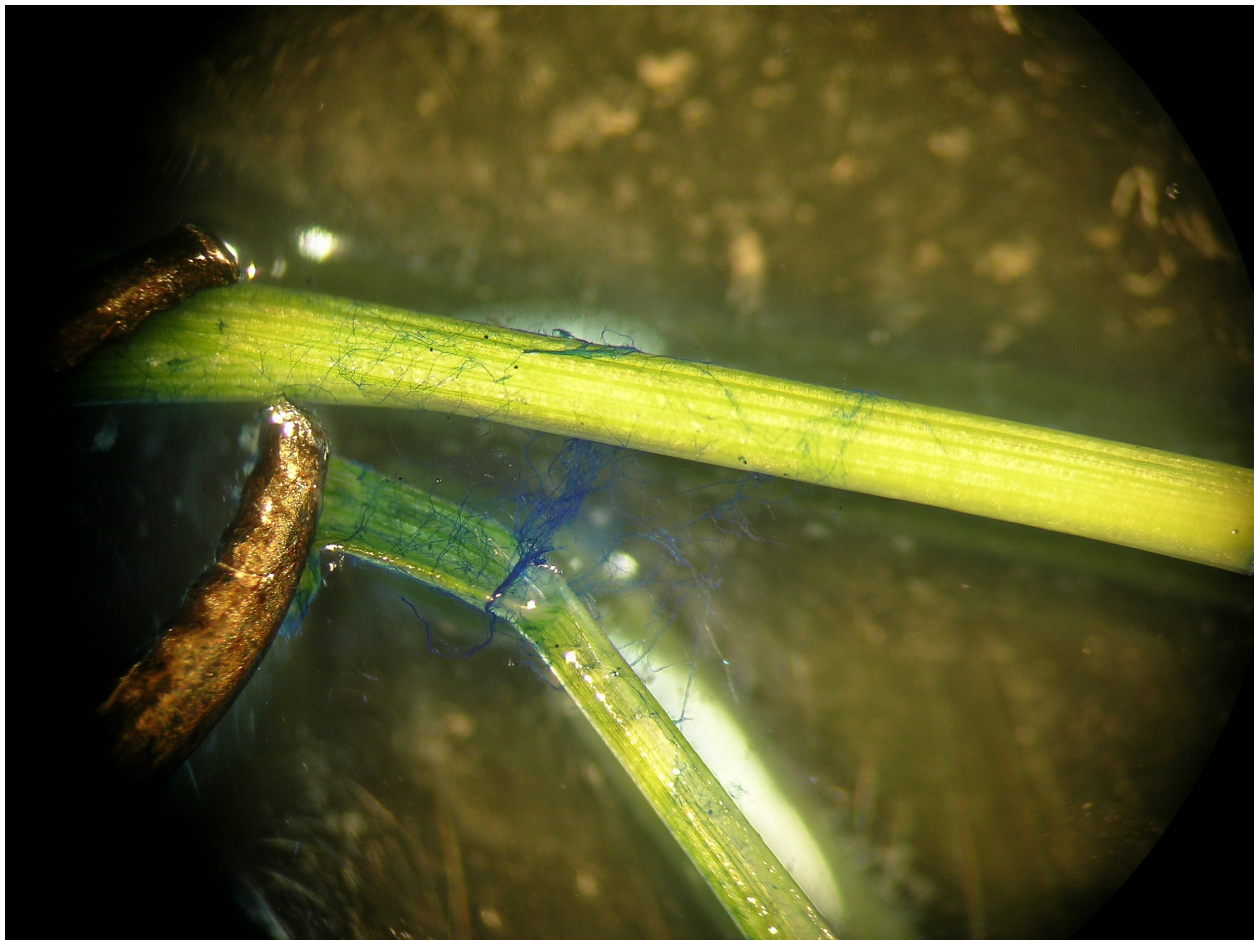


New Discoveries Revealed with Mini Ring Disease on Ultradwarf Putting Greens

By Christopher Hartwiger and Patrick O'Brien, USGA Green Section SE Region Agronomists

Steve Kammerer, a University of Florida MS candidate and Syngenta Field Technical Manager, made a presentation recently at the USGA SE Regional Meeting at the Grandover Resort, Greensboro, NC entitled "Understanding & Preventing Cool Weather Patch "Mini-ring" of Bermudagrass." This disease has puzzled superintendents with ultra dwarf putting greens for many years. Steve's research has made several very interesting discoveries with this perplexing disease that should significantly help superintendents with new strategies for suppression of the "mini ring" disease. The highlights of Steve's presentation at this meeting are outlined below.



The pathogen goes right for where the leaf is attached to the stem/stolon and like fingers on a hand grows right down in-between the leaf sheath and the stem. (Photo courtesy of Steve Kammerer).

Rhizoctonia zae: Summary Points from Steve Kammerer Presentation

- The disease referred to as Mini Ring is thought to be caused wholly or in part by *Rhizoctonia zae*, which is referred to commonly as Rhizoctonia Leaf and Sheath Spot.

- The *R. zae* fungus is most active when canopy temperatures are 83-97 degrees. Environmental stresses to the plant such as higher salinity and drought increases stress & the chance for infection.
- Visible symptoms may not be apparent until the grass either begins to slow its growth in the late summer or early fall.
- *R. zae* works soil layer upwards (from the thatch bottom upwards around and through the leaf sheaths) which makes it very hard to control curatively.
- The infection is located mostly within the sheath as well as on the outside. This makes sense as the fungus is protected and has easier access to nutrition and water inside the sheath. Additionally, its location inside the sheath renders contact fungicides applied curatively ineffective at stopping infection.
- Diagnosis is difficult as the hyphae of *R. solani* and *R. zae* are similar in its growth and 90⁰ branching pattern of growth. *R. solani*, when mature has a light brown color to the mycelia, *R. zae* is clear/white in color & difficult to see underneath leaf sheaths without a microscope or unless stained with a dye.



Typical symptoms of the “mini-rings” observed at putting greens during the fall season.

***Rhizoctonia zae*: Treatment**

- Since infection is favored by hot and dry conditions, treatment at this time is most effective in preventing the disease or stopping the infection early.
- Keep thatch from accumulating as it is an ideal source for continual re-infestation for *R. zae* (use of sand via topdressing is a more desirable alternative to thatch as it provides no nutrition for fungal pathogens but can impede air movement – ideally if using fungicides, apply the fungicides prior to topdressing).
- In addition to monitoring canopy temperatures, keep an EC (salinity) meter on hand to monitor soils and irrigation water for changes in salinity levels.

- Use systemic fungicides with high water volume (at least 2 gals/1000 sq ft). Because almost all fungicides with systemic activity move upward only, the fungicide must be put into the lower turfgrass canopy and rootzone so that it can be taken up by the roots and translocated into the shoots and leaves (this is especially important for curative applications).
- Contact fungicides, fungicides with no movement with turfgrass roots or green tissue after application, while not effective at stopping existing infection are valuable for early preventive applications (prior to infection). Coverage (spray volume + droplet size) is important to deliver the fungicide down into the turfgrass canopy. Contact fungicides can also help at knocking down the *Rhizoctonia* overwintering mycelia and survival structures in existing thatch and organic matter.

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