Disease management
in landscape ornamentals

Plant health and quality take forethought and
time but is a necessary step in the protection
of our investment in the landscape.

By JOHN WATKINS, Ph.D./University of
Nebraska

landscape ornamentals represent a consider-
able investment to a property owner. It’s
much less costly to prevent dis-
ease injury to landscape plants
than it is to replace them.

Plant selection

Do your homework before
purchasing landscape plants.
Become knowledgeable in the
basics of plant disease i.e. how
diseases develop, the common
landscape plant diseases in your
geographic area, how environ-
mental stress interacts with the
host and potential disease
threats and the control mea-
sures available for combating
the various diseases.

Plant selection encompasses
two aspects of disease manage-
ment. One, know your plant
material. When plants, not well
adapted to a geographic area,
are exposed to an inhospitable
environment, stress results.
Chronic stress in a landscape
plant often predisposes it to in-
fection by disease-causing bac-
teria or fungi. Many of these
organisms are opportunists that
have difficulty infecting healthy, vigorously growing
plants but can become deadly invader of stressed plants. If a
certain tree or shrub is not adapted to your geographic area,
don’t put it in the landscape.

In my geographic area of
the Great Plains, iron chlorosis
is a chronic problem in certain
landscape sites and plants be-
cause, in our high pH soils, iron
is less available. Pin oak, a pop-
ular landscape tree, suffers be-
cause of iron deficiency. It’s dif-
cult to modify the soil with
enough organic matter or sulfur
to lower the pH and drilling
holes in the trunks of chlorotic
trees to inject iron is unsightly
and may promote internal
decay of the heartwood. You
can avoid the hassle, expense
and problem by simply not
planting pin oaks in high pH soils.

Another example of a prob-
lem landscape tree in certain
geographic areas is sycamore.
Sycamore is a beautiful tree
but anthracnose is a chronic
disease that may greatly detract
from the tree’s value as a land-
scape plant. Before you plant
sycamore give some thought as
to developing a tree health
management plan.

Roses and flowering crabap-
ples are popular landscape or-
amentals in both residential
and commercial landscapes.
When the homeowner or land-
scape manager selects a variety
based only on aesthetics the
headaches begin. Black spot
and powdery mildew can dev-
astate a rose garden and apple
scab, fireblight or cedar apple
rust can make your flowering
crabapple or hawthorn look far
different from that picture in

Correct diagnosis

Correct diagnosis is basic to
maintaining plant health, but
recognizing an infectious dis-
ease on ornamentals can some-
times be difficult. With certain
diseases such as tar spot of
maple or rust on quaking
aspen, symptoms are specific,
but with others, such as ash an-
thracnose, they may be non-
specific. Sometimes non-spe-
cific symptoms of an infectious
disease resemble those of envi-
ronmental stress making a de-
termination more difficult.

Cultural practices

Fertilization—Don’t pro-
trum growth with heavy
applications of nitrogen. De-
velop a balanced fertility pro-
gram.

Irrigation—Provide ade-
quate water for your plants but
don’t overwater. Avoid over-
head irrigation. For trees irri-
igate at the drip line.

Location—Don’t crown

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Location—Don’t crown
SOME CHEMICALS FOR DISEASE MANAGEMENT IN LANDSCAPE ORNAMENTALS

**Bordeaux mixture, fixed copper**  
Dormant application for anthracnose, general protectant for certain leaf spots and blights

**Fosetyl-Al (Aliette WDG)**  
Phytophthora root rots

**Chlorothalonil (Daconil Ultrex)**  
Broad spectrum protectant for anthracnose, leaf and petal blights and needle casts

**Quintoze (Terrachlor, PCNB)**  
Root and stem rots

**Iprodione (Funginex)**  
Rose black spot, powdery mildews, rusts

**Triadimefon (Bayleton)**  
Rusts, mildews and certain leaf spots and blights

**Maneb/Mancozeb**  
General protectant for rust and leaf spots

**Propiconazole (Banner MAXX)**  
Apple scab, powdery mildew, leaf spots and blights on certain ornamentals

**Thiophanate-methyl (Cleary's 3336)**  
Rhizoctonia root and stem diseases, certain leaf spots and blights, Botrytis blight

**Agronomus radiobacter (Galtrol)**  
Biological control for crown gall

**Fenarimon (Rubigan)**  
Powdery mildew, apple scab, rusts and black spot

**Sulfur**  
Organic fungicide for powdery mildew

**Streptomycin (Agri-Strep)**  
Control of bacterial diseases such as fireblight

**Propamocarb (Banol)**  
Soil drench for Phytophthora and Pythium root rots

**Metalaxyl (Subdue MAXX)**  
Soil drench for Phytophthora and Pythium root rots

**Chloroneb (Terraneb SP)**  
Soil drench for Pythium, Rhizoctonia and other root and blight diseases

**Myclobutanil (Eagle)**  
Systemic fungicide for rusts and powdery mildews

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**SYMPTOMS OF DISEASES OF LANDSCAPE ORNAMENTALS**

<table>
<thead>
<tr>
<th>Disease</th>
<th>General Symptom</th>
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</thead>
<tbody>
<tr>
<td>Fungus leaf spots</td>
<td>Distinct spots that vary in size, shape &amp; color</td>
</tr>
<tr>
<td>Bacterial leaf spots</td>
<td>Water-soaked spots that drop out</td>
</tr>
<tr>
<td>Anthracnose</td>
<td>Leaf spots and blottches and twig dieback</td>
</tr>
<tr>
<td>Cankers</td>
<td>Discolored branches, open wounds or branch dieback</td>
</tr>
<tr>
<td>Wilts</td>
<td>Yellowing and dieback of foliage, dark streaks in vascular tissue</td>
</tr>
<tr>
<td>Rusts</td>
<td>Yellow to orange pustules on leaves and twigs</td>
</tr>
<tr>
<td>Mildew</td>
<td>Grayish white powdery coating on leaves, distorted plant parts</td>
</tr>
<tr>
<td>Galls</td>
<td>Tumor-like growths on plant parts</td>
</tr>
<tr>
<td>Root rots</td>
<td>Wilting and dying of plants, discolored roots</td>
</tr>
<tr>
<td>Fireblight</td>
<td>Scorched appearance of shoots, blossoms and/or fruit</td>
</tr>
<tr>
<td>Scabs</td>
<td>Black to dark green circular lesions on leaves and fruits</td>
</tr>
<tr>
<td>Blights</td>
<td>Non-specific dying of leaf and flower tissue</td>
</tr>
<tr>
<td>Mosaic viruses</td>
<td>Mosaic pattern of lightgreen, dark green and yellow on leaves</td>
</tr>
</tbody>
</table>

Pine tip blight on Austrian pine plants. Provide winter and summer protection for sensitive ornamentals.

- **Pruning**—Make pruning cuts in healthy tissue well below infected areas. Preferably, prune when the tree or shrub is dormant.

- **Mulch**—Mulching around trees and shrubs protects the plants from mower injury and maintains a moist soil environment. Pull mulch away from the base of tree trunks.

- **Insect and Weed Control**—Weeds may harbor viruses that can be transmitted by insects to ornamentals in flower beds.

- **Removal**—Remove diseased flowers from the ornamental bed when symptoms are first noticed.

**Chemical Control**

Careful plant selection and good cultural practices can reduce the dependency on chemicals for disease control. However, when incorporated into a holistic plant health management program, rather than a "spray and pray" approach, fungicides provide the landscape manager with an effective disease control tool. Correct diagnosis of the disease leads to selection of the right chemical.

Apply the chemical so that all plant surfaces are covered. If the foliage being sprayed is hairy, you may need to add a spreader-sticker to the spray mix. Timing is critical, not only for the initial application but for follow-up repeat applications as well. Weather, plant growth and other factors affect residual activity of the chemical. Labels will give repeat application guidelines. **LM**
in cool-season turfgrass

The goal of every turfgrass manager should be to create a healthy turfgrass ecosystem. This can be a challenge since growing seasons in the northern latitudes are never the same.

By JOHN E. WATKINS/Ph.D. University of Nebraska

A nyone that has ever taken a soil microbiology course comes away with a new appreciation of the abundance of microbes in the plant/soil rhizosphere. The rhizosphere is that microenvironment in soil influenced by plant roots. One pound of soil and roots may contain over 900 billion organisms—bacteria, fungi, actinomycetes, nematodes, insects, etc. With that many organisms within the root zone of your turfgrass plants, you often wonder how anything survives. Fortunately for the turfgrass manager, only a few of the microbes in the rhizosphere cause disease; many benefit plant growth by keeping disease-causing microbes under control. There's a delicate coexistence between the good and the bad microbes in the turfgrass rhizosphere. When this balance is altered, disease can result.

Turfgrass diseases result from the complex interaction of pathogen, host and environment. Turfgrass management practices can affect all three, greatly influencing disease development. Those practices that favor vigorous, but not lush, grass growth and are detrimental to growth of the pathogen result in less disease injury to the turf. Good turfgrass management is an effective disease deterrent.

The goal of every turfgrass manager should be to create a healthy turfgrass ecosystem. This is a challenge since growing seasons in the northern latitudes are never the same. In 1996 the Northern Plains were relatively cool and wet. 1997, however, was just the opposite—hot, dry and windy. Because each season is different and because the relationship of host, pathogen and environment are so ecologically interwoven, disease predictions are difficult.

Let's examine some of the more common and damaging diseases of cool-season turfgrasses.

Leaf spot and melting out are two fungal diseases within the old group known as "Helminthosporium" leaf, crown and root diseases. The leaf spot pathogen, Bipolaris sorokiniana, attacks bluegrasses, bentgrasses, ryegrasses and fescues. Melting out, caused by Drechslera poae is a serious disease of Kentucky bluegrass and also occurs on ryegrasses and fescues. Both diseases are favored by dry periods alternating with prolonged cloudy wet weather. The range of pathogen activity is from 65°F to 85°F. Early disease symptoms are small dark brown spots on the leaf blade or leaf sheath. As the diseases progresses, the spots enlarge causing the infected leaves to yellow and the affected turf to appear chlorotic and thin.

Widespread use of improved turfgrass cultivars with good resistance to leaf spot and melting out has significantly lessened the impact of these diseases on turfgrass quality. The dependency on rescue fungicide treatments can be drastically reduced through good cultural practices. These include a fertilization program that does not stimulate lush growth in May, thatch management and using a preventive fungicide program on susceptible turfs.

Dollar spot, caused by Sclerotinia homoeocarpa, occurs when days are warm and nights are cool. The presence of dew and high humidity in the turf canopy are ideal conditions for dollar spot. On turfs maintained at 1 to 3 inches, symptoms are a mottled, light tan pattern made up of 4- to 6-inch patches of blighted turf. Individual leaf blades will develop a lesion that may be up to an inch long, is light tan with reddish-brown margins and often spans the width of the blade. If the turf looks as though it's covered with small cobwebs in the mornings, that's probably S. homoeocarpa mycelium.

Dollar spot often can be prevented without the use of fungicides or with minimal fungicide application. Maintaining vigorous growth during the season helps the turf outgrow the infection and recover quickly when it is infected. If needed, a fungicide can be applied at the first appearance of dollar spot.

Two of the most destructive patch diseases of cool season turfs are necrotic ring...
Spot, caused by *Leptosphaeria korrae* and summer patch, caused by *Magnaporthe poae*. Necrotic ring spot generally occurs on Kentucky bluegrass during spring and fall, and summer patch during July and August. Summer patch devastated lawns in the central plains in 1997 because of record high temperatures and low rainfall. Distinguishing between the two diseases is difficult as both produce doughnut-like patches in affected turf. The dead grass is light tan and matted, and many of the patches will have a tuft of healthy grass in the center.

The key to effective management of these two persistent diseases is in promoting root health through timely fungicide treatment and minimizing stress during the hot periods of the summer. These diseases are like a bad headache. They go away periodically but always return during periods of stress. On established turf, the key to prevention is to avoid management practices that promote rapid top growth at the expense of root development. Reduce thatch, fertilize properly and water more frequently when the disease is active. Apply a systemic fungicide with high volumes of water to drench the chemical into the root zone. Make the first application in May with a second one in June.

Brown patch, caused by *Rhizoctonia solani*, occurs on Kentucky bluegrass, tall fescue and perennial ryegrass during midsummer’s heat and humidity. The disease is identified by the presence of patches of dead and dying grass. The

### PREVENTIVE AND CURATIVE FUNGICIDE PROGRAMS FOR MAJOR DISEASES OF COOL-SEASON TURFGRASSES

<table>
<thead>
<tr>
<th>Disease</th>
<th>Preventive/ Curative</th>
<th>Initial application</th>
<th>Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leaf spot/melting out</td>
<td>P</td>
<td>May</td>
<td>chlorothalonil, iprodione, mancozeb, propiconazole, vinclozolin</td>
</tr>
<tr>
<td>Stripe smut</td>
<td>P</td>
<td>April or October</td>
<td>cyproconazole, fenarimol, flutolanil, propiconazole, thiophanate-methyl, triadimefon</td>
</tr>
<tr>
<td>Necrotic ring spot</td>
<td>P</td>
<td>When soil temperatures reach 60°F at 2&quot; depth</td>
<td>azoxystrobin, cyproconazole, fenarimol, iprodione, thiophanate-methyl</td>
</tr>
<tr>
<td>Fairy ring</td>
<td>C</td>
<td>At first symptoms of green ring</td>
<td>flutolanil</td>
</tr>
<tr>
<td>Dollar spot</td>
<td>P/C</td>
<td>June for ryegrass and bentgrass</td>
<td>chlorothalonil, cyproconazole, iprodione, mancozeb, propiconazole, thiophanate-methyl, triadimefon, vinclozolin</td>
</tr>
<tr>
<td>Brown patch</td>
<td>P/C</td>
<td>June for ryegrass and bentgrass</td>
<td>azoxystrobin, chlorothalonil, cyproconazole, flutolanil, iprodione, propiconazole, thiophanate-methyl, triadimefon, vinclozolin</td>
</tr>
<tr>
<td>Summer patch</td>
<td>P</td>
<td>When soil temperatures reach 65°F at 2&quot; depth</td>
<td>azoxystrobin, cyproconazole, fenarimol, propiconazole, thiophanate-methyl, triadimefon</td>
</tr>
<tr>
<td>Pythium blight</td>
<td>P</td>
<td>June</td>
<td>azoxystrobin, chloroneb, ethazol, fosetyl-Al, metalaxyl, propamocarb</td>
</tr>
<tr>
<td>Rust</td>
<td>P/C</td>
<td>July</td>
<td>chlorothalonil, cyproconazole, mancozeb, propiconazole, triadimefon, vinclozolin</td>
</tr>
<tr>
<td>Typhula blight</td>
<td>P</td>
<td>October/November</td>
<td>azoxystrobin, chlorothalonil, cyproconazole, fenarimol, iprodione, PCNB, propiconazole, triadimefon, vinclozolin</td>
</tr>
<tr>
<td>Microdochium patch</td>
<td>P</td>
<td>October/November</td>
<td>azoxystrobin, chlorothalonil, cyproconazole, fenarimol, iprodione, PCNB, propiconazole, thiophanate-methyl, triadimefon, vinclozolin</td>
</tr>
</tbody>
</table>

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patches are roughly circular. Green plants within the diseased patches have leaf spots that are long, gray lesions surrounded by a dark brown margin.

The presence of dew and high humidity in the turf canopy are ideal conditions for dollar spot.

Control thatch and maintain an adequate nitrogen fertility program during the growing season. Don’t overdo it with the nitrogen, but don’t starve the turf either. Apply a fungicide to susceptible turfs at the first appearance of brown patch symptoms.

Pythium blight is caused by several species of Pythium fungi. In turfgrass they survive in thatch and soil. All turfgrass species are susceptible to attack by these fungi. The two most important criteria for disease occurrence are poor surface drainage and a wet grass canopy. These along with high relative humidity and day temperatures above 90°F with warm nights, provide an ideal environment for an outbreak. Environmental conditions are key to this disease. When it’s cool and dry, no disease, but when it’s hot and humid, look out. Early symptoms are small brownish spots that suddenly appear, especially in drainage channels, within the turf. These many form into larger areas where the individual spots have merged. Infected leaves appear water-soaked and feel slimy to the touch. In the early morning hours, the turf may contain masses of fungal mycelium resembling a fluffy cotton ball. Sometimes the affected turf will give off a fishy odor. Place a plug of the affected turf in a sealed plastic bag overnight and then smell the results.

No single control measure will provide complete protection against an outbreak of Pythium blight. Turf managers must employ a combination of good management, early disease detection, and preventive fungicide treatment to avoid serious turf injury. Provide good surface and subsurface drainage and promote good air movement across blight-prone areas by pruning landscape plantings. The best fungicide strategy is one of prevention. When temperatures and humidities are forecast to reach into the 90’s with warm nights, it’s time to treat.

Rust diseases, caused primarily by Puccinia spp., occur on all commonly grown turfgrasses. The severity of rust outbreaks varies from year to year. Kentucky bluegrass, perennial ryegrass and tall fescue are the cool season grasses most affected by rusts. In the Great Plains and Rocky Mountains, rust usually occurs from mid to late summer until early October. It becomes severe when lack of water, low fertility or soil compaction reduce turf growth. Warm days and moderate night temperatures along with long dew periods create optimal environmental conditions for rust.

Heavily rusted turfs appear yellow or orange when seen from a distance. If still in doubt, put on a pair of white shoes and walk across the turf. If it’s rusty, they’ll

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**TURFGRASS FUNGICIDES GROUPED BY CHEMISTRY**

<table>
<thead>
<tr>
<th>Fungicide class</th>
<th>Common name</th>
<th>Examples of some trade names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aromatic hydrocarbons</td>
<td>Etridazole, Chloroneb, PCNB</td>
<td>Koban, Teremec SP, Turcide</td>
</tr>
<tr>
<td>Benzimidazoles</td>
<td>Thiophanate-methyl</td>
<td>Cleary’s 3336, Fungo, Systec 1998</td>
</tr>
<tr>
<td>Carbamates</td>
<td>Mancozeb, Propamocarb, Thiram</td>
<td>Fore, Banol, Thiram</td>
</tr>
<tr>
<td>Carboximides</td>
<td>Flutolanil</td>
<td>ProStar</td>
</tr>
<tr>
<td>Dicarboximides</td>
<td>Iprodione, Vinlozolin</td>
<td>Chipco 26019, Curlan, Vorlan</td>
</tr>
<tr>
<td>Nitriles</td>
<td>Chlorothalonil</td>
<td>Daconil 2787, Daconil Ultrex, Daconil Weather Stik</td>
</tr>
<tr>
<td>Phenylamides</td>
<td>Metalaxyl</td>
<td>Subdue Maxx</td>
</tr>
<tr>
<td>Phosphonates</td>
<td>Fosetyl-Al</td>
<td>Aliette, Prodigy, Aliette Signature</td>
</tr>
<tr>
<td>Sterol biosynthesis inhibitors (DMIs)</td>
<td>Cyproconazole, Propiconazole, Triadimenol, Myclobutanil</td>
<td>Sentinel, Banner Maxx, Bayleton, Eagle</td>
</tr>
<tr>
<td>Pyrimidine (DMI)</td>
<td>Fenarimol</td>
<td>Rubigan, Heritage</td>
</tr>
<tr>
<td>B-methoxyacrylate</td>
<td>Azoxystrobinn</td>
<td></td>
</tr>
</tbody>
</table>

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And So Is This

And So Is This

And So Is This
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- Backyard Brush Control. • Turf Renovation.
- Questions & Answers About Roundup Pro.
- Roundup Pro In The 21st Century.
- Product Label and MSDS.

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turn orange. Close examination of rusted leaf blades reveals the presence of orange to brick-red pustules. Spores within these pustules rub off easily when touched. Each pustule is capable of producing over a million rust spores. Under ideal conditions turf can become heavily rusted about 40 days after initial infection.

Rust management begins with the use of improved rust-resistant cultivars. Maintaining vigorous growth throughout the growing season by supplying a consistent source of nitrogen and alleviating compaction will lessen the rust severity. Fungi- cides may be needed in certain years with the initial application in early July followed by one or two additional treatments at three-week intervals.

The life cycle of fairy ring-forming mushrooms is similar to that of other common mushrooms. Fairy ring fungi survive as dormant spores or mycelium. This mycelium becomes active during moderate, wet weather; and the ring continues to grow outward each year. Following rains, mushrooms appear within the dark green ring or at the edge of the dead area. Fairy rings usually are most severe in sandy, low fertility soils low in moisture. The mushrooms grow on decaying organic matter such as a thick thatch. Typically, fairy rings are found as circular patterns of thin or dead grass within a dark green ring of lush grass. The concentric ring of thin or dead grass is the result of drought stress caused by the dense mat of fungal mycelium present just below the ring.

In established turfs, symptoms are "masked" by lightly fertilizing, punching holes into the soil at 1-foot intervals within the ring and irrigating. This procedure should be repeated every two or three weeks during the growing season. A more drastic approach is to kill the turf in the infested area with a herbicide and rototilling the entire area in three or four different directions to mix the mycelium from the different rings. The area can then be seeded or sodded. The fungicide flutolanil (ProStar) is registered for the suppression of certain fairy ring fungi. It could be used to spot treat problem fairy rings.

Principle snow molds of the central and northern plains are Microdochium patch (pink snow mold) and Typhula blight (gray snow mold). Microdochium patch, caused by Microdochium nivale, can injure turf anytime from mid October to April during prolonged cool, wet weather. Infection most often occurs with temperatures between 32°F and 50°F, during cold fogs, or in a light drizzle.

Symptoms of pink snow mold are roughly circular rusty brown patches with a salmon-pink moldy growth visible at the edges of the patches. The scattered spots are easily detected, even in midwinter, because of the contrast in color between the diseased spots and dormant turf.

Unlike Microdochium patch, Typhula blight is strictly a cold-weather disease. Caused by Typhula ishikariensis or T. incarnata, this disease can seriously injure turf during periods of extended snow cover. Turf injury is aggravated when the snow is compacted by skiing, snowmobiling or sled- ding. Symptoms of gray snow mold are patches of rough, dead, bleached-tan areas up to a foot in size becoming visible as melting snow recedes from diseased areas. When wet they are covered by a whitish-gray moldy growth. Tiny orange to red to black fungal sclerotia are embedded in infected leaves can be seen with a hand lens. LM

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**Turf Disease Management Guide**

<table>
<thead>
<tr>
<th>Disease</th>
<th>Resistant varieties</th>
<th>Proper fertilization</th>
<th>Thatch management</th>
<th>Aerification</th>
<th>Improved drainage</th>
<th>Improved air circulation</th>
<th>Snow fencing</th>
<th>Mowing until dormant</th>
<th>Proper irrigation</th>
<th>Preventive fungicides</th>
<th>Curative fungicides</th>
<th>Till the area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leaf spot/melting out</td>
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<td>Dollar spot</td>
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<td>Brown spot</td>
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New low odor technology
Same outstanding performance

"The low odor is an advantage with our high-end commercial accounts where customers are coming and going all day, as well as with our high-end residential accounts who don't need to close their windows or postpone outdoor activities to avoid the pesticide odor."

Tom Mieyal, General Manager, of a major Cleveland, Ohio lawn care company.
in warm-season turfgrass

The common southern turfgrass diseases have distinctive symptoms, and are easy to predict based on temperature and moisture conditions. Reduce traffic, watering and thatch, and use appropriate control products for a combined defensive strategy.

by GARY W. SIMONE, PH. D., University of Florida

The fall overseeding period on bermudagrass in golf courses and other recreational sites has had an increasing incidence of *Leptosphaerulina* blight.

This disease has been a minor leaf blight affecting such cool season grasses as annual and perennial ryegrass, annual bluegrass, creeping bentgrass, fine leaf fescues, and Kentucky bluegrass. The causal fungus, *Leptosphaerulina australis*, has commonly invaded senescent or stressed leaf tissue in the past. Recent years have seen an increased incidence of this disease on rye/bentgrass overseeds and not necessarily on old or stressed tissue.

*Leptosphaerulina* blight begins on leaf tips, producing a yellowing that progresses down toward the sheath. Affected tissue develops a reddish-brown color prior to the necrosis and shriveling of affected leaves. The fungus does not appear to invade the crown nor roots of the overseed. Affected turf areas have a patchy appearance, exhibiting a reddish color similar to that caused by cold wet soils and restricted phosphorus uptake. Close examination with a hand lens will reveal the brown-to-black, embedded sexual reproductive structures in shriveled leaf tips. The fungus has been known to invade bermudagrass in the absence of an overseeded species. *Leptosphaerulina* likely survives as mycelia in thatch and in the sexual bodies (perithecia) in either debris or soil. Recent dramatic shifts in rainfall due to El Niño may have much to do with incidence of *Leptosphaerulina* in overseeded grasses and in bermuda.

St. Augustinegrass is still suffering from the widespread incidence of take all root rot caused by *Ganmmannomyces graminis* var. *graminis*. However, an increasing number of summer decline samples from urban lawn sites are not associated with take all root rot disease. Samples processed in the Florida Extension Plant Disease Clinic are revealing the presence of *Rhizoctonia zeae* – a causal fungus of leaf and sheath spot on bermudagrass. This disease is similar in appearance to take all disease on St. Augustinegrass but with less root destruction. Turf professionals comfortable with visual identification of take all patch by appearance and timing, are encouraged to take an occasional sample and forward to a diagnostic clinic for verification. Turf sites invaded by *Rhizoctonia zeae* are treatable situations.

Some Familiar Foes

**Algae** – These are not truly pathogenic on turf but have an adverse impact on turf quality due to competition. The blue-green algae are the primary culprits, invading partially shady sites with high moisture and a freely available nitrogen source. Algal growth produces a slippery condition on the turf and may become so dense that it can prevent irrigation from reaching the root zone. Improving soil drainage and air circulation coupled with verticutting areas with algal mats will aid in management.

**Anthracnose** – Incidence has been low on centipedegrass due to the mild winter conditions throughout much of the Southeast. Areas with disease are correlated to either poor fertility conditions or nematode populations. Minimizing stress conditions greatly reduces anthracnose development.