

# Turfgrass Disease Management

Philip F. Harmon, Ph.D.  
Associate Professor and Extension Specialist  
UF/IFAS Plant Pathology Department



# Topics to be covered:

- Causes of turfgrass diseases
- Influence of environmental factors on disease development
- Specific turfgrass diseases – Diagnosis and management



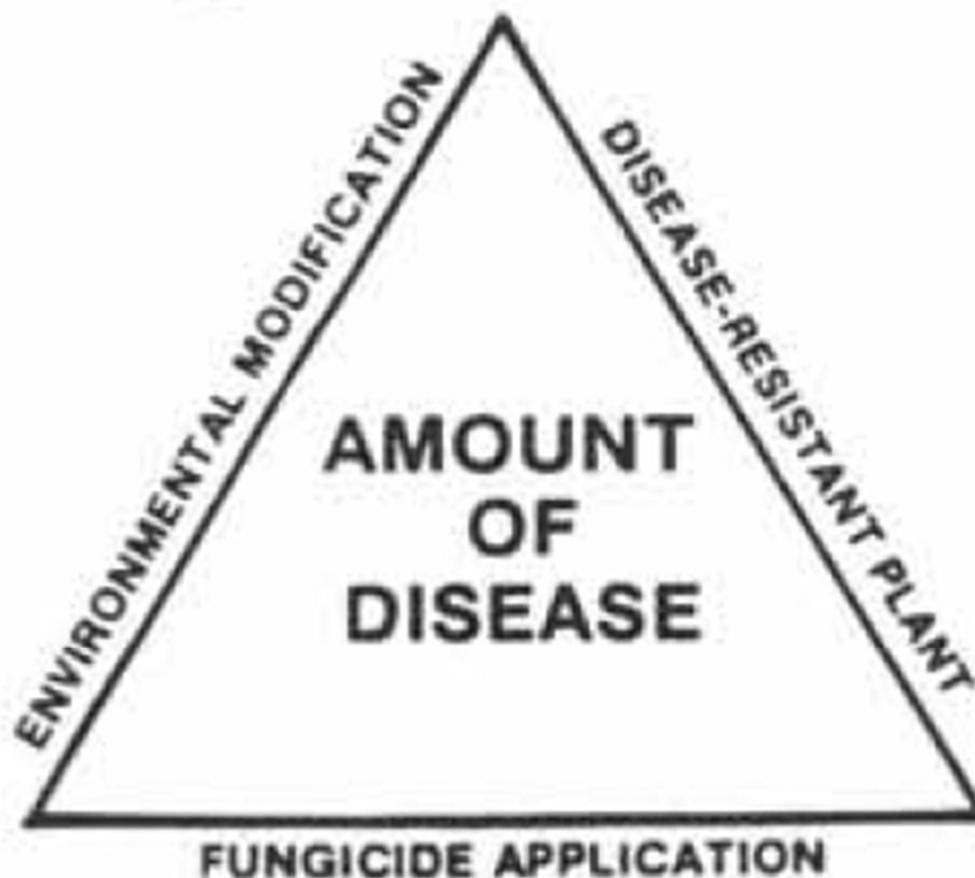
# Learning objectives:

- Understand how environmental factors influence turfgrass diseases
- Be familiar with two specific diseases of turfgrass and how to manage them





# DISEASE TRIANGLE



# MANAGEMENT TRIANGLE

Pat Sanders, Penn State University

# Primary turf pathogens

- **Fungi**
- **Bacteria-** very few examples, none in FL
- **Viruses-** SAD virus not detected in FL
  - Other viral diseases of minor importance
- **Others-** *Labyrinthula* sp.
  - Affects C3 overseed (*Poa* and *Lolium*) ...
  - Marine slime mold relative
  - Only where soil salinity issues occur







# Fungi

- **Most significant turfgrass pathogens**
- **Thrive with free water or high humidity**
- **Temperature sensitive**
- **Survive in organic matter**



# Environment—Water

- Moisture makes fungus germinate and grow
- Fungal infection is encouraged by
  - Over-watering
  - Early evening watering
  - Shade or cloudy days
  - High humidity
  - Poor drainage
  - Fog or rain, etc.



# Environment—Water

- Plants need the right amount of water to grow
- Plant stress can occur when we have
  - Over-watering
  - Shade or cloudy days
  - Poor drainage
  - Fog or excessive rain, etc.
  - Drought conditions



# Environment—Temperature

- Fungi have different temperature optima for
  - Growth
  - Infection
  - Host colonization
- Plants have temp optima as well
  - C3 grasses, 61 to 75 F
  - C4 grasses, 81 to 95 F
- Some “like” it hot, some do not



# What are you seeing?





*Fuligo septica* is a species of plasmodial slime mold

# What are you seeing?

- Large patch has been active in Gainesville since mid October—still active
- Leaf spot in Central and South Florida is starting to produce thinning in fairways and greens
- Leaf and sheath spot- *R. zea* is active and producing mini-ring symptoms on some golf course greens
- Dollar spot is causing problems in seashore paspalum lawns and golf turf where N fertility is low



# Common Lawn Diseases

- Large Patch (*Rhizoctonia solani* AG 2-2LP)
- Gray Leaf Spot (*Pyricularia grisea*)
- Take all root rot (*G. graminis* var. *graminis*)
- Cercospora leaf spot (*Cercospora fusimaculans*)

**Bipolaris (Helminthosporium) Diseases, Pythium Blight and Root Rot, Fairy Ring, Dollar Spot, Rust**







Captiva St. Augustinegrass







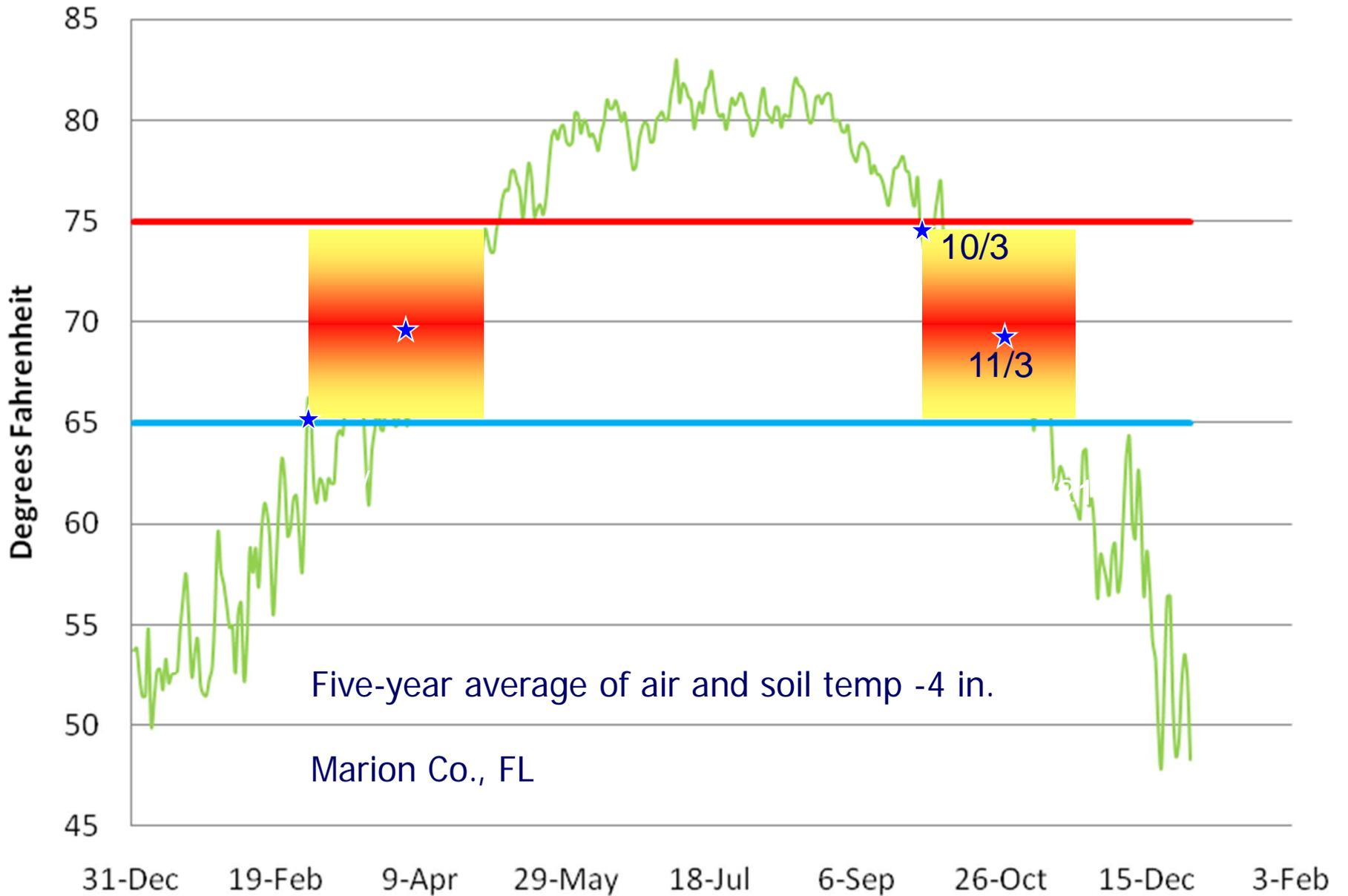


# Fungicide Timing

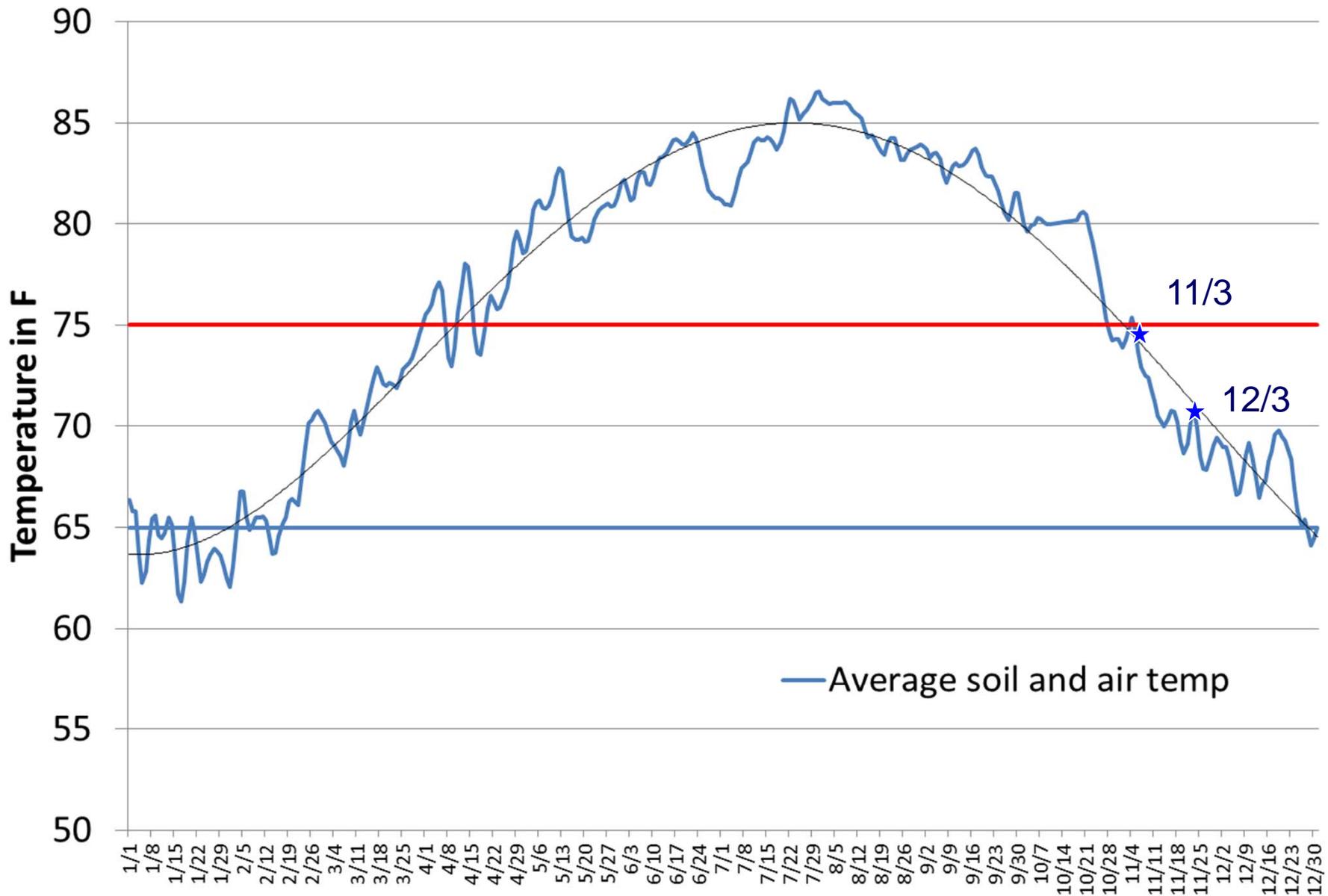
- Applications need to go on before symptoms appear
  - Use less fungicide
  - Get better results
- After symptoms, use higher rates, and more expensive products
- Fall Applications are more important than Spring
- When to apply?



# Large Patch Risk



# Sebring 5-yr avg (4 in. depth soil and 2 ft air)



# Fungicide Selection

- Cheapest group that works consistently when applied prior to symptoms are the DMI fungicides
  - Banner, Bayleton, Eagle, Trinity, Torque
- The best products include one of these and a QoI fungicide
  - Armada, Headway, Disarm M
- Prostar is also an excellent choice



# Fungicide Reapplication

- One fall application of the best products in the least favorable year may give acceptable control
- Two applications of single active products made 28 d apart prior to symptoms usually gives good control
- Two applications of premix products is the best strategy for problem areas and favorable years



# Granular Formulations

- Not a new idea, but new technologies make them more feasible and effective
- Dependent on good distribution of granules, good soil moisture, possibility for root uptake, systemic action
- Can be applied quickly with minimal disruption or attention
- Expect best efficacy on root and crown diseases with systemic actives



# Granular Formulations

- In my research, the most promising products include the DMI and Strobilurin (QoI) actives
- Large patch and take all root rot have been controlled effectively in trials

Disarm G

Headway G

Heritage G

Pillar G



# Large Patch

## *Rhizoctonia solani* AG 2-2LP

### Systemic

- Heritage, Disarm, Insignia
- flutolanil- Prostar
- DMI's and premixes

### Contact

- fludioxanil- Medallion
- mancozeb- Fore
- chlorothalonil- Daconil

### Problematic:

Spring and fall disease

Zoysia most susceptible

Seashore paspalum and St.  
Augustinegrass also suscep.

### Cultural

- Limit fall fertility
- limit leaf wetness
- thatch reduction



Taken 12/6/12



# Petro Canada Large Patch Zoysiagrass Ultimate Tee 3b, Citra, Fall 2012



12	7	1	11	10	8	3	5	6	4	2	9
10	9	11	5	2	4	12	6	8	7	3	1
11	10	8	7	12	9	5	1	3	2	6	4
1	2	3	4	5	6	7	8	9	10	11	12

X

Taken 12/13/12



Taken 1/11/13



Taken 2/1/13



Taken 3/15/13



Taken 3/15/13



Taken 3/20/13



Taken 3/26/13



Taken 4/10/13





Nidulariaceae

# Gray Leaf Spot

- Cultural inputs
- Avoid excess water soluble nitrogen
- Avoid herbicides that contain atrazine during summer
- Variety selection

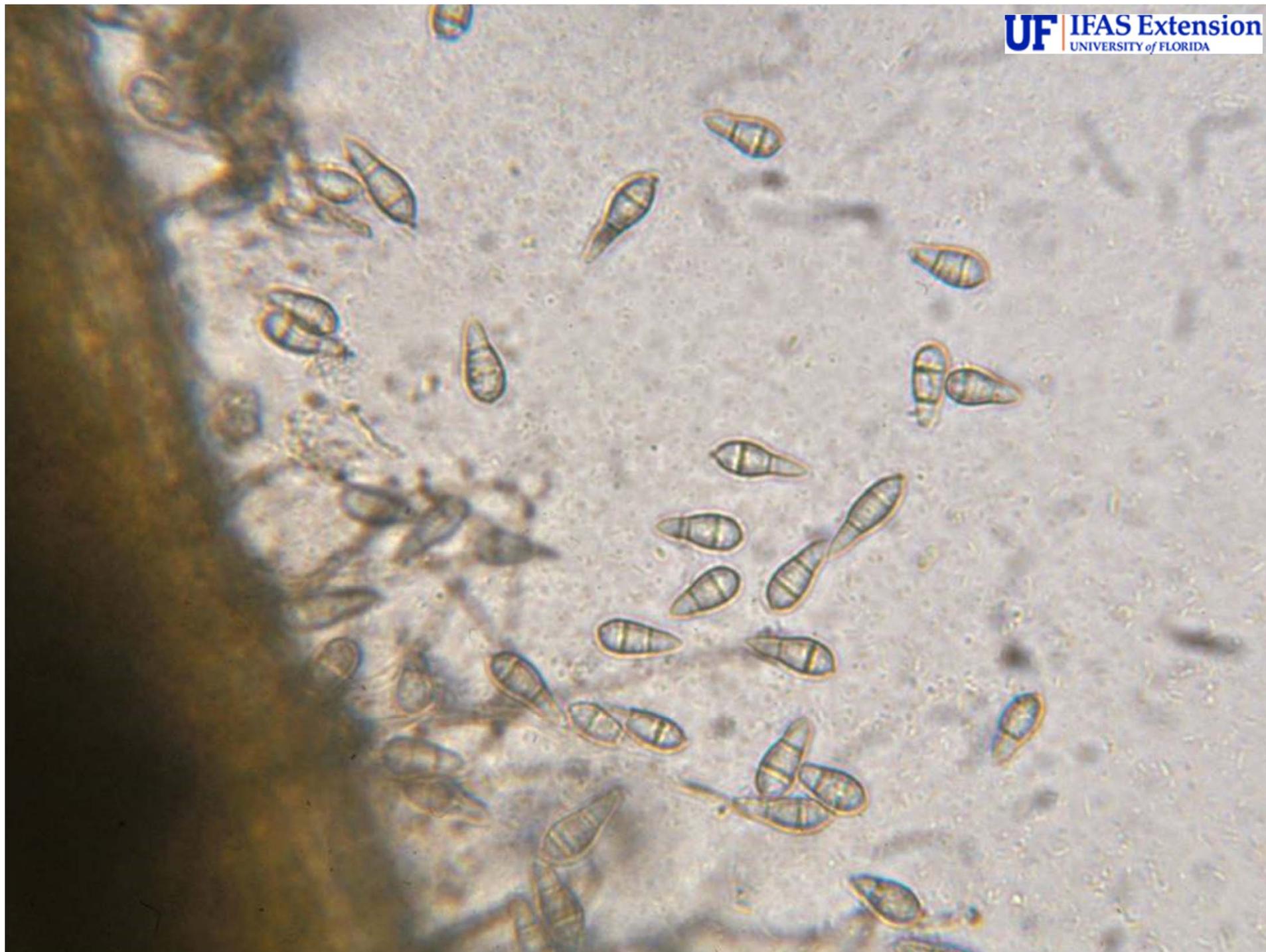










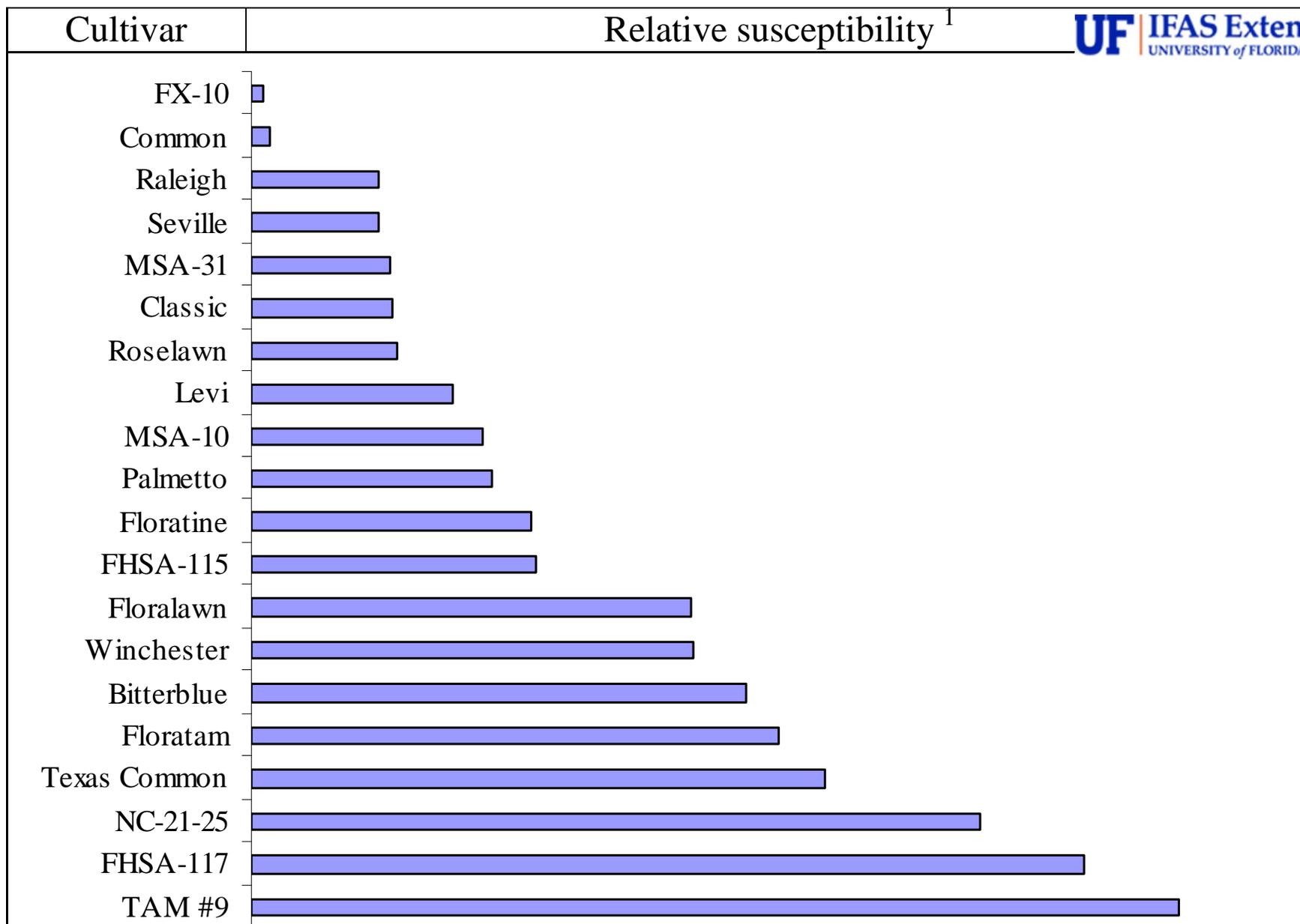


Raleigh

UF Accession

Gray leaf spot





<sup>1</sup> Relative susceptibility was based on area under disease progress curves (AUDPC). TAM#9 was the cultivar most susceptible to gray leaf spot tested.

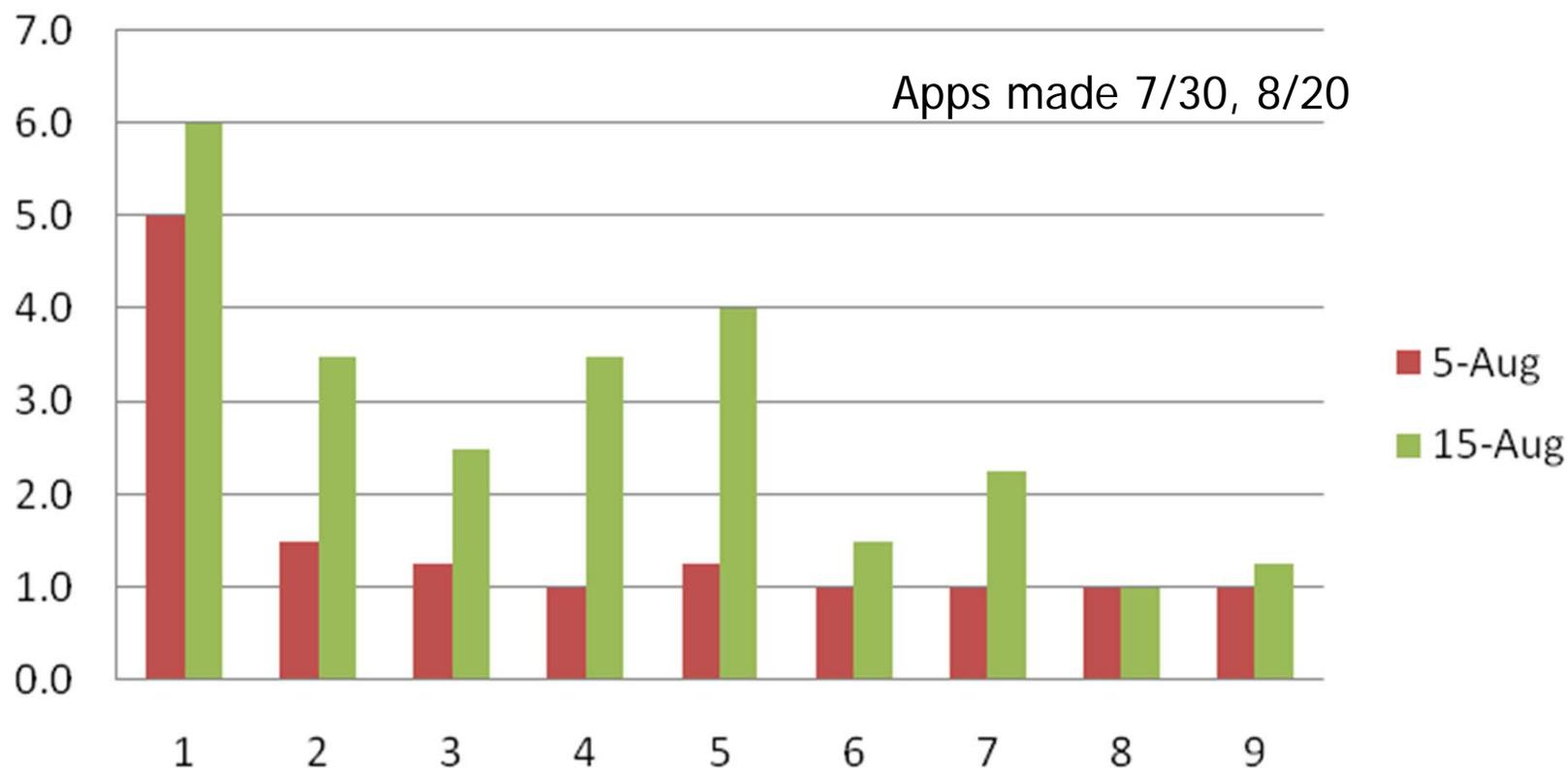
## Gray leaf spot effect on St. Augustinegrass sod grow-in

no fungicide

fungicide treated



# Gray leaf spot trial 2008



1	Untreated check	
2	Cleary's 3336+	4 fl oz
3	Cleary's 3336+	3 fl oz
4	Cleary's 3336+	2 fl oz
5	Endorse	4 oz
6	Insignia	0.9 oz
7	Heritage TL	2 fl oz
8	Armada	1.5 oz
9	Tourney	0.37 oz
10	Trinity	1.0 oz

# Gray Leaf Spot

- Avoid atrazine herbicide applications where disease occurs
- Fungicides with activity should be rotated in a preventative summer fungicide program to avoid selecting insensitive populations

## Systemic

- Insignia
- Heritage
- Banner
- Bayleton

## Premix

- Armada
- Headway



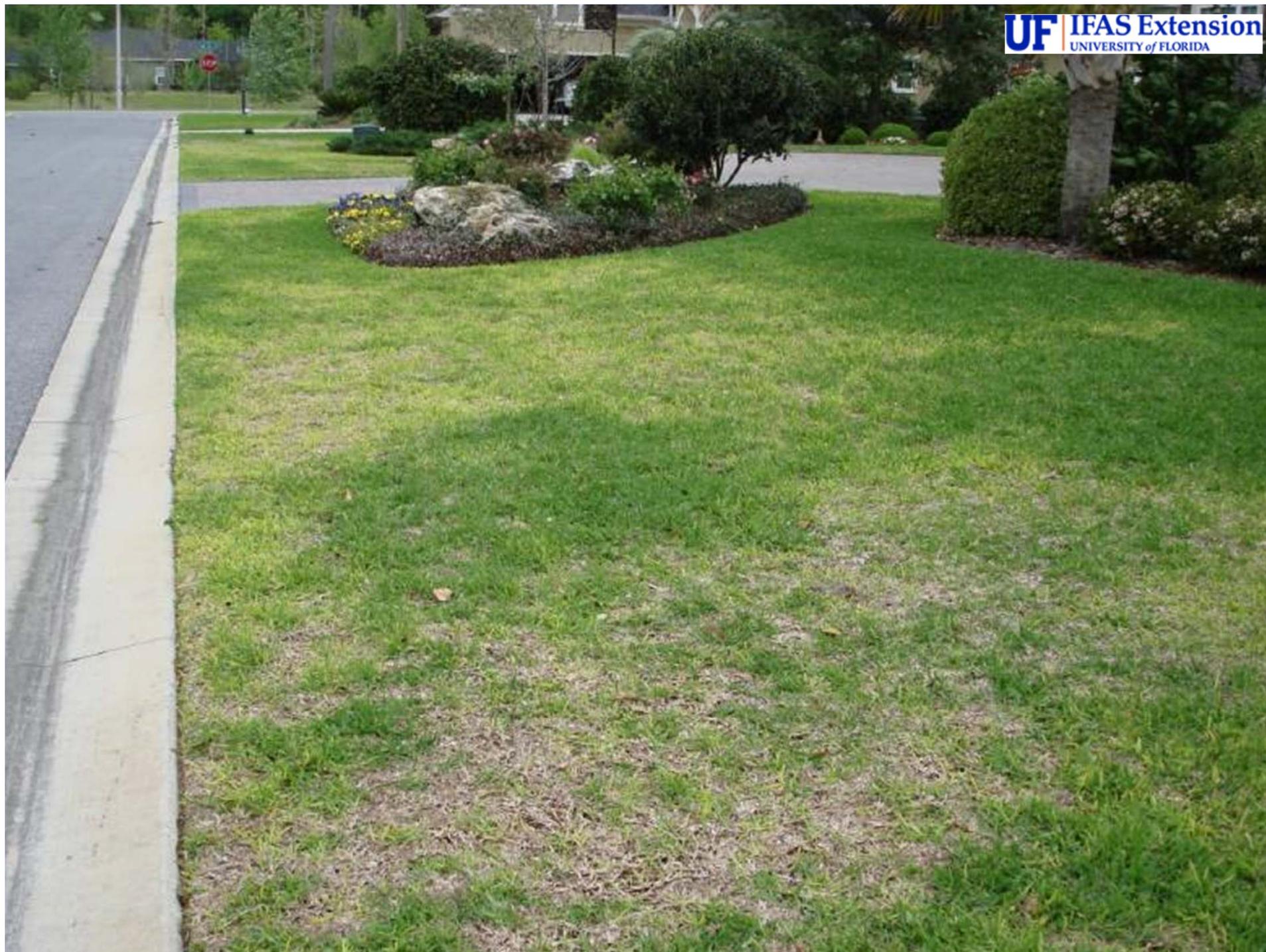
# Take-all root rot

## Bermudagrass decline

- Fungal disease 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
- Occurs where turf is stressed, high soil pH, wet areas, shade, poor air circ.

















# Winter Injury

- Low temperature injury can kill roots and cause stress
- Fertilizer applied in late fall or too early in spring (growth potential) can cause stress
- TARR can further reduce turfgrass quality and prevent recovery in spring



# Ggg Management

- Reduce stresses by following IFAS fertilizer, mowing, irrigation, and other agronomic recommendations
- Diseased turf will require extra care to maintain quality with damaged roots
- Recognize the micronutrient deficient symptom and get a disease sample tested early



# Ggg Management

- Have a soil test done
  - High pH favors disease, use acidifying fertilizers to lower pH
  - Symptoms of disease can be masked with micronutrients in fertilizer applications
  - “Spoon feed” grass with disease, the roots are damaged and can’t take up much soluble N



# Ggg Management

- Fungicides are not consistently effective after symptoms become severe
- Fungicides can help when applied at the time of a re-sod and 28 days later
- Premix products like Armada, Disarm M, and Headway have provided the best protection for new sod



# Summary

- Fungicides are not effective curatively.
- Fungicides are effective when applied just after sod installation (2 apps).
- Acidifying fertilizers, minimal herbicide use, good irrigation and cultural management help.



# TARR, Bermuda Decline

## Fungicide options

- Armada, Headway, etc.
- Tank mix
- Heritage, Insignia, Disarm
- Bayleton, Banner, Trinity

## Problematic:

On St. Augustinegrass sod and bermudagrass golf greens in summer

Disease worst where other stresses exist

Often occurs in a complex with damaging nematode pops., Pythium root rot

Fungicides with activity should be rotated in a preventative summer fungicide program





UF Rapid Turfgrass Diagno...

Timeline

Recent

Admin Panel

Promote Page

Recent

2013

2012

Launched

See Your Ad He

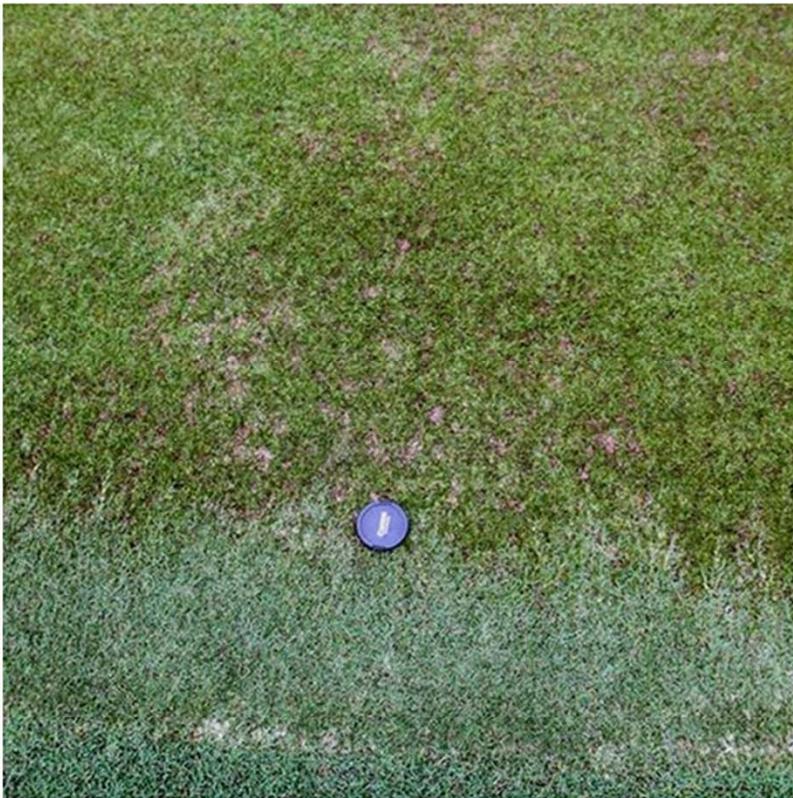
Rapid Turfgrass Diagnostic Ser



UF Rapid Turfgr Diagnostic...

Large patch is ac on the research p in Citra. 12% dise sever...

Advertise your p



Like · Comment · Share

4

89 people saw this post

Boost Post



Like · Comment · Share

6 2

333 people saw this post

Boost Post



UF Rapid Turfgrass Diagnostic Service shared a link.

September 18

Field Day is just around the corner, October 9th. Details here: <http://gatorturf.eventbrite.com/>



2013 North Central Florida Turfgrass Field Day [gatorturf.eventbrite.com](http://gatorturf.eventbrite.com)

# Thanks.

Phil Harmon  
pfharmon@ufl.edu

# Questions?

Phil Harmon  
Department of Plant Pathology, UF  
1453 Fifield Hall  
Gainesville, FL 32611

Phone: (352) 273 4622  
Email: pfharmon@ufl.edu

