



# Rust on Turfgrass

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Rust is a common fungal disease found on most species of grasses around World. Rust can be found early spring through fall depending on the location. Yellow flecks on the leaf blades are the first signs of rust disease on turfgrass. The yellow flecks enlarge which cause the leaf epidermis to rupture and release yellow-orange powdery spores. These fungal spores easily get on shoes, mowers, and pets but are not harmful to humans or animals. In severe incidences, infected grass can thin and individual shoots may die.

## Grasses Affected:

- Perennial Ryegrass (Most Common)
- Kentucky Bluegrass
- Tall & Fine Fescues
- Zoysiagrass
- Bermudagrass

## Environmental Conditions

Rust is favorable in slightly warm moist conditions in conjunction with prolonged leaf wetness from dew. Wetness of the leaf blade for more than 10 hours with air temperatures

between 68° and 86°F, are optimum growing conditions for this pathogen.

- Mid-Summer through Fall (Most Common)
- Optimum air temperature for pathogen 68-86 F
- Leaf wetness followed by rapid increase in temperature and high light intensity
- Stressed grass from:
  - Drought
  - Low nitrogen
  - Low mowing height
  - Shade

## Pathogen

There are many types of fungi that cause rust. The most common are *Puccinia graminis* (Black Stem Rust), *Puccinia coronate* (Crown Rust), *Uromyces dactylidis* ( Leaf Rust), and *Puccinnia striiformis* (Yellow Stripe Rust). The disease life cycle of rust is often very complex, involving two hosts and five stages of spores. The uridial stage of the rust cycle can repeat every two weeks causing an abundance of new infections.

## Management:

### *Genetic host resistance:*

Today there are many new cultivars that have a high resistance to rust diseases. It is important before seeding to make sure you select a resistant cultivar. Visit the National Turfgrass Evaluation Program (NTEP) at [www.ntep.com](http://www.ntep.com) to find more information on rust resistant turf.

### *Cultural Practices:*

The most effective control for preventing rust is to establishing a healthy turf. Providing enough nitrogen and maintaining a proper irrigation regime will minimize the chance of rust. Below are key cultural practices to prevent this disease.

- Maintain a good fertility program adequate for healthy turf growth
- Avoid moisture stress
- Raise height of cut
- Manage Soil to avoid compaction

### *Chemical Control:*

Fungicides are commonly not used to control this disease if proper plant health practices are being done. However, if a severe rust outbreak exists on a healthy turf stand, two fungicide families, DMIs and Strobilurins, are the most effective in suppressing the disease. Remember to follow application rates and make sure the fungicide is labeled for the turf site (i.e. residential lawn, athletic fields, golf course, etc.).

## References:

Clarke, Bruce, Dernoeden, Peter, and Smiley, Richard. *Compendium of Turfgrass Diseases*. 3<sup>rd</sup>.

St. Paul, MN: The American Phytopathological Society, 2007. Print. Pg. 43-44

"Rust on Turfgrass Factsheet." Plant Disease Diagnostic Clinic, Dr. Eric B. Nelson. May 2009

<<http://plantclinic.cornell.edu/FactSheets/turfrust/rust.htm>>

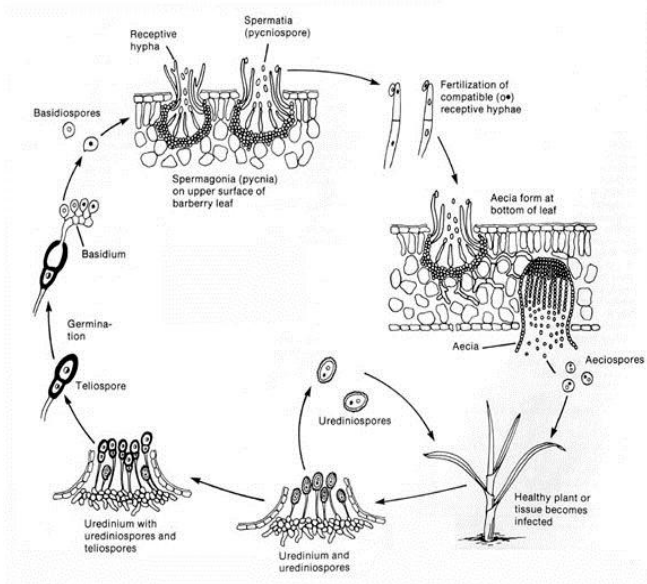
"Leaf Rust." Turfgrass Disease Profiles, Richard Latin. Purdue University. May 2009

<http://www.ag.purdue.edu/btny/extension/pages/extpubs.aspx>

-Cornell University turfgrass extension website



Rupture of rust spore sacks



Rust life cycle

[http://www.google.com/imgres?imgurl=http://plantclinic.cornell.edu/FactSheets/turfrust/cycle\\_small.jpg&imgrefurl=http://plantclinic.cornell.edu/FactSheets/turfrust/rust.htm&usq=IXTjhrzqTNp wd0 Bgm4CO10MPw=&h=495&w=580&sz=59&hl=en&start=7&itbs=1&tbnid=SxNePG36MNVJAM:&tbnh=114&tbnw=134&prev=/images%3Fq%3Dturf%2Brust%26hl%3Den%26sa%3DX%26gbv%3D2%26tbs%3Disch:1](http://www.google.com/imgres?imgurl=http://plantclinic.cornell.edu/FactSheets/turfrust/cycle_small.jpg&imgrefurl=http://plantclinic.cornell.edu/FactSheets/turfrust/rust.htm&usq=IXTjhrzqTNp wd0 Bgm4CO10MPw=&h=495&w=580&sz=59&hl=en&start=7&itbs=1&tbnid=SxNePG36MNVJAM:&tbnh=114&tbnw=134&prev=/images%3Fq%3Dturf%2Brust%26hl%3Den%26sa%3DX%26gbv%3D2%26tbs%3Disch:1)

## Spores on turf blade

[http://www.google.com/imgres?imgurl=http://rickvuyst.files.wordpress.com/2008/08/rust1.jpg&imgrefurl=http://thankyouverymulch.com/2008/08/13/fungus-amongus/&usg=\\_\\_D1CrrpkS8yi89rSF4ZCvADRVaAc=&h=471&w=469&sz=58&hl=en&start=26&itbs=1&tbnid=3SoATKSeI4dbfM:&tbnh=129&tbnw=128&prev=/images%3Fq%3Dturfr%2Brust%26start%3D21%26hl%3Den%26sa%3DN%26gbv%3D2%26ndsp%3D21%26tbs%3Disch:1](http://www.google.com/imgres?imgurl=http://rickvuyst.files.wordpress.com/2008/08/rust1.jpg&imgrefurl=http://thankyouverymulch.com/2008/08/13/fungus-amongus/&usg=__D1CrrpkS8yi89rSF4ZCvADRVaAc=&h=471&w=469&sz=58&hl=en&start=26&itbs=1&tbnid=3SoATKSeI4dbfM:&tbnh=129&tbnw=128&prev=/images%3Fq%3Dturfr%2Brust%26start%3D21%26hl%3Den%26sa%3DN%26gbv%3D2%26ndsp%3D21%26tbs%3Disch:1)



Powdery orange rust spores on a shoe

[http://www.google.com/imgres?imgurl=http://www.donnan.com/images/rust-on-shoes.jpg&imgrefurl=http://www.donnan.com/faqs.htm&usg=\\_\\_KXFT8yENqQRCUsC11KbFw5mzdio=&h=208&w=250&sz=23&hl=en&start=61&itbs=1&tbnid=cXe76ng6zPB\\_VM:&tbnh=92&tbnw=111&prev=/images%3Fq%3Dturfrgrass%2Brust%26start%3D42%26hl%3Den%26sa%3DN%26gbv%3D2%26ndsp%3D21%26tbs%3Disch:1](http://www.google.com/imgres?imgurl=http://www.donnan.com/images/rust-on-shoes.jpg&imgrefurl=http://www.donnan.com/faqs.htm&usg=__KXFT8yENqQRCUsC11KbFw5mzdio=&h=208&w=250&sz=23&hl=en&start=61&itbs=1&tbnid=cXe76ng6zPB_VM:&tbnh=92&tbnw=111&prev=/images%3Fq%3Dturfrgrass%2Brust%26start%3D42%26hl%3Den%26sa%3DN%26gbv%3D2%26ndsp%3D21%26tbs%3Disch:1)

\*Add picture of lawn with rust similar to one below.

