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From the turf care group at Union Carbide

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# INSECT CONTROL GUIDE

comes most pronounced during the hot, dry days of summer. Bermudagrass and St. Augustinegrass are preferred hosts, but other grasses are also infested. Several treatments with diazinon and a wetting agent are required for control to be effective.

Ground pearls are scale insects that live in the soil throughout the year, sometimes 8-10 inches deep. In the spring eggs hatch producing nymphs that feed through out the summer by piercing turf roots and extracting plant fluids.

Chemical control for ground pearls has not been effective at any time of year. Damage is most severe during summer months when the turf is stressed from heat and drought.

Centipedegrass is especially susceptible to damage, particularly when weakened by overfertilization or drought. Proper fertilization, disease control, and adequate irrigation to maintain healthy turf is the best defense.

## Summary of grub control tests in Ohio - 1971-84<sup>1</sup>

Insecticide	Rate Lb AI/A	No. tests ( ) <sup>2</sup> and avg. % control
bendiocarb (Turcam) 76W	2.0	(9) 82%
ethoprop 5G (Mocap)	5.0	(5) 89%
ethoprop 5G (Mocap)	10.0	(5) 95%
ethoprop 10G (Mocap)	5.0	(3) 83%
ethoprop 10G (Mocap)	10.0	(2) 99%
trichlorfon (Proxol) 80S	8.0	(29) 73%
isazophos (Triumph) 4E	2.0	(8) 82%
isazophos 1G (Triumph)	2.0	(2) 99%
isofenphos (Oftanol) 2I	2.0	(12) 90%
isofenphos (Oftanol) 5G	2.0	(17) 86%
isofenphos (Oftanol) 1.5G	2.0	(7) 86%
diazinon 2G	5.5-6	(7) 66%
diazinon 5G	5.5-6	(2) 49%
diazinon 50WP	5.5	(1) 69%
diazinon 4EC	5.5-6	(20) 63%
diazinon 14G	5.5-6	(5) 29%
carbaryl 80S	8.0	(2) 63%
chlorpyrifos 0.5G (Dursban)	4.0	(8) 33%
chlorpyrifos 2EC (Dursban)	4.0	(5) 64%
chlorpyrifos 4EC (Dursban)	4.0	(6) 51%

<sup>1</sup> - Includes Japanese beetle, *Cyclocephala* spp., *Phyllophaga* spp., only.

<sup>2</sup> - Each test replicated 3 or 4X. Generally, treatments applied late summer or early spring. Irrigated (1/4-1/2 inch) after application, thatch - 1/2 inch, readings taken ca. 4-8 weeks after treatment. H. D. Niemczyk & K. T. Power.

## Fall (Sept.-Oct.)

**Chinchbugs**—In the northern U.S. the second generation of chinchbug is at peak numbers in September. Nymphs complete their development to adults in late October. Most chinchbugs overwinter in the turf, but some move to protected areas before winter.

Generally, infestation levels at this time are not high enough to warrant the use of insecticides. Early fall rains and infection by a parasitic fungus (*Beauveria* spp.) usually provides sufficient control.

Damage by southern chinchbug may continue in untreated areas. Late summer applications of insecticide usually make fall treatment unnecessary.

**Billbugs**—During September billbug adults that developed from summer larvae are often seen wandering about on sidewalks, driveways, or other paved surfaces. Before winter, these adults seek shelter in thatch, along sidewalk edges, or near foundations and overwinter there. Many, if not most, overwinter in turf.

In some areas (Cincinnati, Ohio) a partial second generation is known to occur. Larvae of this generation have been known to cause visible damage in September and October. If necessary, diazinon, Turcam or Proxol may be used to control damage.

**Grubs**—Most species of grubs are in the third of their three stages of development and are feeding actively. When soil temperatures decrease in late October the larvae burrow deeper into the soil to overwinter. Severely cold winters have little effect on survival.

Treatments of existing grub infestations can be accomplished as late as early to mid-September, using standard grub insecticides. Treatment after this time may or may not kill the grubs before they move deeper into the soil to overwinter.

If the soil is dry, irrigation before treatment is advisable. Whenever treatment is applied, the grubs should be in the top one to two inches of soil.

**Black turfgrass ateniensis**—By Sep-



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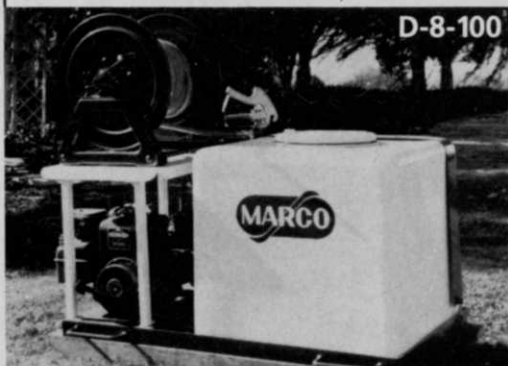
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tember, adults of the current generation begin to fly into protected areas, such as golf course roughs, to overwinter. Larvae that have not completed development to adults before frost are killed.

**Mole crickets**—Mole crickets fly again in the fall, but no egg laying is known to occur at this time. The crickets are large and difficult to control at this time. Damage becomes obvious as turf growth slows.

Sprays of diazinon (5-6 lb. AI/acre) or Turcam (2 lb. AI/acre) may have to be repeated several times. Oftanol (2 lb. AI/acre) may work too slowly for adequate control of large crickets in October. Mocap 10G (10 lb. AI/acre, commercial turf only) is usually effective at this time providing up to four weeks residual control.

**Sod webworm**—Northern sod webworm larvae are small and cause little if any damage in the fall. Late in the fall the larvae construct a cocoon-like shelter in which they overwinter.

Except for the most southern areas where development is continuous, sod webworm larvae present in September will overwinter. Areas treated earlier in the season may be reinfested by this time. Treatment in September reduces the population for next season.

**Fall armyworm**—Fall attacks on newly established turf from mid-September through October may result in damage that will not recover with fall fertilization. This forces the turf to enter winter in a stressed condition. Such damage can contribute to winter turf mortality.

If needed, apply controls early in the morning or late in the day when fall armyworms are most active. Use diazinon, Sevin, Dursban, or Proxol.

**Fire ants**—Hot, dry periods in September and October may make fire ant control difficult. Once rain begins, fire ants become active and may be effectively controlled with mound treatments of diazinon, Dursban, Orthene, Amdro bait or MC-96. Larger infested areas where mound treatment is impractical can be treated with Amdro fire ant bait (1.5 lb./acre).

**Greenbug**—Severe infestations of greenbug have been known to occur as late as the first week of December. Areas having a history of infestation should be reexamined when mild temperatures extend late into the fall. Heavily infested turf will not survive through winter.

Late fall infestations may be controlled with the same insecticides used to control the pest in the summer. **WT&T**



Frank J. McDonald, Director of Marketing  
Cushman Division, Outboard Marine Corporation  
Lincoln, Nebraska

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## WOODY ORNAMENTAL INSECT CONTROL

by Dr. D.G. Nielsen and Dr. J.R. Baker

**L**andscape trees and shrubs constitute a major investment and add significantly to the beauty and value of residential and commercial properties.

Landscape managers need to be familiar with woody plants, their requirements for survival and vitality and their pest problems to implement effective pest control programs. Most native trees and shrubs on undisturbed sites suffer only rarely from ravages of insect pests.

However, trees growing in landscapes are commonly stressed by construction damage, lack of water (or too much water if there is poor drainage), high temperatures, compacted soils, and other factors that reduce the tree's ability to either repel or withstand insect attacking without suffering decline.

Many major pests of trees and shrubs are probably opportunists that exploit hosts that have been weakened by physical factors.

This article is designed to help landscape managers develop strategies for controlling insect pests of woody plants.

The information is organized according to seasonal insect activity. The time or times an insect is vulnerable to a direct control tactic and up-to-date insect control recommendations are provided.

### Control Strategies

In the past, pre-scheduled cover sprays were often used to control insect pests that may be present on the property, because the detrimental side effects of some pesticides were not yet known and landscape managers were not familiar enough with local pests to develop target spray programs.

Many times, all trees on a property were sprayed when only a few harbored a pest species. Today, conscientious tree care specialists use

Dr. D.G. Nielsen is a professor of entomology at Ohio State University, and Dr. J.R. Baker is an extension entomologist at North Carolina State University.



The life cycle of the black vine weevil (from left): egg, larva, pupa, adult. Four foliar sprays at three-to-four week intervals are required for control.

insecticidal sprays only after determining which pest(s) is present and whether or not it has reached a potentially damaging population level. They spot spray only infested plants.

This approach is cost effective in terms of material costs, landscape beauty and longevity, and environmental quality.

### Dormant Period (November-March)

Some insect and mite pests are vulnerable to control tactics after trees and shrubs have become acclimated to winter temperatures. Landscape managers can capitalize on this vulnerability by performing pest control functions when other maintenance activities are not competing for their time.

Horticultural spray oils can be used safely on many woody plants to control overwintering eggs of spider mites and aphids and immature forms of adelgids and soft scales.

New information from Cornell University indicates that currently

available horticultural oils can be used throughout the year when the temperature is above freezing.

However, four cautions should be considered before using these products:

- Read the label to make sure the product is not phytotoxic to plants on which you intend to use it;
- Do not use oils at the dormant season rate in the fall before plants have become winter-hardy. In the South, woody ornamentals may not go dormant until late December;
- Oil sprays should not be used on plants under moisture stress or when temperatures are high with high humidity;
- Do not apply oil sprays to tender new growth in spring.

### Spruce Gall and Pine Bark Adelgids

Adelgids are small, soft-bodied sucking insects that feed on the needles or bark of conifers.

On spruce they cause pineapple-like galls to form on the new growth.

Eastern spruce gall adelgid and Cooley spruce gall adelgid overwinter



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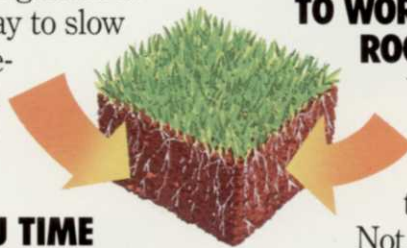
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