TURF ENTOMOLOGY RESEARCH REPORT

Dave Smitley and Amy Cole
Michigan State University
East Lansing, MI

Although the black turfgrass ataenius, Ataenius spretulus, has become more of a problem for golf course superintendents in recent years, little is known about this insect other than the observations made by Dr. Niemczyk in Ohio. In Ohio ataenius goes through two generations per year. The most grubs and grub-damage are found in late June and early August. In past years I have assumed that in southern Michigan we also have two generations of ataenius. This idea was reinforced by observations at golf courses where ataenius grub activity appeared to have two peaks, one in early July and another in August. However, data collected at three golf courses in southeast Michigan this year clearly shows that there was only one generation of Ataenius.

In 1992 we initiated a project to study the populations of ataenius on golf courses in Michigan. We hope to learn why ataenius grubs are so abundant on golf courses, and yet are relatively rare on home lawns. Once we understand why ataenius is abundant on golf courses we may be able to recommend management practices that will keep ataenius grubs below damaging levels. In the first year of this project Amy Cole, a graduate student in the entomology department, visited three golf courses in the Detroit area once per week from late June through September. A moderate level of grubs was found (maximum of 50 per square foot) at two of the golf courses. Research plots were established in the fairway and in the adjacent irrigated rough to determine if there was any difference in grub density in the fairway compared with the rough. The turf plots were sampled weekly with a cup-cutter, and any grubs that were found were brought back to the laboratory to determine the species and to detect the presence of fungal pathogens.

The first grubs found turned out to be Aphodius, a beetle that looks very similar to ataenius, as adults or larvae. At Oakland Hills more Aphodius grubs were found than ataenius (Figure 1.). The Aphodius activity peaked in late June (Julian date=174) while ataenius activity peaked about four weeks later in late July (Julian date=203). Similar data were collected at the other two golf courses. There was only one generation of ataenius and one generation of Aphodius. 1992 was an unusually cool year. It may be possible for ataenius grubs to complete two generations in southern Michigan in a warm year. However, it is also likely that previous observations of two generations of ataenius in Michigan may have actually been Aphodius followed by ataenius.

At all locations far more grubs were found in the fairway than in the irrigated rough (Tables 1 and 2). One explanation for this could be differences in the type of grass growing in the fairway compared with the irrigated rough. Grass plants were collected from all plots to determine species composition. At Oakland Hills 56% of the fairway turf was annual bluegrass while only 2% of the turf in the rough was

annual bluegrass. However, at Orchard Lake a similar amount of annual bluegrass was found in the fairway and the rough (40–42%). Therefore, at Orchard Lake the grass species composition could not explain the differences in the number of grubs found. Another explanation could be related to increased pesticide use on the fairway compared with the rough. Many ataenius and Aphodius grubs were found to be infected with Metarhizium, a fungal pathogen of grubs. In some cases Metarhizium is known to keep grub populations to low levels. Because it is a fungus Metarhizium is sensitive to fungicides. It is possible that fungicide use is suppressing Metarhizium activity and insecticide use is suppressing predators of grubs on golf course fairways. We plan to continue this project for at least two more years to learn more about why large numbers of ataenius and Aphodius grubs are found on golf course fairways.

Table 1. Number of Ataenius larvae found in the fairway and in adjacent irrigated rough at two golf courses.

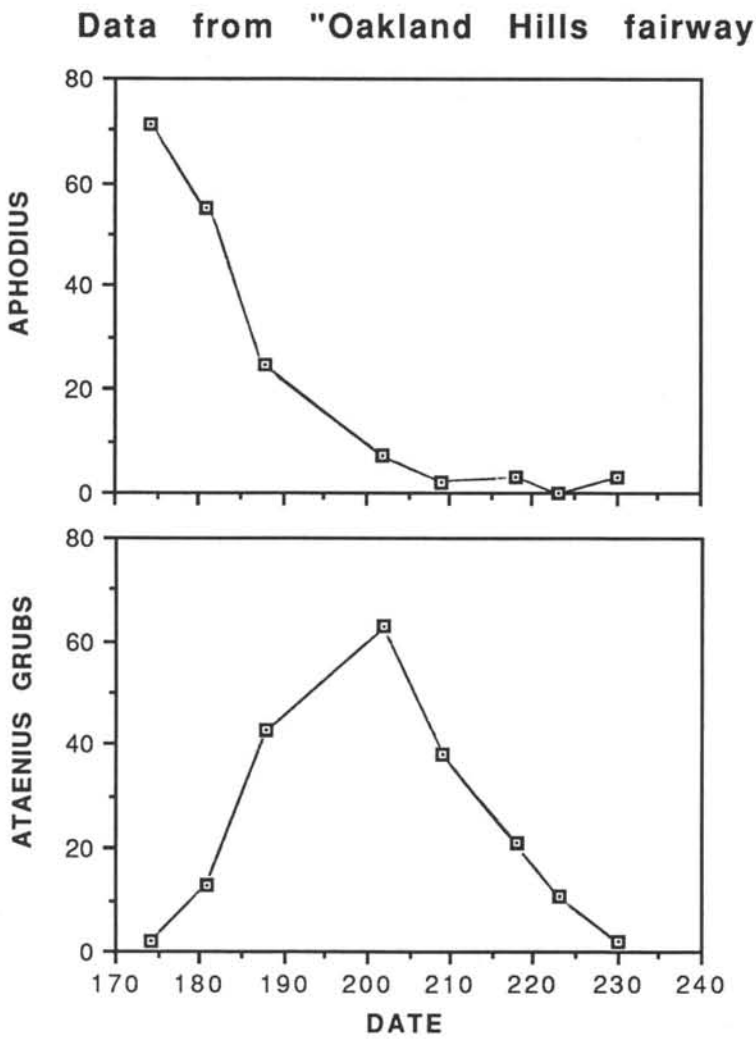
Course	Fairway	Adjacent irrigated rough
Oakland Hills	63	24
Orchard Lake	66	5

Table 2. Number of Aphodius larvae found in the fairway and in adjacent irrigated rough at two golf courses.

Course	Fairway	Adjacent irrigated rough
Oakland Hills	71	14
Orchard Lake	4	1

Table 3. Proportion of grass species found in the fairway and in adjacent irrigated rough at two golf course where Ataenius or Aphodius larvae were found.

Location	Annual bluegrass	Kentucky bluegrass	Creeping bentgrass	Rough bluegrass
Oakland Hills				
fairway	56	0	44	0
rough	2	98	0	0
Orchard Lake				
fairway	42	10	14	34
rough	40	52	2	6


Data from "Oakland Hills fairway"
APHODIUS
ATAENIUS GRUBS
80
60
40
20
0
170
180
190
200
210
220
230
240
DATE