

Insect control in cool-season turf

Understand regional differences and critical periods of pest infestation.

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■ Before turfgrass managers can attain optimal control of insects in turfgrass, they must first understand the habits and injury signs of the target pests. This understanding helps to recognize impending problems, pinpoint critical periods during the season for control and develop the best management techniques.

Regional differences—Although pest complexes in cool-season turfgrass are generally shared, there are important regional differences. For example, problems with Japanese beetle, bluegrass billbug and chinch bugs are generally restricted to areas east of the Mississippi river. Problems in Western states include spider mites (e.g. banks grass mite) and Denver billbug. New species continue to be introduced and spread in North America, such as the Asiatic garden beetle, presently a problem in the Northeast.

Know critical periods—Most turfgrass pests are best managed during certain times of the season. Most white grubs are far more susceptible when they are young and feeding near the surface, so controls are best applied shortly after eggs have hatched. Other insects, such as bluegrass billbug and black turfgrass atenioid, are better controlled in the adult stage, so treatments should coincide with peak periods of adult activity.

Sampling is very important for identifying problems with most turfgrass pests.

For example, numbers of chinch bugs present in a lawn can be determined by sinking an open-ended coffee can in the lawn and filling it with water. The chinch bugs float to the top and populations exceeding 15-20 bugs per square foot indicate a potential problem.

Sod webworms and cutworms can be irritated to come to the surface by drench-

ing an area of the lawn with "disclosing" solutions of dilute detergent or the insecticide pyrethrins. Populations of sod webworms exceeding 6-10 per square foot or cutworm numbers less than half of that suggest treatment may be desirable.

Sampling also identifies "hot spots" in lawns. Most turfgrass insects and mites are not uniformly distributed, and occur in concentrated pockets. Outbreaks of greenbug aphids can usually be found developing under trees, while spider mites, such as clover mites and banks grass mite—tend to occur in warm, dry areas such as next to buildings or on slopes that face south. Distribution of white grubs in a lawn is often determined by soil moisture conditions.

Control options—There are several control options for any pest problem. Using as many of these that are appropriate, in a coordinated manner, is a central idea to Integrated Pest Management (IPM).

Cultural practices limit pest problems. Extra watering can help control outbreaks of chinch bugs by spreading the fungus disease *Beauveria*, which controls them naturally. Watering dry areas also reduces buildup of spider mites in lawns.

A normal lawn contains many natural insect controls. Starlings and blackbirds feed on large numbers of cutworms and sod webworms in spring. Ants feed on many turf insects and a wide variety of other predators—such as big-eyed bugs, ground beetles and parasitic wasps—are present.

If intervention is needed to prevent turf damage, the most obvious management choice is to use insecticides. Many insecticides are labeled for use on turfgrass, each with characteristics that can affect their performance. Some insecticides penetrate thatch well, and are more appropriate for controlling insects below ground, such as white grubs.

Others remain in the thatch layer, where they can best control surface and thatch-infesting species.

New control products—Several new insecticides have been registered for turf-



Masked chafers are adults of annual white grubs.

grass insect control. Talstar, Scimitar and Astro are all pyrethroid insecticides, and they are similar to Mavrik and Tempo. They are now registered for control of most surface-feeding insects. In addition, some of these are effective against spider mites. Merit, from a new insecticide class known as chloronicotinyls, appears to have

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The cranberry girdler is a type of sod webworm.

COOL-SEASON INSECT PESTS AND TREATMENT VARIABLES

PEST	DAMAGE	TREATMENT	CONSIDERATIONS
White grubs (also turfgrass ataenius, Japanese beetles, chafers)	Larvae feed on roots of grasses, and cause drought stress and dieback. Infesta- tions of larger species may attract skunks or crows which tear thatch to feed.	Insecticides that pene- trate thatch well are particularly effective. These include Crusade Mainstay, Proxol/Dylox, Turcam, Triumph, Sevin, Merit or diazinon. Insect parasitic nematodes in the genus <i>Heterorhab-</i> <i>ditis</i> .	Grubs of most species are best controlled when young, shortly after hatching. A light watering after applica- tion moves insecticide into rootzone. Black turfgrass ataenius best controlled when peak flights of adults are observed.
Billbugs (also bluegrass billbug, Denver billbug)	Young develop inside crown of plants. Older larvae feed on roots. Damaged areas may die.	Properly timed surface treatments can kill adults prior to egg laying. Dursban, Scimitar, Crusade/Mainstay, Turcam, Oftanol, Merit and diazinon can be effective. Larval control difficult, but Exhibit nematode can provide good larval control.	Monitoring spring activity of bluegrass billbug emerg- ing from overwintering areas is important in properly timing adult treatments.
Sod webworms	Larvae feed at night, emerging from silken tunnels to clip grass. Damaged areas may thin or even be killed.	Most surface-active insecticides are effec- tive, including Orthene, Sevin, Talstar, Tempo, Scimitar, Dylox/Proxol, Turcam. Neem-derived botanicals (Turplex) and insect parasitic nematodes (Exhibit) are alternatives. Endophyte- enhanced grasses can suppress sod webworms.	Peak injury tends to occur in mid-spring and again in mid-summer. Larvae can be brought to surface with deter- gent solution or pyrethrins (Pyrenone).
Mites , including clover mite, winter grain mite	All active stages feed on grass blades. Heavily damaged grass appears dessicated.	Provide extra water to mite "hot spots" in late winter and spring to delay increase of most mites. Miticides include Talstar, Scimitar, Kel- thane, Dursban.	Winter grain mite and clover mite are "cool season" species primarily active in late winter and spring. Spider mites tend to be worse in drier areas, such as around the base of buildings and trees or on south-facing slopes.

Source: Dr. Cranshaw



Banks grass mites disperse from a grass blade.

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 excellent potential for control of white grubs and billbugs. Several new formulations of Dursban will also be available in 1995.

Some biological insecticides are also available. Most widely known are the insect parasitic nematodes, particularly

the species *Steinernema carpocapsae*. Sold under the trade name Exhibit, this product can control billbugs, sod webworms and cutworms. Other nematodes (*Heterorhabditis* species) can control white grubs. A botanical insecticide derived from the seeds of the neem tree is Turplex, which may be useful for control

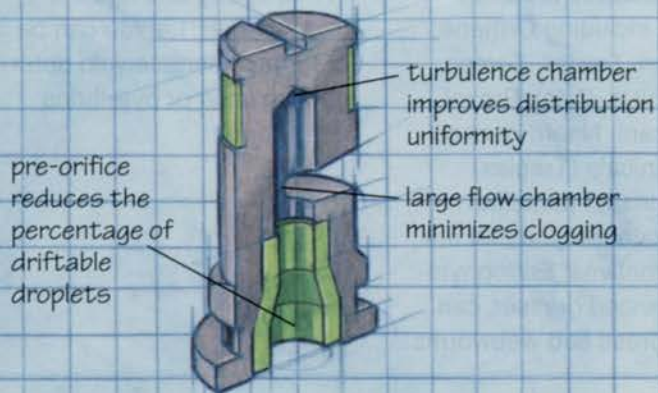
Merit appears to have excellent potential for control of white grubs and billbugs. Several new formulations of Dursban will also be available in 1995.

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Endophytic fungi can be a useful for long-term management.

These are fungi that develop inside certain grasses, notably perennial ryegrass, tall fescue and fine fescue. Endophyte-infected grasses often are more tolerant of stresses such as drought and can resist attack by insects such as billbugs, sod webworms and greenbugs.

—Dr. Cranshaw is an extension entomologist and associate professor at Colorado State University. He recently co-authored "Turfgrass Insects of Colorado and Northern New Mexico."




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