

ATAENIUS AND APHODIUS UPDATE 1996

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Introduction

In 1996, *Ataenius spretulus* and *Aphodius granarius* again presented problems on golf courses across the state of Michigan. *Aphodius* grubs were a larger problem than they ever had been on golf courses, especially on greens. Many courses used the preventative insecticide Merit to eliminate the white grub problem.

Daconil Study

From the survey done in October of 1995, we found that *Ataenius* and *Aphodius* grubs were variable from course to course. We had also found that chlorothalonil represented a large amount of the fungicide usage on golf courses. 28% of the courses that responded to the survey had used chlorothalonil in 1995.

Previous data had showed that Daconil suppressed the predators that kept the *Ataenius* and *Aphodius* grub outbreaks under control. Daconil plots were set up along the rough/fairway interface of a perennial ryegrass golf course. The eight plots were 15ft x 10ft with a 10ft border separating each of the plots. Each of the plots contained 8 pitfall traps, 4 in the rough and 4 in the fairway. The grubs were collected by cup cutters, one cup cutter was taken for each vial in each of the plots. The results showed that Daconil did not suppress predators nor did it suppress the *Ataenius* grubs (See Table 1).

In the second part of this study we looked at *Bacillus popilliae*. This is the milky spore disease that affects the white grub family. We found there were more grubs infected with the milky spore disease in the rough than in the fairway. 50.2% of the grubs in the rough were infected while only 20.4% of the grubs in the fairway were infected. We also found Daconil did not suppress the milky spore disease.

Mowing Height Study

We also performed a mowing height experiment. Previous data had showed that *Ataenius* and *Aphodius* grubs were found more prevalently in the fairway than in the roughs. The mowing plots were also set up along the rough/fairway interface. The interface was erased and the new border was altered by mowing height. The experiment consisted of 16 20ft x 6ft plots which each contained 4 pitfall traps. There were four treatments in this study: Rough 95/Fairway 96, Fairway 95/Fairway 96, Rough 95/Rough 96 and Fairway 95/Rough 96.

The results showed that adult *Ataenius* and larval *Ataenius* were more abundant in the areas that were fairway in 1995 regardless of how it was mowed in 1996 (See Tables 2 and 3). The predators most commonly found on the golf course were two rove beetles. Both of these adult beetles were found in areas where the turf was long. The present mowing height was the deciding factor in the location of these predators (See Table 4).

Conclusions

Daconil does not suppress the predators, nor does it suppress the adult or the larval *Ataenius*. We also found that the Daconil does not suppress the milky spore disease that affects *Ataenius* or *Aphodius*. In the first year, the grubs are found in the areas where the turf was mowed to fairway height in 1995. In the first year of research, the mowing height of the present year does not affect the location of the grubs. We have also shown through field and laboratory experimentation that adult rove beetles of the genus *Philonthus* do not play a large role in the control of *Ataenius* outbreaks.

Future Research

There are many ideas that we have for the research season of 1997. We would like to investigate why we have the milky spore diseases in the roughs of a golf course and not in the fairways. We also believe that the larval forms of the rove beetles may play a role in controlling the outbreaks of *Ataenius* and *Aphodius* grubs. Lastly, we will investigate if there is a year delay in the location of the milky spore disease, the adult *Ataenius* and the larval *Ataenius* when correlated with a mowing height regime.

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Table 1: *Ataenius* Grub Numbers in Daconil Sprayed Plots, 1996

Plot Number	<i>Ataenius</i> grubs (Rough)	<i>Ataenius</i> grubs (Fairway)
1*	0	6
2	7	34
3	11	54
4*	1	27
5	0	12
6*	3	26
7*	17	19
8	21	63

*Daconil sprayed plots

Table 2: *Ataenius* Adult Numbers in Mowing Variability Plots, 1996

Treatment	<i>Ataenius</i> Adults
Rough 95, Fairway 96	68
Fairway 95, Fairway 96	168
Rough 95, Rough 96	71
Fairway 95, Rough 96	278

Table 3: Ataenius Grub Numbers in Mowing Variability Plots, 1996

Treatment	Ataenius Grubs
Rough 95, Fairway 96	21
Fairway 95, Fairway 96	95
Rough 95, Fairway 96	31
Fairway 95, Rough 96	67

Table 4: Rove Beetle Numbers in Mowing Variability Plots, 1996

Treatment	Rove Beetle Adults
Rough 95, Fairway 96	25
Fairway 95, Fairway 96	80
Rough 95, Rough 96	244
Fairway 95, Rough 96	340
