INFLUENCE OF APPLICATION RATE AND FORMULATION ON EFFICACY OF CHLORANTRANILIPROLE (ACELEPRYN) APPLIED PREVENTIVELY AGAINST JAPANESE BEETLE LARVAE IN KENTUCKY BLUEGRASS TURF 2008

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OBJECTIVES

The primary objective of this study was to describe the efficacy of two different formulations of chlorantraniliprole applied during early May at two different rates against Japanese beetle larvae by:

1) Describing how the various application rates and formulations of chlorantraniliprole influence subsequent Japanese beetle larval populations
2) Comparing the efficacy of chlorantraniliprole against imidacloprid.

METHODS AND MATERIALS

The experiment was located at the Nursery Complex at Purdue University (West Lafayette, IN) on a stand of turfgrass consisting primarily of Kentucky bluegrass maintained at 7.6 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 liquid materials were applied May 7, 2008 using a hand-held CO_2 boom sprayer configured with four 8010 nozzles operating at 30 psi and calibrated to deliver a spray volume of 2 gal/1000ft^2. Granular formulations were applied using shaker jars. Plots were irrigated (2 cm) immediately following application.

Field conditions on the May 7 treatment date were:
(1) Soil: moist, 14.5 °C at 10 cm depth (7:30am)
(2) Air Temp: 15 °C (7:30 am)
(3) Weather: overcast, wind 0-5 mph
(4) Thatch: 2.0 cm

Japanese beetle larval infestations were created by driving three, 8" diameter pvc cylinders into each plot along its mid-line and caging two separate groups of 30 Japanese beetle adults within the cylinder during July. Larval populations were assessed September 19, 2008 using a sod cutter to remove a strip of sod lying directly beneath the caging area of each plot and examining the soil to a depth of 3 inches. The number of white grubs of each species were counted and recorded. White grub species composition on September 19, 2008 was: Japanese beetle (93%), Masked chafer (3%), *Phyllophaga* (4%). Because so few masked chafers or *Phyllophaga* were recovered, only variation in

Japanese beetle larval populations was examined using main effects ANOVA. Treatment means were compared using Fisher's LSD test (α=0.05).

RESULTS

Table 1. Japanese beetle larval densities and percent control resulting from preventive applications of two different rates of chlorantraniliprole 1.67 SC and chlorantraniliprole 0.2 G (Acelepryn) compared to imidacloprid 240 SC and imidacloprid 0.5 G (Merit) in Kentucky bluegrass turf. Applications were made on May 7th, 2008 and larval populations were assessed on September 19th, 2008.

TRT#	Treatment	Japanese beetle	
		JB/ft^2	% Control
1	Chlorantraniliprole 1.67SC[b] @ 0.104 lb AI/A	2.0a	84.0
2	Chlorantraniliprole 1.67SC[b] @ 0.157 lb AI/A	0.25b	98.0
3	Imidacloprid 240SC @ 0.3 lb AI/A	0.25b	98.0
4	Chlorantraniliprole 0.2G @ 0.1 lb AI/A	0.0b	100.0
5	Chlorantraniliprole 0.2G @ 0.12lb AI/A	0.0b	100.0
6	Imidacloprid 0.5G @ 0.3 lb AI/A	0.25b	98.0
7	Untreated Control	12.75c	---

All treatments significantly reduced white grub populations compared to untreated controls and all treatments provided acceptable levels of control even at the lower rates.

Figure 1. Experimental site located at the Purdue University Nursery Complex, West Lafayette, IN.

Figure 2. Sampling technique used to evaluate the efficacy of the chlorantraniliprole and imidacloprid applications against Japanese beetle larvae.