NC1208: Biology, Etiology, and Management of Dollar Spot in Turfgrasses
2023 Annual Meeting Agenda
February 6th, 2022: 2:00 to 4:00 EST, Room W309B, Orange County Convention Center
Zoom link:
https://uwmadison.zoom.us/j/96786389349?pwd=U3Y2dk5IR1NYdUIvK2tJczhqSTJBdz09

The full project outline with objectives can be accessed at the following link if you would like to refresh your memory prior to attending:
https://www.nimss.org/projects/view/mrp/outline/18590

Introductions

Updates on current projects:

- Dollar spot fall sampling
- Dollar spot cultural practices
- Dollar spot host resistance
- Bentgrass cultivar survey

Future projects

- Incorporation of dollar spot model threshold work into resistant cultivars

Dissemination of project findings

- Develop a project website? Newsletter or trade articles?
- Plan for a final meeting in 2 years with a larger invite list (industry, practitioners, etc)?

Notes:

- Attendance in person (11): Cale Bigelow, Purdue University; Jada Powlen, Purdue University; Paul Koch, University of Wisconsin – Madison; Dave McCall, Virginia Tech University; Caleb Henderson, Virginia Tech University; Aaron Tucker, Virginia Tech University; Lee Miller, Purdue University; Ming-Yi Chou, University of Wisconsin – Madison; Rick Latin, Purdue University Emeritus; Nancy Dykema, Michigan State University; Joe Vargas, Michigan State University
- Attendance online (10): Ray Hammerschmidt, Michigan State University; Pingyuan Zhang, Rutgers University; Emmanuel Byamukama, USDA; Geunhwa Jung, UMass-Amherst; Mike Kenna, United States Golf Association (Retured); Nathan Walker, Oklahoma State University; Scott Warnke, USDA-ARS; Jin Young Barnaby, USDA-ARS; Megan Kenelly, Kansas State University; Jim Murphy, Rutgers University
- Following introductions, Emmanuel Byamukama from the USDA-NIFA started the meeting by talking about what NIFA does, personnel within the Plant Protection division, and the various funding options available to us through the USDA. Emmanuel stressed that SCRI, CPPM, and IR-4 would be appropriate

funding source for turfgrass projects. Emmanuel generously provided a copy of his powerpoint that I will share with the group and place in the shared Google Drive. Emmanuel also provided links to relevant materials which are copied below:

- AFRI: https://www.nifa.usda.gov/grants/programs/agriculture-food-research-initiative-afri/afri-foundational-applied-science-program
- IR-4: https://nifa.usda.gov/funding-opportunity/minor-crop-pest-management-program-interregional-research-project-4-ir-4
- CPPM (ARDP, EIP, RCP): https://www.nifa.usda.gov/grants/programs/crop-protection-pest-management-program
- SCRI: https://www.nifa.usda.gov/grants/funding-opportunities/specialty-crop-research-initiative
- ALL competitive programs: https://www.nifa.usda.gov/grants/programs/competitive-agriculture-and-food-research-initiative-AFRI
- Sign-up for NIFA updates: https://public.govdelivery.com/accounts/USDANIFA/subscriber/new?qsp=USDANIFA_2
- Upcoming RFA calendar: https://www.nifa.usda.gov/grants/upcoming-request-applications-calendar appro (this link appears to be incomplete, but it's all that I have from the chat)

- Ray Hammerschmidt is the administrative leader of NC1208 and he gave a brief administrative update. Ray complimented the work that the group has conducted to date and stressed for us to focus on the impacts of our work and how we're changing behaviors. He also reminded us that the current project ends in 2024 and that the renewal process should begin in December of 2023.

- Current project updates:
  - Dollar spot fall sampling and sequencing
    - Paul Koch updated the group on this project from 2020, and the summary report from Stacy Bonos was shared with the group prior to the meeting. The sequencing results showed that no significant genetic differences were observed between dollar spot isolates collected in the summer compared to the fall.
    - Future directions were discussed. This included other potential sources of increased virulence in the fall (higher inoculum load, environmental differences, etc). We also discussed the need for a larger sampling size to complete a more appropriate phylogenetic analysis for comparing summer and fall isolates. This ultimately would require additional funding and we agreed to table this project until more funding can be obtained.
  - Dollar spot cultural practices
    - Participating locations in 2022: UW, Virginia Tech, UMass, Clemson, Ohio St, and Penn St.

        - Based on a very brief AUDPC analysis conducted by Paul Koch, more significant treatment differences were observed on fairway locations compared to putting green locations. Nitrogen and dew removal saw the largest decreases in dollar spot, and time of dew removal once again appeared to have an impact on dollar spot (earlier = better). However, 'stacking' multiple control controls failed to provide commercially acceptable dollar spot control across all locations.
        - The group agreed that enough data was collected over the multiple locations and years that a 3rd year of data collection was not warranted, though follow up work determining whether stacking cultural practices can result in less fungicide usage was proposed and will be considered in the future. We will begin data analysis and manuscript preparation. After the meeting Paul Koch discussed with Fereshteh Shahoveisi about taking the lead on the data analysis and she agreed to do so. We anticipate that all groups who participated in the project will serve as co-authors on the eventual publication.
    - Dollar spot host resistance
        - Participating locations in 2022: UW, Kansas St, MSU, PSU, Rutgers, UMass, USGA at Pinehurst
        - Paul Koch updated the group on the progress of this project. All plots were seeded in late summer or fall of 2021, inoculated with Clarireedia in spring of 2022, and treatments initiated in spring of 2022.
        - There was widespread annual bluegrass contamination across most of the locations, which made determining treatment differences across the various cultivars very difficult. In addition, multiple locations reported extremely high dollar spot levels through mid-summer, perhaps as a result of the spring inoculation. Disease severity levels dropped to more 'normal' levels by late summer and fall and so it's anticipated that more expected levels of dollar spot may occur in 2023. Various annual bluegrass control programs were initiated in 2022 at multiple sites, which should lead to less annual bluegrass contamination in 2023.
        - The annual bluegrass contamination and severe dollar spot outbreaks led to minimal usable data being collected in 2022. Coho clearly had less dollar spot than Shark and Penncross, but differences between rolling and/or biocontrol usage were not observed. All locations will repeat the project in 2023.
    - Bentgrass cultivar survey
        - A survey was conducted with the support of the USGA to identify factors superintendents use when selecting bentgrass cultivars, with the goal of helping us develop strategies for increased adaptation of disease-resistant cultivars. The survey was conducted between March 7th and April 8th, 2022.

        - There were 208 completed surveys (above expectations) and at least one survey from 35 different states. Paul Koch provided a brief update on the results, and the full survey results were sent to the group prior to the meeting and are also placed in the shared Google Drive folder.
        - We discussed how to disseminate the results of this survey and agreed that an extension publication that we could print in multiple national, regional, and local trade publications was an appropriate method. After the meeting Paul Koch asked Ming-Yi Chou (incoming Assistant Extension Professor at Rutgers) to take the lead on writing this extension publication that can then be shared broadly with the group.
- Future projects:
    - Dollar spot model thresholds on different cultivars (Koch). *Before further discussion I (Paul) would like to acknowledge that this proposed project is similar to one currently being pursued at Rutgers by Pingyuan (Bay) Zhang and his advisors Jim Murphy and Bruce Clarke. What's most embarrassing is that I serve on Pingyuan's mentoring committee and was aware of his research, but it wasn't until Jim asked me about how this project differs from Pingyuan's work that my memory was 'refreshed'. I apologize to Pingyuan, Jim, and Bruce for this oversight and moving forward I will make sure to acknowledge the work they are doing in this area. With that said, I feel that there are enough differences in the work that Pingyuan has been doing and the project I'm proposing, and feel that we can build upon Pingyuan's work without being redundant.* The goal is to determine Smith-Kerns model thresholds on bentgrass cultivars with various levels of dollar spot resistance. Those sites that participated in the host resistance project and already have culivars of Coho, Shark, and Penncross planted are logical partners, though any location with cultivars of varying dollar spot resistance can participate. The treatment structure is pretty basic. Six treatments tested across each of the three cultivars. The treatments would be a nontreated control, a positive control consisting of a calendar-based fungicide program, and 4 different thresholds that are yet to be determined. Each participating location would need to check the model output on a daily basis during the summer and apply fungicides at the various pre-determined thresholds. UW and MSU agreed to participate, Purdue and Va Tech needed more time to consider. Paul Koch will connect with the group with the intention of initiating this project in 2023.
    - Interseeding resistant cultivars for improved dollar spot control (Miller). Lee Miller proposed a project investigating the ability to interseed newer, more dollar spot-resistant bentgrass cultivars into existing stands without significant course closure. Proposed experimental design is a split-split-plot with cultivar as the main plot and herbicide/pgr treatment and fungicide treatment as the subplots. Dollar spot would be used as the 'biomarker' to determine interseeding success, though molecular

identification strategies were also discussed. Multiple locations responded with interest in participating with the intention of initiating this project in 2023.

- Project results dissemination:
    - Multiple means to disseminate the results were discussed. These included more traditional means such as peer-reviewed publications, extension and trade journal articles, and web pages/social media. We also discussed hosting 'virtual field days' across multiple locations if one of the projects is showing especially interesting data.
    - The group agreed that a larger 'Dollar Spot Conference' with industry partners and stakeholders should be held in the next couple of years to assess the progress made and identify future research priorities. Following renewal of the NC1208 project in 2024 we will target 2025 or 2026 to hold this larger conference.

- Action items:
    - Fereshteh Shahoveisi suggested creating a shared Google Drive folder to hold all relevant material related to the various NC1208 activities. Paul Koch agreed, created an NC1208 Google Drive, and will share with the group.
    - Year 2 of the host resistance project will be conducted by KSU, MSU, PSU, Rutgers, UMass, UW, and the USGA.
    - Two completed projects will begin analysis and development for publication:
        - Fereshteh Shahoveisi will begin initial data analysis for the cultural practices project. The entire group that participated in this project will assist with data analysis and manuscript preparation.
        - Ming-Yi Chou will begin preparation of an extension publication/trade journal based on the results of the bentgrass cultivar survey for wide distribution in national, regional, and local trade journals.
    - Two new projects will be initiated in 2023:
        - 'Identifying dollar spot model thresholds across bentgrass cultivars' will be led by Paul Koch
        - 'Developing interseeding strategies for incorporating dollar spot resistant bentgrass cultivars' will be led by Lee Miller
    - NC1208 Annual Report will be prepared and submitted by Paul Koch after consulting with Ray Hammerschimdt.