

Turf Diseases
Tuesday Feb 15, 2011
206 Turf

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What I'll cover

- common turf diseases of Colorado
 - specifics on their identification
 - how management techniques used by today's lawn care industry directly influence these diseases.
 - mowing practices, aeration, watering schedule and other procedures will be covered.

Ascochyta Leaf Blight



Ascochyta Leaf Blight

- Kills from the tip down towards the crown
- Infection occurs through the cut end of the leaf blade
- Due to drought stress- irrigation heads/nozzles not functioning properly, improper spacing, pressure, etc.
- Stress due to wheel marks
- Stress due to removing too much of the leaf blade at one time

Sell a Service

- Proper irrigation system scheduling
- Adjusting of heads and nozzles
- Replacement of nozzles
- Pressure check
- Poor / restricted soil conditions

- Takes several weeks to a month for turf to recover from a severe outbreak
- Fungicides are ineffective and NOT recommended

ET_o

- The amount of water given off by turf through transpiration and from the soil through evaporation

- Varies for each community
- Varies for each month

- Turfgrass requires only 80% of ET_o

Water According to ET_0
 Example: Grand Junction ET_0
 July ET_0 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?

Lawn Care

Mowing Frequency

'Remove no more than 1/3rd of the grass blade at any one time'

Mow often enough to achieve this goal!

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 Disease problems

Lawn Care




Mowing Height

~~Minimum - 2 inches~~

Preferred height
is
2.5 to 3 inches

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

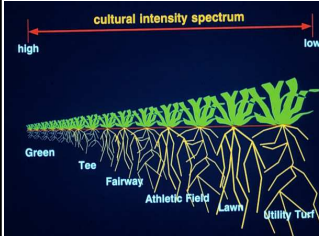
Lawn Care



Mowing Frequency

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

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

Why would you provide this Service (or Information)

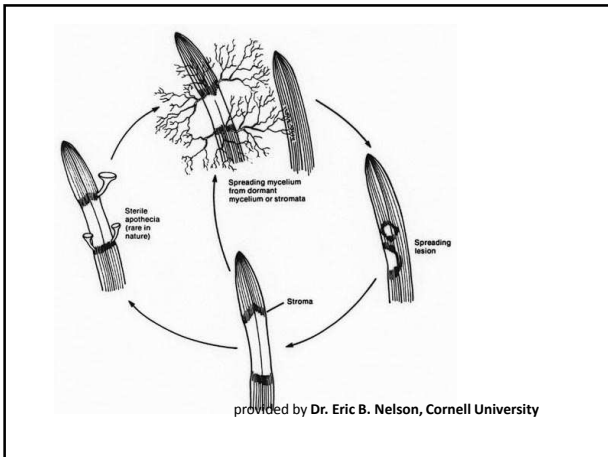
- They will remember you when they need something else sprayed
- Informs the client you are a professional
- Could increase your income
- Need Handouts – Curtis.Swift@colostate.edu

Dollar Spot Disease

- Spots on grass
- Hour glass constriction on blades
- No spores
- Stressed turf



bluegrasses, bentgrasses, fescues, and zoysia



Dollar Spot

- Fungicides often required on stands of creeping bentgrass and annual bluegrass.
 - 7 to 21 days depending on the fungicide
- Rarely necessary for residential lawns

Fungicides effective against dollar spot

- **DMI class SS**
- fenarimol Rubigan®, metaconazole Tourney®, myclobutanil Eagle®, propiconazole Banner Maxx®, triadimefon Bayleton®, triticonazole Trinity®
- **Dicarboximide class SS**
- iprodione Chipco 26GT®, vinclozolin Curalan®
- **Benzimidazole class SS** - thiophanate-methyl Cleary 3336®
- **Carboximide class SS** - boscalid Emerald®
- **Benzonitrile class MS** - chlorothalonil Daconil®

Nitrogen & Dollar Spot

- Adequate nitrogen fertilization in the late spring and summer may help prevent dollar spot
- Excess applications may encourage other turf problems (e.g., brown patch, summer patch, and drought stress).

Dollar Spot Disease

- Proper mowing schedule
 - pattern of symptoms depends largely on mowing practices
 - Try not to remove more than 1/3 of the leaf surface in any one mowing
- Proper irrigation scheduling
 - Nighttime and early morning irrigation are preferred; i.e. 10 p.m. to 6 a.m.
 - Maintain adequate soil moisture

Soil Preparation

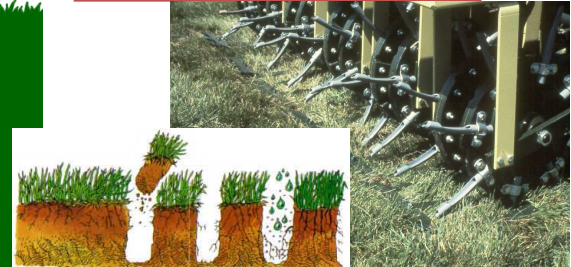
- Proper soil preparation is important
 - Depth and uniformity
- Organic content of soil is important
 - Improves water penetration
 - Improves oxygen content in soil
- Can you redo the soil?

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



Turfgrass Core Cultivation (Aeration)

- Improves water penetration
- Reduces water runoff
- Improves fertilizer movement to the roots
- Improves the oxygen level in the soil
- Enhances turfgrass shoot and root development
- Increase soil microbial activity

Necrotic Ring Spot



Necrotic Ring Spot *Ophiosphaerella korrae*

- Circular or doughnut-shaped patches of dead grass
- Appears two to three years after lawn establishment
- Especially on poorly prepared soil

Necrotic Ring Spot

- Prepare site before sodding or seeding
- Do not overwater
- Follow good management practices on established lawns
 - Aerate, mow
- Avoid applying excessive amounts of nitrogen fertilizer
- Overseed with bluegrass varieties shown to have resistance.

- Adelphi' **Kentucky Bluegrass with moderate resistance**
- 'Alpine'
- 'Apex',
- 'Award'
- 'Bristol'
- 'Classic'
- 'Eclipse'
- 'Impact'
- 'Kelly'
- 'Joy'
- 'Liberator'
- 'Midnight',
- 'Miranda'
- 'Mystic'
- 'NuBlue'
- 'Nugget'
- 'NewStar'
- 'Odyssey'
- 'P105'
- 'P104'
- 'Unique'
- 'Wabash'
- 'Washington'

Overseed

- Perennial ryegrass seed germinates rapidly, competes favorably with Kentucky bluegrass and is immune to NRS
- Fungicides should be considered only if other options have been thoroughly exhausted

Necrotic Ring Spot

- Fungicide effectiveness is inconsistent
- Must be applied in spring before root colonization by the fungus occurs
 - In May when soil temperatures reach 65° F at a depth of 2 inches.
 - Second application after one month
 - Third monthly application may be necessary
- Fungicide applications only suppress NRS

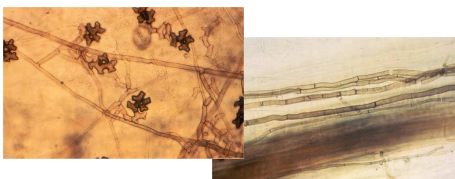
Fungicides for Necrotic Ring Spot

azoxystrobin	Heritage	Fair to good
azoxystrobin +propiconazole	Headway	Good
iprodione	Chipco 26GT, Raven, Lesco, 18 Plus, Iprodione Pro	Unknown
metconazole	Tourney	Good
myclobutanil	Eagle	Fair to good
propiconazole	Banner MAXX, Spectator	Fair to good
Thiophanate methyl	Cleary's 3336, Fungo, T-Storm	Poor to fair at current labeled rates
triticonazole	Trinity, Triton	Fair to good

Patch Diseases

Ectotrophic root-infecting fungi

- Form specialized attachment and infection structured
 - called hyphopodia



Ectotrophic growth and patch disease

- increases following a decline in plant vigor



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

Nitrogen

- ERI fungi are more able to survive in soil when N is added.
 - 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

Take-all Patch

Gaeumannomyces graminis var. *avenae*

- Extremely destructive on bentgrass turf
 - » "Smith, Jackson & Woolhouse. 1989. Fungal disease of amenity turf grasses. E & F.N. Spon, London



Take-all Patch

Gaeumannomyces graminis var. *avenae*

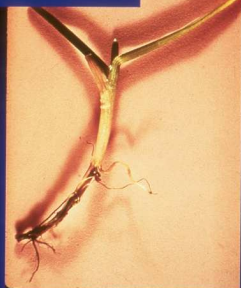
- Common in soils where pH is 4.3 to 7.5
 - » "Smith, Jackson & Woolhouse. 1989. Fungal disease of amenity turf grasses. E & F.N. Spon, London
- Most severe where pH exceeds 7.0
- Excellent control when N is applied as monoammonium phosphate or ammonium sulfate

Bluegrass and Fescue

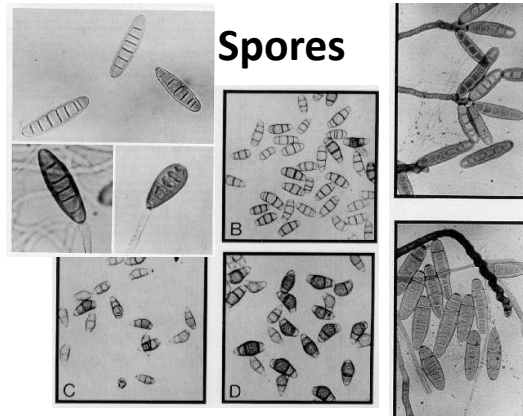


'*Helminthosporium*'

'Melting-out' phase



Spores



"Helminthosporium-type" diseases (melting-out and leaf spot)

- Bipolaris, Dreschlera, Exserohilum
- Favored by extended periods of leaf wetness
 - Promote proper watering
 - Time of day (night)
 - Length of time
 - Frequency
- Avoid excess nitrogen
 - Promote soil tests



'Helminthosporium-type' Diseases

- Avoid excess use of nitrogen in early spring.
- Avoid using common types of Kentucky bluegrass.

Resistant Kentucky bluegrass cultivars: Ascot, Princeton104, Eclipse, Unique, Alpine, SR 2000, Bartita, Apex, Touchdown, Liberty, and Barblue, and many others.

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

Melting Out Disease

- Azoxystrobin Heritage
- Chlorothalonil Daconil – non residential
- Iprodione Chipco 26019 – non residential
- Mancozeb Dithane - non residential
- Myclobutanil Eagle
- Propiconazole
- PCNB no longer permitted phytotoxic

Herbicides

- Overuse of certain herbicides (MCP, 2,4-D and dicamba) have been shown to enhance 'Helminthosporium' disease development on cool season grasses

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