

# Residential Turfgrass Disease Diagnostics



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## Objectives for today

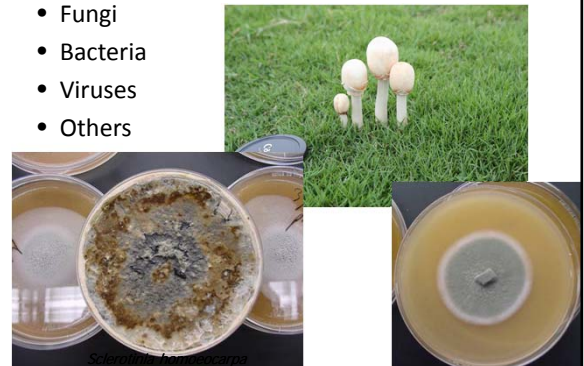
- Plant Pathology review, diagnosis, disease
- Update on what diseases we have been seeing in the plant disease clinic on lawn grass samples
- Diagnostic tips and tricks for common diseases of turfgrass



Pat Sanders, Penn State University

## Disease causers: pathogens

- Fungi
- Bacteria
- Viruses
- Others



## Main types of pathogens

- Fungi
- Bacteria- very few examples, none in FL
- Viruses- Sugarcane Mosaic Virus affects St. Augustinegrass in FL
  - St. Augustinegrass Decline (SAD, Panicum Mosaic Virus)
- Others- *Labyrinthula* sp. Affects Poa triv,...
  - Rapid blight
  - Marine slime mold relative



## Diagnosis of turf diseases

- Correct diagnosis is important
- Some diseases are common
- Others can be difficult
- New cultivars, turf species, pathogens, unusual weather patterns all mean new diseases and disease symptoms



## Diagnosis is critical

- Management strategies differ significantly by disease
- Examples: dollar spot, Pythium
  - Different fertility recommendations
  - Pythium fungicides don't work for ds
- Sometimes the environment is to blame not a pathogen




**Plant Diagnostic Center**

**UF** UNIVERSITY of FLORIDA  
IFAS



"Hub" SPDN resource lab for the Southeast (1/5)  
Surge capacity  
\$1.7 million built in 2012  
Iso-based accreditation

## Diagnostic Services

- Offered within the state and globally
- Provide accurate diagnoses in a timely manner
- Connect research driven management recs
- Clientele include:
  - Growers
  - Extension agents
  - Turfgrass managers
  - Nursery producers
  - Greenhouse managers
  - Pest control operators
  - Consultants
  - Citizens
  - Extension faculty
  - State and federal partners



## How do I take a sample?

- For best results:
  - Take a sample as soon as you notice symptoms
    - Before fungicide is applied
  - Use a cup-cutter or cut a similar size plug (4.25")
    - Be sure to include roots, stolons, leaves
  - Take the sample from the edge of the symptom
    - Shoot for 2/3 diseased, 1/3 healthy border
  - Send the sample expedited (next day is best)
    - We are closed on weekends
  - Send an email and attach pics of the field signature
    - Address and forms are available at turf.ufl.edu



### Turf 8/1/2017 to 8/6/2018

#### St. Augustinegrass

211	Take-All Root Rot	<i>Gaeumannomyces graminis</i>
102	Gray Leaf Spot	<i>Pyricularia grisea</i>
63	Pythium sp./spp.	<i>Pythium sp./spp.</i>
29	SCMV - Mosaic Disease	<i>SCMV Sugarcane Mosaic Virus</i>
22	Large Patch	<i>Rhizoctonia solani</i>
20	No Pathogen Found	
7	Leaf and Sheath Spot	<i>Rhizoctonia zeae</i>
4	Bipolaris Leaf Spot	<i>Bipolaris sp./spp.</i>
3	Pythium Blight	<i>Pythium sp./spp.</i>
2	Curvularia leaf blight	<i>Curvularia spp.</i>
2	Dollar Spot	<i>Sclerotinia homeocarpa</i>
1	Nigrospora blight	<i>Nigrospora sp./spp</i>

**468 Total for St. Augustinegrass**



### Turf 8/1/2017 to 8/6/2018

#### Zoysiagrass

46	Pythium sp./spp.	<i>Pythium sp./spp.</i>
40	No Pathogens Found	
32	Take-all root rot	<i>Gaeumannomyces graminis</i>
25	Curvularia leaf blight	<i>Curvularia spp.</i>
8	Large Patch	<i>Rhizoctonia solani</i>
5	Bipolaris leaf blotch	<i>Bipolaris sp.</i>
5	Dollar Spot	<i>Sclerotinia homeocarpa</i>
5	Leaf and Sheath Spot	<i>Rhizoctonia zeae</i>
3	Nigrospora blight	<i>Nigrospora sp./spp</i>

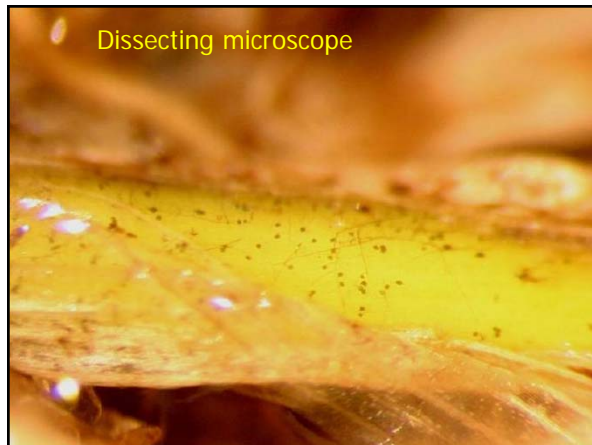
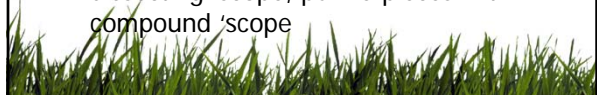
**169 Total for Zoysiagrass**



## Take-all root rot

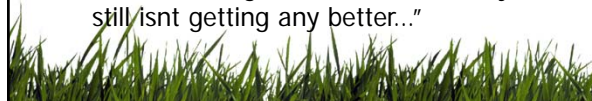
### Bermudagrass decline

- Fungal diseases caused by *Gaeumannomyces graminis* var. *graminis* sometimes abbreviated G.g.g.
- Key diagnostics are yellow symptoms in spring and early summer and lobed hyphopodia on stolons
- Hyphopodia look like tiny black dots with dissecting 'scope, puzzle pieces with compound 'scope



## Pythium root rot

- Caused by many different *Pythium* spp.
- Key diagnostics are yellow, thin, droughty turf
- Roots are brown, have few root hairs, mushy (slough off)
- Occurs where poor drainage, wet areas, shade, poor air circ., G.g.g.... or... "I've been watering for three hours a day, but it still isn't getting any better..."

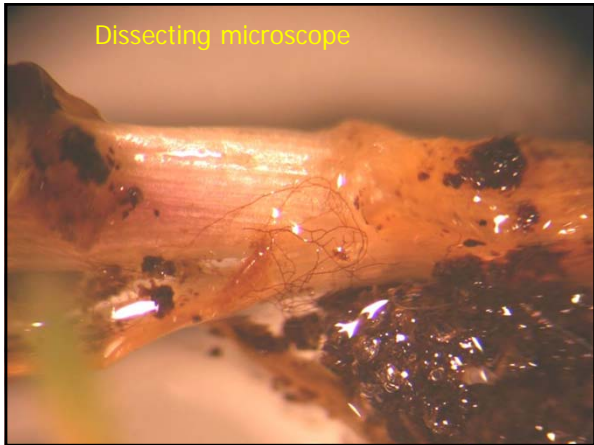




Large patch, zoysia patch

- Fungal disease caused by *Rhizoctonia solani* AG 2-2LP
- Only during cool weather, ~Oct-Apr
- Key diagnostics are brown patches with yellow to orange borders and shoots pull away from stolons easily
- Red fungal hyphae (strands) visible on rotted leaf sheaths with dissecting 'scope





### Gray Leaf Spot

- Fungal disease caused by *Pyricularia grisea*
- Key diagnostics are leaf spot symptoms in early summer and pear-shaped spores produced in a gray fuzzy growth when very humid, view with a compound scope
- Occurs first and most severely in shady areas with excess nitrogen





### Dollar spot

- Fungal disease caused by *Sclerotinia homoeocarpa*
- Key diagnostics are small softball-sized patches with light tan to straw colored leaf spots that span the leaf blade
- White fluffy fungal mycelium before dew dries



## Leaf blotch and Curvularia blight

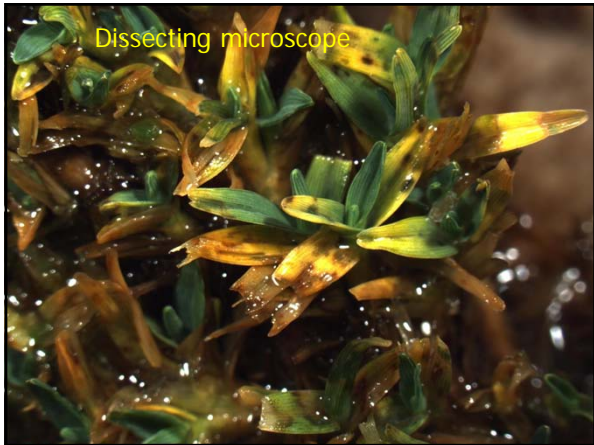
- Fungal diseases caused by several fungi: *Bipolaris*, *Drechslera*, *Exserohilum*, *Curvularia* spp.
- Key diagnostics are small purple leaf spots, also look for crescent roll to cigar-shaped spores
- Not common on St. Augustinegrass. Common on bermudagrass and zoysiagrass



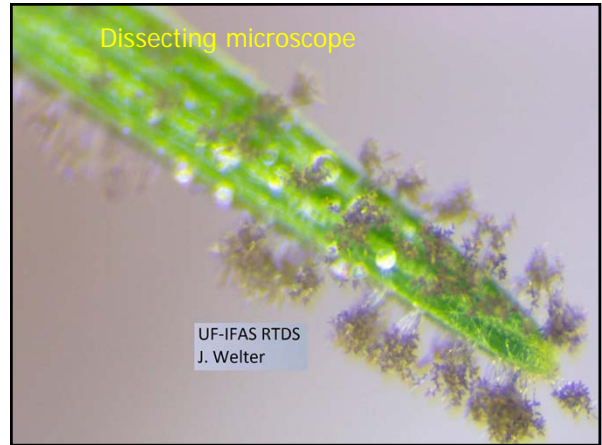
Summer leaf spot symptom on Floradwarf



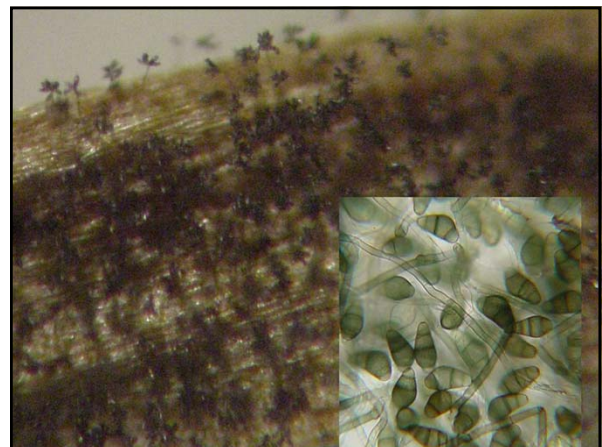
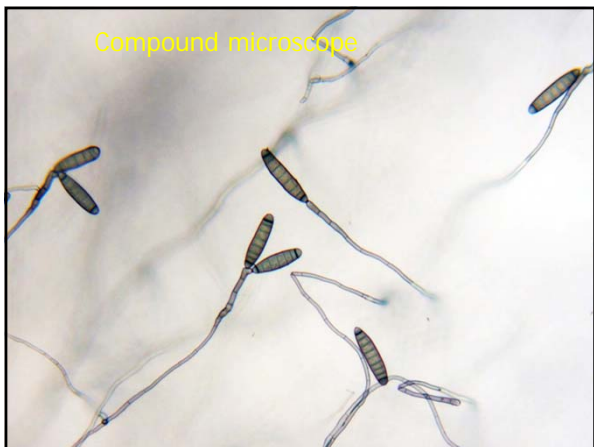
Dissecting microscope



Dissecting microscope



Compound microscope

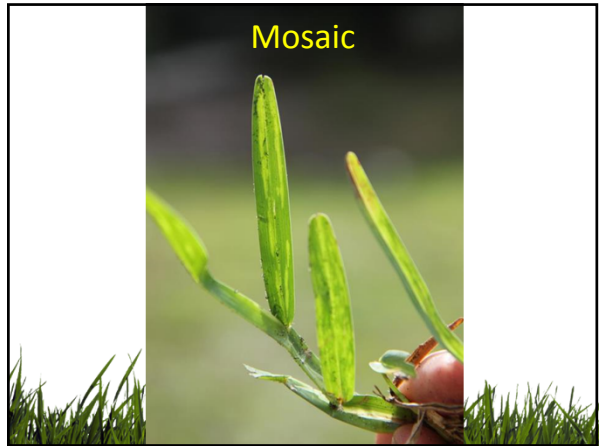


## Mosaic and lethal necrosis

- Viral diseases with distinct symptoms
- Not known to occur in Marion or surrounding counties, but is in Pinellas
- If you suspect viral disease, please send me a picture via email!
- Mosaic occurs on all varieties, lethal necrosis kills Floratam St. Augustinegrass



## Mosaic



## Lethal necrosis



## Dieback of stolons and shoots



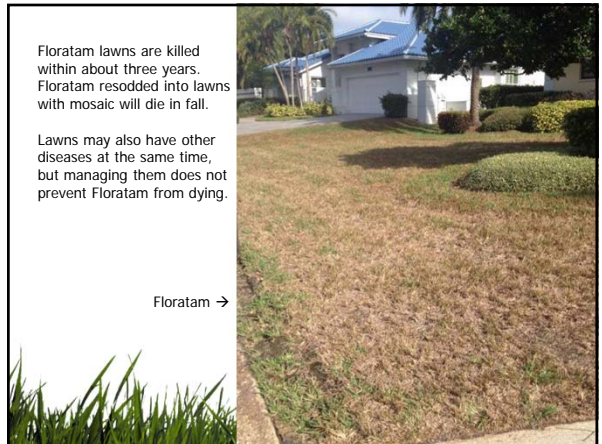
Note infected crabgrass (yellowing,) and nearly dead 'Floratam' St. Augustinegrass bordered by non-'Floratam' St. Augustinegrass (top right).



Floratam lawns are killed within about three years. Floratam resodded into lawns with mosaic will die in fall.

Lawns may also have other diseases at the same time, but managing them does not prevent Floratam from dying.

Floratam →

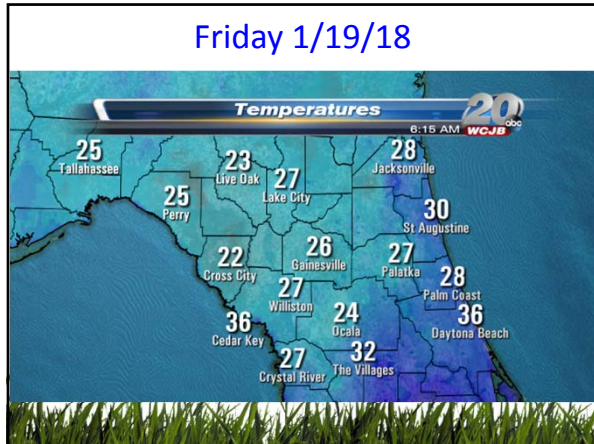




## What about all the other stuff?

- Not all mold is bad
- Look for patterns!
  - Disease doesn't follow straight lines
  - What has been done recently, to where?
- Disease is the exception, not the rule!





Winter kill and spring lawn discoloration

- Yellow blotchy symptoms are usually indicative of iron and/or manganese deficiency
  - High pH in soil or irrigation water can affect MN not really FE
  - Root dysfunction due to disease or cold temperature damage
  - Deficient soils

Winter kill and spring lawn discoloration

- Steps to prevent winter kill
  - Limit late fall fertility (2 to 4 lbs N per season between March and Sept)
  - Apply limited irrigation when temps allow
    - Prevent desiccation and additional stress
  - Mow at appropriate heights
    - 3.5 to 4 inches for standard St. Aug cultivars
  - Keep the lawn as healthy as possible
    - Good management practices will help limit damage, but can't prevent it

Any Questions?  
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 Facebook: UF Rapid Turf