

Public Abstract

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Title:INTEGRATING NITROGEN SOURCE AND APPLICATION TIMING INTO THE MANAGEMENT OF LARGE PATCH ON ZOYSIAGRASS

Large patch is the most limiting disease that affects zoysiagrass in the upper transition zone of the United States. Management of this disease requires two to four fungicide applications split between the fall and spring disease periods. Limited research has been conducted to determine the effects of cultural practices on large patch disease outbreaks, specifically related to nitrogen applications. The first goal of this research was to evaluate nitrogen source impacts on the growth, color, and infection by the fungal pathogen *Rhizoctonia solani* AG 2-2 LP. The second goal was to determine how specific nitrogen application timings, nitrogen source, and a single fungicide application impact disease severity. In the laboratory, fungal growth was highest on calcium nitrate-amended media compared to both ammonium sulfate and urea media. The color of the fungus was dark brown on high concentrations of calcium nitrate and urea media, but was white on high concentrations of ammonium sulfate media with and without a pH buffer. Nitrogen source did not impact infection on zoysiagrass plants in a greenhouse experiment. In the field, summer nitrogen applications without a fungicide had the highest disease severity in all seasons of the study. Spring and/or fall nitrogen applications did not increase disease severity, and spring fertility was most consistent with decreased large patch severity. Similar to the greenhouse, nitrogen source did not impact disease severity in the field. A single spring fungicide application was effective at reducing large patch severity, but not in preventing initial disease incidence. When planning for large patch management, spring nitrogen and preventative fungicides applied prior to 18°C 5-cm soil temperatures would be most beneficial in reducing disease severity.