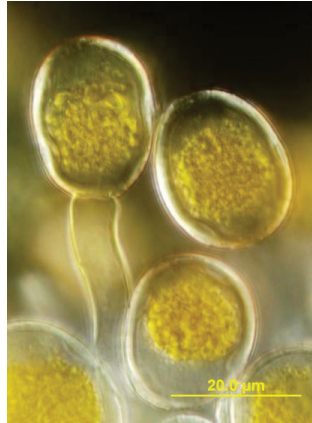


Wheat Leaf Rust

Pathogen Facts

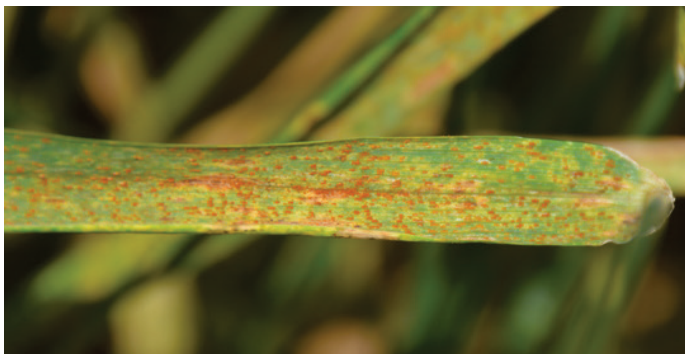
- Wheat leaf rust is caused by the fungal pathogen *Puccinia triticina*.
- Unlike other major foliar diseases in North America, leaf rust does not overwinter in fields.
 - Rusts develop in southern states and move by windblown spores that travel northward with prevailing weather systems.
- Light to moderate yield losses of 1-20% have been observed as a result of this disease.



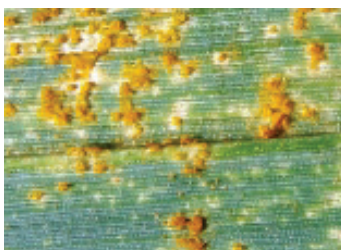
Puccinia triticina asexual urediniospores. Photo courtesy of Bruce Watt, Univ. of Maine, Bugwood.org

Symptoms and Signs

- Initial symptoms are circular to oval yellow spots on upper leaf surfaces.
- These develop into orange, circular shaped pustules that give off an orange dusting of spores if disturbed.
- Photosynthesis is reduced as functional leaf area decreases, which can reduce head fill and yield.
- Infection is most critical during the jointing and flowering stages of the wheat life cycle.

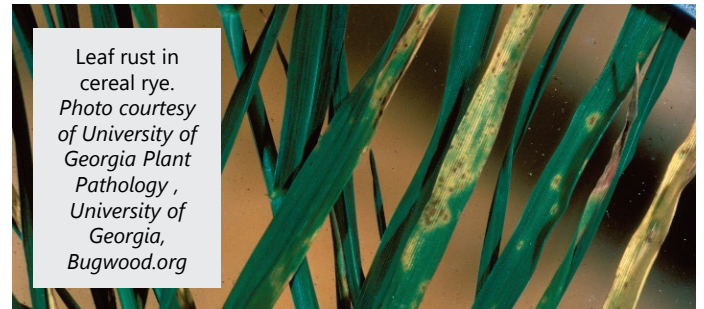


Wheat leaves with leaf rust pustules. Photo courtesy of Emmanuel Byamukama, South Dakota State Univ., Bugwood.org (top) and Donald Groth, Louisiana State University AgCenter, Bugwood.org (right).



Conditions Favoring Disease

- Optimum temperature for *Puccinia triticina* growth is warm, ranging from 60-80 °F (approximately 15-25 °C).
- If winter temperatures are mild, then rust can overwinter in fields on infected wheat plants.
- Windborne spores travel from Southern regions and are deposited via rain.



Leaf rust in cereal rye. Photo courtesy of University of Georgia Plant Pathology, University of Georgia, Bugwood.org

Management Considerations

- Wheat breeders are constantly making varieties with varying levels of resistance to this pathogen
 - Rust has the ability to develop resistance quickly due to dynamic, ever changing resistance genes.
- If infection occurs on the flag leaf, then foliar fungicide applications may be justified.



Wheat plot with different levels of resistance to leaf rust. Photo courtesy of Donald Groth, Louisiana State University AgCenter, Bugwood.org

References

- Kolmer, J. 2020. *Wheat Leaf Rust*. Retrieved from Agricultural Research Service U.S. Department of Agriculture: <https://www.ars.usda.gov/midwest-area/stpaul/cereal-disease-lab/docs/cereal-rusts/wheat-leaf-rust/>
- Marsalis, M. A., & Goldberg, N. P. 2017. *Leaf, Stem, and Stripe Rust Diseases of Wheat*. Retrieved from New Mexico State University: https://aces.nmsu.edu/pubs/_a/A415/welcome.html

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