

TURFGRASS DISEASE MANAGEMENT

The most important lawn diseases in New York include leaf spots, patch diseases (brown patch and summer patch), red thread, pythium blight and root rot, rust, and snow mold. These diseases can usually be controlled through the use of resistant varieties and proper culture, but sometimes the use of pesticides is necessary.

Each disease has weather conditions favorable to its development, so we do not normally see the same diseases in each season. Often, when a lawn has a disease one year, it will re-occur again the following and subsequent years. And although pesticides (in this case, fungicides) can be helpful in slowing down a disease's progression, it still may take careful re-seeding, watering, fertilizing, etc. to repair damage. Fungicides also normally do not eliminate the disease from the site; they only suppress it.

Cornell Cooperative Extension of Rensselaer County can examine lawn samples for disease. Often, we find more than one disease present in a given sample. The following is a list of the typical diseases seen in the New York's Capital District.

ANTHRACNOSE FOLIAR BLIGHT (*Colletotrichum cereale*) – Anthracnose appears as spots that are vague or variable in shape. The leaf tips are often tan or brown, giving the turf a brownish cast. It is most common on turf that is not growing rapidly and can occur spring through fall.

To manage anthracnose, maintain adequate nitrogen fertility, but avoid excess fertilizer applications in the spring. Avoid drought and water early in the day so that the grass will dry by nightfall. Reduce soil compaction and limit thatch to less than 0.5 inch. General use fungicides include fludioxonil + propiconazole + chlorothalonil, pyraclostrobin + boscalid, and chlorothalonil + ASM. Biofungicides include *Bacillus lichiniformis* Strain 3086 and polyoxin D.

BROWN PATCH (*Rhizoctonia solani*) – This disease appears as brown patches a few inches to several feet in diameter, hence its common name. It is a lethal root pathogen, and bare spots may occur where the grass is completely killed. Brown patch is most common in summer during periods of hot, humid weather.

To manage brown patch, avoid excess nitrogen and excess water. Water early in the day so that the grass has time to dry before nightfall. Use of some organic fertilizers may reduce disease severity. Raise the mowing height, alleviate soil compaction and maintain thatch less than 0.5 inch. General use fungicides include azoxystrobin, chlorothalonil, chlorothalonil + ASM, copper hydroxide + mancozeb, cyproconazole, mancozeb, propiconazole, thiophanate-methyl, triadimefon, vinclozolin, pyraclostrobin + boscalid, metconazole, chlorothalonil + propiconazole, and fludioxonil + propiconazole + chlorothalonil. Biofungicides include *Bacillus lichiniformis* Strain 3086, *Bacillus subtilis* strain QST713, *Bacillus subtilis* strain GB 03, polyoxin D, *Pseudomonas aureofaciens* Strain Tx-1, mineral oil.

DOLLAR SPOT (*Sclerotinia homoeocarpa*) – Dollar spot shows up as bleached leaf spots with brown borders, often extending across entire leaf blade. Often it occurs in small silver-dollar-sized patches at first, but may then

spread over the entire lawn. It is most common from June into October.

Managing dollar spot includes assuring adequate fertility, since it is often worse on low fertility soils. Avoid watering frequently or watering in late afternoon or evening. Use of some organic fertilizers may reduce disease severity. Resistant Kentucky bluegrasses include Adelphi, America, Aquila, Bonnieblue, Eclipse, Majestic, Midnight, Parade, Park, Touchdown, Vantage, and Victa. General use fungicides include azoxystrobin, chlorothalonil, chlorothalonil + ASM, copper hydroxide + mancozeb, cyproconazole, mancozeb, propiconazole, thiophanate-methyl, triadimefon, vinclozolin, pyraclostrobin + boscalid, metconazole, chlorothalonil + propiconazole, and fludioxonil + propiconazole + chlorothalonil. Biofungicides include *Bacillus lichiniformis* Strain 3086, *Bacillus subtilis* strain GB 03, boscalid, *Pseudomonas aureofaciens* Strain Tx-1, mineral oil.

FAIRY RINGS & TOAD STOOLS (Various fungi) - Fairy rings occur as arcs or rings of fast-growing, dark-green grass that often surround a ring of thin or dead grass where mushrooms may grow. The rings vary in size, from small to quite large. They can commonly be noticed from April through October.

It is probably best to tolerate fairy rings as they are difficult to suppress. Mask the symptoms with good fertility, watering, and higher mowing. In critical areas, remove the soil and reseed or renovate. Rake down, mow or pick and discard the mushrooms. General use fungicides include azoxystrobin, flutolanil, pyraclostrobin + boscalid, and metconazole. Biofungicides include polyoxin D and *Bacillus subtilis* strain GB 03.

FUNGAL LEAF SPOTS & BLIGHTS (including the leaf blight fungi *Ascochyta spp.* and *Leptosphaerulina spp.*, and the leaf spot fungi *Drechslera spp.*, *Bipolaris spp.*, and *Curvularia spp.*) - Some types of these diseases are most serious when cool and wet weather prevails, usually in the spring, while others may become more problematic in late spring and summer. Symptoms may include oblong brown leaf spots with dark red, brown, or purple borders. There may be an overall yellowish cast to turf; these problems generally do not occur in distinct patches. If severe, leaves may shrivel and entire plants can discolor and die.

Management actions include avoiding the use of high-nitrogen fertilizers in early spring, raising the mowing height and watering early in the day so that the grass dries by evening. The lawn can be renovated using resistant Kentucky bluegrasses which include Bonnieblue, Challenger, Eclipse, Fylking, Midnight, Nassau, Parade, and Touchdown. Avoid using systemic fungicides. General use fungicides pesticides include azoxystrobin, chlorothalonil, chlorothalonil + ASM, copper hydroxide + mancozeb, cyproconazole, propiconazole, thiophanate-methyl, vinclozolin, pyraclostrobin + boscalid, chlorothalonil + propiconazole, and fludioxonil + propiconazole, + chlorothalonil. Biofungicides include *Bacillus subtilis* strain GB 03, mineral oil, and polyoxin D.

GRAY SNOW MOLD (*Typhula* blight) – Gray snow mold can be one of the more serious diseases in upstate New York. The symptoms of snow mold are usually not noticed until after the snow recedes in the spring, since the fungus involved does its destruction under the cover of snow. In the early spring bleached, tan, small or large patches of grass covered with white-gray, fluffy mycelial growth will be noticed. Tiny, yet visible, red or brown spherical fungal sclerotia embedded in infected leaf may also be noticed. The good news is that although the damage can look extensive and severe, gray snow mold rarely kills the grass plants.

Because gray snow mold is a disease that is enhanced by succulent growth, late applications of fertilizer can foster the problem. Therefore, proper fertilization in the fall with nitrogen and potassium should help keep the damage to a minimum, with the timing of application most important: avoid fertilizer applications after October 1. If fungicides are used they should be applied before long lasting snow cover. General use fungicides include azoxystrobin, chlorothalonil, copper hydroxide + mancozeb, propiconazole, triadimefon, pyraclostrobin + boscalid, and fludioxonil + propiconazole + chlorothalonil. Biofungicides include *Bacillus*

lichiniformis Strain 3086, polyoxin D, and mineral oil.

SUMMER PATCH (*Magnaporthe poae*) – This is a devastating disease that occurs during hot, dry periods. Symptoms include irregularly shaped, bleached leaves or dying leaf tips. Irregular crescents or circles of dying grass with or without a small patch of healthy grass in the center may appear. Summer patch can occur April through November.

Summer patch is caused by a root pathogen. Therefore, any practice that encourages deeper rooting (such as proper pH and fertilization, proper mowing, and irrigation) will make the lawn more tolerant of this disease. Management options include removing excess thatch, and avoiding high-nitrogen, excessive watering, and drought stress. Soil pH should be kept above 6.2. Planting resistant Kentucky bluegrasses, which include America, Aspen, Columbia, Eclipse, Glade, Midnight, Mystic, Nassau, Parade, Ram I, Sydsport, Touchdown, Vantage, and Windsor can help. Mix perennial ryegrass seed with Kentucky bluegrass seed when overseeding. General use fungicides include azoxystrobin, cyproconazole, propiconazole, thiophanate-methyl, triadimefon, pyraclostrobin + boscalid, fludioxonil + propiconazole + chlorothalonil, and iprodione + thiophanate-methyl.

PINK SNOW MOLD (also known as Fusarium patch or Microdochium patch, *Microdochium nivale*) – Similar to gray snow mold described above, this disease often does its destruction under the cover of winter snow and is noticed in spring. While it is made worse by cool, wet autumn or spring weather and by snow over unfrozen soil, snow is not absolutely necessary for this disease. Symptoms include bleached brown, small or large patches covered with pinkish fluffy mycelium. Unlike gray snow mold, no sclerotia are present. Pink snow mold is more severe and can rot crowns and destroy grass plants more readily than gray snow mold.

To manage pink snow mold, avoid nitrogen applications in the late fall. Remove thatch, and rake any diseased, matted grass found in spring. Resistant Kentucky bluegrasses include Adelphi, Birka, Bonnieblue, Bristol, and Touchdown. In repeatedly severe cases, fungicide use may be justified. General use fungicides include azoxystrobin, chlorothalonil, chlorothalonil + ASM, cyproconazole, mancozeb, propiconazole, thiophanate-methyl, triadimefon, vinclozolin, pyraclostrobin + boscalid, metconazole, chlorothalonil + propiconazole, and fludioxonil + propiconazole + chlorothalonil. Biofungicides include polyoxin D and mineral oil.

POWDERY MILDEW (*Blumeria graminis*) – This disease appears as white, powdery growth on the leaves, which appear frosted. It is usually found in shady areas. Infected leaves become yellow and then die. Powdery mildew occurs July through October.

To manage powdery mildew, reduce shading and avoid excess nitrogen fertilizer. Plant shade-tolerant varieties of grass. Resistant Kentucky bluegrasses include A-34, Bristol, Eclipse, Glade, Nugget, and Touchdown. Only where infection is extensive and severe are pesticides justified. General use fungicides include propiconazole and triadimefon. Biofungicides include *Bacillus lichiniformis* Strain 3086, *Bacillus subtilis* strain QST713, and mineral oil.

PYTHIUM BLIGHT (*Pythium spp.*) – This disease can happen rapidly. Damaged patches often follow the shapes of the wettest areas on the lawn, since water is necessary for this pathogen to develop. Plants that are killed feel slimy or greasy in the early morning. Pythium blight is most common during hot weather on poorly drained sites.

Management options include avoiding excess fertilizer and excess watering. Do not mow wet grass as this spreads the disease. General use fungicides include azoxystrobin, chloroneb, etridiazole, fosetyl-al, metalaxyl (mefenoxam), propamocarb, chlorothalonil +ASM (2ee recommendation). Biofungicides include mono and di-potassium salts of phosphorous acid, and *Bacillus subtilis* strain GB 03.

PYTHIUM ROOT & CROWN ROT (*Pythium spp.*) – This problem is similar to the pythium blight described above but is more serious, as this one infects the crowns and roots of the grass plants, making it more lethal. Small or large areas of the lawn appear thinned, off-color, and slow growing, and a general dieback may ensue.

Management options include avoiding excess fertilizer and excess watering. Improve drainage, increase light and raise mowing height. General use fungicides include azoxystrobin, chloroneb, etridiazole, fosetyl-AI, metalaxyl (mefenoxam), propamocarb, and pyraclostrobin + boscalid.

RED THREAD (*Laetisaria fuciformis*) - Red thread appears as thin fungal “threads” on the surface of the grass, with patches of the lawn slowly turning brown and dying. A similar disease is called “pink patch,” and in this case the fungal bodies which can easily be seen are pink instead of red. Red thread usually occurs in May through June and disappears during “typical” warmer summer conditions.

Since red thread is usually favored by low fertility soils, maintaining an ample supply of nitrogen and potassium should make the lawn more resistant to this disease. Resistant Kentucky bluegrasses include A-34, Adelphi, Birka, Bonnieblue, Challenger, Monopoly, Nassau, and Touchdown. Since red thread often disappears by summer, so fungicides are justified only in severe cases. General use fungicides include azoxystrobin, chlorothalonil, chlorothalonil + ASM, flutolanil, mancozeb, propiconazole, triadimefon, vinclozolin, pyraclostrobin + boscalid. Biofungicides include *Bacillus lichiniformis* Strain 308, polyoxin D zinc salt, and mineral oil.

RUST (*Puccinia spp.*) Rust is common on Kentucky bluegrass and perennial ryegrass in the late summer and fall. Orangy-brown spores appear on the grass blades. Anyone walking on a rust-infected lawn will notice the dust on their shoes. In severe cases, the infected plants can shrivel and die, making large patches or the entire lawn turn brown.

Rust is favored by low nitrogen levels, so late summer (approximately Labor Day) fertilization should help with a rust problem. Drought also may be a contributing factor. Resistant Kentucky bluegrasses include Fylking, Park, and Sydsport. Only where rust infection is extensive and severe are fungicides justified. General use fungicides include azoxystrobin, chlorothalonil, chlorothalonil + ASM, copper hydroxide + mancozeb, mancozeb, thiophanate-methyl, triadimefon, pyraclostrobin + boscalid, fludioxonil + propiconazole + chlorothalonil. Biofungicides include *Bacillus subtilis* strain QST713.

SMUTS (*Ustilago spp.*, *Urocystis spp.*, and others) In the case of this disease, leaf blades become yellowish, with gray or black stripes developing. Later, the leaves turn brown, die, and shred into ribbons. Smuts can show up all season long and generally do not occur in distinct patches.

Management options include avoiding drought and watering early in the day so the grass dries by nightfall. Early spring fertilizer applications and excessive fertilizer should also be avoided. Resistant Kentucky Bluegrasses include A-34, Adelphi, Aquila, Baron, Birka, Bonnieblue, Challenger, Eclipse, Glade, Ram I, Sydsport, and Touchdown. General use fungicides include propiconazole, thiophanate-methyl, and triadimefon.

SOURCE: Cornell Cooperative Extension of Suffolk County - 6/93. REVISED BY: Nancy Cook, Senior Horticultural Consultant, Cornell Cooperative Extension of Westchester County - 3/95

Fact Sheet 7.041, revised July 2004; extensively revised by David Chinery, April 2012, based on the “2012 Cornell Pest Management Guidelines for Commercial Turfgrass.”

This publication contains pesticide recommendations. Changes in pesticide regulations occur constantly and human errors are still possible. Some materials mentioned may no longer be legal. All pesticides distributed, sold or applied in New York State must be registered with the New York State Department of Environmental Conservation (DEC). Questions concerning the legality and/or registration status for pesticide use in New York State should be directed to the appropriate Cornell Cooperative Extension specialist or your regional DEC office.

READ THE LABEL BEFORE APPLYING ANY PESTICIDE.