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LAWN HEALTH

Common Diseases on Cool-Season Lawns




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Introduction

Turfgrass diseases can be a destructive and misdiagnosed problem on lawns. Disease occurrence is affected by several factors, most crucially a susceptible host species, favorable temperatures and freely available moisture. This guide covers the most common diseases on the two most frequently planted turfgrass species for lawns in Indiana, Kentucky bluegrass and tall fescue.

Symptoms of a particular turfgrass disease may be easily confused with damage caused by other diseases, drought or insects. This manual provides familiarity with the symptoms of the most common turf diseases in Indiana and how to manage them, but is not a definitive resource for diagnosing turf problems. Proper diagnosis relies on identifying the pathogen, often by signs that can only be distinguished by a trained diagnostician with the aid of a microscope. Three steps for assessing a potential disease problem are outlined below. For specialized help, contact your local Purdue Extension educator or the Purdue Plant & Pest Diagnostic Clinic (turf-samples@purdue.edu).

1. **Identify the host species**. Identification of the turfgrass being affected can help narrow down the potential list of diseases, since some diseases are specific to certain host species. For example, dollar spot can be a severe problem on Kentucky bluegrass, but tall fescue is not susceptible. A Flash-enabled online identification guide (requires a browser plug-in) is available at www.turf.purdue.edu. See the table below for a list of common diseases that affect tall fescue and Kentucky bluegrass.

Tall Fescue	Kentucky Bluegrass
Ascochyta Leaf Blight	Ascochyta Leaf Blight
Brown Patch	Dollar Spot
Gray Leaf Spot	Bipolaris Leaf Spot/Melting Out
Fairy Ring	Fairy Ring
Pink Snow Mold/Microdochium Patch	Pink Snow Mold/Microdochium Patch
Pythium blight	Pythium blight
Red Thread/Pink Patch	Red Thread/Pink Patch
Rust	Rust
	Summer Patch

2. **Assess the recent weather pattern**. Have the temperatures been particularly warm, with highs above 85 degrees F? If so, Pythium blight, brown patch or another disease that thrives in high temperatures could be the cause of turf decline. Has the area experienced frequent rain or heavy dews, or is the soil saturated? Fungal pathogens require moisture to grow and infect plants. Therefore, reducing leaf wetness through timely and conservative irrigation and fixing drainage issues can be important sustainable methods of cultural disease control.
3. **Determine if the damage is spreading**. Diagnosis of a lawn problem can be difficult if just observing stand symptoms alone (see photos below). Abiotic disorders — that is, disorders caused by a nonliving agent, such as drought — will not spread from plant to plant and damage will often appear quickly, and in a more even pattern. Conversely, an infectious disease will start in small areas and spread throughout a lawn in a more obvious pattern as the pathogen grows and infects new susceptible plants. Diseases normally do not occur in straight lines unless when spores are spread linearly by mower tracks or water movement. Diseases more often appear in clusters or irregular patterns with a gradient of damage.

Damage from non-selective herbicide application.

Brown patch on tall fescue

ABIOTIC DISORDERS

In half or more of all lawn diagnostic samples submitted, a true disease caused by a fungal pathogen is not the cause. Instead, myriad other abiotic factors often lead to decline, including soil factors such as compaction, pH, and fertility, moisture and temperature extremes, chemical and salt injury, storm damage; scalping, and animal damage. Many of these disorders in a home lawn have substandard soil as a root cause. During home construction, topsoil is often stripped and either isn't replaced or only an inch or two is spread prior to planting. The remaining subsoil is devoid of nutrients and has a dense clay structure that is prone to compaction and difficult to irrigate and fertilize (see photo below). If you can't push a screwdriver through it, a plant root is going to have an equally difficult experience. In these cases, aerifying and adding compost to improve soil structure is more sustainable and beneficial to the lawn. For more information on abiotic plant disorders see: https://www.apsnet.org/edcenter/disandpath/abiotic/intro/Pages/Abiotic.aspx.

Tall fescue & Kentucky bluegrass diseases

ASCOCHYTA LEAF BLIGHT

Ascochyta spp.

Hosts: Tall fescue, Kentucky bluegrass

Time of year: Late April-mid June

Description: Ascochyta leaf blight causes minor sustained damage to lawns but is extremely conspicuous. The disease occurs in warm periods in late spring or early summer after periods of heavy rainfall or high humidity. Many of the details of the disease cycle are unknown, but long periods of leaf wetness seem to play a distinct role. The disease occurs erratically and may be observed on a highly maintained lawn (particularly with an irrigation system) while an adjacent, less maintained yard may be undamaged. Symptoms include leaf chlorosis and blighting that generally girdles the leaf from the tip down and results in straw-colored, irregular patches of varying sizes. Pycnidia, which appear as small brown or black freckles, can be observed on infected leaves. These structures produce conidia, an asexual spore that spreads the disease. In some cases, these conidia can be spread mechanically on mowers, resulting in a somewhat linear pattern of disease occurrence.

Control: Although the disease appears devastating, the pathogen infects only the leaves and does not affect the crown tissue. After conducive conditions pass, affected turf normally recovers quickly and no fungicide is warranted. When symptoms are occurring, restrict mowing and traffic when leaves are wet from irrigation, rainfall or dew to avoid spreading pathogen spores. Avoiding excessive nitrogen applications in the spring. Regularly aerating turf areas may also reduce disease severity.

Tall fescue & Kentucky bluegrass diseases

FAIRY RING

Various basidiomycete spp.

Hosts: All turfgrasses

Time of year: May-September

Description: Fairy rings normally begin to occur in late spring or early summer when soil temperatures rise to over 70 degrees F. Because fairy ring fungi don't infect turfgrass roots, all turf species are susceptible to damage. Fairy rings can appear as three distinct symptoms, all resulting from activity of the subsurface fungal colony. Fairy rings can cause extensive damage to turf areas by causing the soil and thatch to become hydrophobic, (i.e., water-repellant), as their mycelia densely colonize the soil and produce organic acids. This ring type (Type I) often kills turf in rings or arcs during high temperature periods. Symptoms can also occur as lush green rings of turf growth, caused by the release of plant-available nitrogen in the soil profile as a result of organic matter degradation by the fungus (Type II). Ring symptoms may also appear as either mushrooms or puffballs (Type III). One, two or all three of these symptoms can occur at the same time. Sandy root zones are more easily made hydrophobic by fairy ring fungi, and therefore more susceptible to Type I fairy ring damage.

Control: Fungicide applications are normally not suggested for fairy ring control on lawns, and fortunately, fairy ring is not a common cause of lawn damage on heavier soils in Indiana. If a curative fungicide is used, it must be tank-mixed with a surfactant (i.e., wetting agent) and watered in with at least ¼ inch of post-application irrigation to achieve satisfactory control. If fairy ring is active and causing turf damage, remediate the soil physical properties by cultivation in the form of aerification (core preferred) or spiking to break through the water-repellant layer. Heavily watering the area and applying a surfactant may also aid in water penetration and symptom recovery. Some fairy ring mushrooms, particularly the common *Chlorophyllum molybdites*, can cause severe gastrointestinal upset, so care should be taken to prevent children or pets from consuming the mushrooms.

Tall fescue & Kentucky bluegrass diseases

PINK SNOW MOLD/MICRODOCHIUM PATCH

Microdochium nivale

Hosts: Kentucky bluegrass, perennial ryegrass, tall fescue and fine fescues.

Time of year: March-June

Description: Although rarely severe, this disease can be observed on nearly all lawn species in early spring. The disease was previously solely known as pink snow mold because disease development occurs under snow cover. However, the pathogen can infect over a wider range of cool (< 60 F) wet conditions and is not limited to infecting snow-covered turf. Symptoms from infections occurring under snow cover are roughly circular patches 2 to 12 inches in diameter that are white or tan in color. In cool, wet periods when the disease is still actively sporulating, a pink or salmon-colored patch margin can also be evident. Symptoms resulting from infections not under snow cover appear slightly different, often as darkish red or brown patches with a slightly greasy appearance.

Control: Shaded areas with prolonged leaf wetness are more prone to damage. Prevent lush foliage going into the winter dormancy period by continuing to mow until fall growth stops completely. Do not apply high rates of nitrogen within six weeks of a killing frost or when the first snow is expected. Excessive potassium application may also increase disease occurrence. Preventive fungicide applications on lawns are usually not necessary. Heavily raking crusted areas allows for increased air movement and quicker recovery. Nitrogen can also be applied in the spring to affected areas to encourage recovery.

Tall fescue & Kentucky bluegrass diseases

PYTHIUM BLIGHT

Pythium aphanidermatum, other *Pythium* spp.

Hosts: Kentucky bluegrass, perennial ryegrass and tall fescue

Time of year: June-August

Description: Pythium blight can be a severe disease during periods of high temperatures — highs greater than 90 F and lows greater than 70 F — and high humidity or rainfall. The pathogen is not a true fungus and has unique characteristics, such as a zoospore that swims in water films. These spores facilitate the rapid disease spread along drainage and traffic patterns. Symptoms first appear as small circular orange or dark gray patches and leaves with a matted, greasy appearance. Gray, cottony mycelium may be observed in the morning hours during high humidity. Symptoms progress to a bleached straw color, with leaves that are matted or stuck together. Kentucky bluegrass is more susceptible than tall fescue.

Control: Reducing leaf wetness duration during hot conditions is key to management. Water early in the morning to knock overnight dew off leaves. Prune trees and shrubs for increased morning sunlight and airflow. Fix surface and subsurface drainage problems. Pythium blight is more severe on lush, overfertilized cool-season turf, so limit heavy nitrogen applications to early spring or fall. Do not mow or irrigate active Pythium blight infections. Fungicides for Pythium blight control are of different chemistries than standard fungicides due to the differences in biology of this pathogen. Fall overseeding to less-susceptible tall fescue may be an option for regaining stand density.

Tall fescue & Kentucky bluegrass diseases

RED THREAD/PINK PATCH

Laetisaria fuciformis and *Limonomyces roseipellis*

Hosts: Kentucky bluegrass, tall fescue, fine fescue

Time of year: April-June, September-October

Description: Red thread (often along with pink patch) occurs in mid spring or late fall during cool to moderate temperatures and periods of heavy dew or humidity. Symptoms are tan or white, roughly circular patches ranging from 4 inches to 2 feet in diameter. The patches may have a red or pink appearance, due to the presence of thick strands of red sclerotia. The red sclerotia give "red thread" its name, and are survival structures that remain in the thatch and lead to disease reoccurrence. Small tufts of mycelium are often evident during the early morning hours. An associated disease, pink patch caused by *Limonomyces roseipellis*, has pink mycelium and often can occur in the same area as red thread.

Control: Red thread affects turf that is growing slowly; therefore, adequate fertilization often results in large reductions in disease occurrence. Irrigate deeply and infrequently during the early morning hours to reduce leaf wetness duration. Prune trees and shrubs to increase air movement and allow for sunlight penetration. Collect clippings from infected areas to minimize disease spread. Fungicides are available for red thread control, but cultural controls are usually sufficient to manage the disease.

Tall fescue & Kentucky bluegrass diseases

RUSTS

Puccinia spp.

Hosts: Kentucky bluegrass, tall fescue

Time of year: June-October

Description: Worldwide, rust is one of the most pervasive plant diseases limiting food production, particularly wheat. Many rust diseases also occur on turfgrasses. The most common are stem rust of Kentucky bluegrass and leaf rusts on tall fescue. Stem rusts occur in late spring or summer, and leaf rusts most commonly occur in early to mid-fall periods. Unlike most other diseases, rusts are most severe when turfgrass is under a drought condition. Stand symptoms include a general chlorosis that occurs in a random, irregular pattern. High numbers of characteristic "rusty" orange urediniospores are formed in pustules on individual leaves and promote the rapid spread of the disease through wind, water or traffic. In a severe epidemic, urediniospores will coat and turn shoes and clothing orange if walked on. Young stands of Kentucky bluegrass are particularly susceptible to stem rust that can affect stand density and sod strength.

Control: Rust diseases are most severe on turfgrasses that are growing slowly under stressful conditions; healthy plants are often able to withstand low levels of infection. Typical stresses include drought, nutrient deficiency, low mowing height or shade. Reducing the impact of any of these stresses will greatly minimize disease impact. Fungicides are normally not recommended for rust control unless considerable damage occurs.

Tall fescue diseases

BROWN PATCH

Rhizoctonia solani

Hosts: Tall fescue, Kentucky bluegrass (only on select cultivars)

Time of year: May-August

Description: Brown patch is the disease that most limits tall fescue use in Indiana. Tall fescue is much more susceptible than Kentucky bluegrass, with regular brown patch epidemics occurring on only a few Kentucky bluegrass cultivars. The disease begins in late spring or early summer and follows the 6-8 flip-flop rule, with conducive temperatures being nighttime lows of 68 F or higher combined with daytime highs of 86 F or higher. Brown patch on higher-cut turf appears as straw-colored or brown circular patches. A characteristic, irregularly shaped straw-colored lesion with a dark brown margin can be observed on newly infected leaves along the margin of patches. When turf is wet in early morning, tufts of pathogen mycelium may be seen scattered along patch margins.

Control: Balance fertility. Load most nitrogen fertilization in the spring and fall, and apply lower nitrogen rates in slow release forms if lawns are deficient during the summer. Water during the early morning hours to minimize leaf wetness and reduce disease incidence. Raise mowing heights to 3.5 to 4 inches for tall fescue during the summer stress period. Most fungicides purchased over the counter by homeowners are not very effective at controlling this disease. In field trials, azoxystrobin and other strobilurin fungicides have provided the most consistent control of brown patch on tall fescue both preventively and curatively.

Tall fescue diseases

GRAY LEAF SPOT

Pyricularia grisea

Hosts: Tall fescue, perennial ryegrass

Time of year: Late July-early September

Identification: Although considerably more severe and devastating on perennial ryegrass, gray leaf spot can also occur in and reduce the density of a tall fescue stand. Young turfgrass stands are particularly susceptible to this disease. Initial symptoms may resemble drought stress, with affected turf being noticeably thinned. Distinct spots with a light tan or grayish interior and a brown to purplish margin develop on leaves. Many conidia, or fungal spores, are produced within the spots and are dispersed by wind, splashing water and mowers, leading to rapid disease spread. Dying leaves may twist at the leaf tip. Symptoms can be easily confused other diseases, such as brown patch, but time of year is key. Gray leaf spot is most prominent in hot summers followed by warm, humid days of late summer and fall, particularly following the remnants of a Gulf Coast tropical storm or hurricane.

Control: Kentucky 31 tall fescue is particularly susceptible, and no complete host resistance is known to gray leaf spot in turf-type tall fescue varieties. Avoid nitrogen fertilization in late summer, particularly with quick-release forms that encourage a flush of growth. Leaf wetness is crucial to the progression of this disease. Minimize shade by judiciously pruning trees or bushes, particularly to relieve morning shade, and water early in the morning as opposed to late afternoon or evening. Due to the sporadic nature of gray leaf spot development on lawns, fungicide effects are erratic. Thiophanate-methyl alone or combined with azoxystrobin is the most effective fungicide.

Kentucky bluegrass diseases

DOLLAR SPOT

Clarireedia spp.

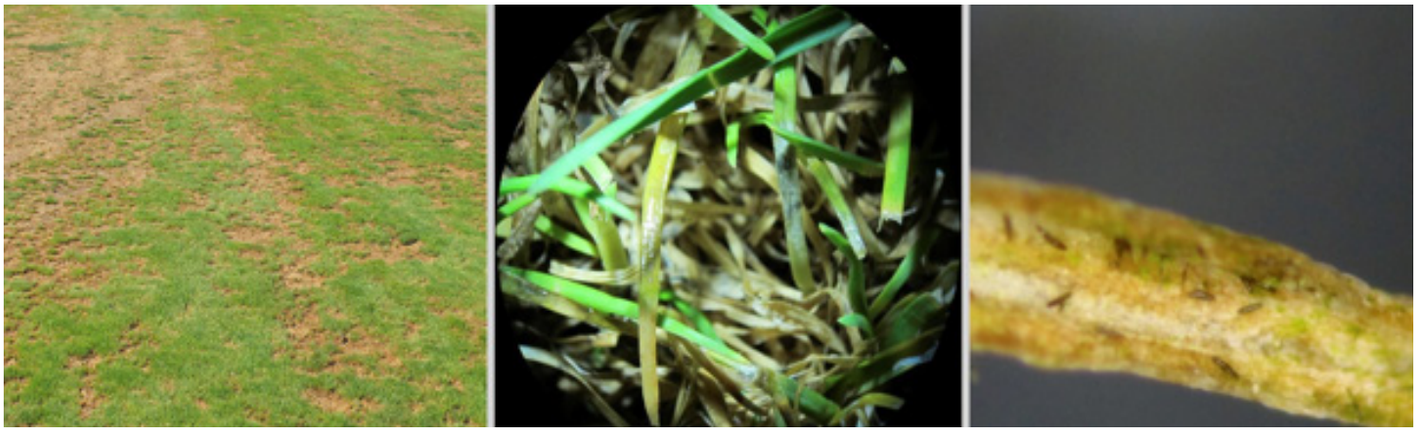
Hosts: Kentucky bluegrass, most turfgrass species except tall fescue

Time of year: Mid-April-early November

Description: Due to its wide host and temperature range, dollar spot is the most important disease of turf worldwide. The disease can occur from April to November in Indiana, with most new infections occurring during heavy dew events when high temperatures range from 60 F to 90 F. On longer-cut turf, spots can reach a size of 6 inches or more in diameter. Longer leaves normally stay upright and are straw-colored. An hourglass-shaped, straw-colored lesion can be observed girdling newly infected leaves along spot margins. In the early morning during heavy dews or high humidity, pathogen mycelium can be observed on top of infected leaves within the canopy of longer-cut turf.

Control: Dollar spot is more prevalent and severe on underfertilized turf, so maintaining adequate nitrogen fertility is crucial. Nitrogen applications, particularly in the fall when other diseases are non-issues, can encourage recovery or prevent disease outbreaks. Limit leaf wetness duration by watering early in the morning. Tall fescue is not known to be susceptible to dollar spot. If dollar spot is a perennial problem on a Kentucky bluegrass lawn, consider overseeding with an improved turf-type tall fescue variety to reduce dollar spot incidence. A number of fungicide classes are effective for dollar spot, but the commonly used azoxystrobin (i.e., Heritage or Scotts Disease EX) is ineffective in controlling this disease. Fungicide resistance is a concern for this disease.

Kentucky bluegrass diseases



LEAF SPOT/MELTING OUT

Bipolaris & Drechslera spp.

Hosts: Kentucky bluegrass, fine fescues

Time of year: June-August

Description: Leaf spot and melting out diseases caused by Drechslera and Bipolaris are common in Kentucky bluegrass, particularly lawns that are mowed low. These diseases also can be particularly severe on younger stands of turfgrass during the hot summer months. During the early stages of this disease, leaf spot symptoms occur as small water-soaked areas that become uniformly dark, ranging from reddish brown to black and on occasion surrounded by a yellow halo. Lesions can merge and cause dieback of entire leaves or plants. In the advanced melting-out stage of the disease, roots, rhizomes and crowns of Kentucky bluegrass can be rotted, causing irregular areas of wilting and chlorosis.

Control: Leaf spot/melting out diseases are most severe on turf that is growing slowly due to environmental stresses. Raise the mowing height when the disease is active.
Do not seed Kentucky bluegrass in late spring or summer. Nitrogen applications that cause excessive turf growth during the hot summer months can predispose turf to this disease and result in severe infections. Areas that are extensively shaded, lack good drainage and are prone to long periods of leaf wetness are most susceptible to this disease. Reduce thatch to eliminate pathogen reservoirs. Certain newly released cultivars exhibit partial to excellent resistance to leaf spot/melting out diseases. Fungicides that control the disease and reduce spore production are available but are not commonly used on lawns.

Kentucky bluegrass diseases

SUMMER PATCH

Magnaporthiopsis poae

Hosts: Kentucky bluegrass, fine fescues

Time of year: Infection 65 F spring soil temperature. Symptoms: June-August.

Description: Summer patch is caused by a soil-borne pathogen that begins infecting turfgrass roots, crowns and rhizomes when mid-spring temperatures reach 65 F. Symptoms occur later in the summer during high temperatures. Summer patch symptoms occur in patches or frog-eye rings ranging from 6 inches to 3 feet in diameter. Patches are straw-colored, sunken and wilted and eventually collapse to the soil surface. Affected plants are easily pulled from the turf and have dark black rotten rhizomes, roots and crowns. The disease is most severe on Kentucky bluegrass and can lead to stand loss and weed encroachment in diseased areas.

Control: Control of summer patch is difficult. Reduce soil pH to 5.5-6.0 through the use of ammonium-based fertilizers. Applications of manganese sulfate at 6 pounds per acre in the spring may suppress the disease. Avoid excessive nitrogen in spring, particularly with nitrate-based fertilizers, which can exacerbate the disease. Reduce thatch buildup through aggressive aeration, vertical mowing and topdressing. When disease symptoms are present, minimize stress through frequent light irrigation and higher mowing heights. A light application of ammonium sulfate (0.2 pounds N per 1,000 square feet) may encourage recovery, but be careful to irrigate and wash the material from leaves to minimize burn potential during high temperatures. If fungicides are warranted, they should be applied preventively when soil temperatures reach 65 F in the spring and should be watered-in to the soil profile. Overseeding areas with non-susceptible turf-type tall fescue varieties is recommended on lawns with a history of this disease.

NOTES

Purdue Extension Resources

Turfgrass Website

Turfgrass Disease Reports

Turfgrass Disease Prediction

Tool Turf Doctor

Turf Fertilizer Calculator

References

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