Evaluation of Fungicides for Control of Powdery Mildew in Kentucky Bluegrass Seed Production in Central Oregon, 2003

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Abstract

Fungicides were evaluated for control of powdery mildew in a commercial Kentucky bluegrass seed field near Madras, Oregon. Of the single-application treatments, Microthiol® and stylet oil were no different than the untreated. Laredo® at 8 oz/acre plus Microthiol at 3 lb/acre provided the best control 19 days after treatment (DAT), while Bayleton® at 4 oz/acre was the highest performer 34 DAT. The first treatment for all the double-application treatments was Tilt® at 4 oz/acre plus Bravo® at 16 oz/acre. The highest performing treatment 23 DAT included Stratego® at 10 oz/acre as the second treatment.

Introduction

Fungicides have been evaluated yearly for control of powdery mildew in Kentucky bluegrass seed production fields in central Oregon since 1998. Products have included the industry standards Bayleton, Tilt, Tilt plus Bravo, and new products such as Laredo, Folicur®, and Stratego, numbered compounds like BAS500, alternative materials like Microthiol (sulfur) and sylet oil.

Methods and Materials

Fungicides were evaluated for control of powdery mildew in a commercial field of 'Merit' Kentucky bluegrass grown for seed near Madras, Oregon. The project consisted of two components. The first was a single-application comparison of products that included Bayleton, Laredo, Tilt, Folicur, Microthiol, and sylet oil applied alone, and Laredo plus Microthiol.

The second component was evaluation of double fungicide applications that consisted of Tilt plus Bravo followed by various products alone or in combination applied 3 weeks later. Second treatments included Tilt, Stratego, Quadris®, Folicur, the numbered compounds A13705 and BAS500, and crop oil concentrate (COC). These materials were applied either alone or in combination.

All treatments were applied April 9 to 10-ft by 25-ft plots replicated three times in a randomized complete block design. Plots receiving a second application were treated April 30, 2003. Applications were made using Tee Jet 8002 nozzles on a 9-ft, CO_2-pressurized, hand-held boom sprayer at 40 psi and 20 gal of water/acre. A silicon surfactant was included with all treatments at 0.25 percent v/v.

Plots were evaluated using a rating scale from 0 to 5, with 0 being no mildew present and 5 indicating total foliar coverage. The single-application portion of the study was evaluated April 28 (19 DAT), May 13 (34 DAT), and May 23 (44 DAT). The double-application treatments were evaluated April 28 (19 DAT) and May 23 (23 DAT).

Results and Discussion

Of the single-application treatments, all but Microthiol and sylet oil significantly reduced powdery mildew compared to the untreated plots (Table 1). Nineteen DAT Laredo at 8 oz/acre plus Microthiol at 3 lb/acre provided the highest level of control, while Bayleton at 4 oz/acre provided the best control 34 DAT. It appears that Laredo, and perhaps other fungicides, applied in combination with Microthiol may have increased efficacy. By 44 DAT there were no differences in powdery mildew levels among any of the treated or untreated plots, despite the level of powdery mildew remaining nearly the same during that period in untreated plots.

Results from the first of the double-application treatments were the same (Table 2), as indicated by no significant differences between treatments 19 DAT. However, there was significantly less powdery mildew in the treated plots compared to the untreated. Twenty-three days after the second applications, Stratego at 10 oz/acre provided the best control. Crop oil concentrate did not appear to increase fungicide efficacy.

Table 1. Severity of powdery mildew on Kentucky bluegrass near Madras, Oregon following a single fungicide application on April 9, evaluated on April 28 and May 23, 2003.

	Application	Evaluation				
Treatments	April 9	April 28 (19 DAT)		May 13 (34 DAT)		May 23 (44 DAT)
Bayleton	4 oz	1.25[1]	bc[2]	1.08	c	1.64
Laredo + Microthiol	8 oz + 3 lb	1.00	c	1.17	c	1.28
Tilt	4 oz	1.06	bc	1.36	c	1.69
Laredo	8 oz	1.25	bc	1.42	bc	2.06
Folicur	6 oz	1.17	bc	1.86	bc	2.17
Microthiol	3 lb	2.00	ab	1.94	abc	2.50
Stylet oil	2 qt	1.39	bc	2.28	ab	2.39
Untreated	----	2.49	a	2.81	a	2.42
						NS

[1]Rating scale was 0 (no mildew) to 5 (total leaf coverage).
[2] Mean separation with LSD $P \leq 0.05$.

Table 2. Severity of powdery mildew on Kentucky bluegrass near Madras, Oregon following combined fungicide applications on April 9, and April 30, and evaluated April 28 and May 23, 2003.

	-----Application Date-----		----------Evaluation----------			
Treatments	April 9	April 30	April 28 (19 DAT)		May 23 (23 DAT)	
Tilt	4 oz	----				
Bravo	16 oz	----				
+ Stratego	----	10 oz	0.92[1]	b[2]	0.14	d
Tilt	4 oz	----				
Bravo	16 oz	----				
+ A13705	----	30 oz	1.39	b	0.33	cd
Tilt	4 oz	----				
Bravo	16 oz	----				
+ A13705	----	20 oz	1.17	b	0.33	cd
Tilt	4 oz	----				
Bravo	16 oz	----				
+ A13705	----	30 oz				
COC	----	1% v/v	0.86	b	0.36	cd
Tilt	4 oz	----				
Bravo	16oz	----				
+ Tilt	----	4 oz				
Quadris	----	4 oz	1.17	b	0.36	cd
Tilt	4 oz	----				
Bravo	16 oz	----				
+ A13705	----	20 oz				
COC	----	1% v/v	1.36	b	0.42	cd
Tilt	4 oz	----				
Bravo	16 oz	----				
+ Tilt	----	4 oz				
Quadris	----	4 oz				
COC	----	1% v/v	1.22	b	0.47	bcd
Tilt	4 oz	----				
Bravo	16 oz	----				
+ Tilt	----	4 oz	1.06	b	0.56	bcd
Tilt	4 oz	----				
Bravo	16 oz	----				
+ Folicur	----	6 oz	1.58	b	0.75	bc
Tilt	4 oz	----				
Bravo	16 oz	----				
+ BAS500	----	9 oz	0.89	b	1.06	b
Untreated	----	----	2.49	a	2.42	a

[1]Rating scale was 0 (no mildew) to 5 (total leaf coverage).
[2] Mean separation with LSD $P \leq 0.05$.