



Turf Disease Guide

Background

Managing lawns in South Carolina comes with its share of challenges. Reducing disease pressure and controlling fungi that attacks grasses is part of an overall management plan to ensure the health of your lawn. Fungi are opportunistic in nature and will present problems when certain criteria are met. Because they cannot manufacture their own food, they rely on a host plant for nourishment. Grasses that are under stress are much more vulnerable to infection. In order for plant diseases to cause infection, they need three things: a host or plant, proper environment conducive for growth, and a pathogen. If any one of these three things is missing, infection cannot occur. Limiting the affect or presence of turf diseases is part of an overall management strategy. Since plant diseases need three criteria to survive, their control revolves around eliminating one of these criteria. Pathogens are abundant in nature much like weed seeds and are impossible to eliminate. Since you have a lawn, a host plant exists for fungi to live off of. This leaves the one factor we have the most control of which is the environment conducive for growth.

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Best Management Practices for Controlling Disease

Best Management Practices (BMP's) refer to cultural practices that promote the health and vigor of your lawn. These practices can greatly reduce disease pressure and lessen the likelihood of infection from disease. By implementing these practices, often the environment for disease development is diminished. Here is a list of BMP's that help ensure a healthy lawn.

Water Management

Improper irrigation practices are the main contributor to providing an environment conducive for plant diseases. Automated timed based irrigation systems that are not operated properly can actually cause stress to lawns by over-watering. Excessive leaf wetness combined with root stress from over-watering favors infection for disease. Studies have shown that the average lawn receives 20-50% more water than it really needs. New technologies in the irrigation industry are paving the way to precisely add just the right amount of water to your lawn. "Smart" irrigation controllers are irrigation controllers that have the ability to receive input from weather stations and soil moisture sensors to determine how much water your irrigation system should apply to your lawn. This technology has shown to produce better results while using less water on average. The return on investment for these types of controllers can be as little as one growing season. See your local W.P. Law Inc. representative for information on available "smart" controllers and other water conservation products.

Drainage

Poor drainage can have detrimental effects on the health of plants. When soils become water-logged, the space between the different soil particles becomes saturated with water. When this happens, there is no room left for oxygen in the soil. Roots need oxygen for survival. Without a healthy root system, plants are unable to take up water and nutrients for their survival. Poor drainage also presents an environment conducive for fungal growth. Most drainage problems exist due to runoff from impermeable surfaces such as driveways and roof tops. Water from these areas should be collected and diverted away from turf areas when possible. Turf areas staying wet where surface water cannot be collected, may benefit from the installation of sub-surface drainage. See your local W.P. Law Inc. representative for information on available drainage products.

Sunlight

Grasses rely on sunlight for photosynthesis. Even though some grass types fair better under shady conditions than others, they all prefer open sunlight. Grasses grown under tree canopies are often more sparse and spindly. Shady conditions also restrict air movement and allow for longer periods of leaf wetness leading to disease problems. Consider using mulch in these types of areas as high quality turf is difficult to achieve.

Type of Grass Selected

Selecting the type of grass for your yard is the most important decision you will make in ensuring you have long term success for a healthy lawn. There is no such thing as the perfect grass type. All grasses have various strengths and weaknesses that should be considered before installing. Grasses grown in environments not suitable for their surrounding will be continually stressed and more prone to disease. Things to consider before selecting a grass type include: amount of sunlight, soil type, fertility and mowing requirements, drought tolerance, disease and insect resistance, recovery ability, and growth habits. Consult your local sod producer on options and varieties suitable for your location.

Compaction

Soil compaction stresses grasses in a similar manner as poor drainage. Compacted soils restrict root growth and do not allow the plant to take up necessary water and nutrient. Core aeration can loosen soils to improve root structure. Aeration should be performed when grasses are in their most active stage of growth. Fertilizing with a balanced fertilizer prior to aeration will help grasses recover from mechanical damage.

Thatch

Thatch is a built up layer of dead and living shoot, stems and roots that develop between the soil surface and the canopy of the grass. Thatch is generally a problem when this layer reaches a ½” or more in thickness. This build up of organic matter can cause several problems in lawns. High levels of thatch provide breeding grounds for diseases and insects that attack grasses. Spores from diseases can over-winter in thatch and cause reinfection once warmer weather returns. Thatch can also restrict the movement of water and air into the soil, causing isolated dry spots. Over time, thatch accumulation will elevate the crown tissue of the grass making it more susceptible to winter injury and temperature changes. Thatch also restricts the movement of fertilizers and pesticides which reduces their effectiveness. Over-fertilization can lead to thatch build up. Thatch forms when organic matter from shoots and roots accumulates faster than it can be broken down by soil microbes. Ensuring grasses have a proper pH can help alleviate thatch problems. At low pH rates, soil microbes are not as active in breaking down organic matter. There is a common misconception that leaf clipping contribute to thatch levels. Studies have shown that grass leaves decompose readily and do not cause thatch. Thatch can be removed physically through the use of verticutter or vertical mowing. This process involves using a machine with vertical blades that pull the thatch from the grass canopy. Also, frequent topdressing of lawns with sand is a useful tool in thatch management.

Proper Mowing Heights & Frequency

Selecting the proper mowing height and frequency for your lawn is essential for its health. Grasses that are not mowed at the proper height or frequency can be stressed and more vulnerable to attack from diseases and insects. The following chart shows the recommended height of cut and frequency for lawns common to South Carolina.

Type	Optimal Height (Inches)	Frequency (Days)
Centipede	1.5 to 2.0	10 to 14
Bermuda (common)	1.0 to 1.5	3 to 5
Bermuda (hybrid)	1.0 to 1.25	3 to 5
St. Augustine	3.0 to 4.0	7 to 14
Zoysia	1.0 to 1.5	10 to 14
Tall Fescue	1.0 to 1.5	10 to 14

Fungicide Applications

Fungicides are available in granular or sprayable formulations. As a general rule, granular products must be watered-in so that their active ingredient can be absorbed by the roots. Most fungicide labels have both a preventative and curative rate. The preventative rate should be used when conditions are favorable for disease development but infection has not occurred. If the disease is already present in the lawn, then the curative rate must be used which is usually higher. Repeat applications may be necessary at the curative rate to achieve complete control. Always consult the fungicide label for exact directions on how to apply.

Brown Patch on Warm-Season Turf (Large Patch) (*Rhizoctonia solani*)

Grasses affected: Centipede, Zoysia, St. Augustine, and Bermuda



Management Tips:

- Make initial nitrogen applications in May once grasses are fully out of dormancy. Do not make any nitrogen applications after Aug. 15th.
- Avoid early season and late season nitrogen applications when the disease is active
- Avoid over irrigating grasses during Spring months
- Increase the height of cut and increase air circulation if possible
- Minimize the amount of shade the grass receives
- Irrigate turf in the early part of the day. Irrigate deeply and infrequently
- Improve drainage. Grasses such as Centipede and St. Augustine are stressed by excessive moisture.
- Reduce thatch
- Apply lime if soil pH is less than 6.5

Symptoms: Large patch typically attacks grasses when they are in the transition stage. This occurs during the spring and fall months when grasses are going in and out of dormancy. Large patch can be identified by large circular patches ranging from 2-20 feet in diameter. Patches often have a yellow to light brown band around them. These patches can be perennial and occur in the same spot from year to year. Large patch produces soft, dark rot that occurs on the lower portion of leaf sheaths. Rot at the basal portion of the leaf sheath causes shoots to easily detach from stolons. Distinct leaf lesions are usually not noticeable with large patch. This disease has quickly become the number one disease on warm season turf in South Carolina.

Conditions favoring the disease: Large patch occurs when daytime temperatures are in the 50° F to 85° range. Warm days with cool nights along with heavy dew favor disease development. Large patch is more active in the spring and fall months and can be brought about by conditions of high humidity and leaf wetness of more than 10 hours for several consecutive days. Because this disease attacks grasses during their transition stage, recovery is often slow.

Fungicides available for control:

Granular

Eagle (myclobutanol)
Heritage (azoxystrobin)
Pillar G (pyraclostrobin + triticonazole)
Prophecy (propiconazole)
T-Methyl (thiophanate methyl)

Sprayable

Armada (trifloxystrobin + triadimefon)
Clevis (mancozeb + myclobutanol)
Dithane (thiophanate methyl)
Fathom (propiconazole)
Honor Guard (propiconazole)
Transom (thiophanate methyl)

Brown Patch on Cool-Season Turf (*Rhizoctonia solani*)

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Grasses affected: Fescue



Management Tips:

- Use low to moderate amounts of nitrogen with moderate amounts of phosphorus and moderate to high amounts of potash
- Avoid nitrogen applications when the disease is active
- Increase the height of cut and increase air circulation if possible
- Minimize the amount of shade the grass receives
- Irrigate turf in the early part of the day
- Improve drainage
- Reduce thatch
- Apply lime if soil pH is less than 6.5

Symptoms: Brown patch typically causes rings or patches of blighted grass that can measure anywhere from 5 inches up to 10 feet. In addition to causing leaf spots, the disease also presents a thin brown border around the patches that can often be seen during the morning hours. This “smoke ring” effect is an easy way to identify the disease. On wide bladed grass varieties, look for leaf lesions that have tan centers with dark brown to black margins. After leaves die in the blighted areas, new leaves can emerge from the surviving crown tissue of the grass.

Conditions favoring the disease: Brown patch occurs when daytime temperatures are over 85° F and night time temperatures are over 68° F. This disease is more active in the summer months on fescue and can be brought about by conditions of high humidity and leaf wetness of more than 10 hours for several consecutive days.

Granular

Eagle (myclobutanol)
Heritage (azoxystrobin)
Pillar G (pyraclostrobin + triticonazole)
Prophesy (propiconazole)
T-Methyl (thiophanate methyl)

Fungicides available for control:

Sprayable

Armada (trifloxystrobin + triadimefon)
Clevis (mancozeb + myclobutanol)
Dithane (thiophanate methyl)
Fathom (propiconazole)
Honor Guard (propiconazole)
Transom (thiophanate methyl)

Gray Leaf Spot (*Pyricularia grisea*)

Grasses affected: St. Augustine, Bermuda, Centipede and some Fescues



Management Tips:

- Water turf as deeply and infrequently as possible.
- Avoid excessive nitrogen applications during hot, humid, and wet conditions.
- Reduce thatch.
- When possible plant grass varieties that are resistant to the disease.
- Avoid using herbicides or growth regulators when the disease is active.

Symptoms: Gray Leaf Spot is most common on St. Augustine lawns. Symptoms first appear as small brown spots on the leaves and stems. These spots can quickly enlarge up to 1/4” in diameter and become bluish-gray in color and oval shape. Mature lesions appear tan to gray in color and often have depressed centers with irregular margins that are purple to brown in color. A yellow border around the lesions is also possible.

Conditions favoring the disease: Gray Leaf Spot disease is most active when daytime temperatures are between 80 and 90° F and night time temperatures are above 65° F. Grasses that experience stress from conditions such as compaction and other factors are more susceptible to this disease. High nitrogen applications encourage the progression of Gray Leaf Spot. This disease is most severe during hot, humid, and rainy conditions.

Granular

Eagle (myclobutanol)
Heritage (azoxystrobin)
Pillar G (pyraclostrobin + triticonazole)
T-Methyl (thiophanate methyl)

Fungicides available for control:

Sprayable

Armada (trifloxystrobin + triadimefon)
Clevis (mancozeb + myclobutanol)
Fathom (propiconazole)
Honor Guard (propiconazole)
Transom (thiophanate methyl)

Dollar Spot (*Sclerotinia homoeocarpa*)

Grasses affected: Bermuda, Centipede, Zoysia and Fescue



Management Tips:

- Use adequate levels of nitrogen, especially in spring and early summer
- Mow grass at regular intervals
- Reduce thatch and increase air circulation if possible
- Irrigate turf as deeply and infrequently as possible
- Remove dew if possible

Symptoms: Dollar spot is most common on hybrid bermuda. This disease can be identified by sunken circular patches that measure from 2-6 inches in diameter. Higher cut turf will usually exhibit larger patches than closely mowed turf. These patches turn from brown to straw color and may connect over time forming irregular shapes. Infected leaves may display small lesions that turn from yellow-green to straw color with a reddish-brown border. Multiple lesions may occur on a single leaf blade and these lesions may extend across the entire leaf blade. In early morning, there may be the presence of a cobweb like growth of fungus in affected areas.

Conditions favoring the disease: Dollar spot is most active when temperatures are between 60 and 85° F. Warm days with cool nights favor the disease especially when heavy dews are present. Low nitrogen fertility can intensify the severity of this disease. Periods of wet weather in the spring and fall favor dollar spot infection.

Fungicides available for control:

Granular

Eagle (myclobutanil)
Pillar G (pyraclostrobin + triticonazole)
T-Methyl (thiophanate methyl)

Sprayable

Armada (trifloxystrobin + triadimefon)
Clevis (mancozeb + myclobutanil)
Dithane (thiophanate methyl)
Fathom (propiconazole)
Honor Guard (propiconazole)
Transom (thiophanate methyl)

Fairy Ring

Grasses affected: All Grasses



Management Tips:

- Avoid using soil amendments high in organic matter.
- Reduce thatch.
- Aerate soil.
- Use nitrogen fertilizers to mask symptoms.
- Use soil wetting agents in hydrophobic areas.
- Irrigate deeply.
- Apply labeled fungicides as a drench in combination with aeration and soil wetting agents.

Symptoms: Fairy Rings can vary in appearance due to over 40 types of fungi in this class. Above ground mushrooms may or may not be present depending on the species present. This group of fungi is different than most other fungi that attack grasses in that they are not parasitic. Most of the damage that occurs from Fairy Rings is due to the hydrophobic conditions (inhibits water infiltration) it presents due to the structure of the fungus. Grasses usually die from lack of water availability in infected areas. Typically, this disease has outer rings that are dark green to brown in color. The size and shape of the rings vary depending on the species. Grasses will often have a very green appearance on the outer most part of these rings. This is due to the release of nitrogen from the disease breaking down organic matter.

Conditions favoring the disease: Fairy Ring is usually present in soils where high organic matter is present. Places where stumps and roots are decaying often harbor this fungus. Fairy Ring can occur anytime of the year, but seems to be most active in the warmer months.

Fungicides available for control:

Granular

Heritage (azoxystrobin)
Pillar G (pyraclostrobin + triticonazole)

Sprayable

Heritage DF (azoxystrobin)
Prostar (flutolanil)

Spring Dead Spot (*Gaeumannomyces graminis*)

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Grasses affected: Bermuda



Management Tips:

- Reduce thatch.
- Apply ammonia based nitrogen fertilizers during the growing season.
- Apply at least 1# of potassium per 1000 square feet during the late summer months.
- Make fungicide applications throughout the fall months.

Symptoms: Spring Dead Spot symptoms are most notable during the spring months after bermuda has come out of dormancy. Affected turf will have circular patches anywhere from 6 inches to several feet that will remain dormant. Once the surrounding grass has fully greened up, quite often these patches will become sunken and depressed. It is common for annual bluegrass (*Poa annua*) to invade infected areas due to its resistance to the disease. Since this disease attacks the root system of bermuda, roots often appear dead and necrotic after infection. Bermuda will grow back into affected patches but often is slow and the roots from the runners appear short and stubby.

Conditions favoring the disease: Infection for Spring Dead Spot occurs in the fall when soil temperatures are in the 60-80° F range. Turf that has been established for at least 3-4 years is more susceptible. Thatch accumulation plays a role in the severity of Spring Dead Spot. All bermuda grass is subject to attack from this disease, but it appears to be more problematic on hybrid varieties. Cooler climates experience more disease pressure than warmer climates.

Fungicides available for control:

Granular

Eagle (myclobutanil)
Heritage (azoxystrobin)
Pillar G (pyraclostrobin + triticonazole)
Prophesy (propiconazole)
T-Methyl (thiophanate methyl)

Sprayable

Fathom (propiconazole)
Honor Guard (propiconazole)
Transom (thiophanate methyl)

Pythium Root Rot (*Pythium spp.*)

Grasses affected: Centipede, St. Augustine, Bermuda, Zoysia, Fescue

Pythium Blight (*Pythium spp.*)

Grasses affected: Fescue, Bermuda, St. Augustine



Management Tips:

- Avoid over-watering.
- Improve drainage.
- Increase sunlight.
- Avoid over fertilization.
- Reduce soil compaction.
- Increase the height of cut.

Symptoms: Pythium Root Rot is common on highly maintained turf. Symptoms are typically non-distinctive although it can appear as irregular yellow patches. The affected grass is often thin, off color, and slow growing while the root system is stunted with reduced volume and vigor. Pythium blight first appears as 1" reddish-brown patches of grass. Upon initial infection spots will be dark and water-soaked in appearance. As infection continues, these spots will start to shrivel and become straw colored. In early stages, these spots often feel greasy and cottony growth is usually present with this disease. Bleached lesions sometimes appear on leaf blades. These lesions differ from dollar spot, in that they have no distinct border around them. Because Pythium blight produces many spores, patches can "streak" across lawns with the movement of water across the surface.

Conditions favoring disease: Pythium thrives when temperatures are between 70-90°F. Pythium root rot is encouraged by high soil moisture, low light and poor drainage. These conditions along with high maintenance and traffic can increase the severity of the disease. Pythium root rot can travel with surface water. Pythium blight is most active above 70° F.

Fungicides available for control:

Granular

Heritage (azoxystrobin)
Pillar G (pyraclostrobin + triticonazole)

Pythium Root Rot (*Pythium spp.*)

Sprayable

Heritage DF (azoxystrobin)
Terrazole (etridiazole)

Pythium Blight (*Pythium spp.*)

Heritage (azoxystrobin)
Pillar G (pyraclostrobin + triticonazole)

Clevis (mancozeb + myclobutanil)
Heritage DF (azoxystrobin)
Terrazole (etridiazole)

Rust (*Puccinia graminis*)

Grasses affected: Zoysia, Bermuda, and Fescue



Management Tips:

- Apply adequate levels of nitrogen.
- Remove leaf clippings.
- Reduce thatch.
- Improve sunlight and air movement.
- Water deeply and infrequent to minimize drought stress.

Symptoms: Rust usually starts out as light yellow flecks on leaf blades and sheaths. As the disease matures, these flecks grow larger in size and become raised on the leaf blade. During the later stages these raised flecks will become reddish-brown or orange in color. Severe infections will cause the leaf to become yellow.

Conditions favoring the disease: Rust diseases are favored by warm humid conditions and most often affect grasses that are already under stress from shade, low fertility, or drought. Rust development is generally seen when temperatures are between 65 and 85° F. Grasses that are actively growing due to proper management practices usually do not have a problem with this disease.

Fungicides available for control:

Granular

Heritage (azoxystrobin)
Pillar G (pyraclostrobin + triticonazole)
Prophesy (propiconazole)
T-Methyl (thiophanate methyl)

Sprayable

Armada (trifloxystrobin + triadimefon)
Clevis (mancozeb + myclobutanil)
Fathom (propiconazole)
Honor Guard (propiconazole)

Slime Mold

Grasses affected: Bermuda, Centipede, Zoysia, and St. Augustine



Management Tips:

- Physically remove by mowing or through the use of a high pressure sprayer.
- Limit leaf wetness.
- Improve sunlight.

Symptoms: Slime mold is usually black to bluish-gray in color. It forms on the surface of leaf blades and stems and is raised in appearance. This fungus does not attack the grass but in severe conditions can impede photosynthesis.

Conditions favoring the disease: Slime molds develop during times of high moisture and low sunlight. Continued leaf wetness contributes to the development of this disease.

Fungicides available for control: None

Anthracnose (*Colletotrichum graminicola*)

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Grasses affected: Bermuda, Fescue, Centipede, Zoysia, and St. Augustine



Management Tips:

- Increase height of cut
- Reduce compaction
- Maintain adequate nitrogen levels and balanced fertility
- Avoid over-watering
- Use preventative fungicide applications where disease has been a chronic problem

Symptoms: Although anthracnose is common in the Southeast, it is usually of minor significance. Anthracnose typically infects grasses during times of slow growth. This occurs during the summer on cool-season grasses and during the spring and fall on warm-season grasses. Anthracnose is known to mostly cause leaf blight and occasionally basal rot. Signs include irregular shaped patches that are yellow to brown in color. Leaf lesions that are yellow with black centers may also occur. Lesions sometimes have the appearance of a yellow halo surrounding them. Anthracnose basal stem and leaf sheath rot occurs during cool, wet weather in the spring and warm, moist weather in the summer. When anthracnose basal rot is present, infected shoots are easily detached.

Conditions favoring disease: Anthracnose is favored by temperatures over 78° F. It occurs in areas that experience more than 10 hours a day of leaf wetness or several consecutive days. Soil compaction and low amounts of nitrogen fertility may enhance the severity of this disease.

Fungicides available for control:

Granular

Eagle (myclobutanil)
Pillar G (pyraclostrobin + triticonazole)
T-Methyl (thiophanate methyl)

Sprayable

Armada (trifloxystrobin + triadimefon)
Clevis (mancozeb + myclobutanil)
Fathom (propiconazole)
Honor Guard (propiconazole)
Transom (thiophanate methyl)

Melting Out / Leaf Spot (*Helminthosporium*) (*Bipolaris* and *Drechslera*)

Grasses affected: Bermuda, Fescue, Centipede, Zoysia, and St. Augustine



Management Tips:

- Reduce thatch.
- Increase air movement.
- Irrigate deeply and infrequently.
- Avoid nitrogen over fertilization.

Melting Out / Leaf spot refers to a disease that has two different agents that cause infection. The fungi *Bipolaris* and *Drechslera* produce a variety of symptoms in cool-season and warm-season turf. This group of fungi were previously referred to and sometimes still are as *Helminthosporium*. The two grasses most affected in the state are fescue and bermuda. *Drechslera* primarily affects cool-season grasses such as fescue. Symptoms include leaf lesions that are distinct and appear water-soaked. These lesions can appear dark brown to purplish black. Older lesions may have a white area in the center. In severe situations, grasses may become entirely yellow. This may be followed by crown and root rots.

Bipolaris primarily affect bermuda, although it can cause leaf spot on fescue. In bermuda, leaf lesions start small and are tan in color. As the disease progresses, lesions appear straw colored and produce patches up to several feet in diameter. Some types of *Bipolaris* cause leaf spot and crown and root rots. In severe situations, stands will have an overall purple to gray coloration. Conditions favoring disease development differ due to plant type and species of fungus.

Fungicides available for control:

Granular

Eagle (myclobutanil)
Heritage (azoxystrobin)
Pillar G (pyraclostrobin + triticonazole)
Prophesy (propiconazole)
T-Methyl (thiophanate methyl)

Sprayable

Armada (trifloxystrobin + triadimefon)
Clevis (mancozeb + myclobutanil)
Fathom (propiconazole)
Honor Guard (propiconazole)
Transom (thiophanate methyl)

Take-All Root Rot (*Gauemannomyces graminis* var. *graminis*)

Grasses affected: St. Augustine, Bermuda, Centipede, and Zoysia



Management Tips:

- Balance nitrogen fertilizers with equal amounts of potassium
- Avoid nitrogen applications in the fall
- Reduce thatch
- Maintain proper mowing heights
- Avoid liming
- Water deep but infrequent

Symptoms: Take-all root rot consists of yellow thin turf in large irregular patches. Leaves can appear anywhere from yellow to brown in color. Patches measure from 3 to 15 feet in diameter. As the disease progresses, roots go from off color with black spots, to almost totally black. Stolons of the grass can be easily lifted from the infected areas and crowns will be rotted. Take-all root rot does not affect the leaves.

Conditions favoring disease: Take-all root rot occurs during wet conditions combined with periods of high temperature. Soils with a high pH (above 6.5) favor disease development. Low mowing heights and thatch build up can also trigger this disease. Proper cultural practices have a strong bearing on disease severity. Fungicide applications will reduce disease symptoms but will not eliminate the problem if grasses are under stress from other environmental factors. There is no silver bullet for controlling take-all root rot. Disease causes infection in spring and fall months with symptoms usually occurring during the summer. Split fungicide applications in both spring and fall help control take-all patch. Fungicides should be watered in to get the chemical into the root zone.

Granular

Heritage (azoxystrobin)
Pillar G (pyraclostrobin + triticonazole)
Prophesy (propiconazole)
T-Methyl (thiophanate methyl)

Fungicides available for control:

Sprayable

Fathom (propiconazole)
Honor Guard (propiconazole)
Transom (thiophanate methyl)

Note: This guide is an informal reference of fungicides available for disease control on grasses. It is not meant to supplement any product labels. Fungicide labels should always be consulted before being applied. Labels are subject to change without notice. Due to differences in grass varieties, environmental conditions, temperature, stress, moisture conditions, plant health, and other factors, fungicide applications may cause undesirable injury to grasses. W.P. Law Inc. does not guarantee or warranty the use of fungicides listed in this guide. Please remember that the label is the law.

W.P. Law Inc. would like to cite the following sources in gathering information for this publication:

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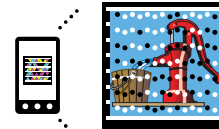
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