



FEBRUARY 2007

HOMEOWNER PLANT DISEASE CLINIC REPORT

Holly Thornton, Homeowner IPM Specialist

As spring quickly approaches and temperatures slowly begin to warm, I anxiously prepare for many days of ‘living’ in the plant disease clinic. Disease organisms that have overwintered in the soil, plant debris, old cankers, and so on will soon be actively growing and reproducing, ready to infect stressed grasses, shrubs, ornamentals, and trees. And as many are probably aware, Daylight Saving Time will begin nearly a month earlier than usual, on Sunday, March 11 (2 a.m.). Studies show that Daylight Saving Time saves energy, and by moving the day we ‘spring forward’, we will apparently be saving millions of dollars nationwide in electricity bills and such. I have never really thought about it in terms of energy; I do know that I eagerly wait for spring time change because I feel much more energized leaving work when there is still some sun shining on my face. If interested, you can find more details at the following link:
<http://www.energy.ca.gov/daylightsaving.html>.

Well, I have received 3 physical homeowner samples since January 1, which if you do the math equals a whopping \$30.00. I have been receiving an increasing amount of digital images submitted through the DDDI system and I expect sample numbers, in general, to continue to increase as we approach spring. From this point forward, both physical and digital samples will be included in the monthly table of homeowner samples diagnosed in the Plant Disease Clinic (see below).

The ‘Disease of the Month’ for February 2007 will focus on *Rhizoctonia* diseases of both turf and ornamentals. I hope everyone will find the report useful in terms of diagnostics and general plant disease information. As always, if there are questions regarding diagnostics, the DDDI system (i.e. sample submission), or the report, please feel free to call me directly (706.542.8987) or send me an email: hthornto@uga.edu. ENJOY!

County	Plant	Common Name of Disease (Pathogen)	Type of Sample – DDDI or Physical
Bartow	Cryptomeria	Environmental – excessive soil moisture	Physical
Clarke	Camellia sasanqua	Foliar blight (<i>Leptosphaeria</i>)	Physical
Dougherty	Asiatic	Possible root rot (<i>Rhizoctonia</i>)	DDDI

	Jasmine	sp.)	
Dougherty	Boxwood	Possible foliar disease (related to above sample)	DDDI
Fulton	Cryptomeria	Environmental stress – competition with hardwoods & low light	DDDI
Lowndes	Japanese Cryptomeria	Environmental stress	DDDI
Newton	Ooze (at base of pines & hardwoods)	Algal & bacterial complex	DDDI & Physical

DISEASE OF THE MONTH

RHIZOCTONIA

Rhizoctonia is a ubiquitous fungal plant pathogen found in most soils throughout the world. It is capable of causing diseases on many plants, including vegetables, flowers, various field crops, turfgrasses, ornamentals, trees, and shrubs. The disease symptoms will vary depending on several factors, such as the host, the life stage at which the plant is infected, the environment, the fungal species involved, etc. Root rots, stem cankers, and damping-off of seedlings are some of the most common symptoms that occur on plants. *Rhizoctonia* can also cause leaf spots, blights, and lesions on turf and ornamentals.

Once *Rhizoctonia* becomes established in a particular soil/area, it can remain there indefinitely as sclerotia and mycelia. Therefore, it is important to **prevent** the disease from becoming established in your area. Like most fungi, *Rhizoctonia* is spread by rain, irrigation, and contaminated tools or soil. Disease development is most severe when soils are moderately wet (rather than waterlogged or dry) and soil temperatures are moderate to high (60°F to 80°F).

Below are images of various plants infected with *Rhizoctonia*.



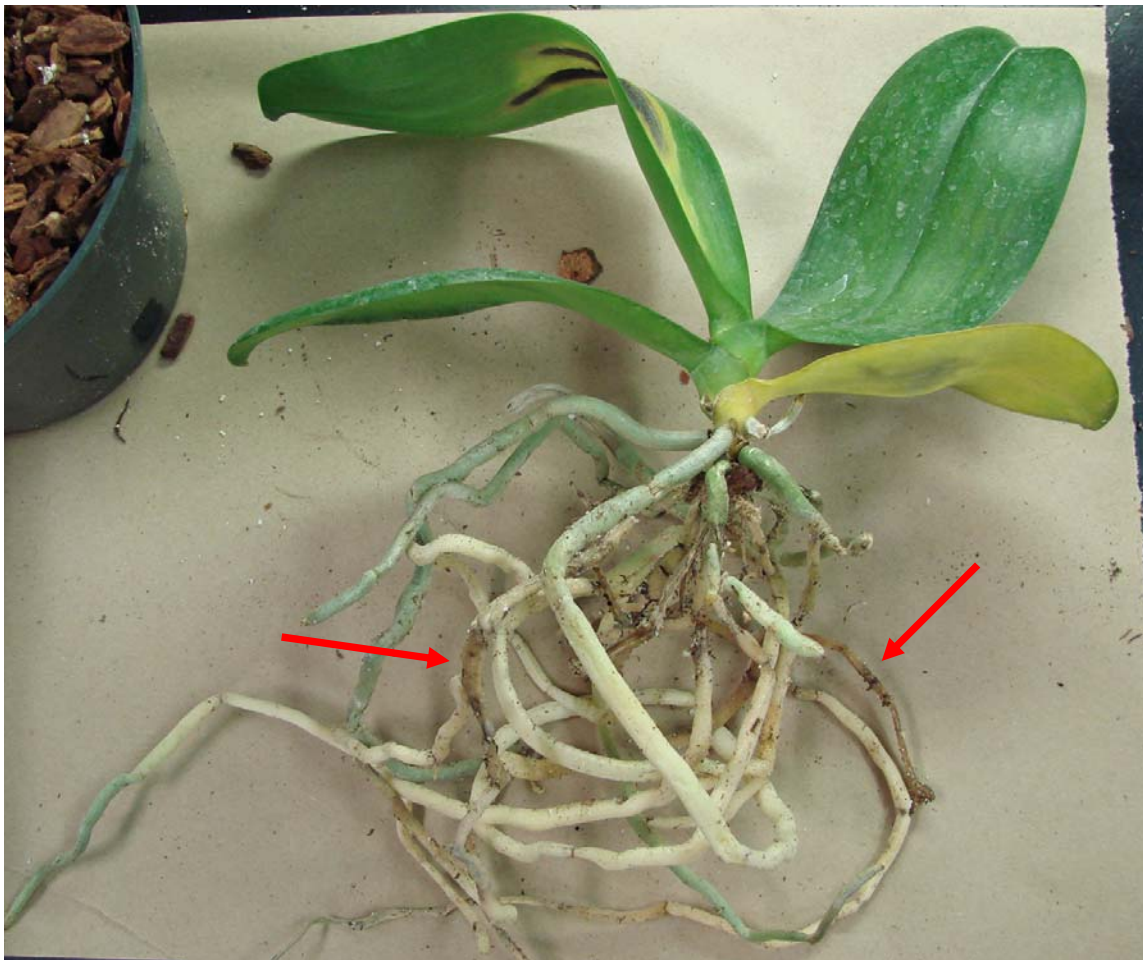
Infected Longleaf pine bed



Rhizoctonia – soil rot – sunken brown spots; dark, narrow-banded concentric marks on new spots



Damping off – flue-cured tobacco – brown stem canker/lesion (P. Bertrand)



Phalaenopsis orchid infected with *Rhizoctonia* – Note darkened areas of roots (red arrows)



Rhizoctonia blight on Cucumber
(Also known as Belly rot) – note brown, irregular-shaped, dry, crusty lesions



Large patch on warm-season grasses (A. Martinez)



As is evident from the pictures above, different plants can become infected with a number of species of *Rhizoctonia* (this fungal genera represents a large, complex group of many species). The most characteristic, diagnostic feature of *Rhizoctonia* is visible microscopically (see below).



40X on Compound Microscope

The images above show the light brown, septate (=having cross walls), branching mycelia, which is one of the identifying features of this fungal pathogen. The mycelium is

usually very robust and the branches formed off the main hypha are usually at right angles, with septa formed close to the branching point (shown above in the red circles). The mycelia can be colorless when young but then turns the light brown color seen above. These images were taken from the infected orchid roots seen earlier in the report. So in order to help diagnose these types of problems in your county offices, I am going to provide a step-by-step methodology of how I found this pathogen on this particular plant. The ease with which one makes the diagnosis oftentimes depends on the type of plant material involved (lower stems, fine roots, larger roots, etc.) and diagnostic experience.

- 1) First, I reviewed the description of the history of the problems as described by the producer/grower (completing the submission form helps a great deal in the diagnostic process).
- 2) I inspected both above-ground and below-ground plant material.



- ◆ I noticed the discoloration on the leaf (yellowing with necrotic/brown center); also the yellowing of the LOWER leaves.
 - ◆ And the water-soaked, discolored/brown, sloughing roots.
- 3) I decided to start with the roots (I could tell there were no fungal structures in the spot on the leaf). Using tweezers, I pulled some necrotic tissue off one of the roots and made a slide using acid fuchsin stain (shown below).



- 4) Starting at 10X, I got the root piece in focus using my coarse adjustment (the bigger of the two focus knobs on the compound scope).
- 5) Once in focus at 10X, I moved the objective up to 20X so that I could see clearer details of the root piece. You never use the coarse adjustment at 20X or 40X. I adjusted the fine focus (the smaller/inner knob) to get the image in focus at 20X.
- 5) I scanned through the slide to see if there were any disease organisms present in the necrotic root tissue.
- 6) Upon closer inspection, I noted the brown, septate, branching mycelia throughout the root tissue and decided to move to 40X to get an even closer view of the mycelia.
- 7) Using my fine focus again, I adjusted it so that I could once again see a clear image.
- 8) It was indeed *Rhizoctonia*!

And there you have it! I proceeded to make additional slides to verify this was indeed the causal agent of the problem and upon inspection found other pathogens present (the water molds – *Pythium* and *Phytophthora*, which indicates that the orchids have more than likely been overwatered and/or there is excessive soil moisture). Three major soil pathogens had infected and were killing this individual's orchids.

REFERENCES:

- ◆ Agrios, George N. 2005. 5th edition. Plant Pathology.
- ◆ Smiley, Richard W., et al. 2005. 3rd edition. Compendium of Turfgrass Diseases.
- ◆ Images with the UGA label can be found at www.invasive.org.

