

The brown patch – growth rate connection in tall fescue lawns
July 9, 2020

Brown patch is a challenging disease of tall fescue lawns in Nebraska. It commonly occurs when the days and nights are hot and humid. The normal Extension recommendation has been to avoid fertilization during these times to help limit disease development. This was based on past research and from observations on creeping bentgrass golf turf. However, evaluation of under-fertilized lawns – especially young tall fescue lawns in new subdivisions – suggests that brown patch is actually more severe in these less fertile/slower growing lawns. Last year, we designed a study to test the link between growth rate, fertilization level and brown patch incidence.

This study was replicated in Nebraska and with Dr. Jim Kerns, Turfgrass Pathologist at NC State University, in North Carolina. We mixed various amounts of nitrogen fertilizer and plant growth regulators (Primo Maxx to slow the growth rate and RyzUp to accelerate growth rate). Brown patch incidence was rated weekly. The Primo Maxx PGR simulates other factors that would slow growth rate, like poor and compacted soils in new subdivisions. The brown patch started to emerge by early July (Fig 1).



Figure 1. Brown patch spreading across a tall fescue research plot (left). Characteristic leaf lesions forming on the grass blades (right).

The results at both locations showed that low nitrogen fertilizer, especially when growth was further slowed by a PGR, resulted in the greatest amount of brown patch (Fig 2). Tall fescue plots that received regular nitrogen fertilizer had had the lowest amount of brown patch, although it was not eliminated.

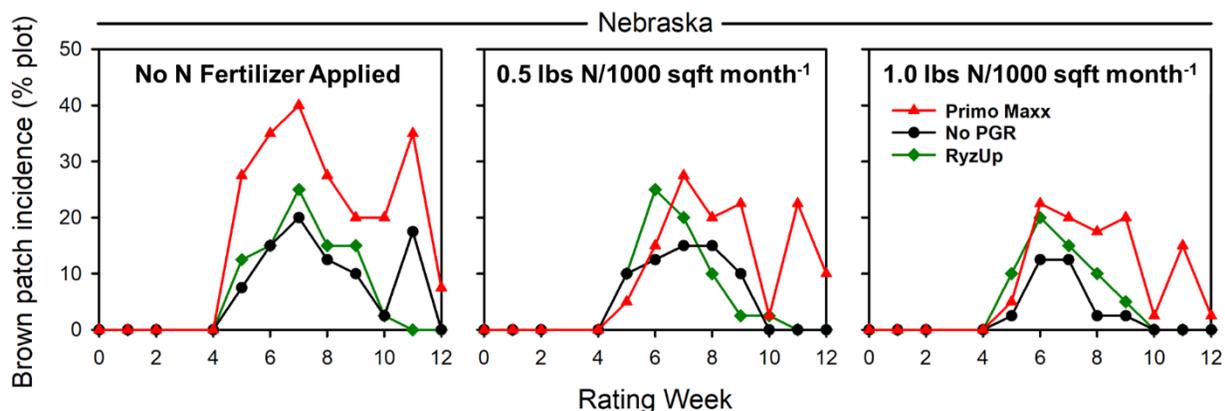


Figure 2. The percent of brown patch incidence in research plots receiving different rates of nitrogen fertilizer and PGR. The slowest growing plots (red lines) and the plots without nitrogen fertilizer (left) had the greatest amount of brown patch. It also developed more quickly in these plots.

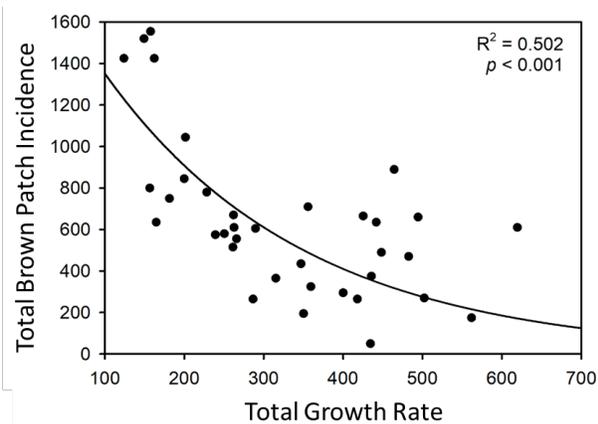


Figure 3. Total brown patch incidence vs total clipping yield in Nebraska during the 2019 study period. The totals were calculated with the area under the disease/yield progress curve method.

At the end of the season, we added all the brown patch incidence ratings together and plotted them with respect to total clipping yields (Fig. 3). Again, the slowest growing plots had the most brown patch incidence. As the total clipping yield increased, total brown patch incidence declined. [Click here for a video summary](#) of this research from the 2019 Field Day.

In summary, tall fescue lawns that are slow growing from poor soils and/or limited summer nitrogen fertilizer are more likely to get brown patch. To help limit the disease, maintain normal growth with nitrogen fertilizer applications through the summer, relieve compaction with aeration and compost, and limit excessive irrigation. A goal growth rate is to sustain 1.0-1.5 inches of new leaf growth per week and only water when drought symptoms are visible. Here's a Turf iNfo from last year about managing growth rate with fertilizer:

https://turf.unl.edu/turfinfo/06-6_Fertilize_to_Your_Mower.pdf. With some good cultural management, brown patch severity can be minimized without fungicides in 2020.

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