CREEPING BENTGRASS (*Agrostis palustris* 'A-4')
Brown patch; *Rhizoctonia solani*

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Preventative control of brown patch of creeping bentgrass putting greens in Jackson Springs, NC, 2006.

Fungicides were evaluated for preventative control of brown patch at the Sandhills Research Station in Jackson Springs, NC on 'A-4' creeping bentgrass maintained under golf course putting green conditions. Mowing was performed five times weekly at a height of 0.156 in. with clippings collected, and the site was irrigated to prevent drought stress. Fertilizer was applied as 18-3-16 on 13 Jan, 20 Mar, and 25 Apr (0.94 lb N/1000 sq ft) and 28-8-18 on 23 May, 12 and 19 Jun, 11 Jul, and 1 and 23 Aug (0.125 lb N/1000 sq ft). Insect pests were suppressed with DeltaGard GC (0.6 fl oz/1000 sq ft) on 23 May and 21 Jul, and Sevin SL (3.0 fl oz/1000 sq ft) on 1 Aug. Harrell's CalMax (0.1 lb Ca/1000 sq ft) was applied on 4 Apr, 23 May, 12 Jun, and 24 Jul and Harrell's Minormax (4.0 fl oz/1000 sq ft) was applied on 19 Jun and 11 Jul. Weed control was applied as Andersons Goosegrass/Crabgrass Control (2.62 lb/1000 sq ft) and Trimec Bentgrass Formula (1.0 fl oz/1000 sq ft) on 23 Mar and 4 Apr, respectively. Magnus wetting agent (4.0 fl oz/1000 sq ft) was applied on 6 and 19 Jun, 11 and 21 Jul, and 1 Aug. 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 CO_2 powered sprayer at 40 psi using TeeJet 8004 nozzles. All treatments were initiated on 9 Jun, unless otherwise noted in the table, and were reapplied at the appropriate intervals as indicated in the table. The experimental area was inoculated on 2 Jun 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 23 Jun, 7 and 21 Jul, 4 and 18 Aug, and 6 Sep. Turfgrass quality was evaluated on 18 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 incidence varied during the study, with untreated controls exhibiting 16% disease on 23 Jun then reaching a maximum of 29% in early July before falling during the remainder of the month. Another period of disease activity in early August caused disease incidence to rise to 22% on 4 Aug. On 7 Jul all treatments, except Banner MAXX, provided excellent control of brown patch, although Concert (3.0 fl oz) and 26GT (14-day interval) were less effective than the best treatments on this date. On 21 Jul disease incidence had fallen to 12% in the untreated control. All treatments provided excellent control of brown patch on this date, except Concert (5.4 fl oz), Banner MAXX, Bayleton, and 26GT (14-day interval). On 4 Aug, 14 treatments were providing good disease control. Of those treatments, eight were registered QoI fungicides applied alone or combined with other fungicides. Experimental products EXC990, EXC991, and both rates of V-10116 provided significant control of brown patch, as did Concert (5.4 fl oz) and Eagle. The addition of Banner MAXX or Banner MAXX + TM-90109 to the 0.18 oz rate of Disarm did not improve control in this study. None of the dicarboximide fungicides significantly differed from the untreated control on 4 Aug. When applied on a 14 day interval, plots treated with Quali-Pro Iprodione exhibited lower brown patch incidence compared to 26GT on 18 Aug, but no other significant differences were detected among these products in this study. The highest turf quality was obtained from the two Heritage TL + Daconil Weatherstik treatments, EXC990, EXC991, and Disarm (0.18 oz) 21-day interval. Unacceptable quality resulted in plots treated with Banner MAXX, Bayleton, and 26GT (14-day interval).

Treatment, formulation, and rate per 1000 sq ft	Spray interval (days)	Brown patch incidence (%)		
		23 Jun	7 Jul	21 Jul
Heritage 50WG 0.2 oz	14[z]	2 d[y]	0 e	0 c
Heritage TL 0.8ME 1.0 fl oz	14	1 d	0 e	0 c
Heritage TL 0.8ME 1.0 fl oz + Daconil Weatherstik 6F 2.0 fl oz	14	1 d	2 e	0 c
Heritage TL 0.8ME 1.0 fl oz + Daconil Weatherstik 6F 3.6 fl oz	14	1 d	0 e	0 c
EXC990 SC 4.0 fl oz	14	1 d	0 e	0 c
EXC991 SC 2.5 fl oz	14	1 d	0 e	0 c
Concert 4.3SE 3.0 fl oz	14	4 cd	14 bcd	2 c
Concert 4.3SE 5.4 fl oz	14	2 d	3 e	3 abc
Insignia 20WG 0.5 oz	14	1 d	0 e	0 c
V-10116 50WG 0.18 oz[x]	14	4 cd	2 e	1 c
V-10116 50WG 0.37 oz[x]	14	2 d	1 e	0 c
Banner MAXX 1.3ME 2.0 fl oz[x]	14	25 a	24 ab	12 ab
Bayleton 50WP 1.0 oz[x]	14	3 cd	6 cde	4 abc
Eagle 40WP 1.2 oz[x]	14	3 d	3 e	1 c
Disarm 4SC 0.18 fl oz	14	1 d	0 e	0 c
Disarm 4SC 0.18 fl oz	21	2 d	0 e	0 c
Disarm 4SC 0.36 fl oz	28	1 d	1 e	0 c
Disarm 4SC 0.18 fl oz + Banner MAXX 1.3ME 1.0 fl oz	21	1 d	0 e	0 c
Disarm 4SC 0.18 fl oz + Banner MAXX 1.3ME 1.0 fl oz + TM-90109 L 4.0 fl oz	21	1 d	2 e	0 c
Quali-Pro Iprodione 2SE 4.0 fl oz[w]	14	9 c	8 cde	1 c
Quali-Pro Iprodione 2SE 4.0 fl oz[v]	21	9 c	1 e	0 c
26GT 2SC 4.0 fl oz	14	6 cd	15 bc	6 abc
26GT 2SC 4.0 fl oz	21	5 cd	3 de	1 c
Insignia 20WG 0.9 oz	28	1 d	0 e	0 c
Untreated Control		16 b	29 a	12 a

[z]Fungicides were applied on 9 Jun (all treatments), 23 Jun (14 day treatments), 28 Jun (21 day treatments), 7 Jul (14 and 28 day treatments), 21 Jul (14 and 21 day treatments), 4 Aug (14 and 28 day treatments), unless otherwise noted in table.

[y]Values 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).

[x]Treatment was applied as a curative treatment beginning 23 Jun.

[w]Treatment was first applied 23 Jun and on a 14 day interval thereafter.

[v]Treatment applied 23 and 28 Jun, and 21 Jul.

Treatment, formulation, and rate per 1000 sq ft	Spray interval (days)	Brown patch incidence (%) 4 Aug	18 Aug	6 Sep	Turf Quality[z] 18 Aug
Heritage 50WG 0.2 oz	14[y]	2 b[x]	0 c	1 d	6.5 b-f
Heritage TL 0.8ME 1.0 fl oz	14	7 ab	2 bc	0 d	6.8 a-e
Heritage TL 0.8ME 1.0 fl oz + Daconil Weatherstik 6F 2.0 fl oz	14	2 b	1 bc	3 bcd	7.8 ab
Heritage TL 0.8ME 1.0 fl oz + Daconil Weatherstik 6F 3.6 fl oz	14	1 b	1 bc	1 d	8.5 a
EXC990 SC 4.0 fl oz	14	5 b	1 bc	1 d	8.5 a
EXC991 SC 2.5 fl oz	14	3 b	1 bc	1 d	7.5 abc
Concert 4.3SE 3.0 fl oz	14	12 ab	4 abc	7 bcd	7.0 a-d
Concert 4.3SE 5.4 fl oz	14	5 b	4 abc	5 bcd	6.0 b-g
Insignia 20WG 0.5 oz	14	1 b	0 c	0 d	6.0 b-g
V-10116 50WG 0.18 oz[w]	14	3 b	0 bc	3 bcd	6.8 a-e
V-10116 50WG 0.37 oz[w]	14	7 b	1 bc	3 bcd	6.5 b-f
Banner MAXX 1.3ME 2.0 fl oz[w]	14	10 ab	5 ab	4 bcd	4.5 g
Bayleton 50WP 1.0 oz[w]	14	11 ab	5 abc	3 bcd	4.5 g
Eagle 40WP 1.2 oz[w]	14	4 b	3 abc	1 d	5.8 c-g
Disarm 4SC 0.18 fl oz	14	1 b	0 c	0 d	7.3 a-d
Disarm 4SC 0.18 fl oz	21	3 b	0 bc	1 d	7.5 abc
Disarm 4SC 0.36 fl oz	28	6 b	0 c	2 bcd	6.0 b-g
Disarm 4SC 0.18 fl oz + Banner MAXX 1.3ME 1.0 fl oz	21	7 ab	2 bc	1 d	6.0 b-g
Disarm 4SC 0.18 fl oz + Banner MAXX 1.3ME 1.0 fl oz +TM-90109 L 4.0 fl oz	21	11 ab	3 abc	1 cd	7.0 a-d
Quali-Pro Iprodione 2SE 4.0 fl oz[v]	14	9 ab	3 bc	9 abc	6.3 b-g
Quali-Pro Iprodione 2SE 4.0 fl oz[u]	21	13 ab	2 bc	7 bcd	6.3 b-g
26GT 2SC 4.0 fl oz	14	10 ab	7 a	16 a	4.5 g
26GT 2SC 4.0 fl oz	21	7 ab	2 bc	6 bcd	5.0 efg
Insignia 20WG 0.9 oz	28	0 b	0 c	0 d	6.5 b-f
Untreated Control		22 a	4 abc	6 bcd	5.5 d-g

[z]Turfgrass quality on a 1-9 scale, where 9=highest quality and 5=acceptable.

[y]Fungicides were applied on 9 Jun (all treatments), 23 Jun (14 day treatments), 28 Jun (21 day treatments), 7 Jul (14 and 28 day treatments), 21 Jul (14 and 21 day treatments), 4 Aug (14 and 28 day treatments), unless otherwise noted in table.

[x]Values 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).

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[u]Treatment applied 23 and 28 Jun, and 21 Jul.