



# Rust on Turfgrass

O & T Guide TD-4

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**Causal Agents and Hosts:** Rust on turfgrass is caused by a number of different, but closely related, species of the rust fungi. The most common rust diseases on turf are leaf rust (*Uromyces* spp.), crown rust (*Puccinia coronata*), stripe rust (*Puccinia striiformis*), and stem rust (*Puccinia graminis*). The disease can occur on all turfgrass species, but is generally most severe on Kentucky bluegrass, tall fescue, perennial ryegrass and zoysia. Most rust species which infect turf have complicated life cycles in which two distinctly different host plants are required. The second host plant required for grass rusts to complete their life cycle is usually a woody shrub or an herbaceous ornamental plant.

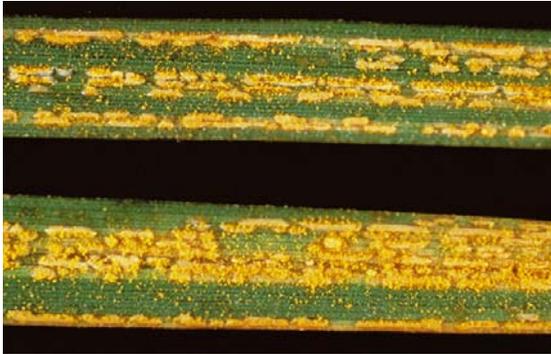
**Symptoms:** Rust first appears as a light green or yellow flecking on infected grass blades. The flecks enlarge and elongate to become raised pustules that rupture the epidermis. Reddish brown to orange spores appear in the pustules. These spores adhere to fingers when pustules are rubbed. Shoes may develop an orange tinge after walking through infected areas. Severely infected turf areas look reddish brown, yellowish, or orange. Individual plants with severe infections may turn chlorotic and the turf thins as plants die. When the disease is less severe, rust doesn't kill the host plants, but infected plants are weakened and may become more susceptible to environmental stresses or other pest problems.

**Conditions for Disease:** Rusts survive as mycelia in infected plants and as teliospores in the thatch and soil. Spores are disseminated long distances by air currents. The fungus can also be spread within an area by people (shoes), animals and equipment.

Cool to warm (60-86°F), moist weather favors rust infections. Leaf wetness is required for infection. Condensed moisture, even dew, for 10 to 12 hours is sufficient for spores to infect plants. After infection, slightly warmer and drier conditions favor disease development and symptom expression. Rusts are often more severe in shaded areas than sunlit areas. Grass which is growing slowly under stressed conditions (nitrogen deficiency, low mowing height, compaction, drought and high temperature) is more susceptible to disease.



Leaf rust on Kentucky bluegrass. Photo: N. P. Goldberg, New Mexico State University.



Stem rust on Kentucky bluegrass. Photo: R. S. Byther, Washington State University.



Rust on perennial ryegrass. Photo: D. Settle, Kansas State University.



Stem rust on a Kentucky bluegrass lawn. Photo: P. H. Dernoeden, University of Maryland.

**Management:** Cultural practices which help to reduce the occurrence and severity of the disease include:

- Selectively prune and carefully place ornamental shrubs and trees to allow good penetration of sunlight to the turfgrass. This measure may also help reduce the humidity over the turfgrass by increasing air circulation.
- Maintain appropriate fertility levels.
- Follow proper irrigation practices.
- Avoid watering at night.
- Avoid light, frequent watering.
- Maintain turf at the tallest height recommended for the grass species.
- Regular mowing and removal of clippings can help to reduce inoculum levels.
- In areas where the disease is particularly severe, fungicides, or the use of resistant cultivars or alternative shade-adapted ground covers may be required.
- Reduce thatch.
- Plant a mixture of turfgrass species rather than a single species.
- Severe outbreaks may benefit from fungicides.