

INFLUENCE OF DOSE AND APPLICATION TIMING ON THE EFFICACY OF MERIT AGAINST JAPANESE BEETLE LARVAE IN KENTUCKY BLUEGRASS TURF, 2007

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OBJECTIVES

The objective of this study was to describe the efficacy of various doses and application timings of Merit against Japanese beetle larvae by:

- 1) Describing the influence of the materials on Japanese beetle larval populations
- 2) Describing differences among treatments (rates and timings)

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. Each treatment was replicated 4 times. 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. Plots were irrigated (0.25 inches) 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 11, 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.

RESULTS

Table 1. Influence of imidacloprid dosage and application timing on Japanese beetle larval populations in Kentucky bluegrass turf

TRT#	Treatment	Application Date	Japanese beetle larvae	
			JB/ft ²	% Control
1	Untreated	Control	6.67a	---
2	Merit 240 SC @ 1 pt/A	11-May	0.00b	100.00
3	Merit 240 SC @ 1.2 pt/A	11-May	0.00b	100.00
4	Merit 0.5 G @ 50 lb/A	11-May	0.48b	92.86
5	Merit 0.5 G @ 60 lb/A	11-May	0.24b	96.43
6	Merit 240 SC @ 0.6 pt/A	11-May and 27-June	0.00b	100.00
7	Merit 240 SC @ 0.8 pt/A	11-May and 27-June	0.00b	100.00

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.

Different levels of control were observed between doses only when granular formulations were applied and these differences were not statistically significant. Only Japanese beetle larvae were present during evaluation of this trial, therefore no interspecific differences in the activity of the formulations or rates was observed. Results of this trial indicate that the new formulations provide excellent control and that split applications of the SC formulation provided levels of control identical to that provided by the single applications.