



## Rust on Turfgrass *Puccinia* and *Uromyces* spp.

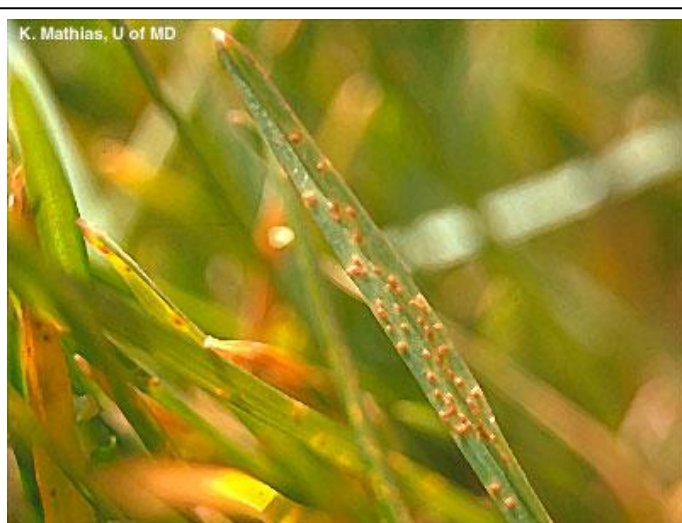
**Introduction:** All turfgrass species are susceptible to rust diseases. Environmental stresses contribute to the severity of the disease. When plants become diseased by the rust fungi, they are more likely to be attacked by other pathogens.

**Symptoms:** Initial symptoms include yellow lesions that enlarge over time. When mature, spores break through the epidermis of the lesion (**Fig. 1 & Fig. 2**) and are blown by wind and splashed by rain to new infection sites. Most spores are characteristically orange in color, but some may be various shades of yellow, red, or brown. When the disease becomes severe, the turfgrass stands may appear very thin and discolored. Death of the turf is possible during severe infections.

**Disease Cycle:** Some rust pathogens have a very complicated and complex five spore stage life cycle often involving two alternating host plants. Most rust species affecting turf have similar disease cycles. The characteristic orange pustules on the leaf blades (**Fig. 2**) are the uredinial stage and produce powdery spores called urediniospores. This stage is also the repeating stage of the fungus which can cause new infections every two weeks without completing the complex life cycle.

Most other spore stages involved in the life cycle cause little or no harm to the turfgrass. Two spore stages, pycniospores and aeciospores are found on the alternating host, which for some rust species is barberry (*Berberis* sp.). The aeciospores leave the alternate host and infect the turf. Once on the turf the fungus may produce three more spore stages, the uredospore stage which causes the damage to turf, the teliospore (repeating) stage, and the basidiospore stage which leaves the turf to infect the alternate host.

**Management Strategies:** Water management is important in controlling the disease. Watering the turf in the early part of the day is recommended to encourage quick drying and minimize the length of time the leaf blades are moist. Also avoiding water-related stresses such as drought and poor drainage. Mowing on a regular basis and keeping the mowing height at recommended



**Figure 1.** Rust spores breaking through the epidermis lesion (K. Mathias, University of Maryland)



**Figure 2.** Close up of spores breaking through epidermis lesion.

levels can help reduce the incidence of disease. Raking up the clippings when the disease is present and discarding or destroying them will reduce the amount of inoculum at the site. Prune surrounding trees to provide more light and greater air flow to the area. Use resistant varieties when available. For homeowners in New York, Heritage, Spectracide Immunox, or some fungicides containing the active ingredients *Bacillus subtilis*, triadimefon, or propiconazole may be registered to treat this disease. Apply only where infection is extensive and severe and cannot be managed through cultural practices. Products with the same active ingredients may also be available for commercial lawn applications. Always read and follow label directions.

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