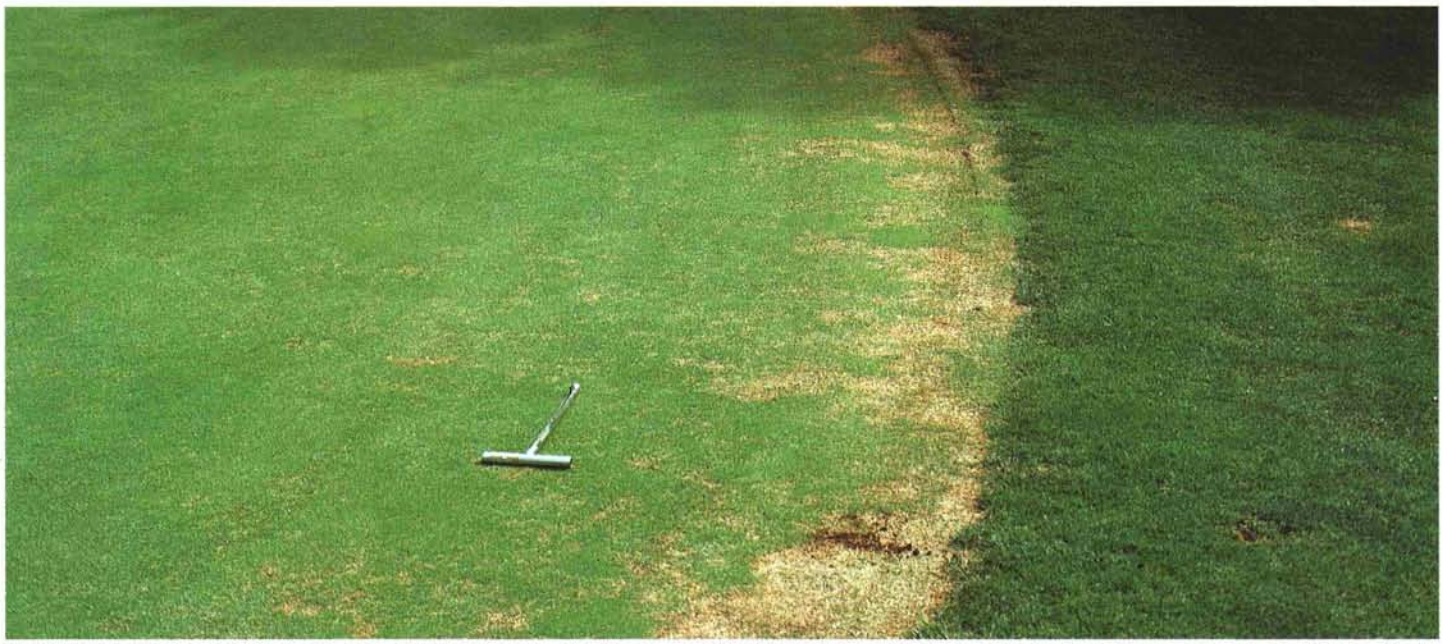
The Annual Bluegrass Weevil Rears Its Ugly Head

New control options worth considering in the fight against the annual bluegrass weevil.

BY PAT VITTUM



Typical late spring feeding damage from annual bluegrass weevil larvae is often heaviest in the perimeter region of a green and becomes more diffuse toward the center of the green.

The annual bluegrass weevil (*Listronotus maculicollis*), often called the *Hyperodes* weevil, has become a major pest for golf course superintendents throughout the Northeast and Mid-Atlantic states and shows signs of increasing its range further.

LIFE CYCLE

Annual bluegrass weevils (ABW) spend the winter as adults in protected sites near fairways, greens, or tees. In the spring, adults migrate to shorter cut turf, where females lay eggs inside the leaf sheath of individual grass plants. Tiny larvae hatch out after about a week and spend five larval stages feeding and growing. Small larvae feed inside the stem, while larger larvae migrate downward and feed in the crown. By late May or early June, feeding damage from the larger larvae becomes very apparent. The insects pupate in the soil for about a week before emerging as new young adults in late June or early July. These adults mate and lay eggs for a second generation. Each larval stage in July or August develops more quickly than in the spring, normally resulting in three generations in a season. It is difficult to track the development of the weevil populations in the summer months because of the overlap between insect stages. It is not uncommon to find small larvae, medium larvae, large larvae, pupae, and adults all in the same summer sample.

MANAGEMENT PROGRAMS

Historically, superintendents in the New York metropolitan area have scheduled insecticide applications to control adult ABW between *Forsythia* full bloom and dogwood full bloom, using insecticides such as chlorpyrifos (Dursban™) or one of the pyrethroids. These chemicals kill many of the adults before they have a chance to lay eggs, significantly reducing spring larva populations. More recently, however, it has been increasingly difficult to figure

out how to manage weevil populations in the summer because of the overlap in development. In 2004 there were limited options and most of the insecticides that were available (i.e., chlorpyrifos and the pyrethroids) were not particularly effective against larvae.

In 2004 we tested trichlorfon (Dylox™) on ABW larvae on a golf course in Westchester County. We applied the material on June 2 and came back just six days later to collect samples.

Treatment	lb. AI/A	Larvae per sq. ft.	% control
Control	—	66.1 b*	—
Dylox 80SP	4	12.7 a	81
Dylox 80SP	6	14.2 a	79
Dylox 80SP	8	14.2 a	79

*Numbers followed by the same letter are not significantly different from each other, Fisher's Protected LSD, P < 0.05.

These results (which were similar to results in 2003) were very encouraging, especially because the insecticide had been applied only six days before we sampled. Field observations in 2005 and in previous years also confirmed that Dylox can work well against larvae, sometimes providing better levels of control than we observed in the 2004 study.

We also tested spinosad (Conserve™) in 2005, again targeting the larvae. In this case we applied on May 10 or June 2 and sampled on June 20. The results from the early May applications were mediocre, but the early June applications (shown here) were much more effective:

Treatment	fl. oz./ 1,000	Larvae per sq. ft.	% control
Control	—	72.2 b*	—
Conserve	0.8	5.1 a	93.0
Conserve	1.0	4.1 a	94.4
Conserve	1.2	2.0 a	97.2

*Numbers followed by the same letter are not significantly different from each other, Fisher's Protected LSD, P < 0.05.

We considered these results to be very encouraging and conducted a follow-up study on the second generation of weevils at a second location. Unfortunately, the populations crashed during the study so we do not know how effective Conserve™ will be in summer conditions. Overall, however, the product looks very promising.

The annual bluegrass weevil adult pictured above is similar in size to black turfgrass ataenius, but it varies in its mottled color and characteristic beak.

During the winter of 2005, the labels on Dylox™ and Conserve™ were expanded to include ABW larvae. But targeting larvae will necessitate a change in a manager's mindset — it is not easy to wait until larvae are present! We will all be learning as we go with this new approach. And we may have to be more aggressive with cultural strategies, such as minimizing the amount of annual bluegrass on greens, tees, and fairways.

MONITORING FOR ANNUAL BLUEGRASS WEEVIL

Monitoring for ABW is fairly straightforward and critical for making proper management decisions. You can observe adults moving on the surface of the greens, tees, collars, or fairways on sunny days throughout the summer. You can also drive them to the surface using a soapy flush (one or two tablespoons of a lemon-scented dish detergent in one or two gallons of water spread over an area one or two feet on a side). Be sure to rinse the test area with irrigation water if it is a hot, sunny day. You can find larvae and pupae by cutting a wedge in the turf or pulling a core out of the turf and inspecting it by hand. The larvae look like grains of rice with a brown head, while the pupae are all white with a diamond shape. Our field observations suggest that the tolerance level for ABW larvae is between 30 and 80 larvae per square foot in the spring (through mid-June) and 10 to 40 larvae per square foot in the summer.

So for now, the "recipe" for control of ABW includes a spring application of a product targeting adults, after *Forsythia* full bloom and before dogwood full bloom. The alternative is to wait until larvae are active in late May or early June and apply trichlorfon or spinosad to areas where larvae are present in high enough numbers to cause damage. Summer management must be based on monitoring and determining which stages are present. When most insects are larvae, apply trichlorfon or spinosad. When most insects are pupae, wait at least a week and then use a material that is effective against adults. And when most insects are adults, apply chlorpyrifos or a pyrethroid. Until we resolve the matter of resistance in the pyrethroid group, it is wise to minimize the number of applications of those products.

Editor's Note: While trade names have been mentioned in this article, no endorsement is intended or implied by the author or the University of Massachusetts.

DR. PAT VITTUM *is an entomologist at the University of Massachusetts, where she has been researching annual bluegrass weevils and other insect pests on golf courses throughout the Northeast.*

Hyperodes weevils spend five larval stages feeding and growing. It is difficult to track the development of weevil populations during the summer months because of the overlap among insect stages.