

Influence of Application Rate on the Efficacy of Acelepryn Against Bluegrass Billbug in Kentucky Bluegrass Turf 2012

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SUMMARY: Aside from providing excellent control of white grubs, Acelepryn has been widely marketed for use against a number of other turfgrass insect pests. We conducted this study to further explore how application rate influences the efficacy of this product against billbugs in Indiana.

MATERIALS AND METHODS

The experiment was located at the Daniel Center for Turfgrass Research and Diagnostics, Purdue University (West Lafayette, IN) on a stand of turfgrass consisting primarily of Kentucky bluegrass maintained at 7.6 cm (Fig. 1). Plots measuring 2.4 x 2.4 meters were arranged in a randomized complete-block design with 0.3 meter alleys between plots. Treatments were applied on May 7 and were followed by ¼" of rainfall almost immediately after application. Each treatment was replicated 4 times. 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/1000ft². The combined density of billbug larvae, and pupae was determined on July 10 using a golf course cup cutter to remove 5 cores (4.25" diameter) from each plot to a depth of 3". The soil and thatch in each core was carefully examined for all billbug life stages and the number of billbugs in each core was recorded (Fig. 2). Variation in

billbug larval/pupal densities was examined using main effects ANOVA and treatment means were compared using Fisher's LSD test ($\alpha=0.05$). Billbug species composition at the site consisted mainly of *Sphenophorus parvulus* with *S. minimus* and *S. inaequalis* also being present.

Field conditions on the May 7 treatment date were:

- (1) Soil Temp.: 17°C
- (2) Air Temp: 17°C
- (3) Weather: overcast, wind 0-10 mph
- (4) Thatch: 2.0 cm

RESULTS AND DISCUSSION

Although both Merit and the highest rate of Acelepryn provided acceptable levels of billbug control, Meridian provided the highest level of control (table 1). The efficacy of Acelepryn appeared to decrease as application rate decreased.

Table 1. Number of billbugs per square foot (\pm SE) and % control in plots of Kentucky bluegrass turf treated with various rates of Acelepryn compared to Merit and Meridian. West Lafayette, Indiana 2012.

Product	Application Rate (Product/Acre)	Billbugs/ft ² (Mean \pm SE)	% Control
Acelepryn 1.67SC	4.0 fl.oz.	12.8 \pm 1.4 b	45.1
Acelepryn 1.67SC	6.0 fl.oz.	8.3 \pm 2.3 ab	64.5
Acelepryn 1.67SC	8.0 fl.oz.	6.0 \pm 1.2 ab	74.2
Merit 75WP	6.4 oz.	5.3 \pm 2.3 ab	77.3
Meridian 25 WG	8.6 oz.	1.5 \pm 0.9 a	93.5
Untreated	---	23.3 \pm 4.1 c	---

* Values within a column followed by different letters are significantly different ($\alpha=0.05$)

Figure 1. Site of billbug trial 2012, showing typical symptoms of billbug damage during early July. W.H. Daniel Center for Turfgrass Research and Education, Purdue University, West Lafayette, IN.



Figure 2. Billbug larva recovered from macerated Kentucky bluegrass plant crown while evaluating plots (July 10, 2012).



ADDITIONAL INDEX WORDS:
Chlorantraniliprole, Insecticide

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