

EFFICACY OF MERIDIAN APPLIED AT OPTIMAL AND LATE TIMING AGAINST WHITE GRUBS IN KENTUCKY BLUEGRASS TURF 2007

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OBJECTIVES

The primary objective of this study was to describe the activity of Meridian 25 WG applied at both optimal and a curative timing against natural infestations of white grubs

METHODS AND MATERIALS

The experiment was located at the driving range on the Birck 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 2007 using a hand-held shaker jar. Plots were irrigated (2.0 cm) immediately following application.

Field conditions on the July 12 treatment date were:

- (1) Soil: moist, 18.7-23.7 °C at 10 cm depth (8:00-10:30 am)
- (2) Air Temp: 21.3-21.6 °C (8:00-10:30 am)
- (3) Weather: clear, wind 6-10 mph
- (4) Thatch: 2.0 cm

Field conditions on the September 10 treatment date were:

- (1) Soil: moist, 21.2-21.3°C at 10 cm depth (8:00-10:30 am)
- (2) Air Temp: 16.8-21.2 °C (8:00-10:30 am)
- (3) Weather: clear, wind 3-7 mph
- (4) Thatch: less than 0.25 cm (compressed = 1.0 mm)

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 (92%), Masked chafer (8%). This ratio favored Japanese beetle during 2007, although during previous years the populations was predominantly masked chafers. Between treatment variation in Japanese beetle populations was examined using main effects ANOVA. Treatment means were compared using Fisher's LSD test ($\alpha=0.05$).

Results:

Table 1. Grub densities and percent control resulting from applications of thiamethoxam at two different timing. Larval populations resulted from a natural infestation and were assessed on October 4, 2007. West Lafayette, IN., 2007.

TRT#	Treatment	White grubs	
		0/ft ²	% Control
1	Meridian 25WG @ 17 oz/a (12-Jul)	0.0a	100.0
2	Meridian 25WG @ 17 oz/a (10-Sep)	1.0a	89.6
3	Untreated Control	9.6b	---

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.

Meridian applied at either the optimal timing or the late curative timing resulted in excellent control of naturally occurring white grub populations. Although the late season application was not as effective numerically as the optimal timing application, it still achieved nearly 90% control, implying that the effective window of application for Meridian 25 WG may be open much later than what was originally thought.

