

Summer Research Preview

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After a brutally cold winter and frustratingly cold spring, summer is finally upon us. The summer season is the busy season for most of us, and here at the university it is no different. Samples are flowing into the diagnostic lab, fungicide testing is in full swing,

and much of our research is 'in the ground.' Turfgrass research can take on many forms, from research that is conducted entirely in the laboratory to research that is done entirely in the field. Most of the research that we will conduct in the years to come will have some element of both, but to get started in my first summer as a faculty member we will conduct several projects that are completely field-based (or 'highly applied' in academic lingo). A brief summary of each project is below, and all of them will be available for viewing at the Turfgrass Summer Field Day on July 29th.

Reduced-risk disease management

Fungicides are an integral part of any successful disease management program on golf course turfgrass. That is not an inherently bad thing, as the majority of research suggests there is relatively little risk to the general public and the environment when pesticides are used properly. However, that doesn't mean that toxicological improvements can't be made, and that they won't be mandated in future years. This small research project will include four treatments, 1) a non-treated control, 2) a traditional fungicide program designed for golf course fairways, 3) a reduced-use program basing fungicide applications on the Smith-Kerns dollar spot prediction model, and 4) a reduced-use AND reduced-risk program basing fungicide applications on the same Smith-Kerns dollar spot prediction model. While treatments 3 and 4 will both base their application timings on a mathematical model developed by Dr. Damon Smith and Dr. Jim Kerns, there is one key difference. Treatment 3 will employ a rotation of conventional fungicides currently available for use on dollar spot, while treatment 4 will only use those fungicides labeled as reduced-risk by the Environmental Protection Agency (Table 1). As table 1 shows there aren't a lot of options for initiating a completely reduced-risk program, but reduced risk products are available that will control the vast majority of turfgrass diseases we see in Wisconsin. The primary objective of this research is to determine whether exclusively using reduced risk fungicides in cooperation with a disease prediction model will yield acceptable disease control with a significantly lower environmental impact.



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Dual-fan nozzles and reduced water volume

Reducing the amount of water volume used in a given application can have clear benefits in application efficiency. Less water means fewer trips back to the shop to refill. However, going too low can impact the quality of disease suppression and defeat the purpose of making the application at all. An informal survey conducted this past spring found most Wisconsin golf course superintendents used a water volume between 1 and 1.5 gallons per 1000 ft². Air induction nozzles have been widely adopted by superintendents in recent years for their ability to decrease drift while maintaining adequate fungicide coverage on the plant. More recently, dual fan nozzles have been introduced with reports of increased plant coverage. Some superintendents have made claims that the dual fan nozzles allow for significantly reduced water volumes to be used because of the excellent coverage provided by the nozzle. This study will investigate the ability of both air induction and dual fan nozzles to provide adequate disease suppression at a number of different water volumes.



Left: Tee Jet Air Induction Nozzle
Right: Greenleaf Technologies Dual Fan Nozzle

Dollar spot suppression provided by strobilurin fungicides

The strobilurin (or QoI) fungicides are an important class that includes widely used products such as Heritage, Insignia, Compass, and Disarm. These products provide excellent suppression of a number of important golf course diseases including brown patch, anthracnose, and both pink and gray snow mold. However, the most prevalent disease found on Wisconsin golf courses is dollar spot, and none of the strobilurin products are labeled for dollar spot control. Some research has even suggested that dollar spot is worse on turf where Heritage is used. Though not labeled for dollar spot control, Insignia is labeled for dollar spot suppression, and has been found in some instances to significantly increase the duration of dollar spot suppression when combined with the new BASF fungicide Xzemplar (the combination of Insignia and Xzemplar is known as Lexicon). This study will attempt to examine the impact, both positive and negative, that all the strobilurin fungicides have on dollar spot control. Nearly every fungicide application made in Wisconsin during the growing season needs to have some sort of dollar spot control. If one or more of the strobilurins are indeed found to decrease dollar spot severity, it would allow superintendents more flexibility in developing their spray program. ✓

Azoxystrobin
Boscalid
Fludioxonil
Penthiopyrad
Trifloxystrobin

Table 1. Reduced-risk fungicides currently labeled for use on turfgrass from the Environmental Protection Agency website (www.epa.gov).

The Turfgrass Information File Database



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