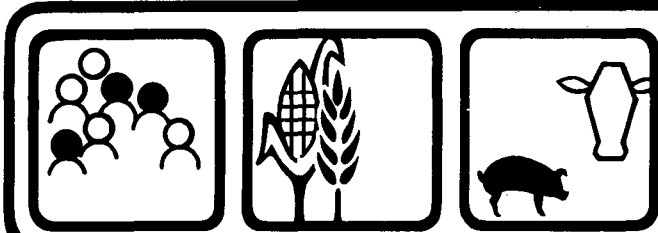


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ENTOMOLOGY FACT SHEET

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Controlling Lawn and Turf Insects

White grubs, sod webworms, bluegrass billbugs, cutworms, and armyworms are important insect pests of lawns and turf in Minnesota. A number of other insects and related organisms may also be found in lawns. They are not destructive but some are a nuisance. Ants and night crawlers often produce mounds which make the lawn unsightly or rough.

WHITE GRUBS

These are the larvae of the common May beetles or June bugs which fly to lights in the spring. The beetles lay eggs in spring and summer. The grubs are whitish with brown heads. They feed on the roots of the grass and heavy infestations will loosen the sod so that it can be rolled back. The grubs are usually found curled in a "C" shape. The damage will appear as irregular patches of yellowed or dead grass. Common species of grubs in Minnesota have a 3-year life cycle.

White grubs are a favorite food of skunks and moles. Skunks sometimes damage turf by digging for the grubs. Controlling grubs may indirectly control moles.

SOD WEBWORMS

The adults of sod webworms are frequently called lawn moths. They are light-colored moths or "millers" which make short erratic darting flights. They also are attracted to lights at night and when resting fold their wings back closely against their bodies. This gives them a very narrow appearance.

The moths lay their eggs in the lawn. The worms which hatch from these eggs begin to feed at night on the grass leaves. During the day the worms hide in silk-lined tunnels or burrows at or slightly into the soil surface. When fully grown, the worms are a dirty white to light brown with darker spots and are about 3/4-inch long. Some species damage plant crowns or roots as well as leaves. Heavy infestations of the second generation may seriously damage large areas of turf.

BLUEGRASS BILLBUG

Adult billbugs are long-snouted, 1/4-inch, gray-to-black beetles with a strongly tapered abdomen. They can be found walking on hard surfaces in early spring prior to depositing eggs in grass stems. The plump, legless white larvae which hatch first feed on stems and then on available roots. Infested lawns have off-colored, irregularly shaped areas which rapidly yellow and finally turn brown. Areas of advanced infestation contain individual plants which offer little resistance when pulled. Larvae complete feeding in late July and August, move 1 to 2 inches into soil and pupate. Adults emerge in August and overwinter in protected locations.

CUTWORMS

Some species of cutworms prefer grasses and may occasionally become damaging. They are most likely to be found

in uncut grass or in lawns next to unmowed areas. The worms feed on the grass leaves or cut the grass off at the soil surface at night. During the day they hide in the soil or under debris. Full-grown worms are about 1 1/2 inches long and may be gray or brownish. One common grass-infesting species has conspicuous bronze stripes.

ARMYWORMS

The true armyworm, a member of the cutworm family, is more widely recognized as a pest of cereal crops but during outbreaks may commonly infest turf areas. It is often found in unmowed park, or lodged grass and may move into lawns from such areas.

LEAFHOPPERS

During some seasons these very tiny green or gray insects become so numerous that when disturbed into flight, they rise like a cloud of dust. They are sap sucking insects and their damage usually appears as irregular patches in which the grass is yellowed or bleached out. Established lawns are seldom seriously damaged. Most of the grass-infesting leafhoppers are less than 1/4-inch long, narrow and tapered from head to tail.

CONTROL MEASURES

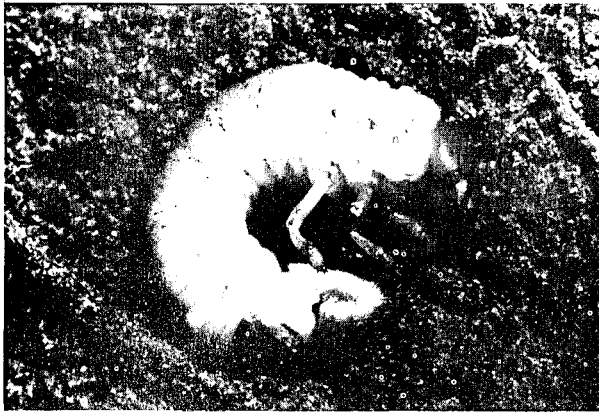
The granules should be spread uniformly over the lawn. A fertilizer spreader may be used if it is calibrated properly. The emulsifiable concentrates and wettable powders must be mixed with enough water to adequately cover the area to be treated. With a compressed air sprayer at least 2 or 3 gallons should be used for each 1,000 square feet. The hose-on type sprayer which delivers a coarse droplet spray may be used. Usually an area of about 500 square feet can be covered with 1 quart of insecticide mixture. Most wettable powders don't work well in the hose-on sprayers. It's best to use the emulsions.

To control underground insects such as grubs and bluegrass billbug, thoroughly soak the treatment in by sprinkling. For sod webworms, armyworms, leafhoppers, and adult billbugs do not sprinkle for 2 to 3 days. After watering or sprinkling following treatment, allow the lawn to dry before letting children or pets play on it.

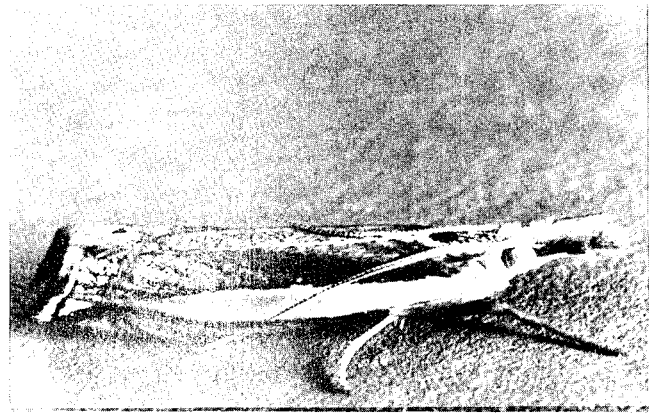
CAUTION

All insecticides must be handled with respect. Read and follow directions and precautions on the container labels. Avoid contaminating the skin and clothing. Do not breathe the dust or spray. After applying insecticides change clothes and wash thoroughly with soap and water. Store pesticides in a safe place where children and pets can't obtain them. Dispose of empty containers safely.

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DOCUMENTS
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▲ White grub

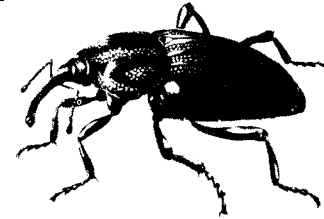


▲ Sod webworm adult



← Sod webworm

Bluegrass billbug →



Control Measures

Pests	Insecticide	Amount per 1,000 square feet	Remarks
White grubs	diazinon 48% EC*	4 fluid ounces	Use granular formulations when thatch is heavy. Will also help control ants.
	2% G**	6 pounds	
	5% G	2 1/2 pounds	
	14% G	1 pound	
Sod webworms	trichlorfon (Dylox, Proxol) 40.5% EC	6 ounces	Do not use if water pH is greater than 7.0.
	80% SP***	3 3/4 ounces	
	chlorpyrifos (Dursban) 5.3% EC	1 quart	
Sod webworms	diazinon 50% WP****	4 ounces	Most effective if applied in the evening during August when adult activity is high.
	48% EC	4 fluid ounces	
	2% G	5 pounds	
	5% G	2 pounds	
	trichlorfon (Dylox, Proxol) 40.5% EC	1/4 to 3/8 pints	
	80% SP	2 1/4 to 3 3/4 ounces	
	chlorpyrifos (Dursban) 5.3% EC	4 fluid ounces	
Bluegrass billbug	Aspon 13% EC	10 2/3 fluid ounces	Withhold water 2 to 3 days following treatment for adults (mid-May). Water thoroughly following application for larvae (mid-June).
	carbaryl (Sevin) 80% WP	1/4 pound	
	50% WP	1/2 pound	
	diazinon 48% EC	4 fluid ounces	
Cutworms and Armyworms	2% G	6 pounds	Withhold water 2 to 3 days following treatment for adults (mid-May). Water thoroughly following application for larvae (mid-June).
	5% G	2 1/2 pounds	
	14% G	1 pound	
	carbaryl (Sevin) 80% WP	1/4 pound	
	50% WP	1/2 pound	
	chlorpyrifos (Dursban) 5.3% EC	4 fluid ounces	
Cutworms and Armyworms	diazinon 48% EC	4 fluid ounces	Withhold water 2 to 3 days following application for larvae (mid-June).
	2% G	5 pounds	
	5% G	2 pounds	
	trichlorfon (Dylox, Proxol) 80% SP	2 1/2 to 3 3/4 ounces	
	40.5% EC	1/4 to 3/8 pint	
Leafhoppers	carbaryl (Sevin) 80% WP	1/4 pound	Apply when leafhoppers are abundant, particularly if the lawn is newly established.
	50% WP	1/2 pound	
	diazinon 48% EC	1 1/4 fluid ounces	
	50% WP	1 1/4 ounces	

*EC = Emulsifiable Concentrate
 **G = Granular
 ***SP = Soluble Powder
 ****WP = Wettable Powder

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