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Advancing the Turfgrass Industry in New Jersey and the World



### **FUNDING TURF ADVANCEMENTS #4: Rutgers Helps to Uncover Dollar Spot's True Identity!**

For decades, dollar spot (which at first was called small brown patch) was classified as a fungus in the genus *Sclerotinia*, but there was always a cloud of doubt about its true identity. Researchers observed subtle differences in its morphology and reproductive structures that separated it from other fungi in the genus. The fact that the dollar spot pathogen does not produce tube-like resting structures, called sclerotia, gave the fungus an air of mystery. However, because the pathogen's sexual reproductive structure is exceedingly rare, determining its true identity was not possible using the technology of the time....until now.

With breakthroughs in DNA-based technology that allow scientists to gather extensive genetic data, Rutgers along with a team of researchers from the USDA Agricultural Research Service, North Carolina State University, and Ohio State University have finally put the dollar spot debate to rest.



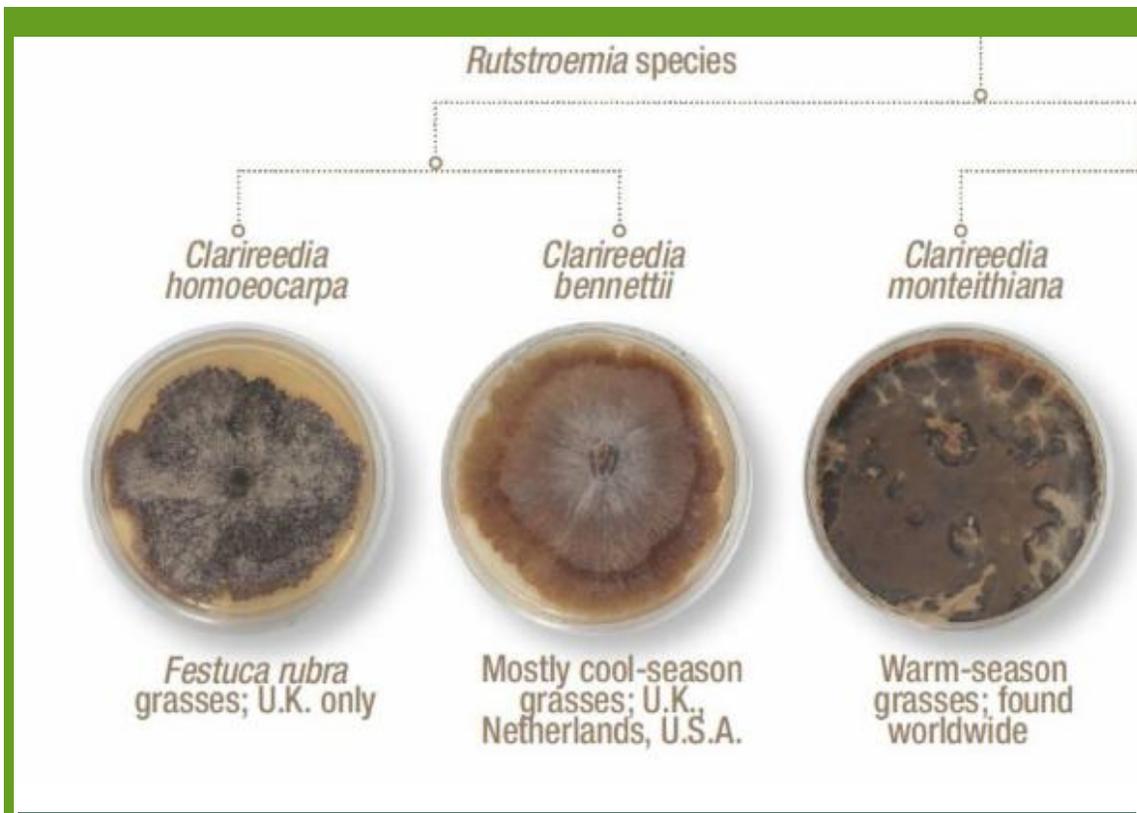
“This was a pretty big deal since dollar spot is the most common disease of cool-season turf worldwide,” said Dr. Bruce Clarke, Director of the Center for Turfgrass Science at Rutgers University. “The true identity of the causal agents was unknown until our research showed there were several fungi that cause this disease throughout the world.”

Thanks to support from the NJTA and other turf groups, Rutgers aided in collecting more than 4,000 isolates of the fungi that cause symptoms of dollar spot on a variety of plant hosts from around the world. The collaborative research team used phylogenetic analysis, a tool used to assess genetic and evolutionary relationships among organisms, and found that there was not one, but four distinct species of dollar spot fungi. They also discovered that these organisms are more appropriately placed in the family *Rutstroemiaceae*, rather than the *Sclerotiniaceae*.

Moreover, since they are unlike other previously described fungi, a new genus "*Clarireedia*" was established in honor of Dr. C. Reed Funk, the world-renowned turfgrass breeder who spent his career at Rutgers pioneering the development of dollar spot resistant turfgrasses for use on home lawns, golf courses, and athletic fields throughout the world. So with the mystery solved, we now know the true identity of the fungi that are responsible for dollar spot disease:

- *Clarireedia jacksonii* (the causal agent on most cool-season turf),
- *C. monteithiana* (only found on warm-season turf),
- *C. homoeocarpa* (only found on red fescue in the U.K.), and
- *C. bennettii* (found primarily on cool-season grasses in the Netherlands, the U.K., and occasionally the U.S.).

“Dollar spot is one of the most destructive and economically important fungal diseases of amenity turfgrasses,” said Dr. Bruce Clarke. “It took 6 years to successfully finalize the work, but this resolved taxonomy provides a foundation for better understanding the nature and biology of these destructive pathogens.”



**FUNDING TURF ADVANCEMENTS is Brought to You By:  
YOU & ALL Members of the NJTA**

The NJTA exists solely to promote the turfgrass industry in the Garden State through education, professionalism, and leadership. Thanks to the support of members like you, the NJTA is able to subsidize some of the research needs of the Rutgers University Center for Turfgrass Science.

If you would like to support these efforts further, you are welcome to [Donate to the NJTA Foundation](#) anytime!



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2018 Green Expo: *Growing Turfgrass Together*  
The Borgata Hotel, Atlantic City, NJ  
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