

Disease Issues & Management Options for Southern Turfgrasses

Don Ferrin, Ph.D.





No matter where you live





No matter where you play

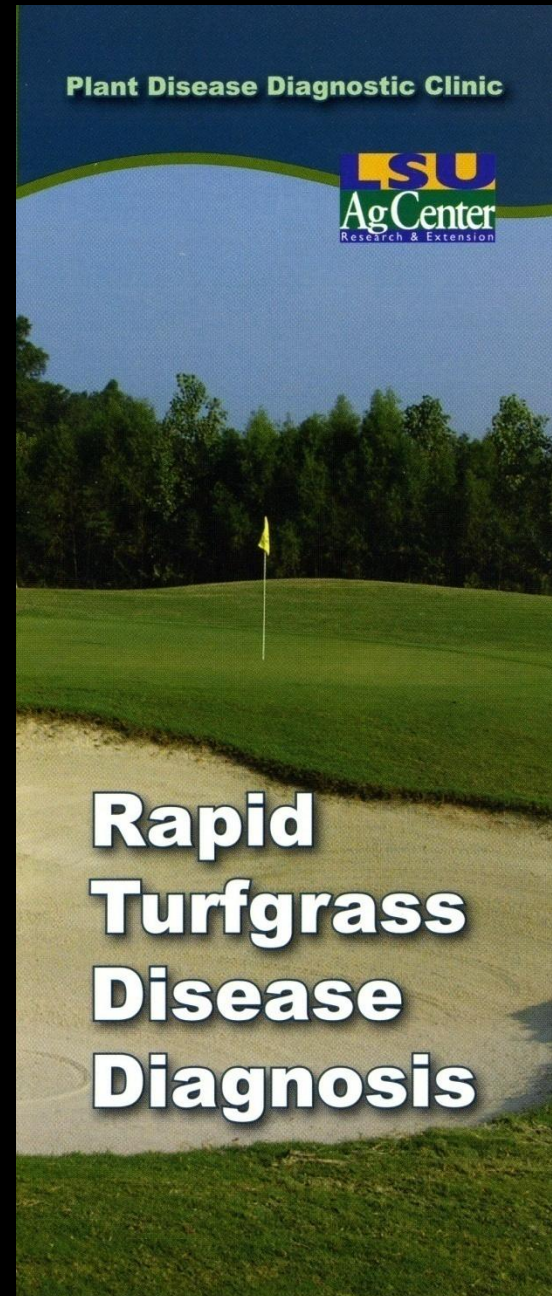
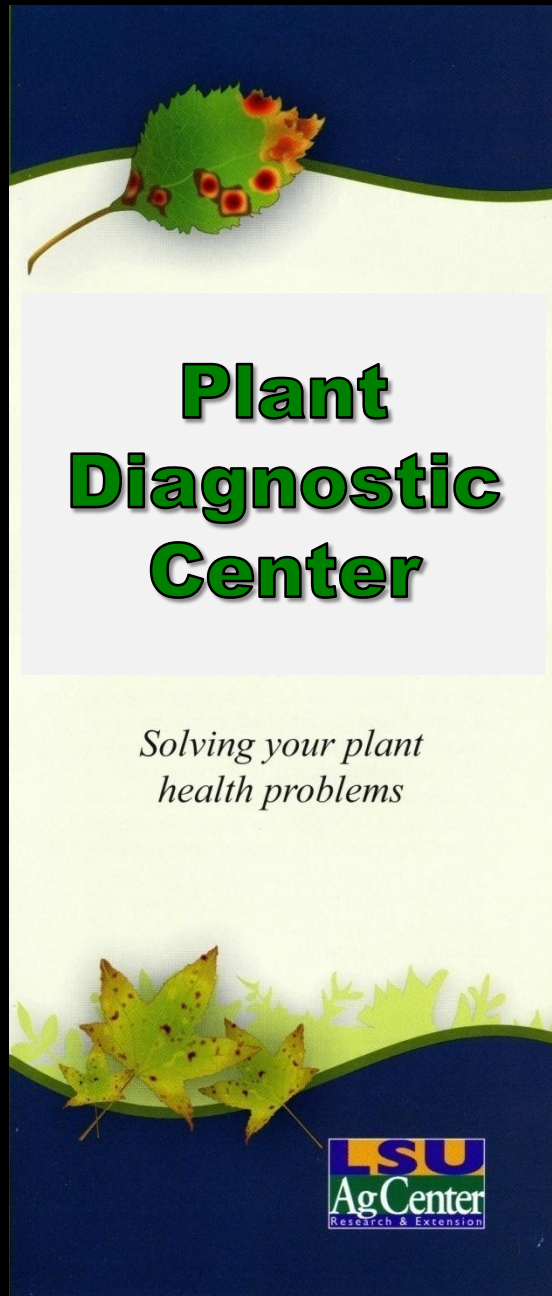


LOUISIANA LAWNS



Louisiana Lawns Best Management Practices (BMPs)

\$20



\$75

Keys to Successful 'Turf Health' Management

- Fertility and pH
- Drainage and aeration
- Irrigation
- Thatch management
- Fungicides

Predisposing Factors

- Insufficient soil moisture
- Excess soil moisture
- Soil compaction
- Oxygen deprivation
- Temperature extremes
- Improper soil pH
- Nutrient deficiency
- Nutrient toxicity
- Air pollution
- Thatch

Key to Successful 'Turf Disease' Management

Proper ID!



Major Causes of Turfgrass Diseases

- Abiotic Factors
- Fungi
- Nematodes
- Algae / 'Water Molds'
- Viruses

Key to Successful 'Turf Disease' Management

Proper ID!



Gray leaf spot & take-all root rot



Stubby root nematode

Keys to Successful 'Turf Health' Management

- Fertility and pH
- Drainage and aeration
- Irrigation
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- Fungicides

Thatch

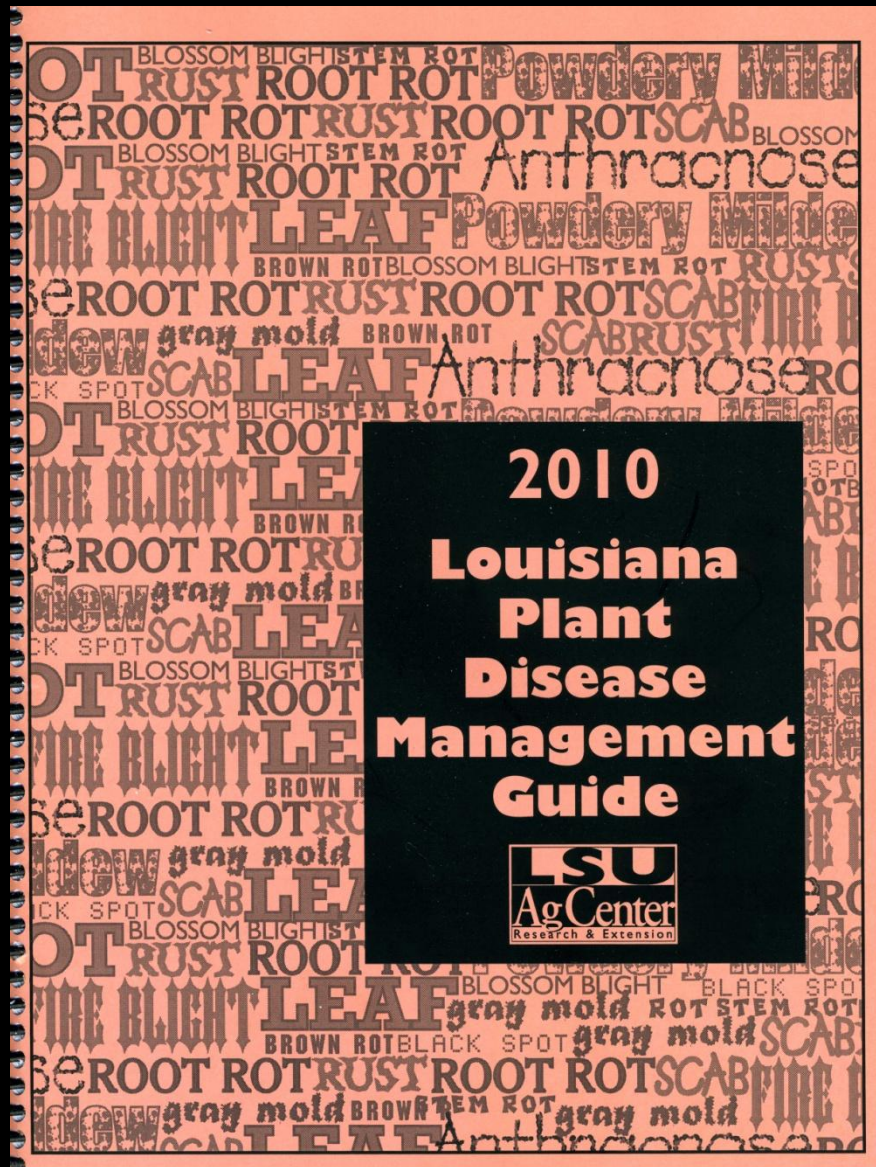


Fungicides

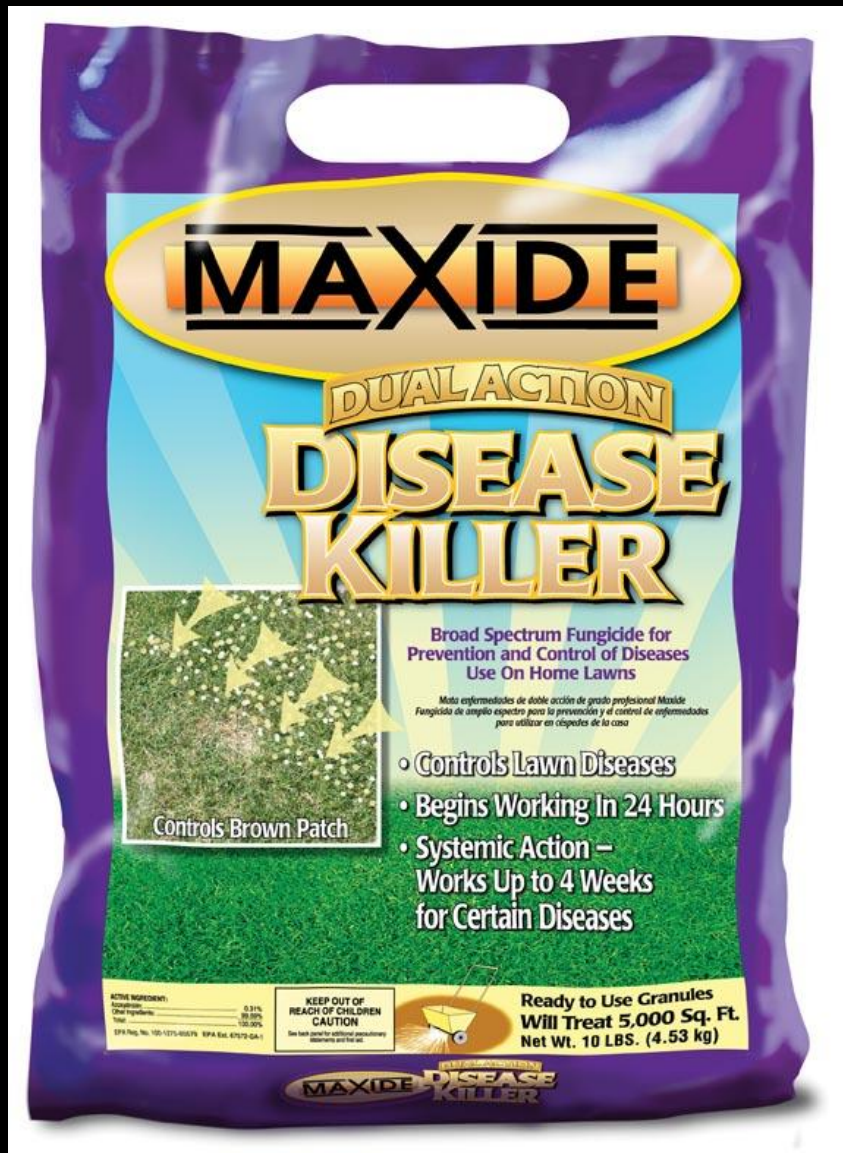
Fungicide: a chemical that kills fungi

Fungistat: a chemical that inhibits fungal growth

| | Fungicide Common Name | FRAC code | Selected Trade names | |
|---|-----------------------|-----------|----------------------|---|
| X | azoxystrobin | 11 | Heritage | Maxide Dual Action Disease Killer |
| | fluoxastrobin | 11 | Disarm | |
| | pyraclostrobin | 11 | Insignia | |
| | trifloxystrobin | 11 | Compass | |
| | boscalid | 7 | Emerald | |
| | flutolanil | 7 | Prostar | |
| | fenarimol | 3 | Rubigan | |
| | metconazole | 3 | Tourney | |
| X | myclobutanil | 3 | Eagle | Ferti-lome F-Stop, etc. |
| X | propiconazole | 3 | Banner MAXX | Bonide Fung-onil Lawn Disease Control, etc. |
| X | triadimefon | 3 | Bayleton | Bayer Advanced Fungus Control for Lawns, etc. |
| | triticonazole | 3 | Trinity | |
| | iprodione | 2 | Chipco 26019 | |
| | vinclozolin | 2 | Curalan | |
| X | thiophanate-methyl | 1 | Cleary's 3336 | Scotts Lawn Fungus Control, etc |
| | chlorothalonil | M5 | Daconil | |



http://www.lsuagcenter.com/en/our_offices/departments/Plant_Pathology_Crop_Physiology/Plant_Disease_Clinic/Plant_Disease_Control_Guide/



azoxystrobin



propiconazole

Care Calendar for Warm-season Grasses

| Management | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Comment |
|---------------------------------------|-------------|-----|-----|---------------------------------|-----|-----|-------------|-----|---------|-----|-----|-----|--|
| Fertilization | ■ | ■ | ■ | | | | | | ■ | ■ | ■ | ■ | |
| Liming | ● ● ● ● ● ● | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | According to soil test |
| Mowing | ■ | ■ | ■ | ■ | | | | ■ | ■ | ■ | ■ | ■ | Throughout growing season |
| Watering (general) | ■ | ■ | ■ | ■ | ■ | | | | ■ | ■ | ■ | ■ | As necessary, water deeply |
| Aerification | ■ | ■ | ■ | | | | | | ■ | ■ | ■ | ■ | Coring is best |
| Dethatch | ■ ● ● ● ● | | | | | | | | ■ | ■ | ■ | ■ | May be necessary in Aug-Sep if overseeding |
| Weed Control | ■ | ■ | ■ | ■ | ■ | | | ■ | ■ | ■ | ■ | ■ | Broadleaf weeds |
| | ● ● ● | | | | | | ■ | ■ | ■ | ■ | ■ | ■ | Crabgrass preemergence |
| | ■ | | | | | | | | ■ | ■ | ■ | ■ | Crabgrass postemergence |
| Insect Control | ■ | ■ | ■ | | | | | | ■ | ■ | ■ | ■ | Identification is critical |
| Disease Control | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | Identification is critical |
| Overseeding | | ■ | ■ | ■ | | | ● ● ● ● ● ● | | | | | | Perennial rye works best |
| Sodding | ■ | ■ | | ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● | | | | | ■ | ■ | ■ | ■ | Avoid Oct and March |
| Seeding | ■ | | | | | | | | ● ● ● ● | ■ | ■ | ■ | Late Spring is best |
| recommended ■■■■■ might be done ●●●●● | | | | | | | | | | | | | |

Cool-season Diseases

Large Patch

Rhizoctonia solani



St. Augustine



centipede



bermuda



Turfgrasses affected:

All warm-season turfgrasses

Time of Occurrence:

Spring & fall

Conditions favoring disease development:

- 1) Prolonged periods of leaf wetness
- 2) Periods of warm, humid weather
($> 50^{\circ}\text{F}$ at night and $< 85^{\circ}\text{F}$ during the day)
- 3) Improper timing of fertilization

Table 2. Suggested schedule using a fast- or slow-release nitrogen fertilizer for turfgrasses in Louisiana.

| | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct | Nov. | Dec. |
|-----------------------------------|------|------|-------|-------|-----|------|------|------|-------|-----|------|------|
| Common Bermuda | | | | | | | | | | | | |
| <i>fast</i> | X | X | | 1 | | 1 | 1* | 1 | | X | X | X |
| <i>slow</i> | X | X | | 1 | | 1-2 | | 1 | | X | X | X |
| Hybrid Bermuda | | | | | | | | | | | | |
| <i>fast</i> | X | X | | 1 | 1 | 1 | 1* | 1 | ½ * | X | X | X |
| <i>slow</i> | X | X | | 2 | | 1-2 | 1* | 1 | | X | X | X |
| Zoysia & St. Augustine | | | | | | | | | | | | |
| <i>fast</i> | X | X | | 1 | | 1 | | 1* | | X | X | X |
| <i>slow</i> | X | X | | 1 | | 1 | | 1* | | X | X | X |
| Centipede & Carpet | | | | | | | | | | | | |
| <i>fast</i> | X | X | | ½ | | ½ * | | ½ | | X | X | X |
| <i>slow</i> | X | X | | 1 | | | 1 * | | | X | X | X |

X: Nitrogen fertilization is usually wasteful and may harm warm-season turf if applied in the months indicated with X.

* These N applications may be eliminated if color and growth are satisfactory.

Management:

- 1) Proper timing of fertilization
- 2) Use slow release forms of nitrogen
- 3) Irrigate in early morning rather than at night
- 4) Improve drainage and increase air movement to promote rapid drying
- 5) Manage thatch
- 6) Fungicides

| Fungicide Common Name | FRAC code | Selected Trade names | Brown patch | Large patch |
|-----------------------|-----------|----------------------|-------------|-------------|
| azoxystrobin | 11 | Heritage | 4/3 | 4 |
| fluoxastrobin | 11 | Disarm | 3+ | ? |
| pyraclostrobin | 11 | Insignia | 4 | 2+ |
| trifloxystrobin | 11 | Compass | 4 | |
| boscalid | 7 | Emerald | | |
| flutolanil | 7 | Prostar | 3+ | 4 |
| fenarimol | 3 | Rubigan | 2 | |
| metconazole | 3 | Tourney | 3 | ? |
| myclobutanil | 3 | Eagle | 2+ | 2+ |
| propiconazole | 3 | Banner MAXX | 3 | 2 |
| triadimefon | 3 | Bayleton | 2 | 4 |
| triticonazole | 3 | Trinity | 3 | 3 |
| iprodione | 2 | Chipco 26019 | 3 | 2 |
| vinclozolin | 2 | Curalan | 1.5 | |
| thiophanate-methyl | 1 | Cleary's 3336 | 2+ | |
| chlorothalonil | M5 | Daconil | 3 | |

Efficacy ratings
compiled by P. Vincelli
& D. Williams, U. of
Kentucky

Dollar Spot

Sclerotinia homeocarpa

St. Augustine



UGA5262019



bermuda



zoysia



bermuda



UGA5265036

St. Augustine





Turfgrasses affected:

Most warm- and cool-season turfgrasses

Time of Occurrence:

Spring & fall

Conditions favoring disease development:

- 1) Periods of warm, humid days with cool nights that lead to the formation of heavy dew (free water on the leaves is required for pathogen growth)
- 2) Low nitrogen fertility

Management:

- 1) Increase nitrogen fertility
- 2) Improve air movement
- 3) Prevent spread on equipment, etc.
- 4) Fungicides

| Fungicide Common Name | FRAC code | Selected Trade names | Dollar spot |
|--------------------------|--------------|----------------------|----------------|
| azoxystrobin | 11 | Heritage | |
| fluoxastrobin | 11 | Disarm | |
| pyraclostrobin | 11 | Insignia | 2 |
| trifloxystrobin | 11 | Compass | |
| boscalid | 7 | Emerald | 4 |
| flutolanil | 7 | Prostar | |
| fenarimol | 3 | Rubigan | 3 |
| metconazole | 3 | Tourney | 3+ |
| myclobutanil | 3 | Eagle | 4 |
| propiconazole | 3 | Banner MAXX | 4 |
| triadimefon | 3 | Bayleton | 4 |
| triticonazole | 3 | Trinity | 3+ |
| iprodione | 2 | Chipco 26019 | 3+ |
| vinclozolin | 2 | Curalan | 4 |
| thiophanate- methyl | 1 | Cleary's 3336 | 4 |
| chlorothalonil | M5 | Daconil | 3 |

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P. Vincelli & D. Williams,
U. of Kentucky

Warm-season Diseases

Algae

Green & Blue-green Algae





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Conditions favoring disease development:

- 1) Periods of warm, wet weather from late spring to early fall
- 2) Shade
- 3) Soil compaction & poor drainage

Management:

- 1) Reduce irrigation
- 2) Reduce shading and improve air movement
- 3) Reduce compaction and improve drainage
- 4) Physical removal by raking or brushing
- 5) Preventative fungicides (chlorothalonil, mancozeb, copper)

Take-all Root Rot

(Ggg Root Decline)

(Bermuda Decline)

Gaeumannomyces graminis var.
graminis



centipede



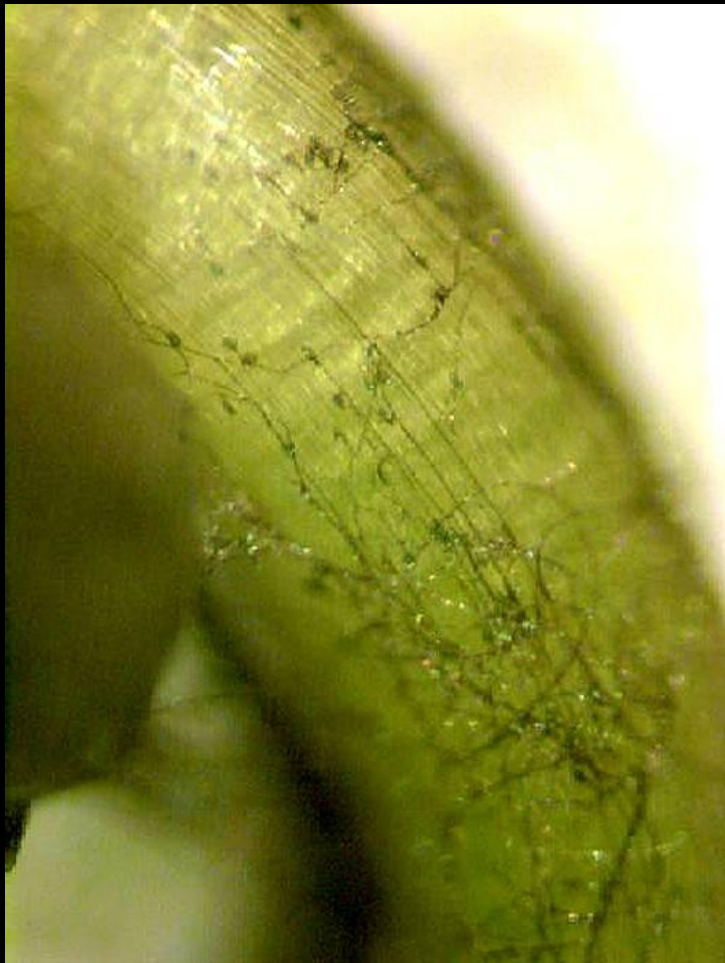
St. Augustine



UGA5077091

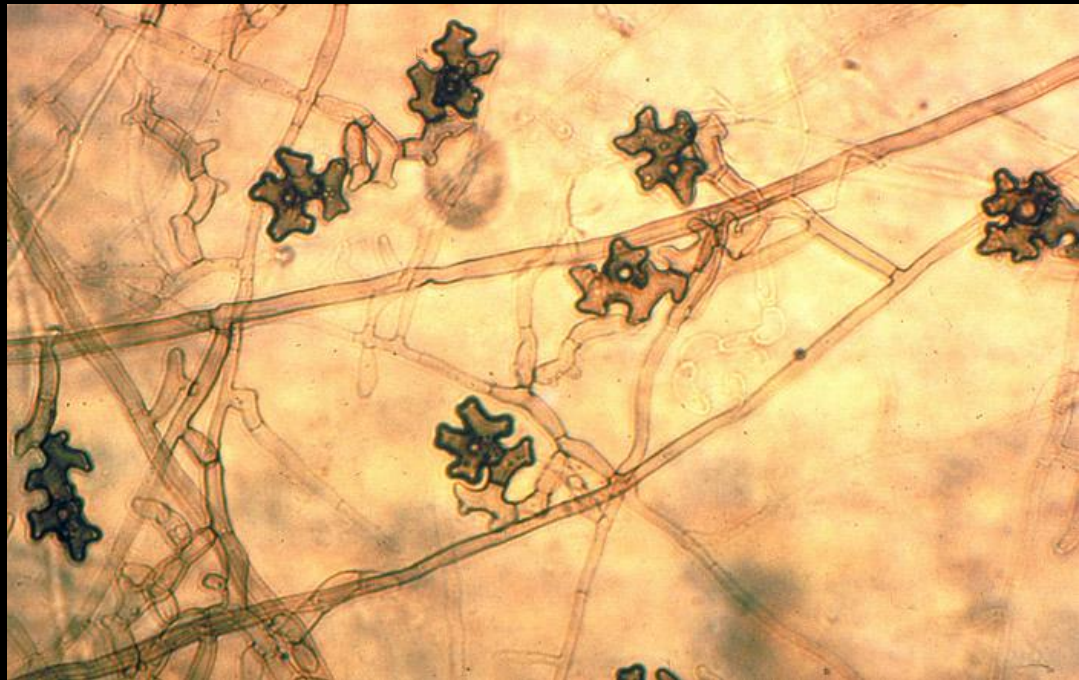






Ggg

(*Gaeumannomyces*
graminis var. *graminis*)



Turfgrasses affected:

All warm-season turfgrasses

Time of Occurrence:

Year round (?)

Conditions favoring disease development:

- 1) Poorly managed turf
- 2) Stress

Management:

- 1) Reduce soil pH to 6
- 2) Fertilization
 - a) Use slow release, acidifying forms of nitrogen
 - b) Apply equal amounts of N and K
 - c) Avoid manganese deficiency
- 3) Reduce stress!
- 4) Fungicides

| Fungicide Common Name | FRAC code | Selected Trade names | Take all root rot |
|-----------------------|-----------|----------------------|-------------------|
| azoxystrobin | 11 | Heritage | (3+) |
| fluoxastrobin | 11 | Disarm | ? |
| pyraclostrobin | 11 | Insignia | (3) |
| trifloxystrobin | 11 | Compass | |
| boscalid | 7 | Emerald | |
| flutolanil | 7 | Prostar | |
| fenarimol | 3 | Rubigan | (2+) |
| metconazole | 3 | Tourney | |
| myclobutanil | 3 | Eagle | |
| propiconazole | 3 | Banner MAXX | (2+) |
| triadimefon | 3 | Bayleton | (2+) |
| triticonazole | 3 | Trinity | ? |
| iprodione | 2 | Chipco 26019 | |
| vinclozolin | 2 | Curalan | |
| thiophanate-methyl | 1 | Cleary's 3336 | |
| chlorothalonil | M5 | Daconil | |

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Gray Leaf Spot

Pyricularia (Magnaporthe) oryzae







Turfgrasses affected:

Most warm- and cool-season turfgrasses

Time of Occurrence:

July - September

Conditions favoring disease development:

- 1) Occurs primarily on St. Augustine (and other warm-season turfgrasses)
- 2) Most severe during periods of warm, humid weather
- 3) Favored by soil compaction, drought, herbicide-induced stress, excessive nitrogen and excessive leaf wetness

Management:

- 1) Reduce compaction; improve drainage and aeration
- 2) Do not use excessive amounts of quick release nitrogen fertilizers
- 3) Reduce stress
- 4) Fungicides

| Fungicide Common Name | FRAC code | Selected Trade names | Gray leaf spot |
|-----------------------|-----------|----------------------|----------------|
| azoxystrobin | 11 | Heritage | 4 |
| fluoxastrobin | 11 | Disarm | ? |
| pyraclostrobin | 11 | Insignia | 4 |
| trifloxystrobin | 11 | Compass | 3+ |
| boscalid | 7 | Emerald | |
| flutolanil | 7 | Prostar | |
| fenarimol | 3 | Rubigan | |
| metconazole | 3 | Tourney | 2 |
| myclobutanil | 3 | Eagle | |
| propiconazole | 3 | Banner MAXX | 2 |
| triadimefon | 3 | Bayleton | 2 |
| triticonazole | 3 | Trinity | |
| iprodione | 2 | Chipco 26019 | |
| vinclozolin | 2 | Curalan | |
| thiophanate-methyl | 1 | Cleary's 3336 | 4 |
| chlorothalonil | M5 | Daconil | 2+ |

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St. Augustine Decline

Panicum Mosaic Virus



Turfgrasses affected:

St. Augustine and centipede

Time of Occurrence:

April - October

Conditions favoring disease development:

- 1) Transmitted by mowers and in infected sprigs or sod

Management:

- 1) Follow BMP's for turf health management
- 2) Replace with resistant cultivars
 - 1) Palmetto
 - 2) Raleigh
 - 3) Seville

Fairy Rings

Caused by a variety of Basidiomycetes
(i.e., mushrooms and puffballs)



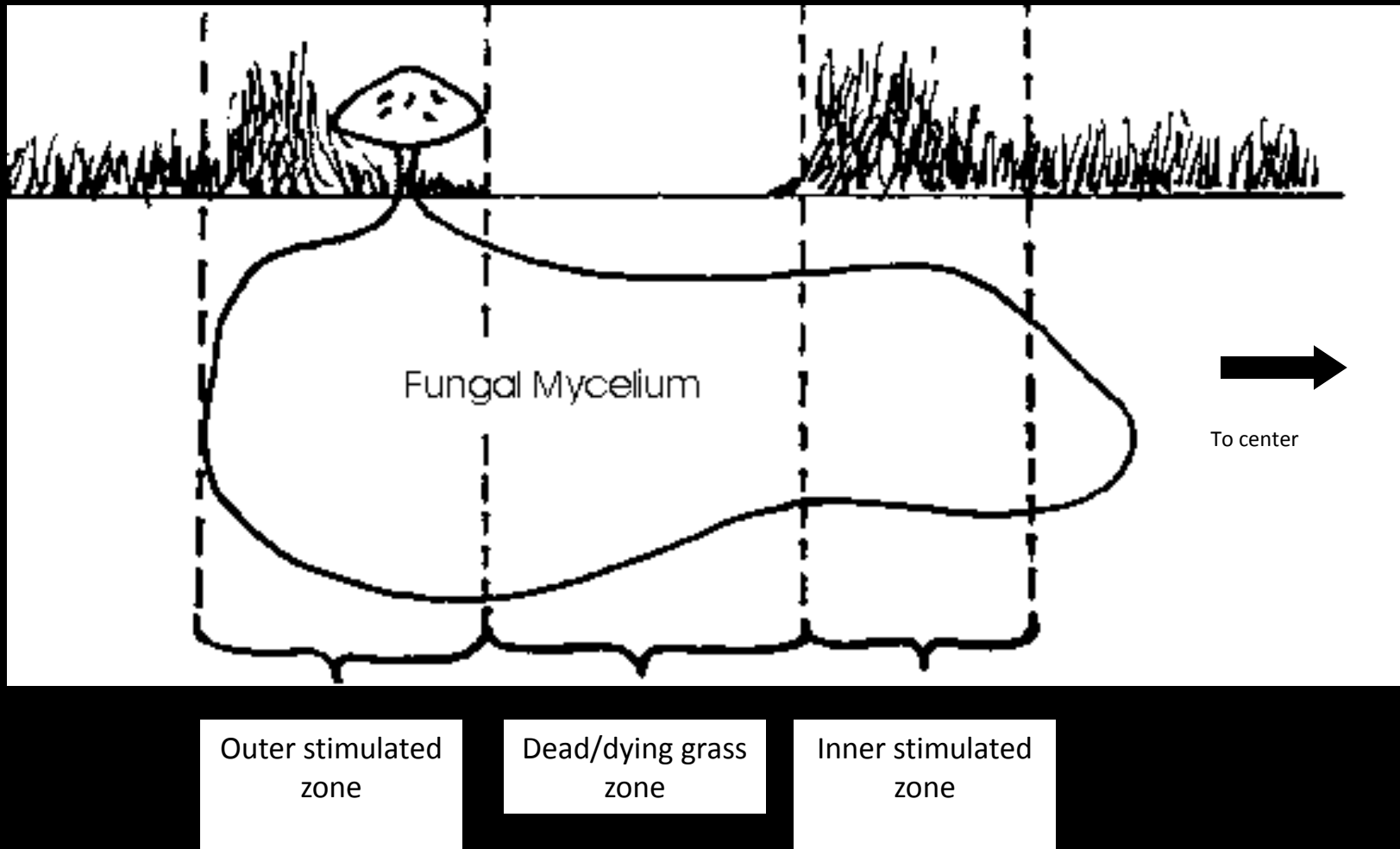
Type 1 Fairy Ring





5408101

Fairy Ring – Type 1





Type 2 Fairy Rings



Type 3 Fairy Ring

Turfgrasses affected:

All turfgrasses

Time of Occurrence:

Year round

Conditions favoring disease development:

- 1) Organic substrates in soil
- 2) Rain

Management:

1. Remove and replace infested soil or cultivate and mix soil
2. Aerate deeply to break up fungal mycelium and allow water to penetrate
3. Water frequently and deeply
4. Apply soil penetrants or other surfactants (i.e., wetting agents)
5. Fungicides ?

| Fungicide Common Name | FRAC code | Selected Trade names | Fairy rings |
|-----------------------|-----------|----------------------|-------------|
| azoxystrobin | 11 | Heritage | 3 |
| fluoxastrobin | 11 | Disarm | |
| pyraclostrobin | 11 | Insignia | 3 |
| trifloxystrobin | 11 | Compass | |
| boscalid | 7 | Emerald | |
| flutolanil | 7 | Prostar | 3 |
| fenarimol | 3 | Rubigan | |
| metconazole | 3 | Tourney | 3 |
| myclobutanil | 3 | Eagle | |
| propiconazole | 3 | Banner MAXX | |
| triadimefon | 3 | Bayleton | 3 |
| triticonazole | 3 | Trinity | |
| iprodione | 2 | Chipco 26019 | |
| vinclozolin | 2 | Curalan | |
| thiophanate-methyl | 1 | Cleary's 3336 | |
| chlorothalonil | M5 | Daconil | |

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Questions?

