



# Effective Management of Turfgrass Diseases: Strategies for Healthier Lawns

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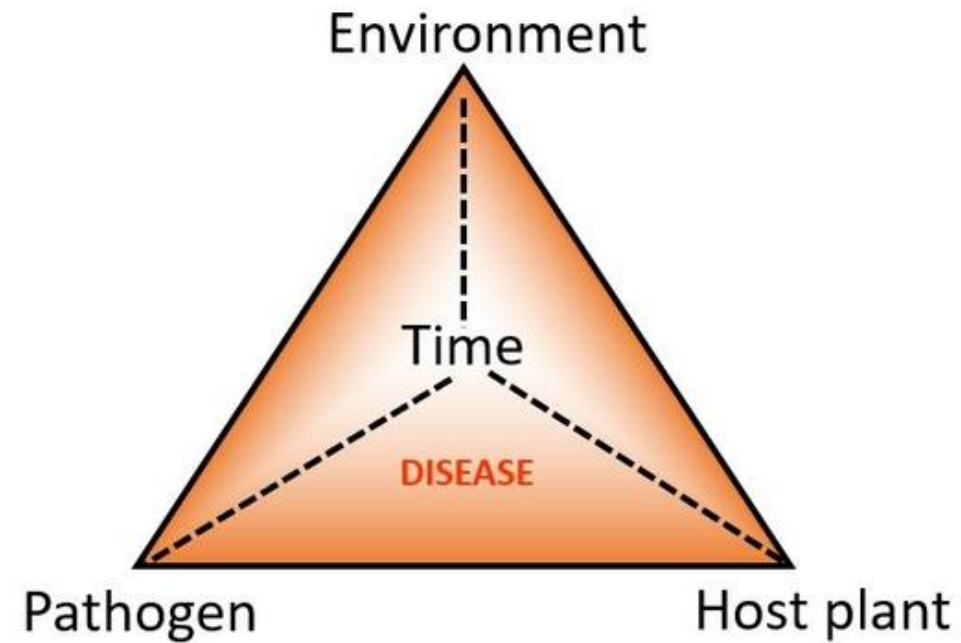
# Topics

## ❖ Introduction to Plant Disease

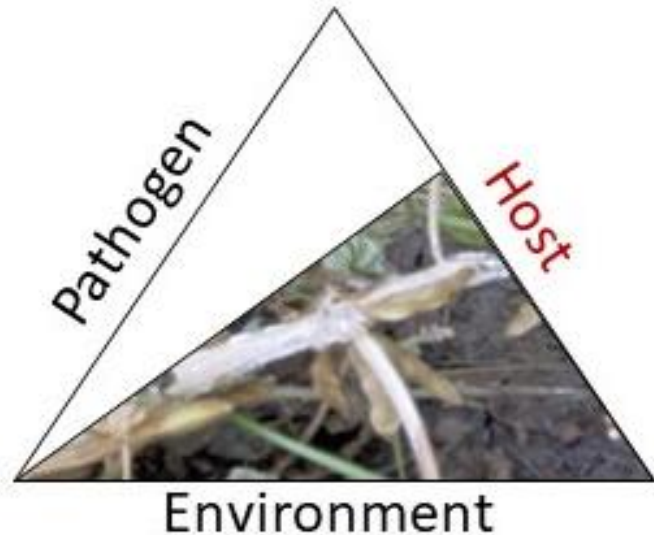
## ❖ Common Diseases:

- ✓ Leaf spot
- ✓ Gray leaf spot
- ✓ Large patch
- ✓ Take-all patch
- ✓ *Pythium* spp.

# Disease Triangle



# Disease Triangle



- Choose the **appropriate** turfgrass for the location.
- Choose **cultivars** within the species that offer certain advantages over drought tolerance or other growing conditions that could happen in the area.

# Disease Triangle

- Use proper irrigation techniques.
- Apply specific fertilizer according to the instructions.
- Maintain it free of weeds.

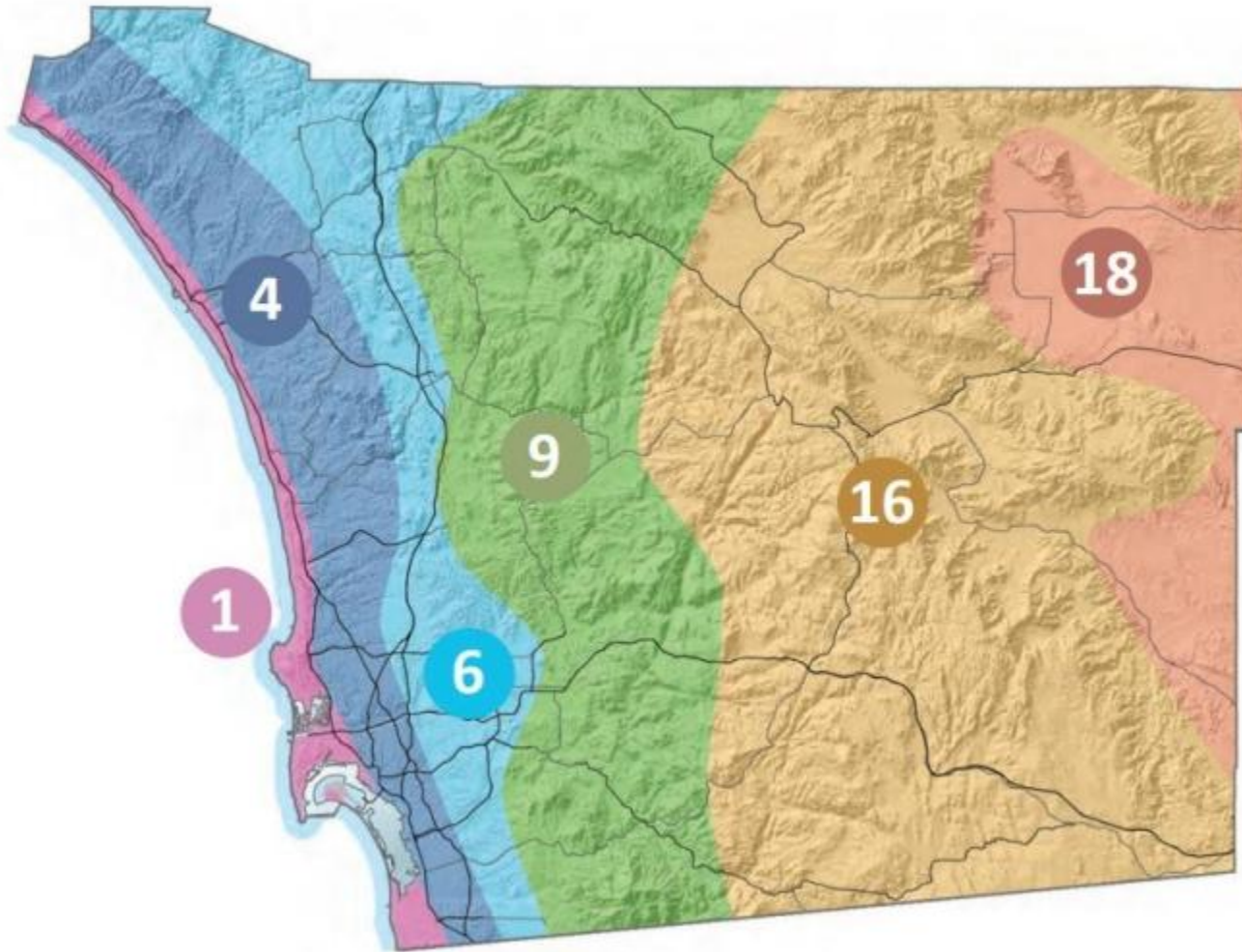


# Disease Triangle



# **CULTURAL CONSIDERATIONS FOR DISEASE MANAGEMENT**

# Develop a plan for each particular site



# Budget



# Establishing a new and good site?



**Soil testing**



**Prepare the soil**



**Species/cultivar selection**

# Maintenance



**Irrigate in the early morning**



**Clean and sharp mowing equipment**



**Apply enough fertilization during the right time**



**Topdressing / Amendment**

# Fertilization – WARM SEASON GRASS



# Addition of Amendments

- Soil physical properties
- Improve soil fertility
- Microbial community increase – plant health
- Solid or foliar applied
- Weeds
- High salts



# HOW TO SPOT DISEASE SYMPTOMS?

# Symptoms of Turf Decline

## Stand Symptoms

Patches



Rings



## Plant Symptoms

Leaf Spots



Leaf Blight



Dieback



# Know how to spot symptoms



# Know how to spot symptoms



# COMMON DISEASES

# Foliar Diseases

## LEAF SPOT AND MELTING-OUT COMPLEX

### Primary pathogens:

- ✓ *Bipolaris* spp.
- ✓ *Drechslera* spp.
- ✓ *Curvularia* spp.

### Affected grasses:

Kentucky bluegrass, perennial ryegrass, fescues, bermudagrass

### Symptoms:

Small purplish to brown leaf lesions that may coalesce. In advanced stages (melting-out), crown and root rot occur, leading to thinning.



# Favorable conditions and management

## LEAF SPOT AND MELTING-OUT COMPLEX

**Hosts:** Cool-season turfgrasses

**Favorable Conditions:** Warm weather and high humidity

**Hosts:** Warm-season turfgrasses

**Favorable Conditions:** Cool, wet weather periods and high humidity

- Leaf spot outbreaks can occur under both low and high nitrogen fertility levels; excessive nitrogen application may promote disease development.
- For Bermudagrass – 1 lb N per 1000 ft<sup>2</sup> per growing month

### Chemical control:

- Heritage<sup>®</sup> (azoxystrobin), Pillar SC<sup>®</sup> (triticonazole + pyraclostrobin), Compendium<sup>®</sup> (azoxystrobin + propiconazole)
- Velista<sup>®</sup> (penthiopyrad), Pedigree<sup>®</sup> (flutolanil)
- Secure<sup>®</sup> (fluazinam), Daconil WeatherStik<sup>®</sup> (chlorothalonil)

# Foliar Diseases

## GRAY LEAF SPOT

### Primary pathogens:

✓ *Pyricularia grisea* (syn. *Magnaporthe grisea*).

### Affected grasses:

Primarily perennial ryegrass, tall fescue, and St. Augustinegrass

### Symptoms:

Gray to tan lesions with purple margins; rapid turf thinning



# Management Strategies

## GRAY LEAF SPOT

- ✓ Cultivars of tall fescue and St. Augustinegrass vary considerably in gray leaf spot susceptibility
- ✓ Irrigate early morning; avoid leaf wetness
- ✓ Mow frequently to reduce leaf wetness (in St. Augustinegrass)
- ✓ Excessive shade could also promote leaf wetness enhance gray leaf spot problems.
- ✓ Collecting clippings reduces spread of the disease when gray leaf spot symptoms are evident.

## Chemical control:

- Headway® (azoxystrobin + propiconazole), Compendium® (azoxystrobin + propiconazole)
- Thiophanate-methyl (Group 1)
- Enclave® (chlorothalonil + iprodione + thiophanate-methyl + tebuconazole), Spectro® (chlorothalonil + thiophanate-methyl)

# Soilborne Diseases

## LARGE PATCH

### Primary pathogens:

- ✓ *Rhizoctonia solani*

### Affected grasses:

Primarily warm-season grasses, especially zoysiagrass, St. Augustinegrass, centipedegrass, and bermudagrass

### Symptoms:

- ✓ Circular to irregular brown or tan patches, often with orange or reddish-brown borders
- ✓ Leaf sheaths rot at the base, causing turf to thin or collapse
- ✓ Infected turf may have a greasy or water-soaked appearance early on



# Favorable conditions and management

## LARGE PATCH

### **Choose resistant turfgrass:**

- Bermudagrass = tolerant
- Zoysiagrass, centipedegrass, St. Augustinegrass = highly susceptible
- Fescues/bluegrasses = immune (in areas where cool-season turfgrasses can be maintained)

- ✓ Avoid nitrogen applications within 6 weeks before dormancy or 3 weeks after spring green-up
- ✓ Avoid planting in saturated or low-lying areas or install subsurface drainage if needed
- ✓ Irrigate only as needed in fall/spring to prevent drought and avoid excess moisture
- ✓ Reduce soil compaction

### **Chemical control:**

- Headway® (azoxystrobin + propiconazole), Compendium® (azoxystrobin + propiconazole)
- Tourney (metconazole), Torque/Mirage (tebuconazole)
- Lexicon Intrinsic (pyraclostrobin + fluxapyroxad), Prosperity Forte/XT (pydiflumetofen + others), tekken (isofetamid + tebuconazole)

# Soilborne Diseases

## TAKE-ALL PATCH

### Primary pathogens:

- ✓ *Gaeumannomyces graminis* var. *graminis*

### Affected grasses:

- ✓ St. Augustinegrass (highly susceptible)
- ✓ Bermudagrass (moderately susceptible)
- ✓ Also occasionally affects zoysiagrass, centipedegrass

### Symptoms:

- ✓ Irregular patches of thinning or dead turf
- ✓ Roots and stolons appear blackened or rotted
- ✓ Chlorosis (yellowing) often precedes dieback
- ✓ Patches may coalesce, especially in warm, moist conditions
- ✓ Turf may not respond to fertilization or irrigation



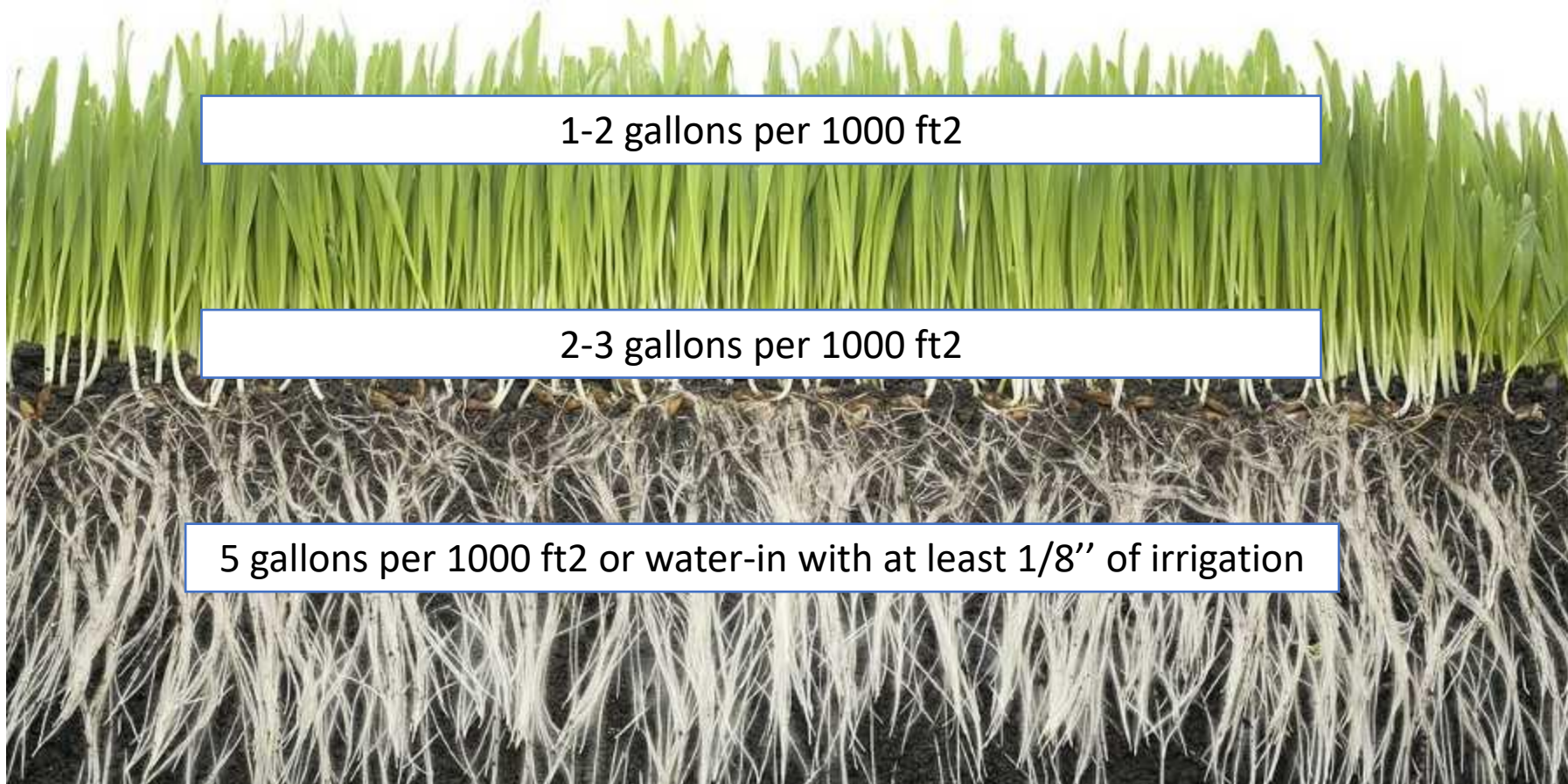
# Favorable conditions and management

## TAKE-ALL PATCH

- ✓ Use resistant or tolerant cultivars if possible
- ✓ Improve drainage and avoid overwatering
- ✓ Avoid excessive nitrogen in spring and the use of plant growth regulators (PGRs)
- ✓ Manganese has shown efficacy against other *Gaeumannomyces* spp. and may benefit disease control.
- ✓ Reduce plant stress in unfavorable conditions (cool, wet, cloudy weather)

## Chemical control:

- **Prioritize** DMI (FRAC 3) and QoI (FRAC 11) fungicides.
- **Avoid** reliance on SDHI fungicides alone.
- **Enhance fungicide programs with tank mixes:** Phosphonates (e.g., Signature Xtra) + Contact fungicides (e.g., chlorothalonil) + Systemic actives from DMI/QoI classes



# Soilborne and Waterborne Diseases

## Primary pathogens:

- ✓ *Pythium* spp.

**Pythium Blight** – the most common and damaging, especially in cool-season grasses

**Pythium Root Rot** – common in both cool- and warm-season turf under wet, compacted, or poorly drained conditions

**Pythium Damping-Off** – affects seedlings in overseeded or newly planted turf

## Symptoms:

- ✓ Greasy, water-soaked, or matted turf
- ✓ Cottony mycelium in early morning
- ✓ Rapid blighting and collapse, often in streaks following water flow or mower paths
- ✓ Root rot symptoms with little or no root hairs



# Favorable conditions and management

## *Pythium* spp.

- ✓ Reduce prolonged leaf wetness by watering in the early morning hours, before sunrise.
- ✓ Avoid excessive rates of nitrogen to prevent lush, succulent foliar growth, which is very susceptible to *Pythium* blight.
- ✓ Avoid establishing turf in low-lying areas that will collect water. If necessary, install subsurface drainage to prevent wet soil conditions.
- ✓ Do not mow or irrigate when *Pythium* mycelium is present on the foliage to minimize spread of the pathogen.
- ✓ Collect and promptly dispose of clippings from infected areas and ensure that mowing equipment is washed before going to an uninfected area.

## Chemical control:

- **Phosphonates:** fosetyl-Al (Aliette), phosphite salts (Signature XTRA)
- **Phenylamides:** mefenoxam (Subdue MAXX)
- **QoI (11):** limited activity on some *Pythium* spp.
- Combination products like Segway (cyazofamid), Banol (propamocarb), etc.

# MOST IMPORTANT!



When choosing a pesticide, consider information relating to the pesticide's properties and application timing, honeybees, and environmental impact. Always read the label of the product being used.



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