

INFLUENCE OF APPLICATION RATE AND TIMING ON THE EFFICACY OF ACELEPRYN APPLIED PREVENTIVELY AGAINST BILLBUGS IN KENTUCKY BLUEGRASS TURF 2008

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OBJECTIVES

The primary objective of this study was to investigate the influence of application rate and timing on the preventive efficacy of Acelepryn (chlorantraniliprole) against billbug populations in turfgrass.

METHODS AND MATERIALS

The experiment was located at the W.H. Daniel Center for Turfgrass Research and Education, Purdue University (West Lafayette, IN) on a lawn consisting primarily of Kentucky bluegrass maintained at 6.4 cm (Fig. 1). Plots measuring 3 x 3 m were arranged in a randomized complete-block design with 0.6 m alleys between plots. Each treatment was replicated 4 times. Based on pitfall trap monitoring of adult billbug activity, initial applications of all materials were made April 25, 2008. A second set of plots was treated on May 1, 2008. All materials 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./1000 ft². Plots were not irrigated after the applications they and did not receive precipitation or irrigation for at least one day following applications. Billbug species present at the site were as follows: *S. parvulus* (90%), *S. inaequalis* (8%) and *S. minimus* (2%).

Field conditions on the April 25 treatment date were:

- (1) Soil: moist, 15.8°C at 10 cm depth (7:30 am)
- (2) Air Temp: 18.8°C (7:30 am)
- (3) Weather: clear, wind 0-10.5 mph
- (4) Thatch: less than 1.0 cm

Field conditions on the May 1 treatment date were:

- (1) Soil: moist, 12.2°C at 10 cm depth (7:30 am)
- (2) Air Temp: 13.8°C (7:30 am)
- (3) Weather: overcast, wind 0-8 mph
- (4) Thatch: less than 1.0 cm

Larval populations were assessed July 11, 2008 by extracting five turf and soil cores (10.8 cm diameter) from each plot and counting the number of billbug larvae in each core. Samples were taken at least 0.25 m inside the border of each plot. Between treatment variation in larval populations was examined using main effects ANOVA and treatment means were compared using Fisher's LSD test (alpha=0.05).

RESULTS

Table 1. Billbug larval densities and percent control resulting from preventive applications of Acelepryn in Kentucky bluegrass turf. Applications were made on April 25th, 2008 and May 1st, 2008. Larval populations were assessed on July 11th, 2008. West Lafayette, IN., 2008.

TRT#	Treatment	Application Date	Billbugs	
			Billbugs/ft ² Mean±SE	% Control
1	Acelepryn @ 0.104 lb ai.A	25-APR	8.2±1.4c	67.3
2	Acelepryn @ 0.157 lb ai/A	25-APR	2.6±1.3ab	89.8
3	Merit 75 WP @ 0.03 lb ai/A	25-APR	7.7±1.0bc	69.4
4	Acelepryn @ 0.104 lb ai.A	1-MAY	4.1±0.0abc	83.7
5	Acelepryn @ 0.157 lb ai/A	1-MAY	1.0±0.6a	95.9
6	Merit 75 WP @ 0.03 lb ai/A	1-MAY	3.1±1.3abc	87.8
7	Untreated		25.1±4.0d	---

Numbers followed by same letters are not significantly different (Fisher LSD, alpha=0.05)

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

All treatments significantly reduced billbug larval populations compared to the untreated control. Although application date did not have a significant influence on efficacy, the later application date produced slightly better levels of control across the board. The highest level of control was produced by the May 1 application of Acelepryn at the higher rate.