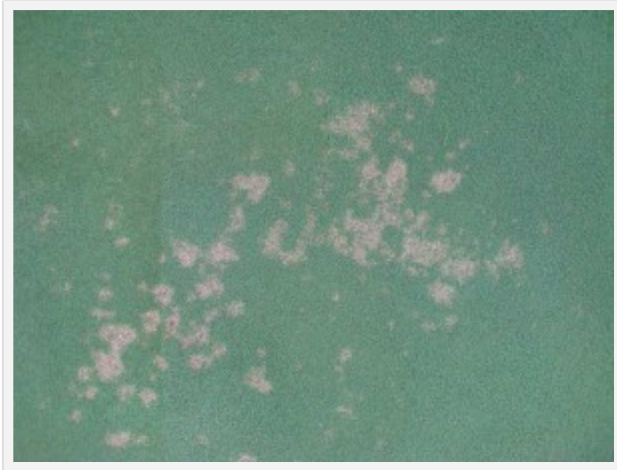


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What is the name of the dollar spot pathogen?

BY MEGAN KENNELLY, ON OCTOBER 27TH, 2011

This post is part of a series of short articles the KSU turf team will be writing about presentations and activities at the recent turf science sessions at the national agronomy/crops/soils conference. Here, I'll talk about some recent research about figuring out the identity of the fungus that causes dollar spot in turf.



The disease dollar spot in turfgrass was first described in 1937 by a scientist named F.T. Bennett. It was given the name *Sclerotinia homoeocarpa*.

There is a family of fungi called Sclerotiniaceae, and within that there is a genus called *Sclerotinia*. Species in this genus produce structures called sclerotia which then germinate to produce a spore-bearing structure called an apothecium. Here is an image of the sclerotia (oval at bottom) and cup-shaped apothecium of *Sclerotinia camellia*, a pathogen of camelia:



Photo from Florida Division of Plant Industry Archive, Florida Department of Agriculture and Consumer Services, Bugwood.org

There is another genus of plant pathogens called *Monilinia* that is somewhat related to *Sclerotinia*. Several are important pathogens of fruit such as peaches, cranberry, and blueberry. This photo shows several apothecia. (They kind of look like mushrooms, but they are not). I'm just using this to illustrate a better view of apothecia:



Image from University of Georgia Plant Pathology Archive, University of Georgia, Bugwood.org

Well, one problem with dollar spot is that it does NOT make these structures. No sclerotia, no apothecia, and no spores at all. Spore-producing structures and the spores themselves are often used to determine how fungi are related. The lack of these structures makes dollar spot tricky.

So, what do we do? Taxonomy, systematics, and phylogenetics are some of the names for the sciences that strive to classify and understand the relationships among organisms. Those relationships help us determine what will be an appropriate name. In fungal systematics (and plants, and bacteria, and many other fields) the use of DNA sequence information is becoming more and more important. It is especially important for organisms that lack distinctive features of size, shape, etc, like dollar spot.

Recent work on dollar spot was presented at the C5 meeting by grad student Lisa Beirn from Rutgers. Other partners on the project are from Ohio State, North Carolina State, and the USDA. They have been using DNA sequence information from several different genes to try to figure out what is the dollar spot pathogen, and who is it most closely related to. It is necessary to use multiple genes because using just one does not tell enough of the story.

They have found, as others have, that dollar spot is NOT in the Sclerotiniaceae. It seems to be related to a different family called Rutstroemiaceae.

BUT... here is the next problem. They have discovered that Rutstroemiaceae is taxonomically "messed up." So, there is no good way to place the dollar spot pathogen within Rutstroemiaceae until the details of that family are sorted out. There's also some evidence that strains from warm-season grasses are a bit different compared to strains from cool-season grasses.

A whole new can of worms, err, fungi, has been opened! That's how science usually works, though. You ask one question and end up with fifty more.

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