

INFLUENCE OF APPLICATION RATE ON EFFICACY OF CHLORANTRANILIPROLE APPLIED DURING EARLY APRIL AGAINST WHITE GRUBS IN KENTUCKY BLUEGRASS TURF 2007

D. S. Richmond, T. J. Gibb, M. W. Baldauf, V. A. Caceres, A. M. Nance and T. L. Hoctor
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 early-April applications of chlorantraniliprole applied at several different rates against white grubs by:

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

METHODS AND MATERIALS

The experiment was located at the driving range on the Birk Boilermaker Golf Complex at Purdue University (West Lafayette, IN) which consisted primarily of Kentucky bluegrass maintained at 5 cm (Fig. 1). Plots measuring 1.5 x 1.5 meters were arranged in a randomized complete-block design with 0.3 meter alleys between plots. Each treatment was replicated 4 times. All materials were applied April 6, 2007 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. Plots were irrigated (0.25 inches) immediately following application.

Field conditions on the April 6 treatment date were:

- (1) Soil: moist, 5.5-5.8 °C at 10 cm depth (10:00-12:00 am)
- (2) Air Temp: 0.1-0.6 °C (10:00-12:00 am)
- (3) Weather: clear, wind 0-10 mph
- (4) Thatch: 2.0 cm

Larval populations were assessed October 4, 2007 by extracting five turf and soil cores (10.8 cm diameter) from each plot and counting the number of white grubs of each species in each core. Samples were taken at least 0.25 m inside the border of each plot. White grub species composition on October 4, 2007 was: Japanese beetle (100%), Masked chafer (0%). Between treatment variation in Japanese beetle populations was examined using main effects ANOVA. Treatment means were compared using Fisher's LSD test ($\alpha=0.1$).

RESULTS

Table 1. Japanese beetle larval densities and percent control resulting from preventive applications of Merit 240 SC and three different application rates of chlorantraniliprole 1.67 SC in Kentucky bluegrass turf. Applications were made on April 6th, 2007 and larval populations were assessed on October 4, 2007.

TRT#	Treatment	Japanese beetle	
		0/ft ²	% Control
1	Chlorantraniliprole 1.67SC ^b @ 0.104 lb AI/A	0.5a	96.3
2	Chlorantraniliprole 1.67SC ^b @ 0.157 lb AI/A	0.5a	96.3
3	Chlorantraniliprole 1.67SC ^b @ 0.209 lb AI/A	0.5a	96.3
4	Imidacloprid 240SC @ 0.3 lb AI/A	5.6b	59.3
5	Untreated Control	13.6c	---

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

* There were no signs of phytotoxicity associated with any of the insecticide treatments.

All treatments significantly reduced white grub populations compared to untreated controls with all three rates of chlorantraniliprole providing better control than imidacloprid during this extremely early application timing. No differences in control were observed between the three rates of chlorantraniliprole.

Figure 1. Experimental site and evaluation methods for protocol PR07-12-1143a. Driving range at the Birk Boilermaker Golf Complex on the campus of Purdue University, West Lafayette, IN.

