

CREeping BENTGRASS (*Agrostis palustris* 'Dominant Plus')

Brown patch; *Rhizoctonia solani*

AnthracoNose; *Colletotrichum cereale*

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Evaluation of fungicides for control of brown patch of creeping bentgrass in Raleigh, NC, 2006.

Fungicides were evaluated for brown patch control at the Lake Wheeler Turfgrass Field Laboratory in Raleigh, NC on 'Dominant Plus' creeping bentgrass maintained under golf course putting green conditions. Mowing was performed five times weekly at a height of 0.220 in. with clippings collected, and the site was irrigated to prevent drought stress. Fertilizer was applied as 7-23-19 on 16 Feb (0.3 lb N/1000 sq ft), 19-5-19 on 1 Mar (0.5 lb N/1000 sq ft), 20-5-10 on 19 Apr (0.75 lb N/1000 sq ft), 18-3-16 on 20 Mar, 5 May, and 21 Aug (0.5 lb N/1000 sq ft), 20-20-20 on 20 Jul (0.125 lb N/1000 sq ft), and 18-3-6 on 6 Apr, 29 Jun, 12 Jul, and 4 Aug (0.24 lb N/1000 sq ft). Micro-nutrients were applied as Brexil Multi on 14 Feb, 27 Mar, and 4 Aug (3.0 oz/1000 sq ft) and HEP 35 (4.0 oz/1000 sq ft) on 6 Apr and 29 Jun. Insect pests were suppressed with Allectus G (2.9 lb/1000 sq ft), Scimitar (8.0 fl oz/A), and Dursban Pro (1.5 fl oz/1000 sq ft) on 1 May, 11 Jul, and 24 Aug, respectively. Plots were 3.33 ft x 6 ft and were arranged in a randomized complete block with four replications. 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 13 Jun, unless otherwise noted in the table. Fungicides were reapplied at the appropriate intervals as indicated in the table. The experimental area was inoculated on 2 Jun and 24 Jul using rye grain infested with *R. solani* isolates Rh-65, Rh-67, and Rh-68 to encourage brown patch development. Percent turf area exhibiting brown patch symptoms was assessed on 29 Jun, 6 Aug, and 8 Sep. Percent turf exhibiting symptoms of anthracnose foliar blight was assessed on 22 Aug. Turfgrass quality was evaluated on 21 Jul and 6 Aug, using a 1 to 9 scale (9=best, 5=acceptable) based on color, density, and uniformity. Data were subjected to analysis of variance and means separation by Waller-Duncan k-ratio t test (k=100).

Brown patch activity fluctuated during this experiment due to weather conditions that were not consistently favorable for brown patch development. June was cool and wet, while July and August were hot and dry. Disease incidence reached 28% in untreated plots in late June, but no disease activity was observed during July. On 29 Jun, PEX-6012 + Pegasus, PEX-6013 + Pegasus, PEX-6015 (3.25 oz), and PEX-60021 (4.0 fl oz) were providing good control of brown patch; although it should be noted that these treatments were applied two days after all of the other treatments in the study. The study was re-inoculated in late July, and another brown patch outbreak ensued. On 6 Aug, Signature + Daconil Ultrex, PEX-6012 + Pegasus, PEX-6013 + Pegasus, PEX-6016 (3.6 fl oz), Daconil Ultrex (3.25 oz), and both rates of PEX-60021 were providing good to excellent brown patch suppression. In the 8 Sep assessment, disease incidence had declined to 11% in the untreated control. Good brown patch control was obtained in plots treated with PEX-60021 (8.0 fl oz) and Insignia (0.5 oz, 14 day).

Foliar anthracnose began to develop in the experimental area in mid-August, possibly due to spread from an adjacent trial that was inoculated with *Colletotrichum cereale*. On 22 Aug, excellent control was provided Signature + Daconil Ultrex, PEX-6012 + Pegasus, PEX-6013 + Pegasus, Daconil Ultrex (3.25 oz), and both rates of PEX-60021.

Turfgrass quality was evaluated on 21 Jul and 6 Aug. The decline in turfgrass quality in untreated plots was primarily due to brown patch injury, but significant thinning and algae invasion was also induced by heat stress during July and August. The best turfgrass quality in the July assessment was exhibited by PEX-6012 + Pegasus, and PEX-6013 + Pegasus. On 6 Aug, good turfgrass quality was provided by PEX-6013 + Pegasus, and PEX-60021 (8.0 fl oz). No phytotoxicity or other negative side effects were observed in the experiment.

Treatment, formulation, and rate per 1000 sq ft	Spray interval (days)	Brown patch incidence (%)			Anthracnose incidence (%)	Turfgrass quality ^z	
		29 Jun	6 Aug	8 Sep	22 Aug	21 Jul	6 Aug
Signature 80WG 4.0 oz + Daconil Ultrex 82.5WG 3.5 oz ...	14 ^y	17 c-g ^x	3 jk	11 c-f	5 jk	6.5 c-f	5.5 cde
PEX-6012 WG 4.0 oz + Pegasus 82.5DF 3.5 oz ^w	14	2 fg	3 jk	10 c-g	11 ijk	7.3 a-d	6.0 bcd
PEX-6013 WG 4.0 oz + Pegasus 82.5DF 3.5 oz ^w	14	1 g	2 k	12 b-e	4 jk	7.8 ab	7.0 ab
PEX-6015 DF 1.8 oz ^w	14	22 c-f	16 d-g	16 abc	30 fg	6.3 d-g	4.0 g-j
PEX-6015 DF 3.25 oz ^w	14	2 fg	16 d-g	18 ab	22 ghi	5.5 f-i	4.5 e-h
PEX-6016 L 2.0 fl oz ^w	14	10 d-g	19 cde	21 a	37 def	5.3 g-j	3.3 i-l
PEX-6016 L 3.6 fl oz ^w	14	10 d-g	10 f-k	15 a-d	16 hij	5.0 h-k	4.3 f-i
Daconil Weatherstik 6F 2.0 fl oz	14	49 ab	18 c-f	13 bcd	28 fgh	4.3 j-m	3.3 i-l
Daconil Weatherstik 6F 3.6 fl oz	14	31 bc	12 e-h	13 bcd	20 ghi	4.5 i-l	4.0 g-j
Daconil Ultrex 82.5WG 1.8 oz	14	53 a	20 b-e	13 bcd	22 ghi	4.5 i-l	3.5 h-k
Daconil Ultrex 82.5WG 3.25 oz	14	28 cd	7 h-k	13 bcd	14 ijk	6.0 e-h	4.8 efg
PEX-60021 4.25F 4.0 fl oz ^w	14	3 fg	3 ijk	6 e-i	7 jk	5.5 f-i	4.8 efg
PEX-60021 4.25F 8.0 fl oz ^w	14	11 d-g	2 k	0 i	1 k	6.5 c-f	7.5 a
Insignia 20WG 0.5 oz	14	12 c-g	22 bcd	3 hi	54 abc	4.3 j-m	3.5 h-k
Insignia 20WG 0.9 oz	28	25 cde	28 b	5 f-i	54 abc	4.5 i-l	3.3 i-l
Untreated Control		28 cd	37 a	11 c-f	65 a	3.3 m	2.3 l

^zTurfgrass quality on a 1-9 scale, where 9=highest quality and 5=acceptable.

^yTreatments were applied on 13 Jun (all treatments), 29 Jun (14 day treatments), 5 Jul (21 day treatments), 11 Jul (14 and 28 day treatments), 27 Jul (14 and 21 day treatments), 7 Aug (14 and 28 day treatments), 17 Aug (21 day treatments), 23 Aug (14 day treatments), unless otherwise noted in the table.

^xValues are means of four replications. Means within columns followed by the same letter are not significantly different according to Waller-Duncan k-ratio t-test (k=100).

^wTreatment was first applied on 15 Jun.