NC1208: Biology, Etiology, and Management of Dollar Spot in Turfgrasses

2025 Dollar Spot Research Conferene

March 18th and 19th, 2025. Sandhills Community College, Pinehurst, NC

The full project outline with objectives can be accessed at the following link: <https://nimss.org/projects/view/mrp/outline/19055>

In attendance:

* Present in person: There were 43 people that registered for the in-person version of the conference and an additional 27 people that registered for the remote version.

Administrative Updates

* Our new AA John Blanton was present at the meeting and introduced himself. John also clarified some confusion on how the funding for NC1208 works and how it can be accessed. John also encouraged additional university researchers that collaborate with the NC1208 group to register as project participants.

Short-term outcomes: This is the first year of the renewed NC1208 and the 6th year of the project overall. This year’s annual meeting was expanded to serve as the first ‘Dollar Spot Research Conference.’ This 2-day event was open to both public and private researchers and practitioners interested in dollar spot management. The primary goal was to bring together different people involved in dollar spot management to assess where we are as an industry, identify key knowledge gaps, and to address collaborative research projects to address those knowledge gaps. The conference was successful and included many people remotely attending the conference from Europe, where dollar spot has become an important problem. In addition to the conference, the NC1208 team is conducting multiple collaborative research projects. New projects ideas were also discussed and are outlined below. Lee Miller from Purdue University took over as the chair of NC1208 at the conclusion of the research conference.

Outputs: The first NC1208-led project titled ‘Efficacy of integrated cultural practices for dollar spot disease management on creeping bentgrass and bermudagrass’ was published in the International Turfgrass Research Journal (<https://doi.org/10.1002/its2.188>). The team ended the ‘host resistance’ project and will now focus on data analysis and publication in a peer-reviewed journal. We hope this publication will be ready for submission by the end of 2025. In addition, assistant professors Quincy Law (Iowa State) and Tyler Carr (Ohio State) have agreed to lead the publication of the bentgrass survey results.

Activities:

* Dollar spot cultural practices publication
	+ This manuscript was titled ‘Efficacy of integrated cultural practices for dollar spot disease management on creeping bentgrass and bermudagrass’ and was published in the International Turfgrass Research Journal (<https://doi.org/10.1002/its2.188>). A poster summarizing this project will be presented at the 2025 International Turfgrass Research Conference.
* Bentgrass cultivar survey publication
	+ This project was completed in the spring of 2022. Numerous interesting results were obtained from the survey results and assistant professors Quincy Law (Iowa State) and Tyler Carr (Ohio State) have agreed to lead the publication of the bentgrass survey results. Journal of Extension, HortTechnology, and other journals were mentioned as possible hosts for this potential publication.
* Dollar spot host resistance
	+ This project was seeded in the summer of 2021 at 7 different locations. Many sites had very high dollar spot pressure in 2022 and saw limited treatment differences within cultivar, though it was clear that Coho had superior dollar spot resistance compared to Shark and Penncross. Paul Koch presented data from 2023 and many locations, notably Michigan State and Wisconsin, had very low dollar spot levels and saw no statistical treatment difference. Results from Rutgers demonstrated that Coho has superior dollar spot resistance compared to Shark and Penncross. Within each cultivar, treatments where the dew was removed had modest reductions in disease compared to where the dew was not removed. The results from Kansas State were similar to Rutgers, except that Shark demonstrated modest resistance compared to Penncross. There was no indication at any site of a dollar spot reduction associated with biocontrol usage. This study has now ended and the data will begin to be analyzed for manuscript preparation.
* Dollar spot model on improved cultivars
	+ This was a new project initiated in 2023 and continued for a second year in 2024. Participating institutions were Wisconsin, Rutgers, Kansas State, Penn State, UMass, Michigan State, and Maryland. The objective was to determine Smith-Kerns Dollar Spot model thresholds for cultivars with varying resistance to dollar spot. Paul presented results from a few locations and the results were quite consistent in demonstrating that the spray threshold can be increased to 60% or higher on a highly resistant cultivar like Coho. The project will continue in 2025 with modfied thresholds for each cultivar.
* Interseeding resistant bentgrass cultivars
	+ Dr. Miller’s graduate student Justice Ruwana provided an update to the group on this project. The objective is to identify and assess bentgrass conversion strategies and document potential fungicide savings following conversion to a more modern bentgrass. Purdue, Penn State, and Wisconsin are participating in this project. All three locations initiated the project with bentgrass interseeding and chemical applications in the summer of 2023. Tissue samples were collected and sent to Scott Warnke with the USDA to determine the genetic makeup of the host plants prior to the interseeding process. The project continued in 2024 and focused on dollar spot and annual bluegrass differences observed between the treatments and the number of fungicide applications needed for acceptable dollar spot suppression. An additional tissue collection will be performed and submitted to Scott Warnke for analysis of how much of the new bentgrass has actually established itself in the plots.

New project ideas

* Robotic mowers for dollar spot control.
* Additional sample sites to assess dollar spot suppressive soils
* Low fungicide rates for dollar spot control

Impacts

Based on the research the NC1208 team has collected over the first 6 years of the project we can make the following recommendations:

* Dew removal can reduce dollar spot severity relative to a non-treated control by approximately 25% when done prior to 7:30 AM.
* Stacking multiple cultural practices (i.e. dew removal + nitrogen) doesn’t appear to suppress dollar spot more than the individual practices do.
* Disease-resistant cultivars can provide extremely effective suppression of dollar spot development.
* Biocontrol products failed to provide meaningful dollar spot suppression even on more resistant cultivars.
* Smith-Kerns Dollar Spot Model thresholds can be significantly increased on disease-resistant cultivars. Further work will refine just how much they can be increased by.
* Most superintendents don’t alter their disease management programs after seeding disease resistant cultivars. This is an opportunity for us as researchers and extension specialists to develop improved disease best management practices specifically for disease resistant cultivars.

Publications

The first NC1208-led project titled ‘Efficacy of integrated cultural practices for dollar spot disease management on creeping bentgrass and bermudagrass’ was published in the International Turfgrass Research Journal (<https://doi.org/10.1002/its2.188>). The team ended the ‘host resistance’ project and will now focus on data analysis and publication in a peer-reviewed journal. We hope this publication will be ready for submission by the end of 2025. In addition, assistant professors Quincy Law (Iowa State) and Tyler Carr (Ohio State) have agreed to lead the publication of the bentgrass survey results.