

**Ataenius and Aphodius Survey, Fall, 1995**  
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## **Introduction**

*Ataenius spretulus* was considered an incidental pest in turfgrass prior to the 1970's. However, in more recent years this insect has become a serious pest of golf courses all across the United States and some provinces of Canada (Tashiro 1987). *Ataenius* is a native pest whose typical Scarabaeid c-shaped larvae chews on the roots of turfgrass. In combination with summer heat and the damage of these grubs, the turf dies in small irregular patches, eventually leading to large dead areas. *Aphodius granarius* is very similar in behavior and appearance to the black turfgrass *ataenius* and was often mistaken for the *Ataenius* grub. *Aphodius* was introduced from Europe and very little is known about this golf course pest (Tashiro 1987). Since these two coleopteran pests are relatively new, more research is needed to learn how to manage these insects on turf.

## **About the Survey**

In the beginning of October of 1995, I organized a survey to be sent out randomly across the state of Michigan. 250 surveys were sent out to both public and private courses. There were many ideas that prompted the survey: 1) what maintenance practices do golf courses utilize that cause high numbers of grubs, 2) how many golf courses have these grubs and are they causing damage, 3) determine the kinds of pesticides being applied to the turf, 4) determine the rates and numbers of applications of these pesticides, and 5) to see if mowing height affects the grub population. The survey also included questions on the location of the grubs, the type of grub populations and dominant types of grasses found on the course.

## **Results**

From the 49 respondents, 26 golf courses had *Ataenius* or *Aphodius* grubs. Also from the returned surveys, there exists a relationship between the number of fungicide sprays and the populations of *Ataenius* or *Aphodius* grubs. It seems that as the number of fungicide applications increased, the grub populations also increased. The average number of fungicide sprays for golf courses with *Ataenius* or *Aphodius* grubs was  $14.65 \pm 12.01$ , while the average number of sprays for golf courses with no *Ataenius* or *Aphodius* grubs was  $11.7 \pm 6.96$ . The p value for this test was .081. Also, the survey showed that courses with grubs mowed the fairways slightly shorter than courses without grubs. The courses with grubs was mowed at  $.61 \text{ inches} \pm .14$  and the

golf courses without grubs was mowed at a height of .62 inches  $\pm$  .14. This demonstrates a possible relationship between mowing height and grub populations.

### Follow up Studies

This summer the results from the survey will be tested in the field. I will be conducting four experiments: mowing height, fungicide applications, and grub distribution. The mowing height experiment will use 60 feet of fairway and rough must be mowed at specific heights to determine if the mowing height has an effect on the grub population. This area must be insecticide free and mowed in a wave shape approximately 10 feet inside each hump. The four different repetitions of rough and fairways will be mowed at each .5 inch and 1 inch. In each plot four pitfall traps will be placed to catch and monitor predators. In the middle of June, *Aphodius* grubs will be collected by taking five cup cutter samples near the center of the plots and counted. The same will be done for *Ataenius* in the beginning of July. Data will be analyzed to determine relative numbers of grubs in long or short turf.

For the fungicide spray experiment, four plots of 15ft x 10ft in the rough and in the fairway will be sprayed with the fungicide Daconil and four plots of the same size in both the rough and in the fairway will not be sprayed. Each plot will be insecticide free and separated by 10ft of untreated turf. The fairways and the rough plots will be mowed at the appropriate rough and fairways lengths. The plots will begin being sprayed on May 25th and end at July 31st, spraying every two weeks at the recommended rates. The *Aphodius* grubs will be collected with a cup cutter, six per plot, near the center in middle of June and *Ataenius* in the same way in late July. Four pitfall traps will be placed in each plot to collect and count the numbers of predators that are found in the fairways and in the roughs. These numbers will show if there is a correlation between more fungicide sprays and less predators, which may ultimately lead to a large population of grubs.

To show distribution of *Ataenius* grubs, 20 private and public courses in Michigan will be sampled. Two holes at each course will be chosen to sample. A 20ft section of fairway of each of those holes will be kept insecticide free. The sampling will be done across the fairway and into the rough on both sides of the fairway. In half of these cup cutter samples, a grass sample will be taken with a small soil probe to determine what type of grass. The grass type will be determined to see if there is relationship between type of grass and grub preference. Thatch thickness will be measured in each cup cutter sample. The thatch thickness will be measured to determine if it has an effect on the grubs. The golf course superintendents will be asked for a fungicide application list. The list will be compared to the number of grubs found in each fairway.

### References

- Tashiro, H. 1987. Turfgrass insects of the United States and Canada. Cornell University Press. Ithaca, New York. 391 pp.