



syngenta®

Most
Common
Turfgrass
Diseases



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Necrotic Ring Spot

Susceptible Turfgrass:

Kentucky bluegrass, annual bluegrass, rough bluegrass, fine-leaf fescue

Symptoms:

Necrotic ring spot first appears as small, light green spots and progresses to thinned, circular patches that are yellow to light-green in color and approximately 3 to 15 inches in diameter. The patches, which can expand up to 3 feet in diameter, eventually turn brown or straw-colored and die. The roots and rhizomes of the affected turfgrass turn brown to black. Grass plants can survive and recolonize the center of the patches, which leads to a ring-like appearance.

Conditions Favoring Disease:

Necrotic ring spot initiates in moist soil, thrives in temperatures of up to 80°F and becomes more severe in higher temperatures and drought conditions. Seeded sites, as well as sodded sites in newly cleared woodlands, are susceptible to this disease. It is also found in areas with compacted soil and that are high in nitrogen during the spring and summer.

Management Tips:

- Raise mower height.
- Reduce soil compaction through aerification and use of lightweight equipment.
- Use moderate to high amounts of phosphorous and potash.
- Maintain adequate nitrogen and a balanced fertility.
- Minimize the amount of shade.
- Lightly irrigate (approximately $\frac{1}{10}$ inch) in the mid-afternoon on a daily basis to cool plants.
- Avoid drought stress.
- Top-dress and aerate turf as needed.
- Reduce thatch.
- Overseed with perennial ryegrass or more tolerant bluegrass cultivars.
- Apply systemic fungicides on a preventive basis.



Spring Dead Spot

Susceptible Turfgrass:

Bermudagrass and buffalograss

Symptoms:

Infected bermudagrass shows disease symptoms as it emerges from winter dormancy. Spring dead spot appears as bleached, straw-colored, circular patches that measure up to several feet in diameter. The roots of affected plants turn dark brown to black.

Spring Dead Spot



Conditions Favoring Disease:

Spring dead spot favors cool, wet weather in the spring and fall and daily temperatures of less than 60°F in November. This disease is typically found where thatch is more than 1/2-inch thick and in locations with poor drainage and low potash levels. Heavy applications of nitrogen in late summer often increase disease severity the following spring. Spring dead spot is more severe on bermudagrass that is over three years old and in locations with long dormancy and cold temperatures.

Management Tips:

- Avoid late summer or fall applications of nitrogen fertilizers which may enhance disease severity.
- Use ammonium sources of nitrogen combined with potassium for fertilizer from spring through early August.
- Control weeds in affected turf to enhance recovery from spring dead spot.
- Apply moderate to high levels of phosphorous, potash, and minor elements.
- Improve drainage of turf.
- Reduce thatch.
- Convert from common varieties to hybrid bermudagrass with good winter hardiness.
- Use preventive fungicide applications in late September or October.

Fairy Rings

Fairy Ring

Susceptible Turfgrass:

All species of warm- and cool-season turfgrass

Symptoms:

Fairy ring symptoms vary with causal agents and the environment. Above-ground mushroom and puff ball basidiocarps may or may not occur. Typically, turf symptoms can appear as outer rings that are either dark-green or brown in color. Sometimes the symptoms may be hydrophobic rings or circular areas showing the first signs of wilt. The shape and size of the rings vary depending on the species and environmental conditions. Activity in the turf may subside when the individual rings come in contact with each other. Some causal agents form fruiting bodies (i.e., mushrooms), but do not form rings. Conversely, other causal agents will form rings, but not fruiting bodies. The fungi that result in a fairy ring symptom may be confined to the soil or the thatch area or both. Upon taking a soil profile, an orange discoloration along the root zone may be present with or without a strong mushroom odor.



Conditions Favoring Disease:

Fairy rings typically occur when the turfgrass is most actively growing. This disease can also occur on cool-season turfgrass in mild winter climates. In warm climates, fairy ring inhabiting bermudagrass turfgrass can decrease over-seed germination and stands in these areas due to hydrophobic areas limiting water availability for the germinating seed.

Management Tips:

- Avoid using root zone mixes with high levels of undecomposed organic materials.
- Reduce thatch by vertical cutting.
- Core aerify.
- Irrigate deeply.
- Use nitrogen fertilizer to mask symptoms on some types of fairy ring.
- Use soil wetting agents/soil surfactants to help alleviate hydrophobic soil conditions.

Superficial Fairy Ring

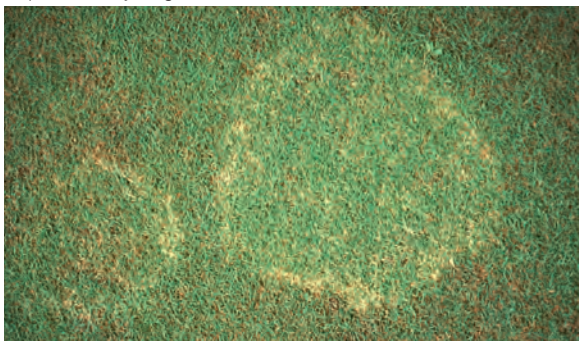
Susceptible Turfgrass:

All species of warm- and cool-season turfgrass

Symptoms:

Symptoms vary depending on the type of superficial fairy ring. This disease can cause patches with felted, white mycelium. Sometimes the patch is sunken and has a ring that measures approximately 1-inch wide at the border. Also, the lower leaves on the turfgrass in the affected areas can die.

Superficial Fairy Rings as seen from 10 feet



Conditions Favoring Disease:

Superficial fairy ring is favored by the summer season for cool-season turfgrass. For areas where warm-season turfgrass is the principle turfgrass species and dormancy is sporadic or doesn't occur, superficial fairy ring can be a common problem. While the patches typically disappear in the cool seasons for cool-season turf or in the summer for warm-season turf, they can remain if the turf is not properly managed.

Management Tips:

- Maintain adequate fertilization to minimize symptoms.
- Reduce thatch by vertical cutting and aerifying.
- Topdress and cultivate turf to control mat and thatch.
- Improve soil drainage.
- Increase mowing height.

Brown Patch, cool-season turf

Susceptible Turfgrass:

All species of cool-season turfgrass

Symptoms:

The symptoms of brown patch can vary depending on the turfgrass cultivar, climatic and atmospheric conditions, soil types and textures, and intensity of the turfgrass management. This disease typically appears as rings or patches of blighted turfgrass that measure 5 inches to more than 10 feet in diameter. The pathogen also causes leaf spots and “smoke rings”—thin, brown borders around the diseased patches that appear most frequently in the early morning. After the leaves die in the blighted area, new leaves can emerge from the surviving crowns. On wide-bladed species, leaf lesions develop with tan centers and dark brown to black margins.

Conditions Favoring Disease:

Brown patch is favored by high relative humidity as well as temperatures of over 85°F during the day and over 60°F at night. It occurs in areas that experience more than 10 hours a day of foliar wetness for several consecutive days. Brown patch infestation is more severe when the turf is cut to a height less than the optimum for that turfgrass species.

Management Tips:

- Use low to moderate amounts of nitrogen, moderate amounts of phosphorous, and moderate to high amounts of potash.
- Avoid fast-release nitrogen applications when the disease is active.
- Increase the height of cut.
- Increase the air circulation.
- Minimize the amount of shade.
- Irrigate turf early in the day.
- Improve soil drainage.
- Reduce thatch.
- Remove dew from turf early in the day.
- For best results, use contact or systemic fungicides to prevent brown patch.

*Brown Patch as seen up close (right)
and from 20 feet.*



Rhizoctonia *Diseases*

Large Patch, warm-season turf

Susceptible Turfgrass:

Zoysiagrass and other warm-season turfgrasses

Symptoms:

Large patch (zoysia patch) appears as rings or patches of blighted turfgrass that measure 5 inches to 10 feet or more in diameter. Patches are brown to yellow in appearance, with a possible “orange firing” at the periphery of the patches. Small reddish-brown colored leaf spots occur on leaf sheaths, stems, and stolons. After the leaves die in the blighted area, new leaves can emerge from the surviving crowns. If the turfgrass is still green, the disease is most apparent down in the canopy, especially around the leaf sheaths as discolored/blackened lesions—when pulled lightly, these leaves detach very easily and are sometimes green above the damaged sheath.

Conditions Favoring Disease:

The symptoms of large patch can vary depending on the turfgrass cultivar, or climatic and atmospheric conditions, soil type and texture, and intensity of the turfgrass management. This disease is favored by high relative humidity, as well as temperatures of 50°F to 60°F at night in late fall or early spring. Infection is most likely when soil temperatures at a 2–4 inch depth decrease to 65°F. This is the period to apply preventive fungicides. Large patch infestation is more severe when the turf has high levels of thatch or is fertilized with nitrogen late in the season.

Management Tips:

- Maintain balanced fertility.
- Avoid nitrogen applications in the late fall through early spring when the pathogen is active.
- Increase the air circulation.
- Avoid overwatering.
- Improve soil drainage.
- Reduce thatch.
- For best results, apply contact or systemic fungicides at no less than 2 gal/1,000 ft² to prevent large patch.

Zoysia Patch as seen from 10 feet (right) and 20 feet.



Rust and Smut Diseases

Stripe Smut

Susceptible Turfgrass:

Annual bluegrass and certain varieties of Kentucky bluegrass, perennial ryegrass, and bentgrass

Symptoms:

Plants are stunted and may appear light green or yellow. Leaf blades are stiff, erect and sheaths develop narrow, elongated streaks that are yellowish-green in color. The leaf blade then curls and forms parallel stripes that are gray to black in color and extend the length of the leaf. Infected older leaves will shred, twist, and split, starting at the tips and progressing downward. Infected areas may be concentrated in large areas or scattered across the turf. Eventually, the root growth and tillering of the turf are reduced.

Stripe Smut



Conditions Favoring Disease:

Stripe smut favors temperatures between 50°F and 60°F, typically in the spring and fall. Hot, dry weather and improper fertilization accelerates the disease in older turf.

Management Tips:

- Convert to a turfgrass species or cultivar (especially in Kentucky bluegrass) that is resistant to stripe smut.
- Avoid high levels of nitrogen, especially during the summer.
- Maintain a balanced fertility level.
- Irrigate as needed to prevent drought stress.

Other Fungal Diseases

Dollar Spot

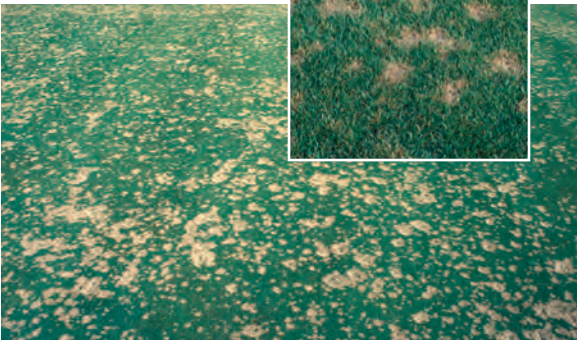
Susceptible Turfgrass:

All species of warm- and cool-season turfgrass

Symptoms:

Dollar spot causes sunken, circular patches that measure up to 2 inches in diameter on golf greens and several inches on higher mown turf. The patches turn from brown to straw color and may eventually coalesce, forming irregularly shaped areas. Infected leaves may display small lesions that turn from yellow-green to straw color with a reddish-brown border. The lesions can extend the full width of the leaf. Multiple lesions may occur on a single leaf blade.

*Dollar Spot as seen from
10 feet (right) and 20 feet.*



Conditions Favoring Disease:

Dollar spot is favored by temperatures between 59°F to 86°F and continuous high humidity. This disease is particularly favored by warm days, cool nights, and intense dews. It also infects areas with low levels of nitrogen and becomes more severe in dry soils.

Management Tips:

- Use an adequate level of nitrogen, particularly in the spring and early summer.
- Mow grass at regular intervals.
- Reduce thatch.
- Increase the air circulation.
- Irrigate turf deeply and as infrequently as possible to avoid drought stress.
- Remove dew from the turf early in the day.
- Convert to a turfgrass cultivar (especially for bentgrass) that is more tolerant to dollar spot.
- Apply contact and/or systemic fungicides on a preventive basis.

Other Fungal Diseases

Leaf Spot/Melting-Out

Susceptible Turfgrass:

Creeping red fescue, Kentucky bluegrass, annual bluegrass, perennial ryegrass, tall fescue, and some varieties of bentgrass and bermudagrass

Symptoms:

Leaf spot (melting-out) causes purplish-brown to black spots with tan centers on the leaf blade and sheath. The lower leaves of the infected plants become shriveled and blighted. When melting-out infection is severe, almost all of the leaves and tillers die, causing severe thinning of the stand—or melting-out. On cool-weather turfgrass, melting-out typically follows the appearance of leaf spots.

Melting-Out



Conditions Favoring Disease:

Leaf spot favors temperatures between 40°F and 80°F.

It occurs in areas that experience more than 10 hours a day of foliar wetness for several consecutive days. It also favors high amounts of nitrogen and a low mowing height.

Management Tips:

- Increase the height of cut.
- Reduce turf stress by using lightweight equipment.
- Avoid the application of high rates of water-soluble nitrogen in the spring.
- Minimize the amount of shade.
- Irrigate turf deeply and as infrequently as possible.
- Reduce thatch in the early spring or fall for cool-season turfgrass and in the summer for warm-season turfgrass.

Other Fungal Diseases

Red Thread and Pink Patch

Causal Agent:

Red thread—*Laetisaria fuciformis*

Pink patch—*Limonomyces roseipellis*

Susceptible Turfgrass:

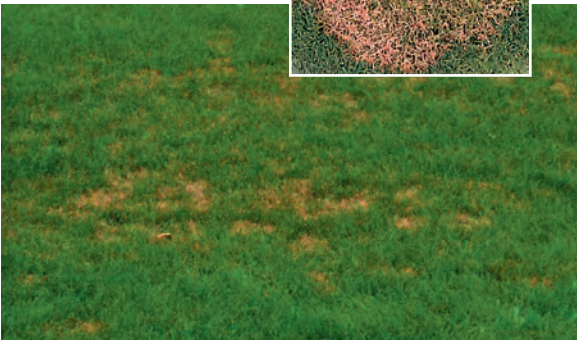
All turfgrasses, but particularly severe on fine-leaf fescue, and perennial ryegrass

Symptoms:

Red thread causes patches that are reddish-brown in color and 1 to 4 inches in diameter up to 2 feet. Pink patch causes a gelatinous mass of pink mycelium with water-soaked leaves.

Red Thread

Red Thread at 20 feet.



Conditions Favoring Disease:

Red thread thrives in temperatures between 40°F to 85°F and in locations that are low in nitrogen. It also occurs in areas that experience more than 10 hours a day of foliar wetness for several consecutive days.

Pink patch usually develops in the presence of red thread. These two similar diseases often occur under the same conditions and at the same times. It is distinguished from red thread by the absence of “red threads,” or sclerotia.

Management Tips:

- Mow turf frequently and collect clippings to remove diseased portions of the leaves.
- Maintain adequate nitrogen and a balanced fertility.
- Apply moderate to high amounts of phosphorous and potash.
- Maintain the soil pH between 6.5 to 7.0.
- Reduce shade.
- Increase the air circulation to the turf's drying process.
- Irrigate turf deeply and as infrequently as possible.
- Use fungicides to control disease when it is a chronic problem.

Pythium Blight

Susceptible Turfgrass:

All turfgrass species, especially annual bluegrass, perennial ryegrass, bentgrasses, and tall fescue and bermudagrass

Symptoms:

Pythium blight appears suddenly during hot, humid weather. This disease causes greasy, brown circular spots that are initially about $\frac{3}{4}$ inch to 2 inches in diameter and then rapidly enlarge in size. The spots are water-soaked and dark-colored early in the morning. They also form fluffy white masses of fungal mycelium (cottony blight) and can coalesce to form large, irregular areas of dead turf. Infected patches may appear bronzish-orange in color.

Pythium Blight as seen up close in early stages (right) and from 20 feet (below).



Conditions Favoring Disease:

Pythium blight favors night temperatures of over 68°F. It occurs in areas that experience more than 10 hours a day of foliar wetness for several consecutive days. It is found in the wettest areas of turf and in areas with poor drainage and air circulation. Lush-growing turf growing under nitrogen fertilization is particularly susceptible to the disease.

Management Tips:

- Avoid mowing wet turf when the foliar mycelium is evident to minimize spreading the disease.
- Reduce thatch.
- Apply less than 1/2 pound of nitrogen per 1,000 ft² a month during hot weather.
- Increase air circulation to speed the drying process of the turf.
- Minimize the amount of shade.
- Irrigate turf early in the day. Avoid late-day watering.
- Improve soil drainage.
- Irrigate turf deeply and as infrequently as possible.
- Apply contact and systemic fungicides on a preventive basis.