



Battling Brown Patch

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John Wooden said it best when he said, "Failure to prepare is preparing to fail." The year 1999 was a rough year on many superintendents and their chemical budgets, but now it is time to look to the future. Results from the latest research may be all that is needed to battle brown patch when Mother Nature decides that the summer of 2000 will be the hottest ever.

Brown patch is a disease caused by the fungal pathogens *Rhizoctonia zeae* and *Rhizoctonia solani*. Symptoms of

brown patch include leaf blades that appear water soaked and dark. Eventually those blades dry up, wither and turn dark brown. During periods of high nighttime temperatures (>70° F) and very high humidity "smoke rings" may form. "Smoke rings" are actually very active mycelium growing at the outer edge of the diseased area. Although smoke rings are a very obvious sign of brown patch, they do not have to be present for the pathogen to be active.

Because brown patch can do

serious damage to turf, personnel at the TDDL have conducted an evaluation of chemicals used in its control. The fungicide trial was done on 2,500 ft² of colonial bentgrass, which had been established in 1997. The study area was maintained under golf course fairway management conditions. The plot was mowed three times a week at 0.50 inches, was irrigated 3 times weekly at 70 percent of the evapotranspiration rate, and had received approximately 3 lbs. N per 1,000 ft by August 11, 1999.



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The study consisted of one untreated control and 19 treatments. Individual 3 ft x 8 ft plots were arranged in a randomized complete block design with three replications. Treatments were applied with a CO₂ powered boom sprayer using XR Teejet 8005 VS nozzles at 30 psi, in water equivalent to 2 gal per 1,000 ft². All treatments were initiated on June 21, 1999 and continued at specified intervals.

Rhizoctonia zeae and *R. solani* can infect and cause damage to most cool and warm season grasses. Creeping, colonial, and velvet bentgrasses are all susceptible.

Kentucky bluegrass, perennial ryegrass, fine fescue and annual bluegrass are also susceptible. The pathogen is most severe on turf which has received high nitrogen treatments and when dew points are near 70° F.

High disease pressure at the end of June yielded the first results from the study. The plots were rated for percent infection on July 4, 1999. On July 13, 1999 the experimental area was inoculated with both species of *Rhizoctonia* to ensure the disease was present throughout the plots. Percent infection ratings were taken again on July 19, 1999 and July 29, 1999.

These ratings were subjected to statistical analysis to determine significant differences between treatments.

Table 1 lists all the treatments and their efficacy as observed by the TDDL. The first ten treatments are three-way reduced-rate mixtures. The reduced-rate treatments do not indicate the efficacy of those same chemicals when they are used at their labeled rates. Unlike previous years these combinations did not result in desirable control. The study indicated a significant amount of control with these mixtures, but none of them were as effective labeled

Table 1. Percent Brown Patch Infection

Trt#	Treatment	Form.	Rate	Rate Unit	Interval/ Timing	% Infection 7-4-99 AVG		% Infection 7-19-99 AVG		% Infection 7-29-99 AVG		% Infection 8-2-99 AVG	
1	Daconil Ultrex	82.5 WG	2.5	oz/1000 ft2	21 Day	15.0	BCD	13.3	DEF	26.7	CDE	0.0	C
	Fungo Flo	4.5 F	0.25	fl oz/1000 ft2									
	Chipco 26 GT	2 SC	2.0	fl oz/1000 ft2									
2	Daconil Ultrex	82.5 WG	2.5	oz/1000 ft2	21 Day	5.0	CD	16.7	C-F	30.0	CDE	0.0	C
	Chipco 26 GT	2 SC	2.0	fl oz/1000 ft2									
	Bayleton	25 DF	0.11	oz/1000 ft2									
3	Daconil Ultrex	82.5 WG	2.5	oz/1000 ft2	21 Day	1.7	D	11.7	EFG	23.3	CDE	0.0	C
	Chipco 26 GT	2 SC	2.0	fl oz/1000 ft2									
	Banner Maxx	1.3 MC	0.22	fl oz/1000 ft2									
4	Daconil Ultrex	82.5 WG	2.5	oz/1000 ft2	21 Day	3.3	CD	15.0	DEF	26.7	CDE	1.7	C
	Chipco 26 GT	2 SC	2.0	fl oz/1000 ft2									
	Rubigan	1 SC	0.5	fl oz/1000 ft2									
5	Daconil Ultrex	82.5 WG	2.5	oz/1000 ft2	21 Day	3.3	CD	20.0	B-E	33.3	CD	0.0	C
	Fungo Flo	4.5 F	0.25	fl oz/1000 ft2									
	Bayleton	25 DF	0.11	oz/1000 ft2									
6	Daconil Ultrex	82.5 WG	2.5	oz/1000 ft2	21 Day	25.0	B	25.0	BCD	55.0	B	0.0	C
	Fungo Flo	4.5 F	0.25	fl oz/1000 ft2									
	Banner Maxx	1.3 MC	0.22	fl oz/1000 ft2									
7	Daconil Ultrex	82.5 WG	2.5	oz/1000 ft2	21 Day	11.7	BCD	28.3	BC	33.3	CD	0.0	C
	Fungo Flo	4.5 F	0.25	fl oz/1000 ft2									
	Rubigan	1 SC	0.5	fl oz/1000 ft2									
8	Chipco 26 GT	2 SC	2.0	fl oz/1000 ft2	21 Day	3.3	CD	13.3	DEF	28.3	CDE	5.0	C
	Fungo Flo	4.5 F	0.25	fl oz/1000 ft2									
	Bayleton	25 DF	0.11	oz/1000 ft2									
9	Chipco 26 GT	2 SC	2.0	fl oz/1000 ft2	21 Day	5.0	CD	16.7	C-F	21.7	CDE	1.7	C
	Fungo Flo	4.5 F	0.25	fl oz/1000 ft2									
	Banner Maxx	1.3 MC	0.22	fl oz/1000 ft2									
10	Chipco 26 GT	2 SC	2.0	fl oz/1000 ft2	21 Day	10.0	BCD	30.0	B	40.0	BC	1.7	C
	Fungo Flo	4.5 F	0.25	fl oz/1000 ft2									
	Rubigan	1 SC	0.5	fl oz/1000 ft2									
11	Heritage	50 WDG	0.2	oz/1000 ft2	14 Day	0.0	D	0.0	G	0.0	G	0.0	C
12	Heritage	50 WDG	0.4	oz/1000 ft2	28 Day	0.0	D	0.0	G	1.7	FG	0.0	C
13	Compass	50 WDG	0.15	oz/1000 ft2	21 Day	0.0	D	10.0	EFG	13.3	EFG	0.0	C
14	Compass	50 WDG	0.15	oz/1000 ft2	21 Day	0.0	D	5.0	FG	20.0	DEF	0.0	C
15	Banner Maxx	1.1 MC	1.0	fl oz/1000 ft2	21 Day	20.0	BC	20.0	B-E	33.3	CD	15.0	B
	Primo	1.0 EC	0.2	fl oz/1000 ft2									
	Banner Maxx	1.1 MC	1.0	fl oz/1000 ft2									
16	Daconil Ultrex	82.5 WG	3.8	oz/1000 ft2	14 Day	10.0	BCD	0.0	G	23.3	CDE	0.0	C
17	Prostar	70 WP	2.0	oz/1000 ft2	14 day	0.0	D	0.0	G	1.7	FG	0.0	C
18	Chipco 26 GT	2.0 SC	3.5	fl oz/1000 ft2	14 Day	10.0	BCD	10.0	EFG	18.3	D-G	3.3	C
19	3336 Flo	4.5 SC	2.0	fl oz/1000 ft2	14 day	8.3	BCD	10.0	EFG	20.0	DEF	3.3	C
20	Check					55.0	A	78.3	A	80.0	A	81.7	A
LSD (P=0.05)						16.76		5.41					

Means followed by same letter do not significantly differ (p=0.05, LSD)

rates of Heritage and Prostar and to a lesser extent Compass.

When looking at Table 1 a small letter may be observed after each of the percent infection ratings. The letter indicates treatments that statistically did not perform differently from each other. A rating followed by a letter is statistically the same as another rating followed by that same letter. Treatment number 20 is the check. A small "a" follows this rating. Since a small "a" follows none of the remaining treatments, it can be concluded that the check is significantly different from all the other treatments. Thus the treatments were all better than taking no control measures.

Along with percent infection ratings, samples were collected from each infection center and isolated onto PDA to determine the

pathogen present in each treatment. The TDDL personnel were looking for tolerance of the *Rhizoctonia* species to any of the treatments. Results from those isolations revealed that most of the disease pressure came from *Rhizoctonia solani*. *Rhizoctonia zaeae* was only isolated in one plot even though the entire experimental area had been inoculated with the fungus. Thus, no resistance to any treatment was observed.

Brown Patch may not be as threatening as pythium blight but it still can do damage when left unchecked. Hopefully the results of this study are all you need to show Mother Nature who is boss. Well, I know that won't happen but at least you will be waiting for it when she throws a curve next year. ♻



Smoke ring with dew and without dew.



Effects of a fungicide treatment on the development of brown patch.

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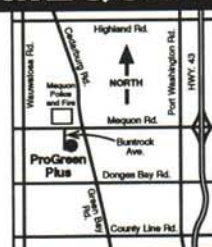
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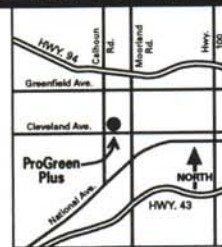
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