

# Controlling the Black Turfgrass Ataenius

by Dr. Harry Niemczyk and Gerald Wegner

Since 1973, golf course superintendents have assigned various names to the *Ataenius spretulus*, many of which we cannot print. However, this insect now has an official name, the black turfgrass *ataenius*, which was approved in August 1978 by the Entomological Society of America.

First reported as a new grub problem for golf course turf in the March 1976 issue of **The Golf Superintendent**, the insect has since caused serious damage to one or more golf courses in 22 states and Ontario, Canada. The development of resistance to chlordane and the lack of natural controls are probably among the major reasons for its resurgence as a pest.

## Life History

Three years of careful study have shown that the black turfgrass *ataenius* overwinters as an adult one to two inches in the soil under leaves and other debris on the edges of fairways and in wooded roughs. Adults begin leaving these overwintering sites during the time when crocus (*Crocus neapolitanus*) and red bud (*Cercis canadensis*) bloom. Migration from these sites continues through April when adults are often seen on greens or flying about the course in swarms on warm afternoons. When adults alight on the turf, they quickly burrow into the thatch.

After a period of flight activity during April and early May, the adults begin laying eggs about the time black locust (*Robinia pseudoacacia*), horse chestnut (*Aesculus hippocastanum*) and Vanhoutte spirea (*Spiraea Vanhouttei*) are beginning to bloom. Eggs are deposited in clusters of 11 or 12 in the soil or in thatch just above the soil. From mid-July, larvae can be found in the thatch and soil, feeding on the root systems of annual bluegrass (*Poa annua*), bentgrass (*Agrostis* sp.) or Kentucky bluegrass (*Poa pratensis*). Symptoms of injury include wilting despite regular irrigation.

Larvae burrow two to three inches in the soil, pupate and form adults that emerge in July and August. The red and black adults are often numerous around lights and under turf killed by the larvae.

Studies in Ohio show that these adults begin laying eggs about the time rose of Sharon (*Hybiscus* sp.) blooms, thus producing a second generation of larvae. Apparently, the second generation does not occur in northern states such as Minnesota. However in Ohio, this generation has been known to cause significant injury to fairways.

Completion of larval development and pupation of the second generation occurs in late September and October. These adults emerge and leave the fairways for overwintering sites during October and November.

## Control of Larvae

Infestations of the black turfgrass *ataenius* larvae are usually discovered when the root zone of wilted or dying turf is examined. When larvae are found, other fairways should be checked to determine the extent of infestation. Generally, populations of less than 30 to 40 grubs a square foot cause little damage unless the turf is under additional stress from disease, moisture or other factors. Only careful observation can determine whether damage is serious enough to warrant an insecticide treatment.

Other infestations are localized on a few fairways, and spot treatment with an insecticide is sufficient. Occasionally, entire fairways may require treatment. If liquids are applied, the treated area should be irrigated with one-half inch of water immediately after application. Sprays should not be allowed to dry before irrigation is applied. Applications can be made in the early morning before the dew dries, late in the evening, or during a rain shower.

Granular insecticides also have been effective against the larvae. Applications should be made when the turf is dry so the granules won't stick to grass blades. One-half inch of water should be applied soon after application to move the insecticide to the feeding grubs as soon as possible.

## The Preventive Approach

A method of preventing infestation of the black turfgrass *ataenius* larvae was tested in Ohio and other states from 1976 to 1978 by applying an insecticide just as the beetles started laying eggs. The objective of the method was to deposit insecticide in the first one-fourth inch of thatch so that residues would kill the beetles when they landed on the turf and burrowed in the thatch to lay eggs.

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The test showed that controlling the adults before they lay first-generation eggs prevents larval infestation. With good control, the second generation either does not develop, or the number of larvae is too small to cause damage.

The timing of the insecticide application is critical to this method of control. If applied too early, insecticide residue may be gone before the overwintering adults return to the golf course. If applied too late, enough eggs may be laid to produce a damaging population of larvae. The insecticide residue must continue killing adults throughout their peak period of egg-laying.

To provide treatment times for this method which are applicable to all locations where the black turfgrass *ataenius* has caused injury, the beginning of adult egg-laying is keyed to the bloom of certain trees and shrubs common to those locations. The signal plants in the test included black locust, Vanhoutte spirea and horse chestnut. The time to apply the insecticide, then, is when one of these plants is in bloom.

The relationship between bloom, the black turfgrass *ataenius* and the timing of the treatment is based on the fact that biological events such as these are a function of accumulated units. The number of units required for bloom is about the same as that required for the *ataenius* adults to begin laying eggs; therefore, both events occur about the same time, regardless of the location.



Insecticide applications for this method of control should be lightly watered (no more than five minutes for each irrigation head) in order to wash the insecticide off grass blades and into the first one-fourth inch of thatch. It is important to keep the insecticide residue in the upper half of the thatch layer where the black turfgrass *ataenius* adults seek shelter.

### Testing

In 1977, a single application of diazinon 4EC, or 14 percent granular at 6 pounds AI/A (active ingredient/acre), successfully prevented development of damaging larval populations. Control with these two formulations was 87 percent and 90 percent respectively on two golf courses in Cincinnati, Ohio. Similar tests in 1976 at this location showed that whereas diazinon 4EC at 6 pounds AI/A gave 93 percent control, Dursban chlorpyrifos at 4 pounds AI/A gave poor control. In 1977, two applications about 10 days apart of Dursban at 2 pounds AI/A provided an average of 72 percent control on two golf courses.

In 1978, the preventive method was used extensively on many golf courses in the Cincinnati area. With support funds provided by GCSAA and Ciba-Geigy Corporation, the program also was tested on golf course fairways in Missouri, Colorado, Minnesota and Michigan that had experienced severe damage in 1977. In all cases, application of diazinon 4EC was timed to the bloom of the signal plants.

Except for one or two golf courses in Cincinnati, damaging populations of the black turfgrass *ataenius* did not develop the rest of the year at any of the test locations. In fact, many superintendents found the effectiveness of the program difficult to believe.

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Except where the preventive program was used on the entire golf course, reinfestation is likely to occur the following year. Regardless of the control method used, it is advisable to keep a watchful eye out for the appearance of adults in April. If numerous, the potential for damaging populations of larvae is present.

Proper application of either the preventive or larval control methods should control damage.

- Dr. Harry Niemczyk is professor of turfgrass entomology and Gerald Wegner is a Ph.D. candidate and graduate research associate in the department of entomology at the Ohio Agricultural Research and Development Center, Wooster, Ohio.

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## Golf Outing

At Mascoutin, on Tuesday, July 17, 1979. 11:30 a.m. to 12:30 p.m. - 1/3 lb. Grilled Hamburgers available at Outside Grill. 12:30 p.m. - Shotgun start. 5:30 p.m. - Social "UnScramble" hour with Hors d'oeuvres. 7:00 p.m. - Sit-Down U.S. Choice Prime Rib Dinner AuJus. Meeting After. Cost is \$17.00 per "Super". Price includes, lunch, golf, shower, hors d'oeuvres, dinner, tax and tip.



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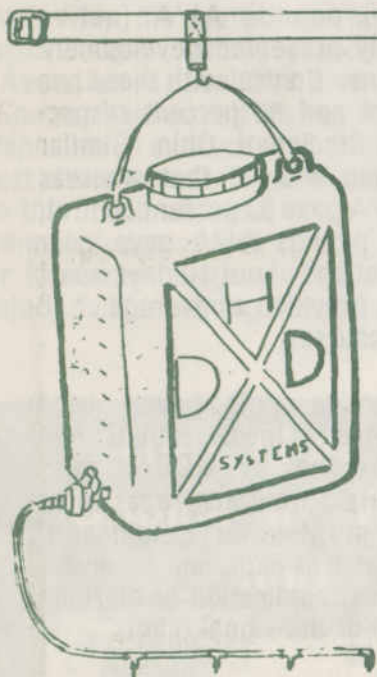
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## 1979 WGCSA Meeting schedule

The following is a tentative schedule of WGCSA meetings for 1979.

DATE	SITE	HOST
March 28	West Bend C.C.	Dennis Willms
April 23	Tripoli C.C.	Jim Belfield
May 14	Rhineland C.C.	Paul Cooper
June 31	Beloit C.C.	Don Ferger
July 17	Mascoutin C.C.	Glen Gerth
August 14	Cherokee C.C.	Melvin Mork
September 18	Bulls Eye C.C.	Bruce Worzella
October	Mee Kwon C.C.	Robert Gosewehr
November 5	Waupaca C.C.	Jeff Bottensek