

EFFICACY OF SEVERAL THIAMETHOXAM FORMULATIONS APPLIED DURING EARLY APRIL AGAINST WHITE GRUBS IN KENTUCKY BLUEGRASS TURF 2007

T. J. Gibb, D. S. Richmond, M. W. Baldauf, V. A. Caceres T. L. Hoctor and A. M. Nance
Turfgrass Entomology and Applied Ecology Laboratory
Purdue University
West Lafayette, IN 47907

OBJECTIVES

The primary objective of this study was to describe the efficacy of mid-April applications of several white grub insecticides/formulations against white grubs by:

- 1) Describing how the various formulations influence subsequent white grub populations
- 2) Comparing the efficacy of the different formulations against the selected reference compound

METHODS AND MATERIALS

The experiment was located at the Purdue University Nursery located on the campus of Purdue University in West Lafayette, IN, on a lawn consisting primarily of Kentucky bluegrass maintained at 7.6 cm. Plots measuring 1.5 x 1.5 meters were arranged in a randomized complete-block design with 0.6 meter alleys between plots. Liquid formulations were applied using a hand-held CO₂ boom sprayer configured with four 8010 nozzles operating at 30 psi and calibrated to deliver a spray volume of 2 gal/1000ft². Granular formulations were applied using a hand-held shaker jar. Each treatment was replicated 5 times and plots were irrigated (1.0 cm) immediately following applications. Thatch at the site measured less than 1/8 inch.

An artificial infestation of Japanese beetle larvae was created at the site by caging groups of 30 adult beetles (sex ratio = 50:50) on plots using 8" diameter PVC pipes cut into 6" sections. Three cylinders were placed in each plot and one quarter of a large apple was placed inside each cage to provide a source of nutrition and moisture for the beetles. Beetles were caged during the first and third weeks of July using fresh beetles collected using Trecé traps and a floral lure.

Japanese beetle larval populations were assessed on October 12, 2007 by examining the turf and soil core lying directly under each PVC cylinder to a depth of 5 inches (total area = 1.05 ft²) and counting the number of live larvae present. Between treatment variation in Japanese beetle populations was examined using main effects ANOVA. Treatment means were compared using Fisher's LSD test ($\alpha=0.5$).

Field conditions on the April 24 treatment date were:

- (1) Soil: moist, 13.0-13.1 °C at 10 cm depth (8:00-10:00 am)
- (2) Air Temp: 13.5-16.8 °C (8:00-10:00 am)
- (3) Weather: clear, wind 0-11.8 mph
- (4) Thatch: less than 0.25 cm

RESULTS

Table 1. Japanese beetle larval densities and percent control resulting from mid-April applications of several white grub insecticides/formulations in Kentucky bluegrass turf. Applications were made on April 24th, 2007 and larval populations were assessed on October 12, 2007.

TRT#	Treatment	Japanese beetle	
		0/ft ²	% Control
1	Untreated	5.7a	---
2	Meridian 25 WG @ 298.0 g ai/ha	0.0b	100.0
3	Meridian 25 WG @ 210.0 g ai/ha	0.4b	93.3
4	Merit 240 SC @ 445.0 g ai/ha	0.4b	93.3
5	Arena 50 WG @ 280.0 g ai/ha	0.2b	96.7

Numbers followed by same letters are not significantly different (Fisher LSD, $\alpha=0.1$)

* There was no indication of phytotoxicity associated with any of the insecticide treatments at 1 or 7 DAT.