

DISEASE MANAGEMENT IN HOME LAWNS



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Diseases of turfgrasses in home lawns are caused by plant pathogenic fungi; fungicide (a pesticide which kills fungi) use is generally discouraged for this setting. Commercial fungicides are only effective against specific diseases, must be applied at the correct time, and often must be applied several times to be effective. Sound lawn management practices that produce a vigorous stand of grass can provide effective disease control.

Cultivar Selection: Select turfgrass cultivars appropriate for your conditions and level of maintenance that you are willing to furnish. Always use high-quality certified seed containing 0% weed seeds, sprigs or sod from reliable sources to prevent the introduction of diseases into the lawn. The improved “turf-type” tall fescue cultivars tolerate low soil fertility, compacted soils, heavy traffic, and low maintenance inputs. These new cultivars are less coarse, more upright in growth, tiller more readily, and possess good color as well as good disease and insect tolerance. Tall fescue germinates readily, is drought tolerant, remains green because of a deep root system, is adapted to sun or shade, and does not form thatch. Most turf-type tall fescues have beneficial fungi (endophytes) associated with them that are toxic to lawn-damaging insects. Perennial ryegrass cultivars are tolerant of temperature extremes, establish quickly to form a dense canopy, do not form thatch, and may host endophytes. Ryegrasses are often mixed with Kentucky bluegrass. Fine leaved fescue cultivars are the most tolerant of shade and low soil fertility, do not form thatch readily, and can host endophytes. Kentucky bluegrass cultivars require high levels of maintenance, in particular nitrogen fertility. If not irrigated in hot, dry summers, Kentucky bluegrass will turn brown and become dormant. It is also prone to thatch formation and its related problems. When seeding a new lawn or overseeding an existing one, it is best to use a mixture of cultivars of different species.

Fertilization: Some turfgrass diseases are more severe when the nitrogen level is low; others are more severe where the nitrogen level is high. Moderate, complete levels of fertilization provide for greatest lawn health. Most of the fertilizer should be applied in late summer/fall (September) and late fall (November). This is when root growth is the greatest; good root growth in the fall will result in better top growth in the spring, earlier green-up, better color in the fall, and fewer disease problems. Fall fertilization promotes recovery from summertime diseases and other stresses. Avoid heavy applications of nitrogen in the spring and summer as lush, succulent growth is more susceptible to certain diseases and summer stresses, and requires more frequent mowing. A single, light spring application is appropriate. Fertilizer should be applied on the basis of a soil test to determine whether lime, potassium, or phosphorous should be applied and in what amounts.

Mowing: Low mowing heights, especially during the summer months can stress the lawn and increase its susceptibility to disease. A mowing height of 2-3 inches is recommended. High mowing heights result in more competitive grass and more shading of the soil. This reduces

weed competition and conserves moisture, as well as making for deeper root systems and enhanced drought tolerance. Follow the $\frac{1}{3}$ to $\frac{1}{2}$ rule when determining mowing frequency; the removal of more of the leaf blade stresses the grass. Keep mower blades sharp. A dull mower shreds the blades, increasing water loss and creating wounds for infectious fungi to invade. Continue mowing through late autumn to prevent leaf tissue from accumulating which makes the grass more susceptible to winter diseases. Lowering the mowing height to 2 inches in late fall can promote tillering and thicken and fill in the lawn. Leave clippings on the lawn as they return nutrients and organic matter to the soil and do not contribute to thatch formation. Mulching mowers chop clippings finely; other mowers may leave clumps which should be broken up by raking or re-mowing at a 90 degree angle. Tree leaves left on the lawn for long periods can kill patches of the lawn. Dry leaves may be chopped up by a mulching mower or by mowing in two directions with a regular mower. When done on a weekly schedule, leaves may be easily recycled into the lawn.

Irrigation: Too much or too little moisture can be detrimental to lawns; too much water favors disease development while too little water can weaken plants, lead to dormancy, and eventually kill plants. Water deeply and infrequently; light, frequent watering encourages shallow root growth and provides moisture for fungal infection of leaf blades. One inch of water per week (enough to wet top 4-6 inches of soil) is a general rule of thumb. Water early in the day; late afternoon or evening irrigations prolong periods of leaf wetness that encourage disease development. Turf-type tall fescues are the most tolerant of drought stress, followed by fine fescues. Perennial ryegrasses and Kentucky bluegrass are very close in drought tolerance, although Kentucky bluegrass can withstand drought conditions longer due to the presence of rhizomes. Keep in mind that irrigating Kentucky bluegrass in July may aggravate grub problems. If you allow the lawn to become dormant, remember that even dormant grass needs some moisture to survive ($\frac{1}{2}$ in. every 4-6 weeks).

Thatch Control: Thatch is an organic layer of dead and live roots, stolons, crowns, and rhizomes that sits on the soil surface. If this layer becomes greater than $\frac{1}{2}$ in. thick, it can interfere with water, air, and fertilizer infiltration, harbor insects, and create conditions conducive to disease development. Roots tend to grow in the layer of thatch where they are subject to moisture and temperature extremes. Thatch problems are most frequently found in intensely managed (heavily fertilized and treated with pesticides) Kentucky bluegrass lawns and to lesser degree in fine fescue lawns. Soils high in organic matter, beneficial microorganisms, and earthworms slow thatch buildup. Thatch reduction can be accomplished by two methods: removal of thatch with a dethatching implement or vertical mower and core aeration. Aeration requires special equipment to remove soil cores from the top 2-3 inches and redeposit them on the surface, where the soil is released into the thatch and encourages soil microorganisms to degrade it. This practice reduces soil compaction, improves air and water movement into the soil, and improves root growth by loosening the soil. Core aeration is best done in the spring and/or fall.

Other Practices:

- Plant resistant or 'improved' cultivars.

- Topdressing with compost provides nutrients and organic matter, and may speed up decomposition of thatch. Topdressing should be done only in conjunction with core aeration and the compost worked into the holes by dragging or with a rake.
- Overseeding with a slice seeder when lawn quality deteriorates replenishes desirable turfgrasses and produces a denser lawn that can out-compete weeds.
- Prune surrounding trees and shrubs to reduce shade and improve air circulation or plant a shade tolerant fescue cultivar.
- When planning where to establish turfgrasses avoid areas of excessive or inadequate drainage and excessive shade. Consider ground covers, flower beds, or walkways for these areas.
- Control weeds, insects and other lawn pests which can cause stress.
- Follow all label directions when applying lawn chemicals-improper applications can lead to turfgrass injury (i.e. fertilizer burn).
- Before using any fungicide, be sure that the disease is properly diagnosed.

Disease causing organisms are natural inhabitants of the soil and/or thatch and infect grass plants when the environmental conditions are favorable or the plants become weakened by poor growing conditions such as excess or too little water, poor soils, high temperatures, or shade. Very succulent, highly fertilized grass can also provide conditions favorable for plant pathogens. Most common lawn diseases rarely kill the plants, but cause unsightly damage. Most lawns recover with changes in environmental conditions and proper cultural practices. Important steps to manage plant diseases include proper soil preparation, selection of appropriate grass species and cultivars including ones with genetic resistance to diseases, and application of sound maintenance practices. For severe cases due to poor soil, poor grass selection, or excessive thatch, the best solution may be renovation.

Table 1. Common Lawn Diseases: Hosts, Occurrence, Symptoms and Relevant Cultural Practices

Disease	Hosts	Symptoms	Occurrence	Relevant Cultural Practices
<u>Dollar Spot</u>	Kentucky bluegrass Perennial ryegrass Fine-leaf fescue	4-6 in. straw colored spots. Individual blades with bands, often with dark border. Cobwebby growth when wet.	Late Spring through Early Fall. Warm to hot weather.	Avoid low nitrogen and low soil moisture. Apply compost.
<u>Brown Patch</u>	All turfgrasses. Most common on Perennial ryegrass lawns.	Large, brown patches.	Summer. Hot, humid weather.	Avoid high nitrogen levels. Avoid late afternoon or evening irrigation.
<u>Pythium Blight</u>	All turfgrasses.	Spots of greasy collapsed leaf blades. White, cottony growth when wet.	July and August. Very hot, humid weather.	Avoid high nitrogen levels. Improve drainage. Avoid excessive irrigation.
<u>Red Thread</u>	Kentucky bluegrass Perennial ryegrass Fine-leaf fescue	Patches of ragged, uneven, scorched grass. Pink, gelatinous colored 'threads'. Pink, cottony flocks.	Spring and Fall. Cool to warm, humid weather.	Avoid low nitrogen levels. Collect clippings when disease is active.
<u>Melting –out</u>	Kentucky bluegrass	Black to purple spots on blades. Dry, brown rot of roots, rhizomes, and crowns. Blight.	Spring and Fall. Cool, moist weather.	Raise mowing height. Moderate nitrogen levels. Avoid late afternoon or evening irrigation.
<u>Leaf-Spot</u>	All turfgrasses	Black to purple spots on blades. Blight. Severe thinning.	Late Spring to Early Fall. Warm to hot weather.	Maintain balance fertility. Avoid late afternoon or evening irrigation.
<u>Powdery Mildew</u>	Kentucky bluegrass Fine-leaf fescue	Grayish-white cast to entire blade.	Late Spring to Early Fall. Warm to hot weather.	Reduce shade by pruning trees and shrubs. Plant perennial ryegrass.
<u>Gray Leaf Spot</u>	Perennial Ryegrass	Gray leaf spots with dark borders and yellow halo. Blight.	Mid-summer to Early Fall. Warm, humid weather.	Avoid excessive nitrogen. Avoid late afternoon or evening irrigation. Plant resistant cultivars.
<u>Rusts</u>	All turfgrasses	Yellow to orange pustules protruding from leaf blades.	Summer to Early Fall Warm to hot weather.	Reduce shade. Adequate fertility and water. Collect clippings when disease is active.

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Revised November 2005