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G84-701 Septoria Leaf Blotch of Wheat

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Septoria Leaf Blotch of Wheat

This NebGuide describes the symptoms and disease cycle of this wheat disease, and provides recommendations for its control.

John E. Watkins, Extension Plant Pathologist

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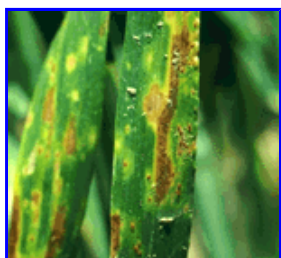


Figure 1. Leaf blotch symptoms. (21K JPG)

Two species of *Septoria* fungi infect winter wheat in Nebraska. *Septoria tritici* and *S. avenae* f. sp. *triticea* cause Septoria leaf blotch. This disease is also known as "Septoria tritici blotch," "Septoria leaf spot," "Septoria blotch," "Speckled leaf blotch" or as the "Septoria complex" since both *Septoria* species may be present in the same fields and on the same plants.

The *Septoria* fungi destroy nearly 2 percent of the world's wheat annually. Actual damage to winter wheat is difficult to measure under field conditions because tan spot and leaf rust commonly occur simultaneously with *Septoria* within fields. Average annual losses amount to around 5 percent in Nebraska, but have been as high as 30 percent in individual fields because of foliar diseases.

Symptoms



Figure 2. Septoria pycnidia on leaf lesion. (34K JPG)

Symptoms appear first as small, chlorotic flecks restricted by veins. These subsequently develop into spots that tend to develop longitudinally (*Figure 1*) to form tan to reddish-brown, irregular-shaped blotches which are often surrounded by a yellow margin. As the blotches age, their centers become light brown to ashen, followed by the appearance of small black specks (*Figure 2*). These specks are pycnidia, the spore-producing bodies of *Septoria* fungi. The presence of pycnidia is the most reliable field sign for distinguishing

Septoria leaf blotch from other leaf spot diseases. Severely infected leaves turn yellow, wither and die prematurely (*Figure 3*). The disease may also develop on leaf sheaths and stems, especially at the nodes, and occasionally on the tips of glumes.

In the fall, wheat becomes infected during periods of wet, cool weather. Heavy fall infection retards root development which can aggravate losses in stand to crown and root rot.

Factors Affecting Fungus Survival, infection and Disease Development

Septoria fungi overwinter on infected plant refuse and on volunteer wheat. The pathogen may infect winter wheat seedlings soon after emergence in the fall. Infection occurs during cool, wet weather and continues to increase and spread until checked by temperatures that are consistently below 40°F. The pathogen survives as mycelium or pycnidia on the leaves of plants or in volunteer wheat during mild winters.



Figure 3. Severely infected leaf. (19K JPG)

The other source of primary inoculum is from pycnidia on undisturbed wheat stubble. Here it can survive up to three years. The overwintering pycnidia produce an abundance of microscopic spores (pycnidiospores) during cool, wet weather in early spring. These are splashed by rain or windblown to leaves of plants as they resume growth in spring. Infection requires 6 hours or more of leaf wetness. Temperatures between 60° and 70°F are optimum for infection and spread, however, infection can occur at temperatures as

low as 40°F.

Frequent periods of cool, wet weather extending into late June favor the rapid spread of this and other pathogens from the lower to the upper leaves, resulting in significant yield reduction. Fortunately, in most years the prevailing hot, dry weather during the yield-crucial post-boot stage is unfavorable for Septoria infection and the development of lesions and pycnidia.

Disease Management

1. Where feasible, use stubble management that promotes rapid deterioration of infested wheat straw. Such practices should be done in a manner that will maintain the soil erosion and moisture retention benefits of conservation tillage, and yet hasten the break down of the straw.
2. Where feasible, rotate winter wheat every third or fourth year with oats, row crops or alfalfa.
3. Destroy volunteer wheat before fall seeding in fallow fields and in continuous wheat.
4. Do not plant winter wheat early. Wait until after the Hessian fly-free date to plant.
5. The fungicides Dithane M-45, Manzate 200, Kocide 101 or Kocide 404 are cleared for control of Septoria diseases, leaf rust, stem rust and tan spot on wheat. Two applications by aircraft--one at boot and a second in 7 to 14 days--are recommended for optimum protection against foliar diseases. The cost-benefit aspects of spraying show a favorable return if fungicides are applied to potentially high yielding fields during years when Septoria leaf blotch and/or leaf rust are threatening and extended moderate, wet weather is forecast.
6. Some varietal resistance is available against Septoria leaf blotch. The winter wheat cultivars 'Dawn', 'Colt', 'Brule', 'Siouxland', and 'Lancota' are intermediate in their reaction to Septoria leaf blotch.

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