Anthracnose on Turfgrass

O & T Guide TD-7

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Cooperative Extension Service • College of Agriculture and Home Economics • October 2006

Causal Agents and Hosts: Anthracnose on turfgrass is usually caused by the fungus *Colletotrichum graminicola*. The fungus, Microdochium bolleyi has been associated with the disease in some areas. All grass species are susceptible to anthracnose; however the disease can be particularly severe on bluegrass and bentgrass.

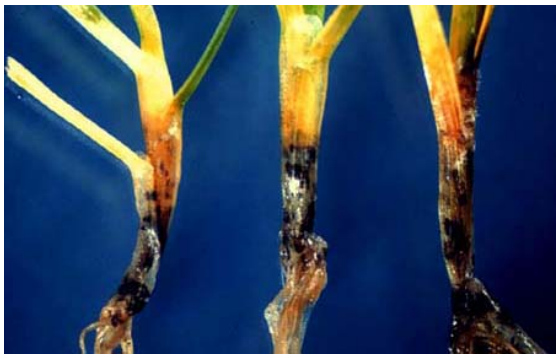
Symptoms: Symptom development is highly dependant on the environment, but scattered chlorosis or irregularly shaped chlorotic patches ranging from a few centimeters to a few meters in size is characteristic of infected turf. Diseased turf is reddish brown at first, fading to yellow, then tan to brown. Anthracnose lesions on individual leaves are round to elongate, reddish brown blotches, often surrounded by a yellow halo, which may merge to blight entire leaves. Foliar blight generally begins on the oldest leaves and progresses to the newer growth. The fungus can attack the crowns and roots resulting in a basal rot. Basal rot begins as a reddish or brown rot of the crown tissue. As the disease worsens, the rot progresses up the stem. Severely affected plants will die resulting in a thinning of the turf. Tiny black spiny fruiting bodies called acervuli may appear on infected stems and leaves. Acervuli and setae are visible with a hand-lens and are diagnostic for this disease.

Anthracnose on turfgrass. Photo: University of Minnesota

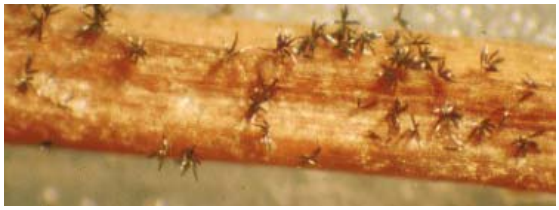
Yellowing and thinning of turf caused by Anthracnose. Photo: Rutgers University.

Turf killed by anthracnose. Photo: E. B. Nelson, Cornell University.

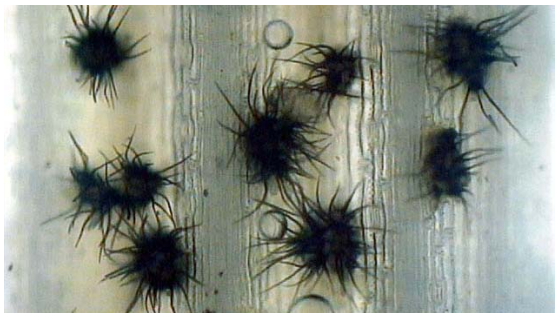
Anthracnose leaf lesions. Photo: Rutgers University.



Basal rot of individual plants. Photo: The Pennsylvania State University.



Acervuli on an infected stem. Photo: The University of Arizona.



Close-up of acervuli on infected leaf tissue. Photo: The University of Wisconsin-Madison.

Conditions for Disease: The fungus survives as mycelium in plant debris. It is spread by movement of spores by equipment, people, animals, water, and wind.

The disease occurs any time of the year, but is most severe during the summer months. Disease development is favored by high humidity and leaf wetness. Grass which is under stress, particularly from high temperatures, drought, low or unbalanced fertility, excessive thatch, insect damage, or compacted soil is particularly susceptible to this disease.

Management: Cultural practices which help to reduce the occurrence and severity of the disease include:

- Maintain appropriate fertility levels.
- Follow proper irrigation practices.
- Reduce thatch.
- Aerate compacted soils.
- Preventative, systemic fungicides can offer protection against disease.

Brown Patch

O & T Guide TD-6

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Causal Agent and Hosts: Brown patch, caused by the soil-inhabiting fungus, *Rhizoctonia solani*, is one of the most common turf diseases in New Mexico. All turfgrass species are susceptible to brown patch.

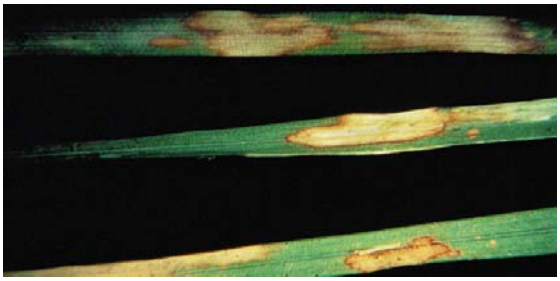
Symptoms: Although the symptoms are highly variable, depending on turf species, mowing height, soil and environmental conditions, the disease is generally characterized by small to large circles or irregularly shaped patches of brown, dead and dying grass. Centers of the spots may recover, resulting in rings of diseased grass. In some cases, no patches or circles are apparent and the disease appears as a diffuse yellow blight. The disease may produce blighted patches with a purplish – gray border ("smoke-rings") on closely mowed, cool-season grasses. Leaves of individual plants may have small to large, irregularly shaped, tan lesions with a noticeable dark brown margin. Infected leaves become chlorotic to olive-green in color and wilt, eventually turning brown as they die. When dew is present on the grass, white, cobwebby mycelium of the fungus can sometimes be seen on the surface of affected grass plants. Stems, crowns, and roots also may be infected. In light attacks, roots and crowns usually are not involved, and plants recover. Dark brown resting structures (sclerotia) composed of hard masses of fungal mycelium may develop at the base of infected plants.

Brown patch on a bentgrass putting green. Photo: B. B. Clarke, Rutgers University

Brown patch on fescue. Photo: B. G., Joyner.

Diffuse damage caused by brown patch. Photo: R. W. Smiley, Oregon State University.

Smoke-rings caused by *Rhizoctonia solani.* Photo: N. Jackson, University of Rhode Island.



Leaf lesions caused by *Rhizoctonia solani*. Photo: B. G. Joyner.

Mycelium of *Rhizoctonia solani* on infected grass. Photo: APS.

Sclerotia of *Rhizoctonia solani* on the base of turfgrass plants. Photo: APS.

Conditions for Disease: The fungus survives in soil, in infected plants and plant debris as mycelium and sclerotia. It is spread by leaf to leaf contact and by movement of infected plant material by equipment, people, animals, water and wind.

The disease occurs from spring through fall and is favored by warm (70-90°F), wet conditions. Periods of wet or humid conditions especially with high night temperatures (above 68ºF) favor rapid disease development. A cold, wet-weather (40°-60° F) form of the disease occurs infrequently. Dense, highly fertilized (excessive nitrogen), frequently watered grass is more susceptible to the disease. Poorly drained soils, excessive thatch, and night irrigation lengthen the period of leaf wetness and promote infection.

Management: Cultural practices which help to reduce the occurrence and severity of the disease include:

- Reduce shading.
- Aerate soil to reduce thatch and improve water drainage.
- Maintain appropriate fertility levels.
- Avoid heavy nitrogen applications.
- Follow proper irrigation practices.
- Avoid watering at night.
- Avoid light, frequent watering.
- Maintain turf at the tallest height recommended for the grass species.
- Fungicides are more effective when used preventively, but will also help to stop the disease infection.

Dollar Spot

O & T Guide TD-1

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Causal Agent and Hosts: Dollar spot, caused by the fungus *Sclerotinia homeocarpa*, is a disease that occurs on most turfgrass species, though hybrid bermudagrasses, bentgrass and zoysia are the most susceptible species.

Symptoms: Dollar spot first appears as small (approximately the size of silver dollars), circular patches of brown or straw-colored grass. The patches become sunken overtime and may coalesce into larger, irregular spots. During conditions of heavy dew, fine cottony webbing (mycelium) may occur over the diseased grass. Leaves become water soaked with brownish margins and often die back from the tips. Leaf spots have reddish brown margins which spread out from the leaf margins. Necrotic tissue between the margins may constrict resulting in an hour-glass shaped lesion or the girdling of the leaf blade.

Early symptoms of dollar spot. Photo: The Pennsylvania State University.

Advanced symptoms of dollar spot. Photo: P. Vincelli, University of Kentucky.

Cottony mycelium of the dollar spot fungus. Photo: B. B. Clarke, Rutgers University.

Leaf lesion caused by the dollar spot fungus. Photo: www.omafra.on.ca.

Conditions for Disease: The fungus survives unfavorable periods as mycelia or sclerotia (dormant, compact, hardened masses of mycelia) in soil and infected plant material. The fungus is easily spread by equipment and foot traffic.

Dollar spot is most severe during warm, humid days with cool night temperatures. Dry soils increase the disease; however moisture must be present on the foliage in order for the disease to occur. Turf stressed from low fertility, especially nitrogen deficient turf is more susceptible. Excessive thatch also contributes to disease development.

Management: Cultural practices which help to reduce the occurrence and severity of the disease include:

- Maintain appropriate fertility levels.
- Follow proper irrigation practices.
- Avoid watering at night.
- Avoid light, frequent watering.
- Reduce thatch.
- Aerate compacted soils.
- Promote good air circulation.
- Maintain turf at the tallest height recommended for the grass species.
- Fungicides can offer protection against disease.

Fairy Ring

O & T Guide TD-5

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Causal Agents and Hosts: Fairy ring can be caused by many different species of soil-inhabiting fungi in the fungal group (class) known as basidiomycetes. All grass species are susceptible to this disease.

Symptoms: Symptoms of fairy ring are variable depending on the fungal species, soil type, condition of the grass, and the environment, but generally consist of circles or semi-circles in the affected turf area. The disease may appear as circles, rings or arcs of dark green, faster growing grass. The grass inside the rings may die-out leaving dead areas surrounded by dark green growth or the rings may develop with no dead grass (surrounded by normal colored grass). Conversely, some fairy ring fungi result in circles or arcs of dead grass surrounded by apparently healthy grass. Rings can vary in size during the year and can appear or disappear throughout the growing season. The rings may be surrounded by mushrooms, toadstools, or puffballs which are fruiting bodies of these fungi. In some cases, rings of fruiting bodies may develop with no visible effect on the grass. These fruiting bodies are excellent signs of the fungi and can be used as a diagnostic tool. Weed invasion into affected areas is common due to the lack of competition from healthy grass. Some fairy ring fungi cause a hardened hydrophobic (water repellant) layer to develop resulting in turf areas that are difficult to water.

Dark green rings caused by fairy ring. Photo: APS.

Fairy ring with no dead grass. Photo: M. A. Fidanza, The Pennsylvania State University.

Fairy ring with two rings of dead grass. Photo: D. H. Scott, Purdue University.

Mushrooms produced by fairy ring fungus. Photo: N. P. Goldberg, New Mexico State University.

Fairy ring affected turf (note weed invasion into diseased area). Photo: APS.

Conditions for Disease: The fungi which cause fairy rings live in the soil and decomposing thatch layer. They are spread from one area to another by the movement of infected plant material or infested soil by equipment and wind blown spores.

The disease occurs from spring to early summer, and the fruiting bodies generally appear in the late summer (during the summer rainy period). The fungi are favored by light textured soils, excessive thatch, low fertility, and drought. Symptoms are most obvious on nitrogen-starved turf.

Management: Cultural practices which help to reduce the occurrence and severity of the disease include:

- Maintain appropriate fertility levels. Apply adequate nitrogen, but do not over fertilize.
- Follow proper irrigation practices. Avoid shallow, frequent irrigations. The use of a surfactant (wetting agent) may be necessary if the disease has caused a hydrophobic condition.
- Aerate to improve water penetration.
- Reduce thatch.
- Removing the turf, digging out and discarding the infested soil (2 ft. beyond the rings on all sides to a depth of 3 ft.), replacing it with fresh soil, and resodding may be possible for small infected areas.
- Fungicide applications are ineffective if applied after the disease is apparent; however the use of systemic fungicides prior to symptom development may provide protection in areas known to be infested with these fungi.
- The fruiting bodies of many of these fungi are poisonous. Removal of the fruiting bodies is recommended – while this will not reduce the disease, it does help to improve the appearance of the grass area.

Fusarium Leaf Spot and Crown and Root Rot

O & T Guide TD-10

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Hosts: Fusarium leaf spot (also known as Fusarium blight) and Fusarium crown and root rot are caused by several species of *Fusarium*. All turfgrass species are susceptible to this disease; however the disease is usually more severe on cool-season grasses.

Symptoms: Fusarium crown and root rot begins as small (2-6") roughly circular and crescent shaped patches of light green, wilted turf. As the disease progresses, the affected grass changes from light green to reddish-brown to tan and finally straw colored. Patches may develop a "frog's eye" or doughnut-shape (dead circles with live grass in the center). Diseased patches may become numerous and grow into one another resulting in large areas of blighted grass. Infected plants exhibit a black to brown "dry rot" of the roots, crowns, rhizomes, and stolons. White to pink mycelium may develop on infected grass during periods of high temperature and moisture. Fusarium leaf spot occurs more uniformly over relatively large areas. Irregularly shaped, water-soaked lesions with a purplish-brown margin occur mostly on the older leaves. Leaf spots may start near the tip of the leaves resulting in tip blight.

Conditions for Disease: These fungi survive as mycelium or thick-walled resting structures (chlamydospores) in infected plants, plant debris (thatch) or soil. They are spread by movement of spores by equipment, people, animals, water and wind.

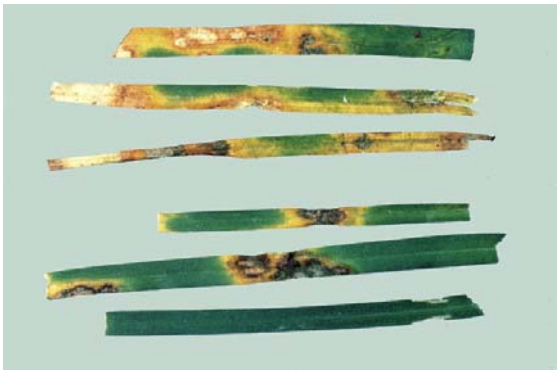
The disease occurs from late spring through summer and is favored by high temperatures (daytime temperature of 85ºF - 95ºF with night temperatures above 70ºF) and drought stress. Humid conditions increase spore formation and may lead to the rapid development of large blighted areas. Over watering, especially following periods of drought, creates a more favorable environment for disease development. Susceptibility increases in grass with excessive nitrogen or unbalanced fertilizer applications, and thick thatch.

Circular spots caused by *Fusarium*. Photo: A. H. McCain, University of California.

"Frog-eye" appearance caused by *Fusarium*. Photo: A. H. McCain, University of California.

Fusarium crown and root rot. Photo: R. W. Smiley, Oregon State University.

Fusarium leaf spot on Kentucky bluegrass. Photo: R. W. Smiley, Oregon State University.



Leaf lesions caused by *Fusarium*. Photo: R. W. Smiley, Oregon State University.

Management: Cultural practices which help to reduce the occurrence and severity of the disease include:

- Maintain appropriate fertility levels.
- Avoid heavy nitrogen applications.
- Follow proper irrigation practices.
- Avoid watering at night.
- Avoid light, frequent watering.
- Aerate soil to reduce thatch and improve water drainage.
- Maintain turf at the tallest height recommended for the grass species.
- For bluegrass, use tolerant cultivars or a blend of bluegrass with perennial ryegrass.
- Fungicides are most effective when used preventively or as soon as symptoms appear.

Leaf Spot and Melting Out

O & T Guide TD-9

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Hosts: Leaf spot and melting-out diseases, caused by several different species in the genera, *Bipolaris, Curvularia, Drechslera,* and *Exserohilum*, are among the most common turf diseases in New Mexico. These fungi used to be in the genus *Helminthosporium*. All turfgrass species are susceptible to one or more of these pathogens. Cool-season grasses are generally most susceptible however bermudagrass and St. Augustine are also commonly infected in the Southwest.

Symptoms: Leaf spot first appears as small, dark purple or black spots on the leaf blade. These spots develop into oval lesions with buff-colored centers, surrounded by a dark brown to dark purple margin. The lesions may enlarge to cross the width of the leaf blade. When this occurs, leaf blades are girdled, wither and die. Symptoms of melting-out are similar at first, with small, dark purple to black spots on infected leaves. However in the case of melting-out, the disease progresses down the leaves eventually reaching and attacking the crown and roots. Tissue around the base of infected plants becomes dark brown and rots. Affected grass areas are shabby looking, yellowed and gradually thinned from the loss of individual plants. These areas appear as irregular patches ranging in size from 2 inches to 3 1/5 feet in diameter. Individual turf plants are hard to find in infected areas and it appears as if the turf has "melted" away. When individual plants are found, the leaves may have brownish-green to black lesions, be dappled with yellow and green patterns, or have elongated water-soaked lesions with a yellow halo.

Melting-out. Photo: N. P. Goldberg, New Mexico State University.

Melting-out. Photo: N. P. Goldberg, New Mexico State University

Leaf spot caused by *Drechslera*. Photo: R. W. Smiley, Oregon State University.

Individual plant affected by melting-out caused by *Drechslera*. Photo: R. W. Smiley, Oregon State University.

Leaf spots caused by *Bipolaris*. Photo: R. W. Smiley, Oregon State University.

Conditions for Disease: The fungi survive in infected plants or plant debris and are spread by the movement of spores and infected plant material by equipment, people, animals, water, and wind.

These diseases occur from spring through fall and are favored by dry periods alternating with cloudy, wet weather. Disease caused by *Bipolaris* and *Exserohilum* are favored by cool to warm (68-86°F) temperatures. *Curvularia* is favored by high temperatures (above 86°F) and *Drechslera* is favored by cool temperatures (55-65°F). Other factors which contribute to disease development include excess nitrogen fertilizer, excess water, thick thatch, and short mowing height.

Management: Cultural practices which help to reduce the occurrence and severity of the disease include:

- Maintain appropriate fertility levels.
- Avoid heavy nitrogen applications.
- Follow proper irrigation practices.
- Avoid watering at night.
- Avoid light, frequent watering.
- Mow grass frequently to maintain turf at the tallest height recommended for the grass species.
- Avoid scalping.
- Reduce shade.
- Reduce thatch to improve aeration and water drainage.
- Use resistant cultivars and use a blend of multiple cultivars when possible.
- Fungicides can be used to help manage these diseases; however timing is critical to effective control and in many cases, the severity of the disease can be reduced with cultural practices which reduce plant stress and fungicides should not be needed.

Powdery Mildew on Turfgrass

O & T Guide TD-3

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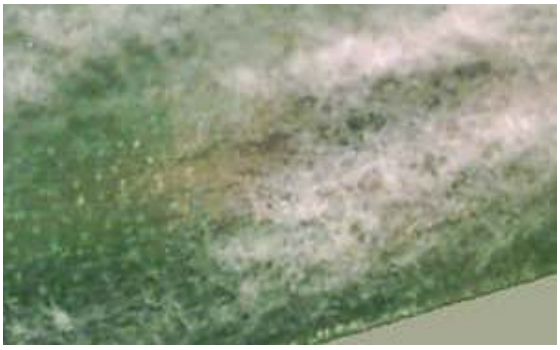
Causal Agent and Hosts: Powdery mildew on turfgrass is a foliar disease caused by the fungus, *Erysiphe graminis*. This widely distributed pathogen occurs on all turfgrass species, but the disease is generally most severe on Kentucky bluegrass and some fescues.

Symptoms: Powdery mildew infects only the foliage of susceptible plants. It is first seen as isolated colonies of fine, whitish mycelia on leaves and leaf sheaths. The colonies enlarge rapidly and coalesce to cover much of the leaf surface with a largely superficial, white mat of fungal mycelium. The disease results in large areas of the turf appearing as if they were dusted with powder. Older leaves are more susceptible to attack than the young succulent growth. Heavily infected leaves turn yellow, and then tan or brown, as they die. Colonies of powdery mildew darken as they become older, and tiny black fruiting bodies (cleistothecia) may form in the mycelial mat. Although powdery mildew does not kill the plants, infected plants are weakened and are easily killed by other stresses, such as drought, low temperatures, or other diseases.

Conditions for Disease: The fungus survives as mycelium in living, infected plants or as cleistothecia embedded in plants or plant debris. The fungus is spread by airborne spores which can move great distances in air currents.

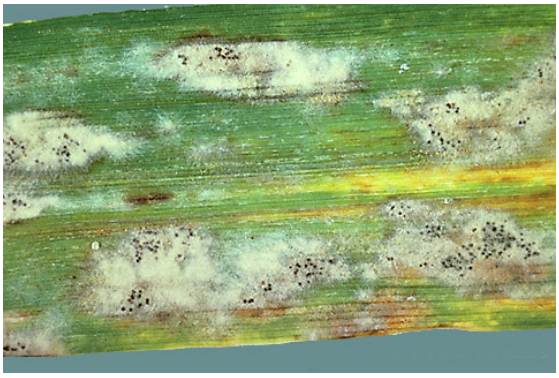
Cool (60°-72° F), humid, cloudy weather favors the development of powdery mildew. The disease is most severe in shaded areas with poor air circulation. New plantings in the shade are especially susceptible to the disease.

Powdery mildew on turfgrass. Photo: Kansas State Research and Extension.



Close-up of the powdery mildew fungus. Photo: J. Sedbrook, Colorado State University.

Powdery mildew spread over a large area of Kentucky bluegrass. Photo: A. McCain, University of California.



Black fruiting bodies (cleistothecia) in mycelial mats of powdery mildew. Photo: D. Mathre, Montana State University.

Management: Cultural practices which help to reduce the occurrence and severity of the disease include:

- Selectively prune and carefully place ornamental shrubs and trees to allow good penetration of sunlight to the turfgrass. This measure may also help reduce the humidity over the turfgrass by increasing air circulation.
- Maintain appropriate fertility levels.
- Avoid heavy nitrogen applications.
- Follow proper irrigation practices.
- Avoid watering at night.
- Avoid light, frequent watering.
- Maintain turf at the tallest height recommended for the grass species.
- In areas where the disease is particularly severe, fungicides, or the use of resistant cultivars or alternative shade-adapted ground covers may be required.

Pythium Blight and Pythium Root Rot

O & T Guide TD-8

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Causal Agent and Hosts: Pythium diseases on turfgrass are caused by several *Pythium* species, a common soil-inhabiting water mold. This pathogen attacks all turfgrasses, but disease is usually more severe on cool-season grasses. Disease can be especially severe in ryegrass used to overseed hybrid bermudagrass. Pythium blight, also known as cottony blight or grease spot, occurs when the pathogen attacks the foliage resulting in a rapid blight over large turf areas. When the roots and crowns are attacked, the disease is called Pythium root rot.

Symptoms: While the symptoms are somewhat variable, the diseases are typified by an overall decline in the turf area. This decline may be gradual or rapid, depending on the environmental conditions. Affected areas may appear as irregular patches or streaks associated with water drainage or mowing patterns. Small areas of declining turf may coalesce to cover large areas. Individual plants have dark, water-soaked lesions. The leaves turn yellow, then tan as they die. Pythium blight may also rapidly develop into round to irregular, dark, water-soaked, greasy or slimy, sunken patches of matted grass, up to 6 to 12 inches wide. This symptom is generally referred to as "grease spot." In the early morning when dew is present, a whitish gray to purple, cottony growth may appear on the surface of blighted grass. Pythium root rot occurs when the roots and crowns are attacked. Affected root systems thin and discolor (but do not turn black) as many of the feeder roots decay. The outer cylinder (cortex) of these roots exhibits a soft decay, and will slough off between fingertips when pulled. Pythium can also cause seedling damping-off.

Pythium blight. Photo: The University of Arizona.

Pythium blight. Photo: P. H. Dernoeden, University of Maryland.

"Grease spot" caused by Pythium. Photo: R. W. Smiley, Oregon State University.

"Cottony blight" caused by Pythium. Photo: B. B. Clarke, Rutgers University.

Conditions for Disease: The pathogen survives as oospores in infected plants, plant debris (thatch), and soil and is spread by movement of infected plant material by equipment, people, animals, and water. Swimming spores move short distances in water and contribute to the enlargement of diseased areas.

The disease can occur anytime during the growing season, but the most serious damage generally occurs during periods of hot, wet or very humid conditions. Large areas of turf can be destroyed in 24 to 48 hours after the onset of disease-favorable weather. Waterlogged soils and a moist thatch layer, along with high relative humidity (90% or greater) and daytime temperatures in the 80's or 90's with warm nights (above 68° F) provide ideal conditions for warm weather Pythium blight. There are species of *Pythium* that do well in cool weather also. Turf areas seeded or overseeded during warm, moist conditions are especially vulnerable to attack. Susceptibility increases in dense turf and in turf growing in alkaline conditions. Excessive nitrogen, excessive thatch, poor drainage, and compacted soils also contribute to disease development.

Management: Cultural practices which help to reduce the occurrence and severity of the disease include:

- Improve soil aeration (reduce thatch).
- Improve water drainage.
- Reduce shading.
- Maintain appropriate fertility levels.
- Avoid heavy nitrogen applications.
- Follow proper irrigation practices.
- Avoid overwatering and watering at night.
- Avoid light, frequent watering.
- Avoid mowing or walking on wet turf.
- Avoid seeding or overseeding during favorable environmental conditions.
- Several fungicides are available to help control *Pythium*. For highly valuable turf and turf with a history of the disease, a preventive spray program using a systemic fungicide, applied prior to the onset of hot, humid weather, is recommended. *Pythium* has developed resistance to fungicides in some areas; therefore great care should be taken to avoid excessive use of any one fungicide chemistry.

Rust on Turfgrass

O & T Guide TD-4

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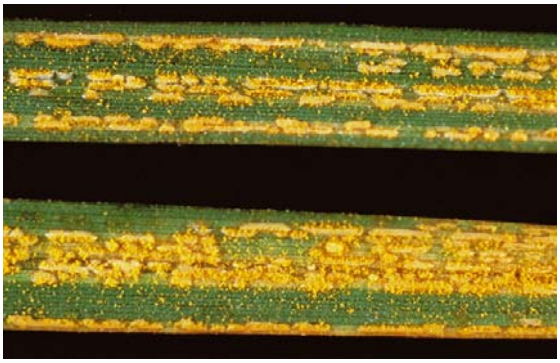
Causal Agents and Hosts: Rust on turfgrass is caused by a number of different, but closely related, species of the rust fungi. The most common rust diseases on turf are leaf rust (*Uromyces* spp.), crown rust (*Puccinia coronata*), stripe rust (*Puccinia striiformis*), and stem rust (*Puccinia graminis*). The disease can occur on all turfgrass species, but is generally most severe on Kentucky bluegrass, tall fescue, perennial ryegrass and zoysia. Most rust species which infect turf have complicated life cycles in which two distinctly different host plants are required. The second host plant required for grass rusts to complete their life cycle is usually a woody shrub or an herbaceous ornamental plant.

Symptoms: Rust first appears as a light green or yellow flecking on infected grass blades. The flecks enlarge and elongate to become raised pustules that rupture the epidermis. Reddish brown to orange spores appear in the pustules. These spores adhere to fingers when pustules are rubbed. Shoes may develop an orange tinge after walking though infected areas. Severely infected turf areas look reddish brown, yellowish, or orange. Individual plants with severe infections may turn chlorotic and the turf thins as plants die. When the disease is less severe, rust doesn't kill the host plants, but infected plants are weakened and may become more susceptible to environmental stresses or other pest problems.

Conditions for Disease: Rusts survive as mycelia in infected plants and as teliospores in the thatch and soil. Spores are disseminated long distances by air currents. The fungus can also be spread within an area by people (shoes), animals and equipment.

Cool to warm (60-86°F), moist weather favors rust infections. Leaf wetness is required for infection. Condensed moisture, even dew, for 10 to 12 hours is sufficient for spores to infect plants. After infection, slightly warmer and drier conditions favor disease development and symptom expression. Rusts are often more severe in shaded areas than sunlit areas. Grass which is growing slowly under stressed conditions (nitrogen deficiency, low mowing height, compaction, drought and high temperature) is more susceptible to disease.

Leaf rust on Kentucky bluegrass. Photo: N. P. Goldberg, New Mexico State University.



Stem rust on Kentucky bluegrass. Photo: R. S. Byther, Washington State University.

Rust on perennial ryegrass. Photo: D. Settle, Kansas State University.

Stem rust on a Kentucky bluegrass lawn. Photo: P. H. Dernoeden, University of Maryland.

Management: Cultural practices which help to reduce the occurrence and severity of the disease include:

- Selectively prune and carefully place ornamental shrubs and trees to allow good penetration of sunlight to the turfgrass. This measure may also help reduce the humidity over the turfgrass by increasing air circulation.
- Maintain appropriate fertility levels.
- Follow proper irrigation practices.
- Avoid watering at night.
- Avoid light, frequent watering.
- Maintain turf at the tallest height recommended for the grass species.
- Regular mowing and removal of clippings can help to reduce inoculum levels.
- In areas where the disease is particularly severe, fungicides, or the use of resistant cultivars or alternative shade-adapted ground covers may be required.
- Reduce thatch.
- Plant a mixture of turfgrass species rather than a single species.
- Severe outbreaks may benefit from fungicides.

Summer Patch

O & T Guide TD-2

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Causal Agent and Hosts: Summer Patch, also known as frogeye patch, is caused by the fungus *Magnaporthe poae*. This disease is most common on bluegrasses and fescues. It can also infect bentgrasses, but these species typically show few symptoms and usually continue to grow while the more susceptible species decline. It is a common disease on golf greens and is often identified when bluegrass is killed and seemingly unaffected bentgrass grows into diseased patches.

Symptoms: The first symptom of summer patch is scattered roughly circular or crescent-shaped patches of slow-growing, thinned, or wilted plants. The infected plants quickly turn reddish-brown, then tan and ultimately straw-colored. Older patches may be 2 or more feet in diameter, and may have healthy grass in the center. When conditions are optimum for disease development, the patches may grow into one another resulting in larger area of blighted grass. Infected roots, rhizomes, and crowns turn dark brown as they are killed.

Conditions for Disease: The fungus survives as mycelium in plant debris or perennial host tissue and is spread by aerification and dethatching equipment as well as by transport of infected sod.

Infection occurs in the spring when soil temperatures stabilize between 65 and 68°F. Symptoms develop during hot (86-95°F), rainy, weather or when high temperatures follow periods of heavy rainfall. The disease is more severe when turfgrass is maintained under conditions of low mowing height and frequent, light irrigation. Other conditions that favor the disease include: excessive thatch, unbalanced fertility, and soil compaction.

Summer patch symptoms on a putting green. Photo: N. P. Goldberg, New Mexico State University.

Summer patch symptoms on Kentucky bluegrass. Photo: N. Tisserat, Colorado State University

Large areas of blighted turf on a bluegrass lawn caused by summer patch. Photo: N. Tisserat, Colorado State University.

Individual plants infected by *Magnaporthe poae.* Photo: The University of Guelph.

Management: Cultural practices which help to reduce the occurrence and severity of the disease include:

- Avoid management practices that promote rapid top growth at the expense of root production.
- Maintain appropriate fertility levels.
- Avoid heavy nitrogen applications.
- Follow proper irrigation practices.
- Avoid watering at night.
- Avoid light, frequent watering.
- Promote good air circulation.
- Reduce thatch.
- Aerate compacted soils.
- Maintain turf at the tallest height recommended for the grass species.
- Preventative, systemic fungicides can offer protection against disease.