

Turf Diseases 206

Curtis Swift, PhD
Area Extension Agent,
Horticulture

What I will focus on:

- Curvularia leaf spot and its identification and control
- Gray Leaf Spot and its identification and control

Gray Leaf Spot

- In this case it is blue
- In also comes in gray



- Also affects tall fescue

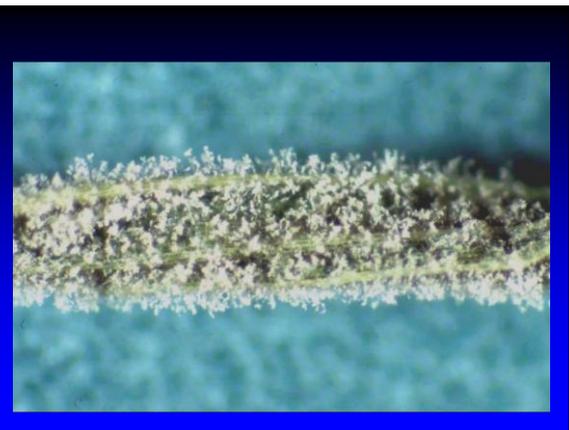


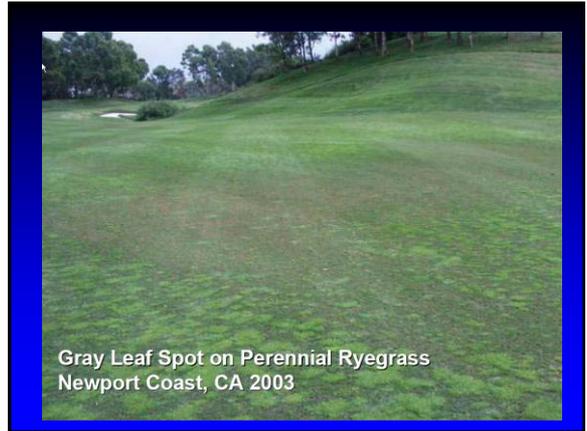
Grey Leaf Spot (*Pyricularia grisea*)
on Perennial Ryegrass (*Lolium perenne*)



Vincelli, Uddin and Viji, *Plant Disease*

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Current Management Issues for Gray Leaf Spot

- Due to the damage potential on sports turf – the disease is heavily managed from July to October
 - It has not yet been a major issue on non-sports turf plantings
- Reduced nitrogen in summer months
- Water use management
- Regular fungicide applications
 - \$150 to 600 per acre
 - 30 – 80 acres
 - 4 to 6 applications (\$18,000 - \$288,000)
- QoI-fungicide resistance has already developed at several locations within 2 years of use

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Geographic Distribution of Gray Leaf Spot in the West

- Gray Leaf Spot has been diagnosed from > 75 locations in California and Nevada since 2003
- Perennial ryegrass
- Kikuyugrass
- St. Augustine

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AFLP Analysis Eastern U.S. Populations

- Penn State (W. Uddin)
 - Perennial ryegrass – 19 isolates
 - Kansas, Maryland, New Jersey, Virginia, West Virginia, New York, Pennsylvania
- North Carolina State Univ. (L. Tredway)
 - Tall fescue (*Festuca arundinacea*) – 10
 - Weeping lovegrass (*Eragrostis curvula*) – 2
 - St. Augustinegrass - 3

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Gray Leaf Spot

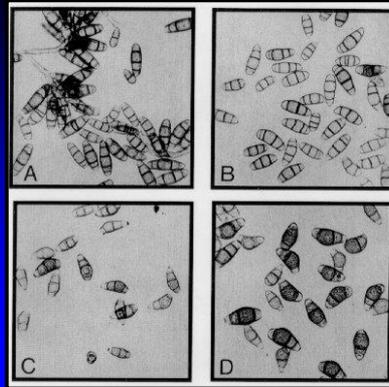
- The presence of both mating types and higher diversity suggests the possibility of sexual recombination/reproduction in these populations
- Alternately – the diversity could be a result of host diversity
 - Possible sexual recombination = increased diversity
 - Spread to other hosts (weeds & crops)
- This pathosystem is being examined as a potential model for pathogen evolution/invasion in urban ecosystems

Gray Leaf Spot Management

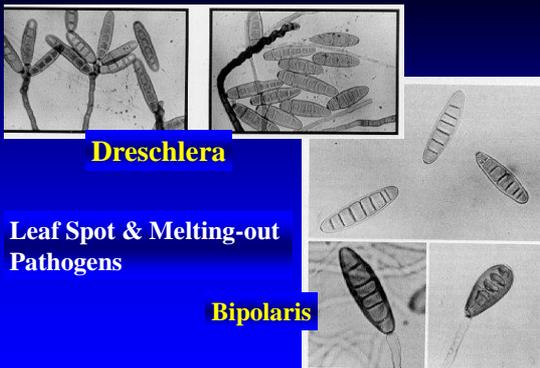
- It is especially troublesome in shaded areas that remain damp for some time.
- Avoid nitrogen on moderately shaded lawns during summer months.
- Apply water early in the morning only when water is needed.
- Avoid evening waterings which keep the leaf surface wet for long periods.

Chemical Controls

- Azoxystrobin, chlorothalonil, mancozeb, metconazole, polyoxin D (suppression only), propiconazole, pyraclostrobin, thiophanate-methyl, triadimefon, and trifloxystrobin



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Dreschlera

Leaf Spot & Melting-out Pathogens

Bipolaris

Curvularia

- Causes thinning out and decline of the grass;
- Irregular patches and streaks may also occur.
- Leaves yellow and then become brown from the leaf tip down.

Human Pathogen

- *Curvularia* has been described as a pathogen of humans and animals
- Causing respiratory tract, cutaneous, and corneal infections
- Fatal Cerebral Phaeohyphomycosis Due to *Curvularia lunata* in an Immunocompetent Patient



Chemical Control Curvularia

- Chlorothalonil
- Iprodione



Curvularia

- Invades grasses through cut tips of leaves
- favored by high temperatures and adverse growing conditions.
- A stress pathogen
- Damage often occurs when temperatures are 85°F or higher.

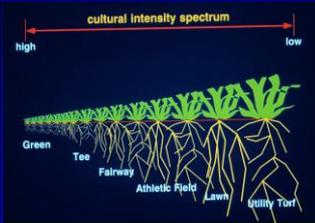
Stress-related conditions increase susceptibility

- Removing too much of the blade at one time
- Heavy traffic
- Extremes in temperature
- Extremes in moisture
- Non-target effects of pesticides

Mowing

- Mowing height has an impact on the humidity within the turf canopy.
- Higher cutting heights result in increased levels of humidity that last for a longer period of time.
- This can result in a more suitable environment for infection by pathogens.
- 2.5 to 3 inches = height of cut

Mowing Affects Root Growth



- Lower mowing heights remove more photosynthetic tissue
- Lower mowing heights require more frequent mowing
- Lower mowing heights reduce root depth and health

Lawn Care



Mowing Frequency

If maintaining lawn at : Mow lawn when grass reaches:

2.5 inches

3.75 inches

3 inches

4.5 inches

Remove no more than 1/3 of the blade

Lawn Care



Mowing Frequency

- Warm Season Grasses as low as 1"
 - Buffalograss
 - Zoysiagrass
 - Bermudagrass

Lawn Care

Leaving the Clippings



Does not increase problems with thatch

Grass Clipping Removal

Represents 3 to 5 pounds of Nitrogen per 1000 square foot area of lawn per year

Beard, J. Aug. 1987. Grounds Maintenance



Lawn Care

Leave Clippings

1. return nutrients to the lawn
2. return organic matter to the lawn
3. help reduce thatch

4. reduce debris going to the landfill

Leaving Clippings Reduces Diseases

Water According to ET_o
Example: Grand Junction ET_o
July ET_o 6.8 inches

Month	Setting required
April	51%
May	78%
June	98%
July	100%
August	80%
September	53%
October	33%

Setting the Irrigation Clock Start Times

- hours between 10 p.m. and 6 a.m. is the best time to water to prevent turf diseases.
- Start Time 1 set for 12:00 midnight
- Start Time 2 set for 1:00 a.m.
- Start Time 3 set for 2:00 a.m.
- Start Time 4 set for 3:00 a.m.
- Start Time 5 set for 4:00 a.m.

The more start times the better and deeper penetration

Solve sprinkler system problems



Low Head Drainage

- Check valves



Why take the time to inform your customers of these problems?

Leaf Spot Management

- Use a seed blend of leaf spot resistant cultivars
- Maintain adequate nitrogen to sustain moderate shoot growth in the summer
- Ensure adequate phosphorus (P) and potassium (K)

Nitrogen

- Apply N fertilizer according to the needs of the turf
 - don't over apply N fertilizer
- What nutrients does the lawn need?
 - Offer a soil test

Soil Preparation

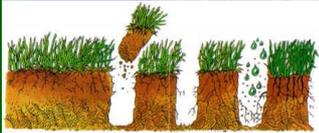
- Proper soil preparation is important
 - Depth and uniformity
- Organic content of soil is important
 - Improves water penetration
 - Improves oxygen content in soil
- Can you redo the soil?

Promote Aeration

- Core cultivate as deep as possible
 - Holes 2 inches apart
 - Aerate spring and fall
- Top dress with a fine textured organic matter
 - Rake into aeration holes
- Avoid excess layer of organic matter on the surface

Turf Management

• Aerating the lawn



Electronic Bulletin Board for the 'Green Industry'

- A quick and easy way
 - announcements on workshops
 - problems
 - questions

Send an e-mail to cswift@coop.ext.colostate.edu
to request addition to the list