Evaluation of Fungicides for Control of Brown Patch on Colonial Bentgrass
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Objective

The objective of this research was to evaluate various fungicides and application programs for control of brown patch.

Rationale

Brown patch is a serious disease of creeping bentgrass greens and tees on midwestern golf courses. During hot humid days of summer, fungicides often represent the only effective brown patch management option. Superintendents must select from numerous fungicides registered for use against brown patch that vary in cost and efficacy. This type of research is conducted routinely to provide superintendents and other interested turf managers with objective evaluations of the performance of current fungicides. The research is conducted on colonial bentgrass because the extent of disease development is much more clearly assessed than on creeping bentgrass.

How It Was Done

The research was conducted at the Purdue University William H. Daniel Turfgrass Research and Diagnostic Center in West Lafayette, IN. The experimental site was a stand of 'Astoria' colonial bentgrass maintained at a height of 0.5 in. Fertilization, irrigation, aerification, and topdressing were done according to standard practices for colonial bentgrass at fairway height. During the course of the experiment, nitrogen fertilizer (18-4-10) was applied at rates of approximately 0.5, 1.0, 0.5, and 0.7 lb N/1000 ft^2 on 19 May, 27 May, 26 Jun, and 18 July, respectively. The stand was core-aerified on 11 May. Individual treatment plots measured 3.3 ft by 6.6 ft and were randomized within each of four replications. The experimental site was inoculated with a sorghum-seed culture of *R. solani* on 12 June. Inoculum was applied with a manually operated spreader that dispersed approximately 2 infested seeds/plot. Fungicide applications were made using a custom-built bicycle boom sprayer. Three nozzles (Tee-Jet 8004 EVS, flat fan) were mounted approximately 12 in. apart on a boom positioned 12 in. from the ground. The sprayer was calibrated to deliver 2 gal/1000 ft^2 at 40 psi. Treatments with 14-day spray intervals were applied 14 June, 28 June, 12 July, 26 July, and 9 Aug. The treatments with 21-day spray intervals were applied 14 June, 5 July, 26 July, and 9 Aug. Treatments with 28-day application intervals were sprayed on 14 June, 12 July, and 9 Aug. The plots were evaluated for brown patch severity at 7 day intervals by visual estimation of the proportion of plot area affected by brown patch using the Horsfall-Barratt scale. Analysis of variance was performed on Horsfall-Barratt ratings. Mean values were then transformed to disease percentages for presentation in the table.

Results

There were two brief periods during the summer when environmental conditions favored brown patch development. The first occurred during the initial two weeks of July; the second occurred in early Aug. Between those periods, relatively cool temperatures favored turf recovery and abatement of brown patch symptoms. Fungicide treated plots resulted in significantly less brown patch than the untreated plots. Throughout the summer, control was excellent, with few differences among treated plots. By the final evaluation date, more brown patch was observed in the Chipco Signature 80WG treatment. The Banner Maxx 1.24ME treatment also supported moderate levels of disease, although this probably was due to the fact that the last brown patch favorable period occurred towards the end of the 21-day application interval. Dollar spot was a confounding problem throughout the course of the experiment. Low turf quality ratings in treated plots were due to dollar spot development rather than phytotoxicity or thin turf.

Table 1. Brown patch control by experimental and commercially available fungicides.

Fungicide, rate/1000 ft^2, and application interval	Brown patch severity						Turf quality[b]
	10 July	17 July	24 July	31 July	7 Aug	10 Aug	31 July
No fungicide	38.3 a[a]	65.7 a	58.1 a	16.7 a	34.5 a	54.1 a	2.5 d
Banner Maxx 1.24ME 1.0 fl oz 21 day	4.5 bc	9.5 c	8.2 c	0.0 b	19.1 b	11.0 b	7.3 a
Chipco 26GT 2SC 4.0 fl oz 14 day	0.0 c	0.0 d	0.0 d	0.0 b	0.0 c	0.0 c	7.3 a
Chipco Signature 80WG 6.0 oz 14 day	34.5 a	54.1 b	34.5 b	0.0 b	0.0 c	14.6 b	4.3 c
Chipco 26GT 2SC 4.0 fl oz + Chipco Signature 80WG 4.0 fl oz 14 day	0.0 c	4.5 d	0.0 d	0.0 b	0.0 c	4.5 c	7.3 a
Prostar 70WP 2.2 oz 14 day	7.1 b	0.0 d	0.0 d	0.0 b	0.0 c	0.0 c	4.0 c
Heritage 50WDG 0.2 oz 14 day	0.0 c	0.0 d	0.0 d	0.0 b	0.0 c	5.2 c	6.0 b
Heritage 50WDG 0.4 oz 28 day	0.0 c	0.0 d	0.0 d	0.0 b	0.0 c	0.0 c	6.8 ab
BAS50002F 20WG 1.0 oz 14 day	0.0 c	0.0 d	0.0 d	0.0 b	0.0 c	0.0 c	7.5 a
BAS50002F 20WG 1.8 oz 28 day	4.5 bc	0.0 d	0.0 d	0.0 b	0.0 c	0.0 c	7.0 a
BAS50503F 50WG 0.4 oz 14 day	0.0 c	0.0 d	0.0 d	0.0 b	0.0 c	0.0 c	6.8 ab
Compass 50WG 0.15 oz + Banner MAXX 1.3MEC 1.0 fl oz 14 day	0.0 c	0.0 d	0.0 d	0.0 b	0.0 c	0.0 c	7.3 a
Compass 50WG 0.15 oz + Banner Maxx 1.3MEC 1.0 fl oz 21 day	0.0 c	0.0 d	0.0 d	0.0 b	0.0 c	0.0 c	7.0 a
Lynx 45WP 0.278 oz + Daconil Ultrex 82.5WDG 1.83 oz 14 day	0.0 c	0.0 d	0.0 d	0.0 b	0.0 c	0.0 c	7.0 a
Lynx 45WP 0.278 oz 14 day	0.0 c	0.0 d	0.0 d	0.0 b	0.0 c	0.0 c	7.3 a
Lynx 45WP 0.556 oz 21 day	0.0 c	0.0 d	0.0 d	0.0 b	0.0 c	0.0 c	7.0 a
Compass 50WG 0.25 oz 21 day	0.0 c	0.0 d	0.0 d	0.0 b	0.0 c	0.0 c	6.0 b

[a] Values within columns followed by the same letter are not significantly different according to Fisher's LSD (P=0.05).
[b] Turf quality ratings are based on a 0-9 scale where 9 is excellent. Values less than 5 represent plots with unacceptable turf quality.