green Industry Expo Booth Space for Suppliers
- > Legislative Support and Updates on the Issues
- > Discounts on PLCAA's Operating Efficiency Study
- > Exclusive Use of the Symbol of Good Practice Logo

Visit PLCAA's
Web Site:
www.plcaa.org



YES! Help me invest in my success. Send me information on PLCAA.

Name _____
 Company _____
 Address _____
 City _____ State/Country _____ Zip _____
 Phone _____ FAX _____
 E-Mail _____

Clip & send this coupon to:
 PLCAA,
 1000 Johnson Ferry Road,
 NE, Suite C-135
 Marietta, GA 30068-2112
 FAX: (770) 578-6071
 PHONE: (800) 458-3466
 or (770) 977-5222
 E-Mail: plcaa@atlcom.net