



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.

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	Fungicides available for control:	Sprayable
Heritage (azoxystrobin) Pillar G (pyraclostrobin + triticonazole) Prophesy (propiconazole) T-Methyl (thiophanate methyl)		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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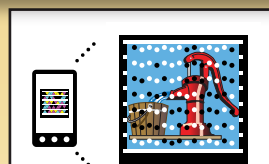
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