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Controlling wheat leaf diseases in 1999

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Controlling wheat leaf diseases in 1999

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 several foliar diseases that are 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

Plant Pathology

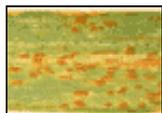
Disciplines

Agricultural Science | Agriculture | Plant Pathology

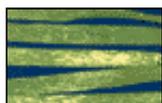
INTEGRATED CROP MANAGEMENT

Controlling wheat leaf diseases in 1999

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 several foliar diseases that are 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.



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



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

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 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.

Yield potential and price

Usually, 45-50 bu/acre yield potential is considered the minimum for profitable fungicide use, but with current wheat prices this figure might be higher. A fungicide application costs about \$15-17/acre. At \$2.75/bu you would need about a 6-bu yield response to break even. This level of response is likely if the variety is moderately susceptible and a disease threshold (described below) is reached by head emergence.

Susceptibility

Susceptible varieties are obviously at a higher risk for disease losses and therefore better candidates for fungicide application. You should know something about susceptibility based on past experience, or information from seed company representatives or 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 [Plant Pathology Extension Web site](#) [3].

Disease severity

Scouting should begin just prior to flag leaf emergence, when the stems are rapidly elongating, which usually occurs in 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 percentage is equivalent to about 1-3 powdery mildew or *Septoria* pustules per leaf, or about 10-20 rust pustules per leaf (on the flag leaf or the second 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

Fungicide options have changed for wheat. The most commonly used fungicides have been propiconazole (Tilt), triadimefon (Bayleton), and mancozeb (Manzate 200, Penncozeb, and Dithane). New this year is the registration of azoxystrobin (Quadris), which is effective but may be more expensive than the other options. Bayleton registration has not been renewed, so this product can be used only if you can find some manufactured before December 1997. Apparently, it is still available for now. In Iowa, Tilt can be sprayed only until flag leaf emergence. In other states Tilt has a label to apply after flag leaf emergence, but not in Iowa. Disease symptoms may not reach thresholds until after the window for Tilt application. In this case, a Quadris application or a tank mix of Bayleton and mancozeb would be the best options. Quadris can be applied up to 45 days preharvest for grain and the tank mix can be applied as late as 26 days prior to harvest. 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 or Quadris is to be used) or during or immediately after head emergence (if Quadris or the tank mix is used), depending on disease levels. Always check fungicide labels to ensure that the intended use is consistent with the label.

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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