

Curative control of Pythium blight in tall fescue, 2006.

Fungicides were evaluated for their curative effect on Pythium foliar blight. This trial was conducted at the Lake Wheeler Turfgrass Field Laboratory in Raleigh, NC on a blend of 'Rebel III' and 'Coronado' tall fescue maintained under home lawn conditions. Mowing was performed two times weekly at a height of 3.5 in. with clippings returned, and the site was irrigated daily with 0.13" at 8 PM to enhance Pythium blight development. Fertilizer was applied as 25-6-12 on 28 Feb, 29 Mar, and 16 Jun (1.0 lb N/1000 sq ft respectively). Barricade 65WG (0.75 lb ai/A) was applied on 7 Mar for pre-emergent weed control. Plots were 5 ft x 5 ft and were arranged in a randomized complete block with three replications in an area that was naturally infested with Pythium blight. Fungicides were applied in water equivalent to 2 gal per 1000 sq ft with a CO₂ powered sprayer at 40 psi using TeeJet 8004 nozzles. All treatments were initiated on 14 Aug and reapplied on 28 Aug. A pre-treatment assessment of percent turf area exhibiting Pythium blight symptoms was taken on 14 Aug. Post-treatment assessments were taken on 24 Aug and 20 Sep. The Henderson-Tilton transformation was used to determine percent disease control based upon the pre-treatment assessment. Data were subjected to analysis of variance and means separation using the Waller-Duncan k-ratio t-test (k=100).

Pre-treatment assessment values ranged from 3-21% disease incidence, but no significant differences were detected due to variability within the experimental area. Disease incidence in untreated plots increased to 27.4% on 24 Aug, then declined to 2.9% on 20 Sep due to cool weather conditions. Few significant differences in Pythium blight incidence or percent control were detected on either evaluation date. On 24 Aug, 10 days after fungicide applications were initiated, four treatments provided a numerical reduction in disease symptoms according to the Henderson-Tilton transformation. On this date, Rhapsody + Heritage TL, Rhapsody + Insignia, Cyazofamid + Alude (0.45 fl oz + 10 fl oz), and Disarm (0.37 fl oz) provided control at levels of 14%, 34%, 15%, and 6%, respectively. On 20 Sep, after two applications of each treatment, plots treated with Rhapsody + Heritage TL and Rhapsody + Insignia were completely free of Pythium blight symptoms. Positive reductions in disease incidence were also provided by Alude (9%), Heritage TL (24%), Disarm + Banner MAXX + TM-90109 (38%), Disarm + Vital Sign (42%), Disarm (44%), Insignia (68%), and Vital Sign (84%) on 20 Sep. Treatments of Rhapsody alone, V-10162, Cyazofamid, and CL-EXP-1 appeared to provide little to no curative suppression of the disease. Although Rhapsody alone has little impact on Pythium blight development, tank-mixtures of this product with Heritage or Insignia appeared to enhance the curative control provided by these fungicides. Additional research is needed to confirm these results due to the large amount of experimental error in this uninoculated study.

Treatment, formulation, and rate per 1000 sq ft	Spray interval (days)	Pre-treatment assessment	Disease incidence (%)	Disease control (%)
		14 Aug	24 Aug	24 Aug
Rhapsody L 5.0 fl oz.....	14 ^y	6.6 a ^x	27.9 abc	-260 a
Heritage TL 0.8ME 2.0 fl oz.....	14	16.3 a	40.1 abc	-2 a
Rhapsody L 5.0 fl oz + Heritage TL 0.8ME 1.0 fl oz.....	14	5.3 a	7.8 bc	14 a
Rhapsody L 5.0 fl oz + Insignia 20WG 0.5 oz.....	14	4.9 a	5.1 c	34 a
Vital Sign L 4.0 fl oz.....	14	4.4 a	10.0 abc	-17 a
V-10161 4F 0.2 fl oz.....	14	3.2 a	7.7 bc	-35 a
V-10161 4F 0.3 fl oz.....	14	6.3 a	13.9 abc	-65 a
V-10162 5.73F 1.2 fl oz.....	14	13.6 a	32.0 abc	-194 a
Banol 6SL 2.0 fl oz.....	14	18.4 a	34.5 abc	-5 a
Signature 80WG 4.0 oz.....	14	12.9 a	21.1 abc	-137 a
Subdue MAXX 2ME 1.0 fl oz.....	14	17.5 a	49.1 ab	-54 a
Cyazofamid 3.34SC 0.45 fl oz.....	14	14.6 a	50.0 a	-159 a
Cyazofamid 3.34SC 0.9 fl oz.....	14	18.4 a	39.6 abc	-34 a
Cyazofamid 3.34SC 0.45 fl oz + Alude 5.17L 5.0 fl oz.....	14	9.0 a	30.4 abc	-53 a
Cyazofamid 3.34SC 0.45 fl oz + Alude 5.17L 10.0 fl oz.....	14	19.4 a	35.4 abc	15 a
Cyazofamid 3.34SC 0.9 fl oz + Alude 5.17L 5.0 fl oz.....	14	21.8 a	49.1 ab	-72 a
Disarm 4SC 0.37 fl oz.....	14	18.5 a	26.7 abc	6 a
Disarm 4SC 0.18 fl oz + Subdue MAXX 2ME 1.0 fl oz.....	14	21.6 a	34.5 abc	-7 a
Disarm 4SC 0.18 fl oz + Vital Sign L 4.0 fl oz.....	14	12.4 a	32.0 abc	-90 a
Disarm 4SC 0.18 fl oz + Banner MAXX 1.3ME 1.0 fl oz	14			
+ TM-90109 L 4.0 fl oz.....	14	9.5 a	19.0 abc	-14 a
Alude 5.17L 5.5 fl oz.....	14	19.4 a	40.5 abc	-9 a
CL-EXP 1 L 16.0 fl oz.....	14	13.8 a	37.4 abc	-334 a
CL-EXP 1 L 8.0 fl oz.....	14	20.7 a	38.6 abc	-45 a
CL-EXP 11 L 5.5 fl oz.....	14	7.8 a	18.4 abc	-72 a
Insignia 20WG 0.9 oz.....	14	15.3 a	31.3 abc	-11 a
Untreated Control.....		14.8 a	27.4 abc	0 a

^zHenderson-Tilton transformation estimates percent control based on changes in disease incidence compared to the pre-treatment assessment on 14 Aug.

^yFungicides were applied as curative treatments on 14 and 28 Aug.

^xValues are means of three replications. Means within columns followed by the same letter are not significantly different according to Waller-Duncan k-ratio t-test.

Treatment, formulation, and rate per 1000 sq ft	Spray interval (days)	Pre-treatment assessment	Disease incidence (%)	Disease control (%)
		14 Aug	20 Sep	20 Sep
Rhapsody L 5.0 fl oz.....	14 ^y	6.6 a ^x	4.3 a	-247 b-e
Heritage TL 0.8ME 2.0 fl oz.....	14	16.3 a	4.3 a	24 abc
Rhapsody L 5.0 fl oz + Heritage TL 0.8ME 1.0 fl oz.....	14	5.3 a	0.0 a	100 a
Rhapsody L 5.0 fl oz + Insignia 20WG 0.5 oz.....	14	4.9 a	0.0 a	100 a
Vital Sign L 4.0 fl oz.....	14	4.4 a	0.2 a	84 ab
V-10161 4F 0.2 fl oz.....	14	3.2 a	0.7 a	-20 a-e
V-10161 4F 0.3 fl oz.....	14	6.3 a	1.9 a	-93 a-e
V-10162 5.73F 1.2 fl oz.....	14	13.6 a	6.1 a	-337 e
Banol 6SL 2.0 fl oz.....	14	18.4 a	5.4 a	-37 a-e
Signature 80WG 4.0 oz.....	14	12.9 a	4.3 a	-44 a-e
Subdue MAXX 2ME 1.0 fl oz.....	14	17.5 a	5.6 a	-92 a-e
Cyazofamid 3.34SC 0.45 fl oz.....	14	14.6 a	12.2 a	-294 cde
Cyazofamid 3.34SC 0.9 fl oz.....	14	18.4 a	10.0 a	-314 de
Cyazofamid 3.34SC 0.45 fl oz + Alude 5.17L 5.0 fl oz.....	14	9.0 a	3.9 a	-131 a-e
Cyazofamid 3.34SC 0.45 fl oz + Alude 5.17L 10.0 fl oz.....	14	19.4 a	8.7 a	-117 a-e
Cyazofamid 3.34SC 0.9 fl oz + Alude 5.17L 5.0 fl oz.....	14	21.8 a	16.8 a	-130 a-e
Disarm 4SC 0.37 fl oz.....	14	18.5 a	2.7 a	44 ab
Disarm 4SC 0.18 fl oz + Subdue MAXX 2ME 1.0 fl oz.....	14	21.6 a	4.8 a	-32 a-e
Disarm 4SC 0.18 fl oz + Vital Sign L 4.0 fl oz.....	14	12.4 a	1.2 a	42 ab
Disarm 4SC 0.18 fl oz + Banner MAXX 1.3ME 1.0 fl oz	14			
+ TM-90109 L 4.0 fl oz.....	14	9.5 a	1.0 a	38 abc
Alude 5.17L 5.5 fl oz.....	14	19.4 a	7.3 a	9 a-d
CL-EXP 1 L 16.0 fl oz.....	14	13.8 a	3.6 a	-83 a-e
CL-EXP 1 L 8.0 fl oz.....	14	20.7 a	9.4 a	-203 a-e
CL-EXP 1 L 5.5 fl oz.....	14	7.8 a	2.6 a	-80 a-e
Insignia 20WG 0.9 oz.....	14	15.3 a	1.0 a	68 ab
Untreated Control.....		14.8 a	2.9 a	0 a-d

^zHenderson-Tilton transformation estimates percent control based on changes in disease incidence in treated and untreated plots compared to the pre-treatment assessment on 14 Aug.

^yFungicides were applied as curative treatments on 14 and 28 Aug.

^xValues are means of three replications. Means within columns followed by the same letter are not significantly different according to Waller-Duncan k-ratio t-test.