Turf Diseases
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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

Grey Leaf Spot (Pyricularia grisea)
on Perennial Ryegrass (Lolium perenne)
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 800 per acre
  - 30 – 90 acres
  - 4 to 6 applications ($18,000 - $288,000)
- QoI-fungicide resistance has already developed at several locations within 2 years of use

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

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
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

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

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.

Dreschlera

Leaf Spot & Melting-out Pathogens

Bipolaris

Curvularia
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

- Warm Season Grasses as low as 1”
  - Buffalo grass
  - Zoysiagrass
  - Bermudagrass

Leaving Clippings Reduces Diseases

Grass Clipping Removal

Water According to ET₀

Example: Grand Junction ET₀
July ET₀ 6.8 inches

<table>
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<tr>
<th>Month</th>
<th>Setting required</th>
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<tr>
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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