

Leaf Blotch Diseases of Wheat

Carol Groves, Chase Fritz and Damon Smith, UW-Madison Plant Pathology

What is leaf blotch? Leaf blotch is a complex of common fungal diseases of small grains (e.g., wheat, barley, oats and rye), and many grasses. In Wisconsin, winter wheat is the most important commercial crop affected by these diseases with potential yield losses of up to a 30%. Leaf blotch diseases are generally favored by cool, wet, windy weather.



In Wisconsin, leaf blotch diseases can lead to yield losses of up to 30% in small grain crops such as winter wheat. (photo courtesy of Craig Grau)

What does leaf blotch look like?

Symptoms of leaf blotch diseases usually first appear between the veins of lower leaves as chlorotic (i.e., yellow), water-soaked flecks that enlarge to become dry, yellow (eventually red-brown), blocky- to oval-shaped lesions, sometimes surrounded by yellow haloes. Some leaf blotch fungi can infect glumes in seed heads as well as leaves, causing a disease known as glume blotch. Glume blotch symptoms include small brown to purple lesions on heads and stems. Rows of tiny black specks (reproductive structures of leaf blotch fungi) are often visible in mature leaf and glume blotch lesions.

Where does leaf blotch come from?

Several species of fungi can cause leaf blotch. These include *Septoria tritici*, *Stagnospora nodorum* and *Stagnospora avenae* f. sp. *triticae*. *S. tritici* is the primary cause of leaf blotch of wheat. *S. nodorum* can cause both leaf and glume blotch. These fungi are quite variable, and variants that infect wheat tend not to cause severe disease on other leaf blotch susceptible hosts and vice versa. Wheat leaf blotch fungi survive in infested wheat residues, wheat seeds, and volunteer wheat plants. Initial infections typically occur in the fall as seedlings emerge, and are caused by spores (called ascospores) that are produced on wheat residue from a previous wheat crop. Infested seed can also be a source spores that cause initial infections. Additional infections can occur the following spring and are due to spores (called conidia) that are produced in lesions on infected wheat plants.

How can I save a wheat crop with leaf blotch? In areas with a history of severe leaf blotch diseases, and on wheat varieties susceptible to leaf blotch, preventative applications of fungicide to protect the flag leaf (Feekes 8 and 9 growth stages) may be necessary. However, any decision to apply fungicides should be based on regular, careful scouting. Because heavy rainfall favors leaf blotch development, rain patterns should be considered when determining the frequency of

monitoring for disease development. To assess the need for treatments, scout five locations within a given wheat field. Once two of the five areas have 25% or more of leaves showing symptoms of leaf blotch, scouting should be repeated approximately every 4 days. Once three of five areas have 25% or more of leaves exhibiting symptoms, then fungicide applications should be considered.



Blocky to oval brown lesions, often with yellow haloes, are typical of leaf blotch diseases of small grains. (photo courtesy of Craig Grau)

How can I avoid problems with leaf blotch in the future?

Successful management of leaf blotch can be accomplished through an integrated approach that combines use of resistant varieties, pathogen-free seed, crop rotation, proper crop debris management, volunteer wheat eradication, and fungicide treatments. Several sources of complete resistance to specific variants (called races) of leaf blotch fungi are available in commercial wheat varieties. Some partial resistance to many races is also available. These forms of resistance are limited so it is important to use resistance in combination with other management techniques. Use crop rotations that include non-cereal crops for at least a

year between successive wheat crops. When possible, deeply incorporate wheat residues by tillage prior to planting to promote more rapid decay of these residues. Note that residues include not only materials left over from a previous wheat crop, but also wheat straw that has been used as animal bedding and then subsequently disposed of by spreading it onto a field. Deep incorporation of residues will help reduce the levels of leaf blotch pathogens in the soil and will assist in managing volunteer wheat. Use of host resistance and cultural techniques such as tillage can help reduce the need for fungicide applications (as described above).

For more information on leaf blotch diseases of wheat: Contact your county Extension agent.