Pest e-alerts

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Brown Patch is Active on Cool-Season Grasses

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Brown patch has begun to appear on stands of tall fescue and creeping bentgrass putting greens in the Stillwater area. Over the last week or so, prime weather conditions have persisted which favor brown patch. It is most likely to develop when humidity is high and/or excessive soil moisture prevails. Warm temperatures (more than 85°F) encourage the development of brown patch, although symptoms can develop as long as temperatures are above 68 F. Excessive use of nitrogen fertilizer can exacerbate development of the disease.

Brown patch is caused by the fungus *Rhizoctonia solani*. The fungus overwinters using a survival structure (bulbils), specialized cells, or thickened mycelia (fungal body) in plant material. The fungus can be transmitted by the movement of infested plant debris by equipment, animals, water, and wind.

On closely mown grasses (e.g. creeping bentgrass putting greens), symptoms will appear as somewhat circular, purple-to-brown patches that range from 6 inches to over 1 foot in diameter (Fig 1). An area of whitish-gray ("smoke ring") may or may not be present at the perimeter of the patch. On taller grasses, patches will be bronze in color and somewhat larger in size (less than 6 inches in diameter) and irregularly shaped. Initially plants will appear purplish green in color, which quickly fade to brown or bronze (Fig 2). Leaf lesions may be present and will appear as tan, irregular spots bordered by dark brown margins (Fig 3). In Oklahoma, symptoms typically appear in the middle of the summer when temperature and humidity are continuously high.

To control brown patch, excessive amounts of nitrogen should be avoided. Applying nitrogen fertilizer to cool-season grasses in late spring and summer is not advised in Oklahoma. Other elements such as potassium and phosphorus should be applied based on a soil nutrient analysis.

Fig 1. Symptoms of brown patch on a creeping bentgrass putting green.

Fig 2. Symptoms of brown patch on tall fescue.

Fig 3. Leaf symptom of brown patch on a tall fescue plant. Note the beige leaf lesion with the dark brown irregular border (see arrow).

Reducing long periods of leaf wetness and adjusting irrigation to water deeply and infrequently will help reduce the severity of brown patch. Improving airflow and amending obstacles in the landscape to improve air movement will help reduce leaf wetness. Improving drainage in areas where water pools or soils remain saturated for long periods of time will also reduce the likelihood of brown patch development.

Fungicides should be used preventatively and only during periods when weather is conducive for brown patch development. There are numerous fungicide products available for commercial turf applicators and golf course superintendents. Many of these products are highly effective. Fewer effective products are available or priced competitively for homeowner use.

We have conducted fungicide evaluations at the Oklahoma State University Turfgrass Research Center in Stillwater, which have focused on some of the products suitable for control of brown patch on tall fescue in 2008 and 2009. Results among years were similar so the 2008 results are summarized here. In these trials fungicides were applied preventatively (before disease development) or curatively (after disease development). Fungicides readily available to homeowners were compared to the commercial fungicide, Heritage, and a non-treated check. Liquid fungicides were applied with TX8008 flat fan nozzles and calibrated to deliver 87 GPA or 2 gal/1000 ft2. Granular fungicides were pre-weighed and applied by hand. Preventative treatments were initiated on July 3rd, prior to symptom development, and were applied four times at 14-day intervals. Curative treatments of fungicide were initiated on July 31st, after symptoms of brown patch developed, and were applied three times at 14-day intervals. Ratings of disease severity (percent of plot area with symptoms of brown patch), turfgrass stand (percent of plot area with living grass), and turfgrass quality (scale of 1 - 9 scale where 1 = no turf present, 5 = unacceptable turfgrass, 7 = acceptable turf, 9 = dense, dark color, thick stand of turfgrass) were taken at weekly intervals from July 3rd to September 4th. Disease severity data were transformed to a special disease intensity value to account for season-long ratings.

Highest mean levels of disease severity recorded ranged from 40% (September 4th) for plots treated preventatively with Fertilome Liquid Systemic Fungicide 1.55L to 7% (September 4th) for plots treated preventatively with Heritage 50WG. Disease severity was significantly higher for the preventative application of Fertilome Liquid Systemic Fungicide 1.55L than the non-treated check throughout the trial. Disease intensity was numerically higher, but not statistically different, for curative applications of Fertilome Liquid Systemic Fungicide 1.55L and all applications of Scotts Fungus Control 2.3G, Spectracide Immunox Lawn Disease Control 2.0L, and Bayer Advanced Fungus Control 1G compared to the non-treated check (see data table). Disease intensity was numerically lower, but not significantly different, for all applications of Heritage 50WG compared to the non-treated check. Turfgrass quality was highest for plots receiving preventative or curative applications of Heritage 50WG. Compared to the non-treated check, quality was significantly lower for plots treated with preventative and curative applications of Scotts Fungus Control 2.3G and preventative applications of Spectracide Immunox Lawn Disease Control 2.0L. Quality of all other treatments was similar to the non-

treated check. Quality was considered unacceptable for all treatments, except preventative and curative applications of Heritage 50WG, curative applications of Bayer Advanced Fungus Control 1G, and the non-treated check. Compared to the non-treated check, turfgrass stand was significantly reduced in the preventative and curative applications of Scotts Fungus Control 2.3G. Turfgrass stands were not significantly different from the non-treated check for all other treatments.

Treatment and rate/1000 ft^2 (Timing)[Z]	Disease Intensity[Y]	Turf Quality[X]	Turf Stand (%)[W]
Fertilome Liquid Systemic Fungicide 1.55L 20.0 fl oz. (Preventative)	939.2 A	4.6 BCDE	71.0 BC
Fertilome Liquid Systemic Fungicide 1.55L 20.0 fl oz. (Curative)	627.7 AB	5.2 BCDE	76.0 BC
Scotts Fungus Control 2.3G 2.7lb (Curative)	631.0 AB	4.0 E	61.0 C
Scotts Fungus Control 2.3G 2.7 lb (Preventative)	616.2 AB	4.2 DE	63.0 C
Spectracide Immunox Lawn Disease Control 2.0L 10.6 fl oz. (Preventative)	577.0 AB	4.4 CDE	69.0 BC
Bayer Advanced Fungus Control 1G 3.0 lb (Preventative)	570.6 B	5.2 BCDE	72.0 BC
Bayer Advanced Fungus Control 1G 3.0 lb (Curative)	481.0 B	6.2 B	83.0 AB
Spectracide Immunox Lawn Disease Control 2.0L 10.6 fl oz. (Curative)	444.7 BC	5.8 BCD	82.0 AB
Non-treated Check	398.7 BCD	6.0 BC	82.0 AB
Heritage 50WG 0.4 oz (Curative)	105.7 CD	8.0 A	93.6 A
Heritage 50 WG 0.2 oz (Preventative)	56.8 D	8.0 A	96.6 A

[Z] A total of four preventative applications and three curative applications were applied for each fungicide formulation.

[Y] Disease intensity is defined as the standardized area under the disease progress curve (AUDPC) for eight ratings of % brown patch per plot. Means followed by the same letter are not significantly different according to Fisher's test of protected least significant difference where: LSD=368; R^2=0.58; CV=58; *P*-value=0.0014.

[X] Final turfgrass quality (data recorded 4 Sep) is based on a scale of 1 - 9 where 1 = no turf present, 5 = unacceptable turfgrass, 7 = acceptable turf, 9 = dense, dark color, thick stand of turfgrass. Means followed by the same letter are not significantly different according to Fisher's test of protected least significant difference where: LSD=1.8; R^2=0.61; CV=25; *P*-value=0.0001.

[W] Final Turfgrass stand is the % of plot area with living grass on 4 Sep. Means followed by the same letter are not significantly different according to Fisher's test of protected least significant difference where: LSD=17.3; R^2=0.53; CV=18; *P*-value=0.002.

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