

Controlling White Grub Species with Merit and Competitive Insecticides

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Introduction

White grubs are the most destructive of insects causing widespread damage to a number of turfgrasses in the cool-season region. Direct injury occurs when larvae feed on roots near the soil surface. Damage from most species usually appears in late summer and early fall. Various management techniques exist ranging from cultural and biological controls to insecticide treatments. The objective of this research was to assess the performance of merit and competitive insecticides for control of white grubs.

Methods

A field trial was established during the spring of 2004 at the Iowa State University Horticulture Research Station near Gilbert, IA. Each plot measured 5 x 5 feet and contained a mixture of creeping bentgrass and Kentucky bluegrass. The area was mowed at 1.5 inches and was irrigated daily. The randomized complete block trial contained five replications and nine treatments (Table 1).

Table 1. Treatment specification used to control white grub species in a creeping bentgrass/Kentucky bluegrass mixture.

Trt	Product	Formulation	Rate (lbs ai/A)	Application Timing
1	Control	-	-	-
2	Merit	750 g ai/kg WP	0.3	June 26
3	Merit	750 g ai/kg WP	0.4	June 26
4	Merit	5 g ai/kg	0.3	June 26
5	Merit Fertilizer A	2g ai/kg	0.3	June 26
6	Mach 2	2 lb ai/gal SC	2	June 26
7	Mach 2 Fertilizer	13.3 g ai/kg	2	June 26
8	Centric	400 g ai/kg WG	0.125	June 26
9	Centric	400 g ai/kg WG	0.2	June 26

On June 26, 2004 all treatments were applied. Liquid treatments were applied using a carbon dioxide backpack sprayer with #8002 flat fan TeeJet nozzles at 30-40 psi and diluted to a total spray volume of 3 gallons per 1000 square feet. Granular materials were applied using 'shaker dispensers' in order to provide uniform application. The experiment was terminated September 9, 2004. A sod cutter was used to cut a strip across each block. The sod was folded back and grub counts were recorded and converted to an area of one square foot. Data were analyzed using the Statistical Analysis System Software and the Analysis of Variance procedure. Fisher's LSD ($\alpha=0.05$) was used to determine treatment effects.

Results

White grubs were not present in the untreated plot of the fifth block. Therefore, data were analyzed two times, once while including the full dataset and again while excluding the fifth block. Differences were observed between treated and untreated plots (Table 2). However, no differences were observed among insecticide treatments (Table 2).

Table 2. White grub populations in creeping bentgrass/Kentucky bluegrass plots receiving various insecticides. Treatments were applied June 26, 2004 and white grub populations were determined September 9, 2004. Values represent means of four or five replications respectively.

Trt	Product	Rate (lbs ai/A)	Mean (All 5 blocks)	Mean (5th block removed)
1	Control	-	2.0	2.5
2	Merit	0.3	0.4	0.5
3	Merit	0.4	0.0	0.0
4	Merit	0.3	0.0	0.0
5	Merit Fert. A	0.3	0.0	0.0
6	Mach 2	2	0.0	0.0
7	Mach 2 Fert.	2	0.0	0.0
8	Centric	0.125	0.4	0.5
9	Centric	0.2	0.0	0.0
	LSD 0.05		1.0	1.2