



## *Turf Rust: 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 infected by the rust fungi, they are also more likely to be attacked by other pathogens.

### Symptoms and Signs

Initial symptoms include yellow lesions that enlarge over time. Numerous lesions may make leaves appear yellow (**Fig. 1**). Later pustules develop from the lesions, and when mature, spores break through the epidermis of these pustules and are blown by wind and splashed by rain to new infection sites. Most spores are characteristically orange in color (**Fig. 2**), 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.



**Fig.1. Yellow/orange discoloration of the turf**, provided by Dr. Eric B. Nelson, Cornell University

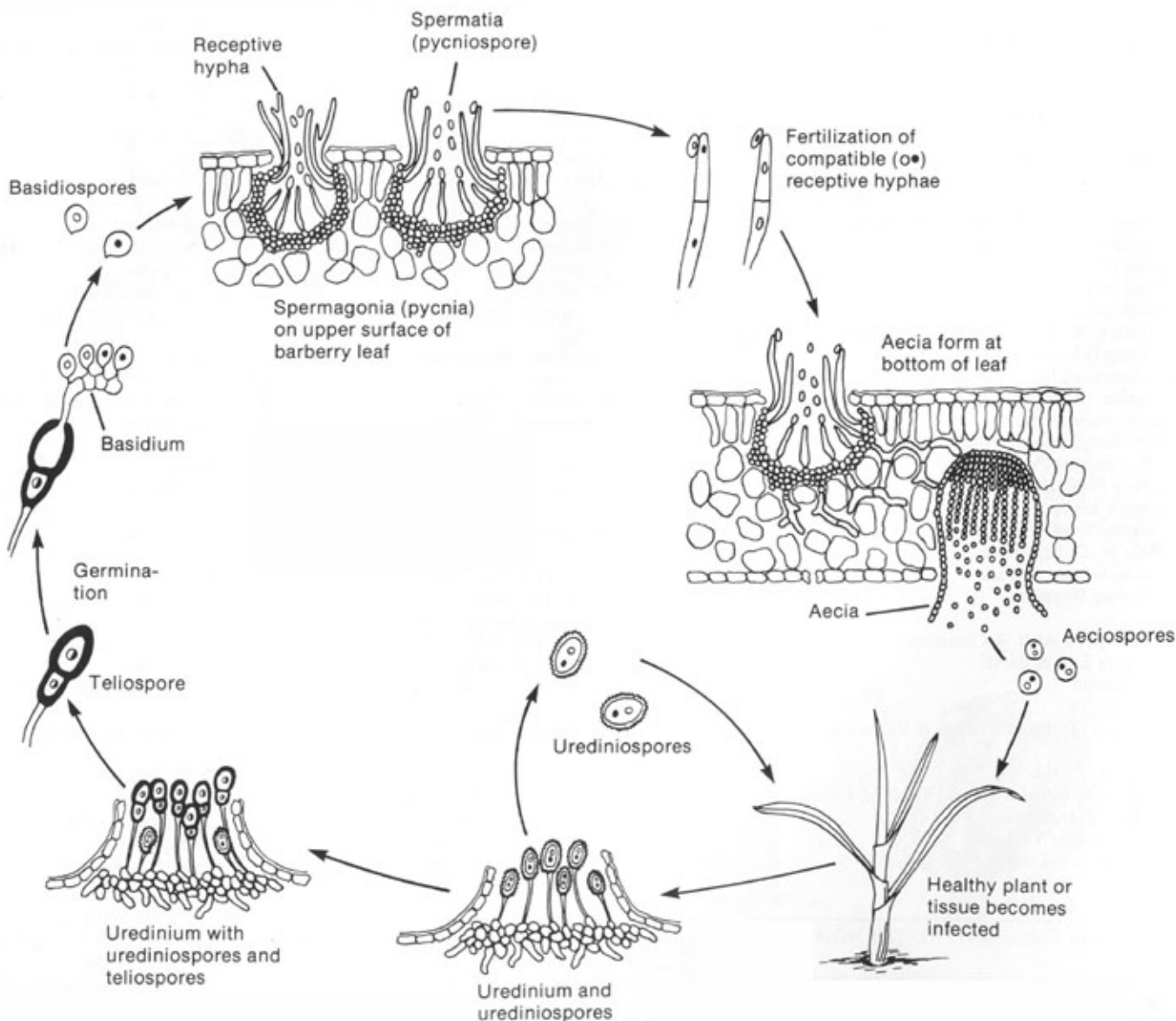


**Fig. 2. Orange pustules covering the leaf blades**, provided by Dr. Eric B. Nelson, Cornell University

### Disease Cycle

Some rust pathogens have a very complicated and complex life cycle that includes five spore stages, and may involve two alternating host plants to complete the life cycle. Most rust species affecting turf have similar disease cycles. The characteristic pustules on the leaf blades 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 needing to complete the life cycle on another host.

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



Disease cycle of turf rust (provided by APS Press, Compendium of Turfgrass Diseases, 2nd Edition)

the fungus may produce three more spore stages, the uredospore stage which causes the damage to turf, the teliospore stage that repeatedly re-infects turf, and the basidiospore stage which may be wind-borne or rain-splashed 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 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, For a list of specific products, please refer to our [turf fungicide table](#). Be certain any formulation of pesticide you purchase is registered for the intended use, and follow the label instructions. The label also contains information on how to apply the fungicide as well as any precautions.

Additional pesticides may be available for commercial turf applications. Commercial applications should refer to the appropriate pest management guidelines, or contact their local Cooperative Extension Office for more information on currently registered products.

**Reference:**

*Compendium of Turfgrass Diseases*, Third Edition, 2005. R.W. Smiley, P.H. Dernoeden and B.B. Clarke. APS Press.

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**READ THE LABEL BEFORE APPLYING ANY PESTICIDE!** Changes in pesticide regulations occur constantly. All pesticides distributed, sold, and/or applied in New York State must be registered with the New York State Department of Environmental Conservation (DEC). Questions concerning the legality and/or registration status for pesticide use in New York State should be directed to the appropriate Cornell Cooperative Extension Specialist or your regional DEC office.

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