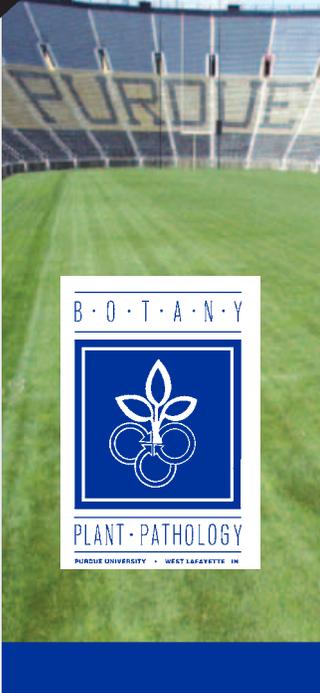


# Turfgrass Disease Profiles

## Rust Diseases

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**R**ust is a disease of taller mown turf. Outbreaks are most common on residential lawns and low budget athletic fields, but symptoms also may occur in professionally landscaped turf and golf course roughs.

A variety of related fungi cause rust (common names include leaf rust, crown rust, and stem rust), and the disease occurs almost exclusively on Kentucky bluegrass and perennial ryegrass. Rust is largely cosmetic, but the orange spores that dislodge easily from leaf surfaces can be a greater nuisance, covering shoes, pets, and lawnmowers with a rusty residue. Rust can severely damage new spring-seeded lawns that lose vigor during heat and drought conditions.

### Disease Characteristics

From a distance, rust-infected turf appears to have a yellow-green cast (Figures 1 and 2). As disease progresses, symptoms occur in a diffuse pattern around the initial site of infection. Outbreaks often first occur in shaded or protected areas, such as around the bases of evergreens or next to a structure's foundation.

Closely inspecting rusted leaves reveals numerous yellow-orange pustules on leaf blades (Figure 3). Walking through grass with significant amounts of infection will disturb and release the spores within these pustules and leave a distinct orange color on one's shoes (Figure 4). These spores, carried by the wind or equipment, spread the disease to other areas during the growing season.

Rust outbreaks are most common in late summer and early fall, although sometimes the disease is active in the early spring (especially on poorly nourished turf). Rust is a disease of slow growing turf, so factors that contribute to poor growth tend to favor rust development. Such factors include summer heat and drought stress, low nitrogen fertility, compaction, and shade.

Rust outbreaks require moderate temperatures (50°-60°F) and long evening dew periods (more than 10 hours). The pathogen survives as resilient spores over the winter, or as inactive mycelium in dormant turf.



Figure 1



Figure 2



Figure 3

- Gray Snow Mold
- Pink Snow Mold
- Leaf Spot/Melting Out
- Red Thread
- Dollar Spot
- Brown Patch
- Gray Leaf Spot
- Anthracnose
- Pythium Blight
- Rust Diseases**
- Powdery Mildew
- Slime Mold
- Fairy Ring
- Take All Patch
- Summer Patch
- Necrotic Ring Spot
- Rhizoctonia Large Patch
- Yellow Patch

## Disease Control

### Resistance to Disease

Some Kentucky bluegrass and perennial ryegrass varieties are less susceptible to rust infection and sustain less damage. However, these differences probably will be negligible when conditions do not favor disease development, so cultural controls — maintaining healthy turf and providing moderate care — are often more effective at controlling rust than variety selection.

Turf variety evaluations are available from the National Turfgrass Evaluation Program at [www.ntep.org](http://www.ntep.org).

### Cultural Control Options

Maintaining a healthy and vigorous turf stand is the most effective and efficient method of rust control. Since slow growing turf in mid- to late summer is most vulnerable to outbreaks, small amounts of nitrogen fertilizer (0.2-0.5 pound of N per 1,000 square feet) in chronic trouble spots (shaded and possibly compacted areas) will help control the disease. The nitrogen will promote leaf growth and allow for regular mowing, which helps the turf outgrow rust's relatively slow infection cycle.

Avoiding irrigation during the early evening also will help limit disease spread by lessening the chance of extended dew periods.

### Fungicides for Rust Control

DMI and QoI (strobilurin) fungicides are very effective against rust, but on well-established turf, should be considered only as a remedial treatment when cultural practices fail to prevent an outbreak. On newly seeded stands, apply fungicides at the first sign of disease. In most cases, a single application of an effective fungicide combined with efforts to encourage turf growth, will quell outbreaks.



Figure 4

## Home Lawn Help

The cultural control options discussed above also apply to residential lawns and professionally maintained Kentucky bluegrass and perennial ryegrass. Rust can be managed with moderate attention to plant nutrition and regular mowing. Fungicides can be useful as remedial treatments for intolerable outbreaks on established turf, or for infected juvenile turf during summer. For best results, use a professional lawn care service.

Other turf-related publications are available on the Purdue Turfgrass Management Program Web site: [www.agry.purdue.edu/turf/pubs/index.htm](http://www.agry.purdue.edu/turf/pubs/index.htm).

