# TURFGRASS PEST MANAGEMENT

## Diseases of Turfgrass

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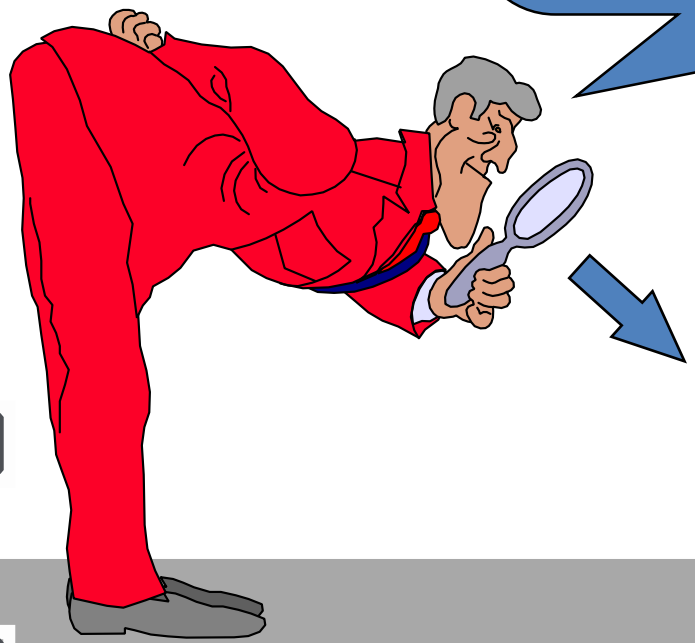
Diseases can be difficult plant disorders to diagnose and manage.



Disease = disturbance of normal plant function.

# DISEASES

Non-infectious:

- Not spread between plants
- Cultural, environmental

Infectious:

- Spread between plants
- Caused by pathogens

# PATHOGENS

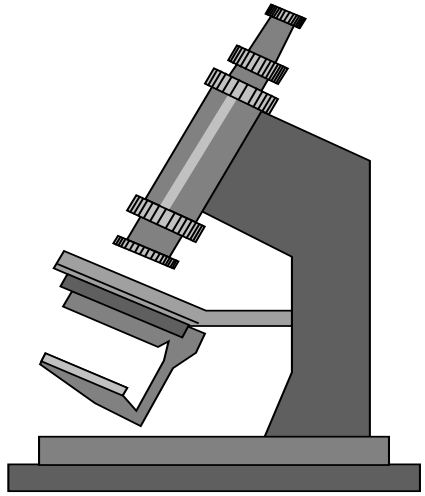
Fungi:

- Most common cause of infectious turfgrass diseases

Bacteria

Virus

Nematodes



# FUNGI

Most fungi feed on decaying organic matter.

Only a few species attack living plants.

Fungi reproduce by spores.

# FUNGI

Most prefer or require moisture for growth, infection, spore germination.

Resting stage found in leaves, stems, roots.

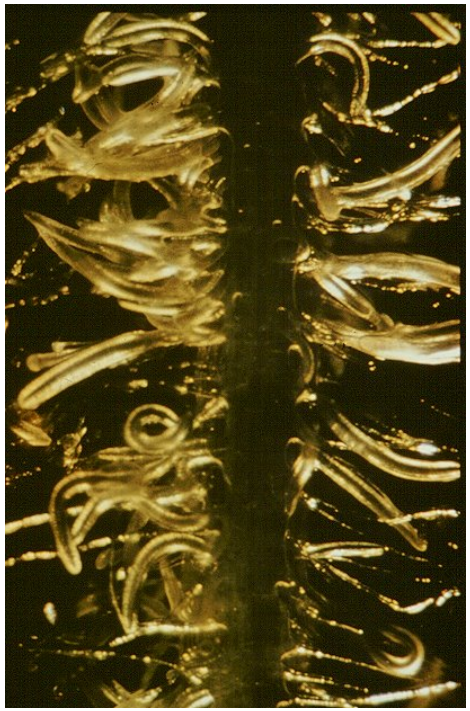
Overwinter in thatch and near soil surface.

# NEMATODES

1/50 to 1/10 inch, slender round worms.

Spread by eggs and anything that can contain eggs or adults.

Only a few species feed on turfgrasses.



# NEMATODE INFORMATION

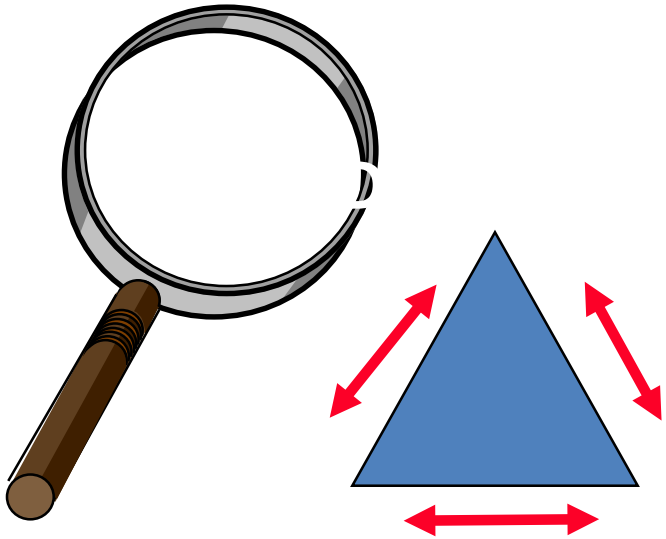
Needle-like mouthpart (stylet) punctures plant tissue.

Infested turf:

- Lacks vigor.
- Does not respond well to cultural practices.
- More susceptible to cultural and pest damage.

**To identify nematode damage, send plants and soil to a lab.**

Not all turfgrasses exposed to a disease become infected. The “Plant Disease Triangle” must be completed.



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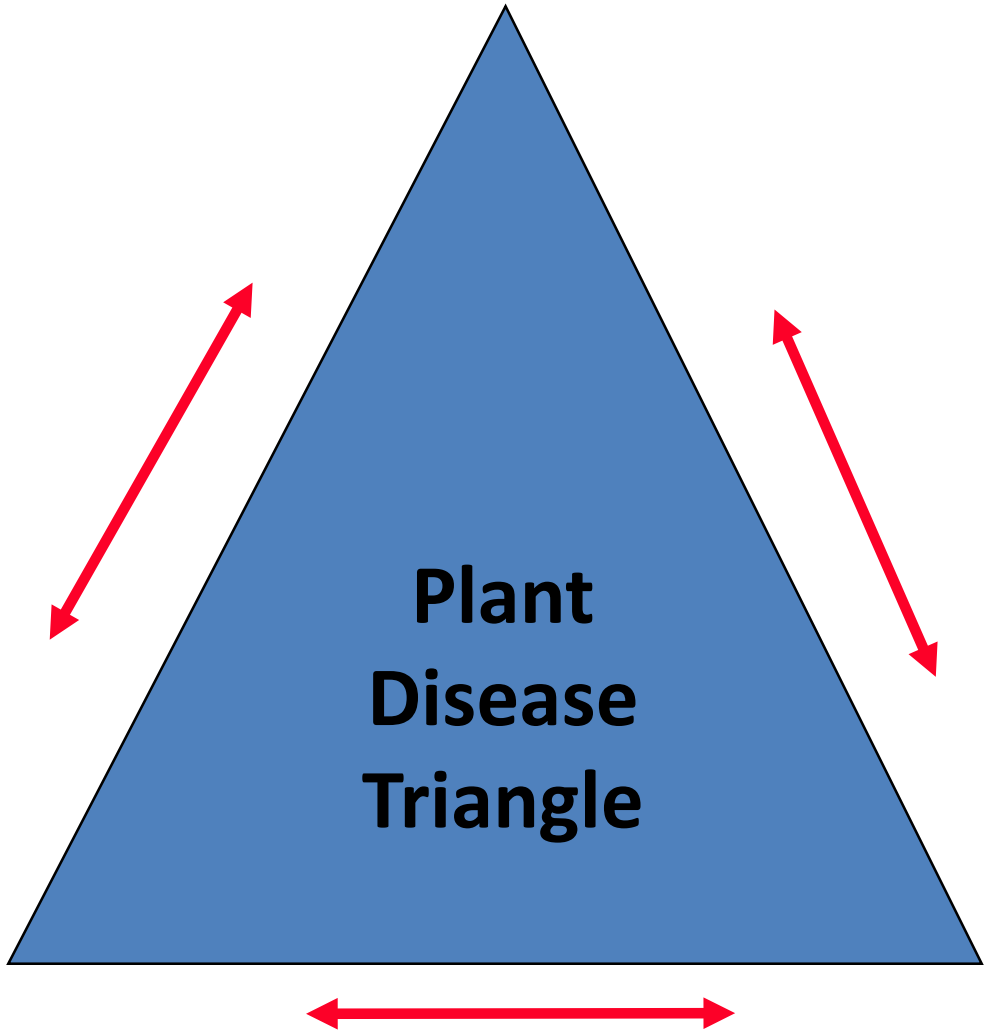
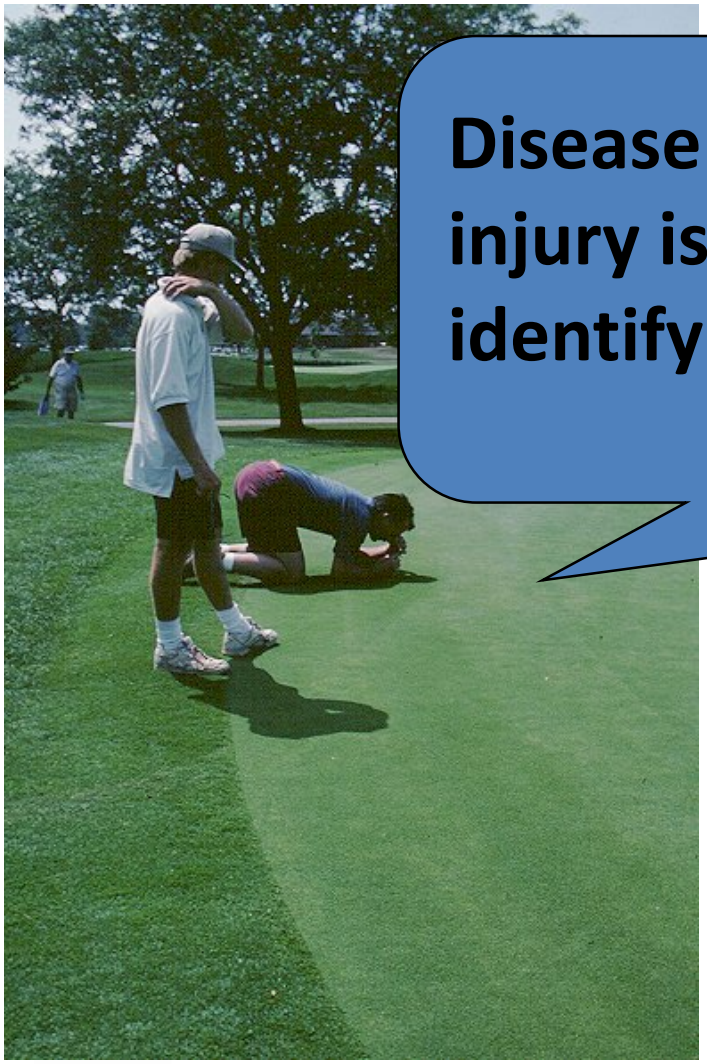
Susceptible Host




Casual Agent

Favorable Environment



**Disease management requires determining if the injury is caused by an infectious disease. If so, identify which pathogen.**

# TURFGRASS DISEASE DIAGNOSIS

Pathogen microscopic

- Diagnosis difficult

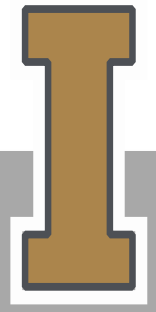
Symptoms are often used

Pathogens vary significantly:

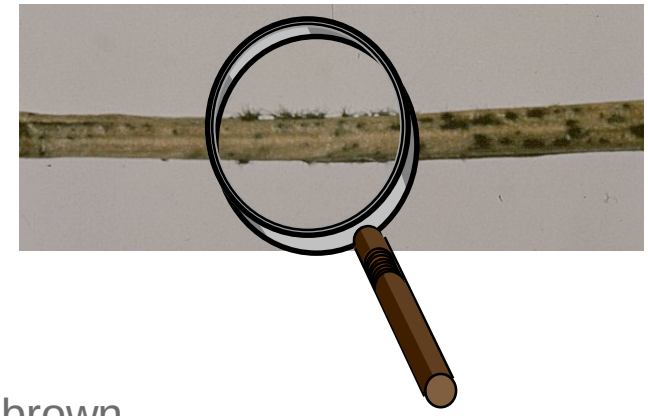
- Host
- Environmental conditions, weather
- Species and variety of grass

# COMMON TURFGRASS DISEASES

- Anthracnose
- Dollar spot
- Fairy rings
- Fusarium patch/Pink snow mold
- Leafspot
- Necrotic ring spot
- Nematodes
- Powdery mildew
- Pythium crown/root rot
- Red thread
- Rhizoctonia brown patch
- Rust
- Slime mold
- Stripe smut
- Pink snow mold



# ANTHRACNOSE



Description:

- Host: annual bluegrass
- Patches of turf 2 in. to 10 ft. turn yellow- bronze to reddish brown.
- Develops most rapidly during hot, humid weather or other stresses.
- “Spiny cushions” of spores may be visible on blades (need hand lens to see spines).

# ANTHRACNOSE

Management:

- Maintain adequate fertility
- Reduce all types of stress
- Fungicides

# DOLLAR SPOT

Description:

- Bentgrass, bluegrass, perennial ryegrass.
- Bleached areas of turf = size of silver dollar.
- Spots may merge - blight large areas.
- Tan lesions with a dark border girdle blades.
- White mycelium may be visible in morning.

# DOLLAR SPOT

Management:

- Maintain adequate nitrogen levels
- Fungicides

Bulk Fertilizer Application

# FAIRY RINGS

Description:

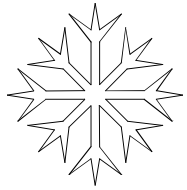
- Dark green ring, mushrooms
- Caused by fungi that breakdown organic matter
- Often appear after rains or heavy irrigation
- Size varies
- More serious problem on golf greens

# FAIRY RINGS

Management:

- Mask symptoms with fertilization.
  - May stimulate some fairy ring fungi
- Difficult and expensive to control.
- Replace infested soil.
- Fumigation of the soil.

# FUSARIUM PATCH (PINK SNOW MOLD, MICHRODOCHIUM PATCH)



Description:

- Fungus survives in thatch and residue
- Develops in cool (45 F) and wet conditions
- Whitish-grey or reddish brown spots from 2 in. to 2 ft in diameter
- Develops with or without snow cover
- Annual bluegrass, perennial ryegrass, bentgrass are susceptible

# FUSARIUM PATCH (PINK SNOW MOLD, MICHRODOCHIUM PATCH)

Management:

- Allow grass to harden off before winter
  - Manage late season fertility
- Fungicides

# LEAFSPOT AND MELTING OUT DISEASES

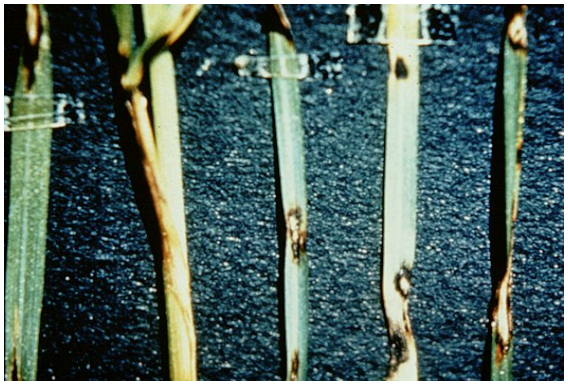
Description:

- Several species of fungi- *Drechslera*
- Most active during cool, moist weather
- Fungi may spread to the crowns during stress causing “melting out”
- Damage may be confused with other pests
- Leafspot: creeping bentgrass, fine fescues
- Melting out: Kentucky bluegrasses

# LEAFSPOT AND MELTING OUT DISEASES

Management:

- Resistant turf varieties
- Limit stress
- Avoid lush, wet turf
- Fungicides
  - Time consuming
  - Expensive



# NECROTIC RING SPOT

Description:

- Wilted, dying or dead turf in spots 2 to 12 inches wide
- Patches may grow together causing steaks, crescents, or circles
- “Frogeye” pattern typical
- Symptoms become obvious during drought stress

# NECROTIC RING SPOT

Management:

- Use resistant varieties – use two or more species/resistant cultivars
- Avoid stressing turf in any way
  - Fertility
  - Irrigation
  - Thatch management – organic matter management
- Fungicides

# NEMATODES

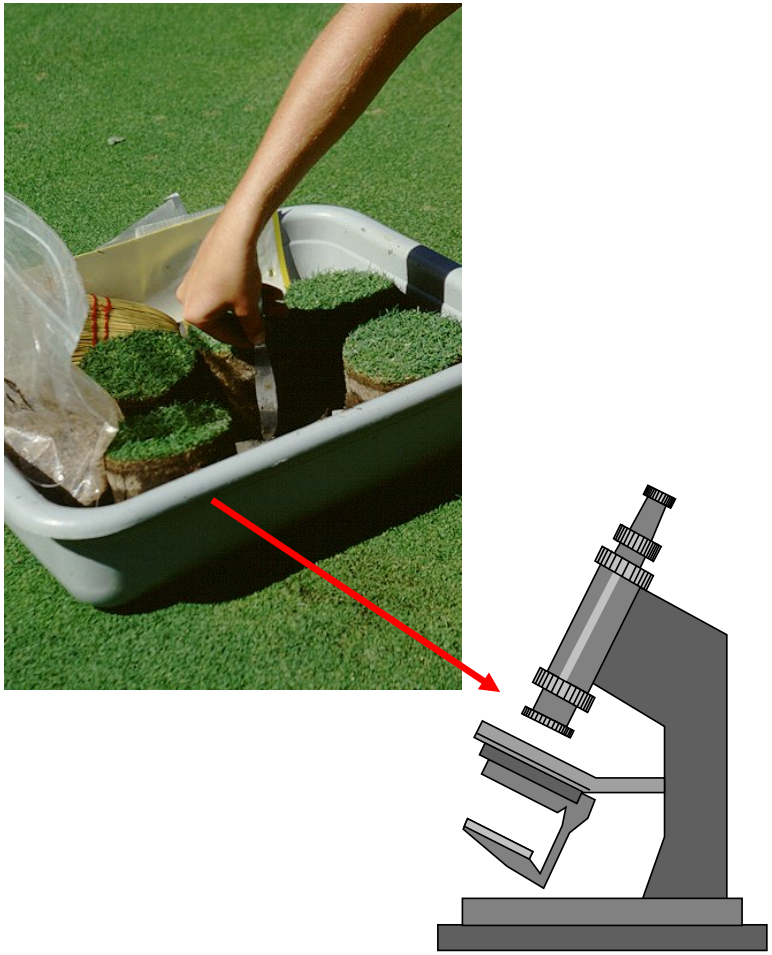
Description:

- Turf lacks vigor
  - Thin, stunted, off color, slow growing
- Fails to respond to water & fertilizer
- Plants wilt during mid-day
- Die in irregular patches
- Roots abnormal

# NEMATODES

Management:

- Laboratory diagnosis
- Reduce stress
  - Frequent, light mid-day irrigation
- Nematicides



# POWDERY MILDEW

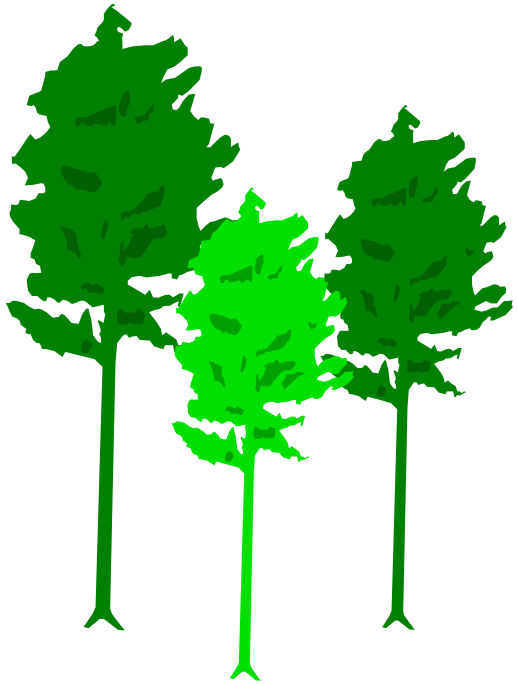
Description:

- White, powdery coating on the leaves
- Common during spring and fall
- Enhanced by shade, wetness, etc.
- Plant growth reduced
- Infected plants may wither and die

# POWDERY MILDEW

Management:

- Avoid planting shady, wet areas with Kentucky bluegrass
  - Use shade tolerant grasses
- Trim trees and shrubs
  - Increase sunlight
  - Increase air circulation
  - Mow frequently at recommended height
  - Water in morning



# PYTHIUM BLIGHT

Description:

- Round to irregular water-soaked , “greasy” sunken patches, up to 12 in. wide.
- Hot weather, usually confined to wet areas.
- Early morning- fluffy white mold growth may be visible.
- Damage may appear in streaks following drainage or mowing patterns.

# PYTHIUM BLIGHT

Management:

- Improve drainage.
- Avoid creating excessively lush turfgrass.
  - Adjustment cultural practices as necessary
- Fungicides - Know the weather forcast.

# RED THREAD

Description:

- Irregular to circular, “ragged” light tan to pink patches, 2 to 12 inches in diameter.
- Develops during prolonged humid weather.
- Reddish- pinkish fungal threads protrude from the leaves.
- Infected patches may merge.

# RED THREAD

Management:

- Maintain turf vigor.
- Remove clippings to reduce inoculum.

# RHIZOCTONIA BROWN PATCH

Description:

- Brown patches, up to 2 ft.
- Appear during hot, moist, overcast weather.
- Grayish-black “smoke” ring of wilted turf may develop on the edge of the patch.
- Relatively rare

# RHIZOCTONIA BROWN PATCH

Management:

- Avoid excessive nitrogen.
- Remove dew.
- Increase air circulation.
- Aerification practices.
- Fungicides.

# RUST

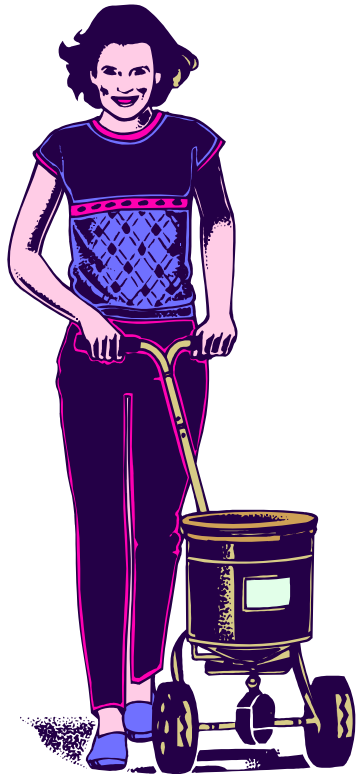
Description:

- Primarily ryegrass and bluegrass.
- Turf becomes reddish brown from fungi pustules.
- Spores rub off on shoes.
- Weakened turf susceptible to other diseases and stresses.
- Develops when growth is reduced.

# RUST

Management:

- Use resistant turfgrass varieties.
- Maintain vigorously growing turfgrasses.
- If rust is present, cut lawn frequently and remove clippings to reduce spread/



# SLIME MOLD

Description:

- Harmless fungi that feed on decaying organic matter.
- During warm weather, white, gray, black, or cream slimy masses grow over leaves.
- Develops in patches or streaks.
- Masses dry to ash- gray crusty mats.

# SLIME MOLD

Management:

- Slime molds soon disappear.
- Rarely occur more than once a season.
- Rake, brush, or spray with water to remove the mold.
- Chemical control NOT recommended.

# STRIPE SMUT

Description:

- Cool weather disease of bluegrass and bentgrass.
- Symptoms are subtle and difficult to detect until damage is extensive.
- Turf stunted.
- Infected blades have long black pustules that open liberating black spores.
- Infected leaves twisted and shredded.

# STRIPE SMUT

Management:

- Resistant grasses.
- Established infection is difficult to control.
- Fungicides suppress smut for only a short period.
- Maintain good cultural practices.
- Do not allow turf to go dormant in summer.

# TYPHULA BLIGHT (GRAY SNOW MOLD)

Description:

- As snow melts, circular gray or brown spots appear in the turf.
- Grayish- white fungal strands are visible.
- More severe when snow falls on unfrozen lush turf .

# TYPHULA BLIGHT (GRAY SNOW MOLD)

Management:

- Avoid creating lush, tender fall growth. Use a balanced fertilizer.
- Rake and remove tree leaves before snowfall.
- Resistant turfgrasses.
- Fungicides.

# PREDICTING DISEASE ACTIVITY

Host susceptibility

Weather conditions

Microclimate

Weather station

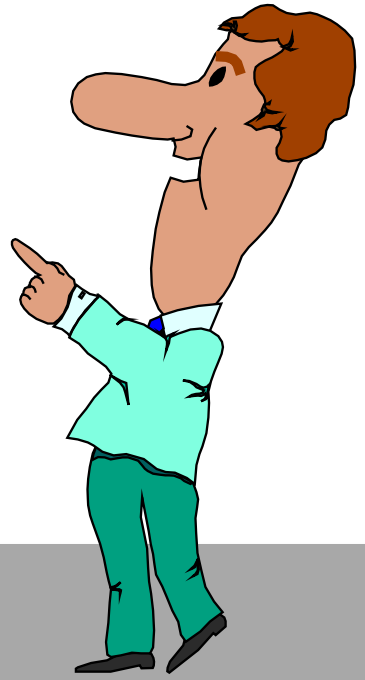
Disease management efforts focus on preventing diseases from occurring or lessening the damage.

# INFECTIOUS DISEASE MANAGEMENT

Resistance

Avoidance

Protection



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