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Controlling wheat leaf diseases

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Controlling wheat leaf diseases

Abstract

Now is the time to start thinking about controlling leaf diseases in wheat if necessary. Conditions have been wet enough in the southern Iowa wheat-producing areas to promote significant leaf disease development. Wheat can be affected by a number of foliar diseases caused by fungi, including Septoria leaf blotch, powdery mildew, and tan spot. There are also three different rust fungi that can infect wheat. Leaf rust, *Puccinia recondita*, is the most common rust disease and has the most destructive potential of the foliar diseases.

Keywords

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INTEGRATED CROP MANAGEMENT

Controlling wheat leaf diseases

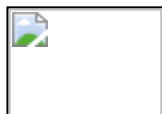
Now is the time to start thinking about controlling leaf diseases in wheat if necessary. Conditions have been wet enough in the southern Iowa wheat-producing areas to promote significant leaf disease development. Wheat can be affected by a number of foliar diseases caused by fungi, including Septoria leaf blotch, powdery mildew, and tan spot. There are also three different rust fungi that can infect wheat. Leaf rust, *Puccinia recondita*, is the most common rust disease and has the most destructive potential of the foliar diseases.

Many of the decisions regarding wheat disease control are made prior to planting. Resistant varieties are available for effective control of rusts, powdery mildew, and Septoria leaf blotch. Crop rotation and tillage will reduce the risk of Septoria leaf blotch and tan spot. Planting date influences the opportunity for rust and powdery mildew infections that may occur in the fall. These practices can reduce the risk of disease development. But what about diseases developing now? Powdery mildew is usually the first to appear and it can be found now; patches of cottony white or tan mycelium can be seen on the surface of the lower leaves. Rust can be expected to follow soon after.

If foliar diseases develop this year, there is a possibility of controlling them with a fungicide. Because of the expense, however, it is not generally profitable to use fungicides routinely on wheat. There are several criteria that must be evaluated to decide if a fungicide is warranted.



[1] **Powdery mildew on wheat leaves.**



[2] **Leaf rust pustules on wheat.**

Yield potential and price. Usually, 45-50 bu/acre yield potential is considered the minimum for profitable fungicide use. However, when wheat prices are high, the likelihood of profitable fungicide use increases.

Susceptibility. Susceptible varieties are obviously at a higher risk for disease losses than resistant varieties and therefore better candidates for fungicide application. You should know something about susceptibility based on past experience, seed company representatives, or information from University publications. The 1996 Iowa State University Wheat Yield Test Report has ratings for powdery mildew and leaf rust. This type of information also is available from other states with greater wheat production, such as Kansas. This information is available on the internet at <http://www.exnet.iastate.edu/Pages/plantpath/> [3].

Disease severity. Scouting should begin just prior to flag leaf emergence, when the stems are rapidly elongating. Usually this means early May. The flag leaf is very important in providing carbohydrates to the developing grain, so it must be protected. Examine the upper two leaves or the flag leaf on 100 plants at 20-30 locations throughout the field. A "field" should be an area no larger than 50 acres that is managed uniformly and has fairly uniform soil and drainage characteristics. Scouting should be done every 4 days or so.

Thresholds. Disease thresholds for fungicide application have not been determined in Iowa wheat, but other states have established thresholds. Fungicide application is warranted on susceptible varieties if the leaves you examine have an average of 1 percent of the leaf area diseased. This is equivalent to about 2-3 powdery mildew or Septoria pustules per leaf, or about 10-20 rust pustules per leaf. You should consider rainfall forecasts as well as scouting information in your decision. High rainfall favors more severe diseases. Also, intervals between scouting can be longer if weather is very dry. The earliest effective fungicide application should occur at growth stage 8, or flag leaf emergence.

Fungicides. The most commonly used fungicides are propiconazole (Tilt), triadimefon (Bayleton), and mancozeb (Manzate 200, Penncozeb, Dithane). Benomyl (Benlate) (mixed with mancozeb) and thiabendazole (Mertect) also are labeled. In Iowa, Tilt can be sprayed only until flag leaf emergence. The window for spraying Tilt is short and early, and this limits its application substantially. Disease symptoms may not reach thresholds until after the window for Tilt application. In this case, a tank mix of triadimefon and mancozeb would be the most likely choice. This tank mix can be applied as early as flag leaf emergence but also as late as 26 days prior to harvest. Tilt has a longer residual activity and is usually a little cheaper than the tank mix. A surfactant is recommended with the tank mix to increase effectiveness. More than one application may be required to fully control diseases in a wet year. If only one application will be made, it is best to apply at growth stage 8 (if Tilt is to be used) or during or immediately after head emergence (if the tank mix is used). Bayleton will not be reregistered for wheat, so this option will not be available in the near future. For now, Bayleton produced before December 1997 is still legal to use on wheat.

More information is available in the *1995 Integrated Crop Management Conference Proceedings*; see the article *Integrated Wheat Disease Management* by Pat Lipps, The Ohio State University.

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