Preventative Brown Patch Suppression on Golf Course Fairways

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OBJECTIVE

To determine the efficacy of standard and experimental fungicides for the control of brown patch caused by the fungus *Rhizoctonia solani*.

MATERIALS AND METHODS

The study was conducted at the O. J. Noer Turfgrass Research and Education Facility on a stand of colonial bentgrass (*Agrostis capillaris*) maintained at 0.5 inches. The individual plots measured 3 feet by 10 feet and were arranged in a randomized complete block design with four replications. Individual treatments were applied at a nozzle pressure of 40 p.s.i. using a CO_2 pressurized boom sprayer equipped with two XR Teejet AI8004 nozzles. All fungicides were agitated by hand and applied in the equivalent of 1.5 gallons of water per 1000 $ft^{2.}$ All treatments were initiated June 13th, 2017 and subsequent applications were made at 14 or 28 day intervals. Plots were inoculated with *R. solani*-infested rye grain on July 14th and subsequently covered with an Evergreen cover to promote fungal infection. Brown patch severity and turf quality (1-9, 9 being excellent and 6 acceptable) were visually assessed and subjected to an analysis of variance and means were separated using Fisher's LSD (P = 0.05). Results of the disease severity and turfgrass quality ratings can be found in table 1 and 2, respectively.

RESULTS AND DISCUSSION

No natural infection occurred before the inoculation date. After inoculation, non-treated controls developed heavy brown patch symptoms, averaging 57.5% infection on the plots. Despite heavy disease pressure following inoculation, all fungicides provided excellent brown patch control. Some minor Pythium blight developed on the plot and was not included in the brown patch ratings but did lower the turf quality ratings. Turf color ratings were most impacted by the level of Pythium blight present in the plots and not any impact on overall turf health.

Table 1. Mean brown patch severity per treatment on creeping bentgrass maintained at fairway height at the OJ Noer Turfgrass Research Facility in Madison, WI during 2017.

	Treatment	Rate	Application Interval	Application Code[b]	Brown Patch Severity[a]		
					Jul 20	Jul 27	Aug 9
1	Non-treated control				57.5 a	40.0 a	2.5
2	Tekken	3 fl oz/1000ft2	21 day	FI	0.0 b	0.0 b	0.0 a
3	Tekken	3 fl oz/1000ft2	28 day	FJ	0.0 b	0.0 b	0.0 a
4	Affirm	0.9 oz/1000 ft2	14 day	FHJ	0.0 b	0.0 b	1.3
5	Headway	2.25 fl oz/1000ft2	21 day	FI	0.0 b	0.0 b	0.0 a
6	Enclave	3.5 fl oz/1000ft2	21 day	FI	0.0 b	0.0 b	0.0 a
				LSD P = 0.5	4.97	10.67	2.39

[a]Brown patch severity was visually assessed as percent disease. Means followed by the same letter do not significantly differ (P=.05, Fisher's LSD).
[b]Application code F=June 13th, H=June 29th, I=July 5th, J=July 13th.

Table 2. Mean turfgrass quality per treatment on creeping bentgrass maintained at fairway height at the OJ Noer Turfgrass Research Facility in Madison, WI during 2017.

	Treatment	Rate	Application Interval	Application Code[b]	Turfgrass Quality[a]		
					Jul 20	Jul 27	Aug 9
1	Non-treated control				3.8 c	3.8 d	6.8 a
2	Tekken	3 fl oz/1000ft2	21 day	FI	4.3 bc	4.8 c	7.0 a
3	Tekken	3 fl oz/1000ft2	28 day	FJ	4.8 b	5.5 bc	7.0 a
4	Affirm	0.9 oz/1000 ft2	14 day	FHJ	5.3 b	6.0 b	7.0 a
5	Headway	2.25 fl oz/1000ft2	21 day	FI	5.5 b	5.3 bc	7.0 a
6	Enclave	3.5 fl oz/1000ft2	21 day	FI	5.3 b	5.3 bc	7.0 a
				LSD P = 0.5	0.79	0.60	0.27

[a]Turfgrass quality was rated visually on a 1 – 9 scale with 6 being acceptable. Means followed by the same letter do not significantly differ (P=.05, Fisher's LSD).
[b]Application code F=June 13th, H=June 29th, I=July 5th, J=July 13th.

Table 3. Mean chlorophyll rating per treatment on creeping bentgrass maintained at fairway height at the OJ Noer Turfgrass Research Facility in Madison, WI during 2017.

	Treatment	Rate	Application Interval	Application Code[b]	Chlorophyll Rating[a]		
					Jul 20	Jul 27	Aug 9
1	Non-treated control				204.3 c	167.8 c	358.5 c
2	Tekken	3 fl oz/1000ft2	21 day	FI	242.8 b	237.8 b	384.5 bc
3	Tekken	3 fl oz/1000ft2	28 day	FJ	275.3 ab	282.0 ab	438.8 abc
4	Affirm	0.9 oz/1000 ft2	14 day	FHJ	302.3 a	284.5 ab	455.5 ab
5	Headway	2.25 fl oz/1000ft2	21 day	FI	324.3 a	289.3 ab	436.5 abc
6	Enclave	3.5 fl oz/1000ft2	21 day	FI	285.0 ab	275.3 ab	442.8 abc
				LSD P = 0.5	38.06	41.92	52.57

[a]Chlorophyll rating was rated visually on a 1 – 9 scale with 6 being acceptable. Means followed by the same letter do not significantly differ (P=.05, Fisher's LSD).
[b]Application code F=June 13th, H=June 29th, I=July 5th, J=July 13th.