

# Evaluation of Fungicides for Control of Rapid Blight of *Poa trivialis* in fall 2006

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## Abstract

Rapid blight is a new disease of cool season turf grasses caused by *Labyrinthula terrestris*, an organism in a group referred to as the marine slime molds. A trial was conducted in fall 2006-winter 2007 to repeat an evaluation of efficacy of different rates and intervals of Insignia fungicide and elemental sulfur, both of which gave acceptable control in trials in 2005. The trial was conducted at a golf course in central Arizona with a previous history of disease and high salinity irrigation water (about 5 dS/m). Plots were established in August 2006 on a practice tee on which Champion 419 bermudagrass was overseeded with *Poa trivialis* "Laser". Treatments included pyraclostrobin (Insignia) as a preventive and as a curative, pyraclostrobin (Insignia) combined with Fore as a preventive, and elemental sulfur (DsiperSul) as a preventive. Disease symptoms appeared immediately after the first mowing. Disease ratings 15 days after first mow showed that applications of the high rate of Insignia at first mow gave excellent control. Moderate control was shown in applications with early applications of Fore combined with the lower rate of Insignia. Treatments with Insignia as a curative and with sulfur as a preventive were not acceptable.

## Introduction

Rapid blight is a new disease of cool season turf grass on golf courses in Arizona. It is caused by *Labyrinthula terrestris*, an organism in a group referred to as the marine slime molds (Bigelow, et al., 2005). Early symptoms of disease include patches of turf that appear water soaked, slightly sunken and darker than healthy turf. Affected turf yellows and dies. Small patches several inches across may enlarge rapidly to over a foot in diameter, coalesce and result in larger areas of dead turf. Rapid blight was first described in southern California in 1995, but it now has been reported in eleven states (Stowell et al., 2005). In most cases in Arizona, disease has occurred on golf courses using irrigation water with moderate to high salinity (EC > 2.0 dS/m). It has been observed in overseeded commercial lawns and sport turf as well. It affects turf varieties used for overseeding Bermuda such as rough bluegrass (*Poa trivialis*), perennial rye (*Lolium perenne*), annual bluegrass (*Poa annua*) and colonial bent (*Agrostis tenuis*). Bermuda (*Cynodon* spp.) appears to be unaffected but is a known host (Olsen and Kohout, 2006).

Trials have been conducted for several years at a golf course in central Arizona with a known history of rapid blight to determine the efficacy of various chemicals for control (Olsen and Gilbert, 2005). In the 2006 trials, successful treatments of the 2005 trial were repeated.

## Materials and Methods

This study was initiated to evaluate treatments applied to bermudagrass before overseeding and to *Poa trivialis* after overseeding for their effect on rapid blight in *Poa trivialis*. It was conducted at a golf course in central Arizona with

a history of rapid blight disease on a *Poa trivialis* overseeded Tifway 419 bermudagrass practice tee. Plots measured 3 ft x 10 ft and were arranged in a randomized complete block with 5 replications. The plots were mowed at 0.5 in. and maintained according to standard practices for a high quality golf course tee. The site was irrigated as necessary to prevent drought stress. The salinity of irrigation water varied throughout the trial but was never below 3.5 dS/m and was as high as 5.0 dS/m. The bermudagrass was prepared for overseeding the first week of September by lightly verticutting, followed by scalping and the removal of clippings. The test site was overseeded on October 16 with *Poa trivialis* "Darkhorse" at 10 lb/1000 ft<sup>2</sup>. The first mowing of the overseed was November 1. Sulfur treatments were applied to bermudagrass as DisperSul Pastille using a 3 ft Gandy drop spreader on August 23, 54 days prior to overseed. Fungicide treatments were applied in water equivalent to 2 gal/1000 sq ft with a CO<sub>2</sub> powered sprayer at 40 psi using TeeJet 8002VS nozzles. Preventive fungicide treatments of Insignia at 0.9 oz and Insignia at 0.5 oz tank-mixed with Fore at 6.0 oz were made on November 2 immediately after first mow and on December 1. A curative application of Insignia at 0.9 oz was applied on November 8 and December 1. Percent turf area exhibiting rapid blight symptoms was assessed on November 8, November 16, and December 1. Turfgrass quality was evaluated on February 26 using a 1 to 9 scale (9=best, 6=acceptable) based on color, density, and uniformity. Data were subjected to analysis of variance (P<0.05) and means separation by LSD All-Pairwise Comparisons Test.

## Results and Discussion

Several treatment strategies were included in this trial: preventive calendar-based, extended preventive and curative applications of fungicides as well as preventive sulfur applications in bermudagrass before overseeding (Table 1). The preventive calendar-based fungicide treatment was applied at first mow and at 28 days; the extended preventive treatment was applied at first mow and again on a threshold basis when 15% of the plot areas were diseased; and the curative treatment was applied when 15% of the plot areas were diseased. Rapid blight was first observed on November 8, 6 days after first mow of the *Poa trivialis* overseed. Untreated plots had already reached the 15% threshold. There were no significant differences between any treatments on the November 8 rating date, with plots exhibiting 11 to 24% disease (data not shown). Plots receiving threshold-based second applications (extended preventive and curative) exceeded the 15% threshold on December 1. Therefore, the calendar treatments and extended preventive treatment were identical. All fungicide treatments provided excellent preventive control when applied at first mow. Preventive treatments with Insignia at the 0.9 oz rate tended to provide better control of disease than Insignia at the 0.5 oz rate mixed with Fore. Curative applications initiated at a 15% disease threshold did not provide the same level of control as preventive treatments. The sulfur treatments did not provide an acceptable level of control.

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## Literature cited

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**Table 1. Efficacy of fungicides and sulfur as preventive and curative treatments for control of rapid blight disease in *Poa trivialis*.**

Treatment and rate/1000 sq ft	Plot Area Diseased (%)		Turf Quality <sup>z</sup>
	16 Nov	1 Dec	26 Feb
Untreated Control .....	59.0 a <sup>y</sup>	84.0 a	3.4 a
DISPER-SUL Pastille 90% 10 lb S .....	54.0 ab	78.8 a	4.8 b
DISPER-SUL Pastille 90% 20 lb S .....	46.0 abc	85.8 a	5.6 b
Insignia 20WDG 0.9 oz <sup>x</sup> (Preventive calendar-based) .....	12.0 de	20.0 b	7.6 c
Insignia 20WDG 0.5 oz + Fore 80WP 6.0 oz <sup>x</sup> (Preventive calendar-based) .....	24.0 cde	29.0 b	7.8 c
Insignia 20WDG 0.9 oz <sup>w</sup> (Extended preventive) .....	9.0 e	16.0 b	8.0 c
Insignia 20WDG 0.9 oz <sup>v</sup> (Curative) .....	32.0 bcd	26.0 b	7.2 c

<sup>z</sup> Turfgrass quality on a 1 to 9 scale, where 9=highest quality and 6=acceptable.

<sup>y</sup> Values are means of five replicates. Means within columns followed by the same letter are not significantly different according to LSD All-Pairwise Comparisons Test.

<sup>x</sup> Preventive calendar-based: Initial application of fungicide was applied at first mow (2 Nov) and followed-up 28 days later (1 Dec).

<sup>w</sup> Extended preventive: Initial application of fungicide was applied at first mow (2 Nov). Second application of fungicide was applied when approximately 15% of plot area exhibited active rapid blight symptoms (1 Dec).

<sup>v</sup> Curative: Initial and follow-up application of fungicide was applied when approximately 15% of plot area exhibited active rapid blight symptoms (8 Nov, 1 Dec).