

Cool-season insect control:

know the symptoms

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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



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

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.) □

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occur if some type of control action is not taken.

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 awaiting final registration and may be available for the 1997 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 2SC 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. Current plans are to have it available by mid 1997.

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 is 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 ateniensis

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 bent-

grass 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. □

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