Turf Diseases and Other Landscape Problems

Claudia Nischwitz
Extension Plant Pathologist
Utah State University
claudia.nischwitz@usu.edu
Overview

- Necrotic ring spot
- Summer patch
- Snow mold
- Other turf diseases, slime mold and algae
- Other problems with landscape plants
Necrotic ring spot

- Caused by *Ophiosphaerella korrae*
- Mainly attacks *Poa pratensis* (Kentucky bluegrass), occasionally *Poa annua* (annual blugrass), *Festuca rubra* (red fescue)

Mary Ann Hansen, Virginia Polytechnic Institute and State University, Bugwood.org
Howard Schwartz, Colorado State University, Bugwood.org
Necrotic ring spot

• Symptoms:
  – Circular patches develop during cool wet weather that gradually enlarge to about 12 in in diameter
  – During drought the spot can get as big as 2-3 ft.
  – Occurs throughout the growing season
  – No spot or lesions on leaves
  – Blackening of roots and stem
  – Occasionally black fruiting bodies are found on infected tissue
  – Roots are rotten
Necrotic ring spot

- **Management**
  - Avoid drought stress. During hot weather light daily irrigation necessary to reduce heat stress.
  - Maintain balanced and adequate fertility, especially nitrogen, potassium and phosphorus.
  - Slow-release fertilizer or organic fertilizer better than quick-release fertilizer (water-soluble).
Necrotic ring spot

• Management (cont.)
  – Overseeding with *Lolium perenne* (perennial ryegrass) or more resistant cultivars of *P. pratensis* ([http://www.ntep.org/data/kb05/kb05_11-9/kb0511t26.txt](http://www.ntep.org/data/kb05/kb05_11-9/kb0511t26.txt))
  – Fungicides applied in early-mid spring as a preventative can reduce incidence and severity
    • Heritage
    • Insignia
    • Banner MAXX
    • Headway*
    • Iprodione Pro 2SE
  * contains azoxystrobin and propiconazole
Summer patch

• Caused by *Magnaporthe poae*
• Mainly attacks *Poa pratensis* (Kentucky bluegrass) and fine-leaf fescue
Summer patch

• Symptoms
  – Very similar to necrotic ring spot
  – Spot of summer patch usually a little smaller than necrotic ring spot
  – During extended hot weather (day time temp. 82-95, night time temp above 68F), infected plants die fast
  – Occurs from late spring to early fall but infected patches can still be seen next season
Summer patch identification

- Growth cessation structures in roots and shoots
- Fruiting bodies with spores
Summer patch

• Management
  – Avoid stress.
  – Use slow-release fertilizer (for example sulfur-coated urea) or acidifying fertilizer in cool dry weather and irrigate immediately to prevent foliar burns
  – Overseeding with *Lolium perenne* or resistant *P. pratensis* ([http://www.ntep.org/data/kb05/kb05_11-9/kb0511t25.txt](http://www.ntep.org/data/kb05/kb05_11-9/kb0511t25.txt))
**Summer patch**

- **Management**
  - Same fungicides can be applied that are used for necrotic ring spot
Snow mold (pink and gray)

- Pink snow mold caused by *Michrodochium nivale*
- Gray snow mold caused by *Typhula sp.*
Gray snow mold

• Symptoms:
  – Circular patches visible after snow melt
  – Size of spots ranges from 1 in. to 2-3 ft.
  – Leaves are matted and often white to gray mycelium is visible (disappears after desiccation)
  – Usually only leaves get infected. Plants re-grow as soon as it warms up
  – Sclerotia (fungal survival structure) can be seen on grass


William Brown, Colorado State University, Bugwood.org
Gray snow mold

• **Management:**
  – Avoid heavy nitrogen fertilizer in late fall
  – Fertilizer should be applied a few weeks prior to dormancy
  – Mow until late fall to avoid snow falling on tall grass
  – Avoid compaction of snow by skis etc and large snow drifts
  – Fungicides can be used as preventative in fall, not useful as curative
    • Heritage
    • Iprodione Pro 2SE
    • Banner MAXX


William Brown, Colorado State University, Bugwood.org
Pink snow mold

• **Symptoms:**
  – Circular patches develop with long periods of cool, wet weather regardless of snow cover
  – Initial spot size less than 2 in. but can enlarge indefinitely
  – White to gray mycelium is sometimes visible (disappears after desiccation)
  – Exposure to light leads to spore production. Spores look pink in masses

Pink snow mold

- **Management:**
  - Same as for gray snow mold
  - Additionally:
    - Maintain low soil pH
    - Maintain balanced fertilizer program
Rust

- Fungal pathogens (several species cause the disease)
- Name comes from the orange colored spores
- Grass stressed by environmental conditions is more susceptible.
- Resistance varies among turf varieties
- Spores are dispersed through air, mowing, shoes, animals
Rust

http://www.flickr.com/photos/biresch/3103228256/
Rust

• Rust fungi produce several types of spores
  – Urediniospores – rust colored, for widespread dispersal
  – Teliospores – dark brown or black, for survival in the winter but for grass rust these spores are not important

• Urediniospores survive the winter in milder climates and then are blown long distances to colder regions
Rust

• Management:
  – Fertilize and irrigate as needed to avoid stress
  – Irrigate in the morning so the grass is dry overnight
  – Mow frequently to remove new infection early but do not mow below the recommended height and remove clippings
  – Prune trees to increase light in heavily shaded areas and increase air movement to reduce humidity
  – Fungicides like Heritage and Insignia
Bipolaris, Drechslera and their relatives

- Cause leaf spots
- *Bipolaris* sp. active in cool-season grasses during warm, wet weather (68-90°F)
- *Drechslera* sp. active from 59-64°F and is not active above 80°F
- They can also cause root rot and attack rhizomes
Bipolaris, Drechslera and their relatives

Bipolaris leaf spot symptom

Drechslera spores

Bipolaris spores

http://www.ars.usda.gov/Research/docs.htm?docid=8909


http://turfdiseases.blogspot.com/2010_06_01_archive.html
**Bipolaris, Drechslera and their relatives**

- **Management:**
  - Avoid fertilizer applications that cause excessive growth in spring and midsummer
  - Water deeply in the morning
  - Reduce thatch layer to no more than 0.5 inch
  - Plant resistant varieties
  - Fungicides: Heritage, Insignia, Iprodione
  - Avoid shade
Bipolaris, Drechslera and their relatives

- *Curvularia* sp.
  - Weak pathogen
  - Attacks already stressed grass
  - Most active during high temperatures or drought stress
  - Survives in organic debris (thatch)
  - Management of *Curvularia* is the same as for Bipolaris and Drechslera
Fairy rings

• Symptoms and signs:
  – Three types of symptoms:
    • Type I: Soil and thatch become hydrophic and the grass dies → brown ring of dead grass
    • Type II: Rings on the lawn that are 2-8 in. wide which lush green grass
    • Type III: Mushrooms and puffballs are produced in the ring
    • White fungal mycelium can be found in thatch

• Causal agents:
  – A variety of different mushrooms such as Marasmius, Agaricus, Calvatia, Lepiota or Tricholoma
Fairy rings

Type I


Type II

http://www.gardenersheaven.co.uk/gardening-news/toadstools-and-fairy-rings.html

Type III


http://www.fairyring.ca
Marasmius sp.

Lepiota

Agaricus sp.
Fairy rings

• Management:
  – Reduce thatch
  – Deep watering to stimulate growth of grass around ring to mask fairy ring
  – May need a wetting agent
  – Control with fungicide drenches is inconsistent
  – Other management option very expensive
    • Soil replacement: Remove soil about 20 in. to each side of the ring and up to 30 in. deep and replace with sterile soil
**Ascochyta leaf blight**

- **Symptoms:**
  - Leaves die back from the tip resulting in brown patches of grass
  - Does not cause permanent damage
  - Looks similar to *Drechslera* and *Bipolaris* symptoms
  - Symptoms can occur at any time but are more commonly seen during hot dry weather
  - Top third of leaf blade dies back and the area between diseased and healthy tissue is slightly constricted
Ascochyta leaf blight

Mary Ann Hansen, Virginia Polytechnic Institute and State University, Bugwood.org
Ascochyta leaf blight

• Management:
  – Reduce thatch
  – Improve water penetration by aerification
  – Maintain sharp mower blades to reduce wounding of grass; reduce mowing frequency during an outbreak
  – Balanced fertilizer program; avoid excessive nitrogen especially in the spring
  – Avoid drought stress as well as excessive irrigation
Slime mold

- They are not pathogens
- Fruiting structures form under moist conditions on plant surfaces
- Spores will disperse and fruiting structures disappear

http://www.extension.iastate.edu/newsrel/2003/mar03/mar0303.html
http://hort.uwex.edu/articles/slime-molds
Cyanobacteria\Blue-green algae

- They are not true pathogens
- Problem in areas that are heavily shaded, have poor drainage and high levels of phosphorus
- In large number they move up on grass blades or cover the ground
- Release of toxins causes grass to turn yellow and sometimes die
- Black layer on thatch or thinned grass
Cyanobacteria\Blue-green algae

http://www.flickr.com/photos/25486599@N07/2401503604/sizes/z/in/photostream/

http://www.flickr.com/photos/25486599@N07/2401285296/sizes/z/in/photostream/
Cyanobacteria\Blue-green algae

• Management:
  – Fungicides: Chlorothalonil products (Daconil) three times at 7 day intervals
    • Note: QoI fungicides such as Heritage and Insignia could increase problem
  – Aerating compacted areas to increase water infiltration
Algae

- Problem in thin grass, shaded areas, over watered and overfertilized areas

General management practices to reduce disease

- Reduce thatch
  - Many fungal pathogens like to stay in the thatch
  - High humidity, lots of food (dead grass)
- Do not mow grass below recommended heights
- Avoid drought stress
Information and Resources

• National Turfgrass Evaluation Program (http://www.ntep.org/contents2.shtml)

• Diagnosis of disease problems
  – Utah Plant Pest Diagnostic Lab
    Utah State University
    5305 Old Main Hill
    Logan, UT 84322
Other landscape problems
Downy mildew of Impatiens

• First observed in Utah in 2012
• Fungal-like organism specific to impatiens
• Spores are spread by wind and water
• Pathogen survives in plant debris
• Symptoms
  – Leaves may be slightly yellow
  – Leaves fall off, leaving just stems
Downy mildew

http://palmbeachcountyextension.wordpress.com/2012/02/10/managing-downy-mildew-on-impatiens-workshop/
Downy mildew of Impatiens
Downy mildew - Management

- Remove all infected plant material
- Do not compost infected plant material
- Plant other ornamentals in the location for at least a couple of years
- Fungicides as protectant
  - Heritage, Stature, Presidio
  - Subdue Maxx, Fenstop
  - They do not always work due to resistance problems
Porcupine ‘canker’
Damage from lawnmowers provides entrance points for wood decay fungi
Thousand cankers disease

- Black and English walnut trees are killed
- Fungus transmitted by walnut twig beetle
- Beetle is the size of grain of rice. It bores into the trunk of trees. The fungus kills the tissue surrounding the bore holes.
- It is the high number of small cankers that kill the tree within 3-4 years after infection
Thousand cankers

http://www.coloradotrees.org/News/September-October.html

www.agnr.umd.edu
Management – Canker

- Look for dead, dying or wilting branches
- Look for discolored bark
- Prune out infected branches and limbs