



K-STATE
Research and Extension

Extension Agronomy

eUpdate

04/28/2015

These e-Updates are a regular weekly item from K-State Extension Agronomy and Steve Watson, Agronomy e-Update Editor. All of the Research and Extension faculty in Agronomy will be involved as sources from time to time. If you have any questions or suggestions for topics you'd like to have us address in this weekly update, contact Steve Watson, 785-532-7105 swatson@ksu.edu, Jim Shroyer, Crop Production Specialist 785-532-0397 jshroyer@ksu.edu, or Curtis Thompson, Extension Agronomy State Leader and Weed Management Specialist 785-532-3444 cthompso@ksu.edu.

1. Special Edition: Making the decision to apply a fungicide to wheat for stripe rust..... 3

1. Special Edition: Making the decision to apply a fungicide to wheat for stripe rust

Reports of stripe rust in central and eastern Kansas continue early this week. The disease is still at low levels in most fields, but with favorable weather conditions over the weekend, the severity of the infection is likely to increase. The wheat crop is at or will soon be at critical stages for fungicide applications and many growers are debating whether fungicides are needed to protect the yield potential of the crop.



Figure 1. Stripe rust on wheat, April 28, 2015. Photo by Erick DeWolf, K-State Research and Extension.

The decision to apply a fungicide is influenced by the economics of the treatment, susceptibility of the varieties, presence of the disease, and the outlook for weather. The following questions should help frame the process for making this decision.

What is a typical fungicide response?

Research done at K-State suggests that the average yield response to a foliar fungicide on a susceptible variety in a high disease pressure situation is about 10%. The yield response for stripe rust can be more than 20% when conditions favor disease development on susceptible varieties. Using this figure and the estimates of a field's yield potential and the value of wheat grain, we can quickly estimate the breakeven point for a fungicide application. In general, fields with more than a 40 bu/acre yield potential are good candidates for a fungicide application.

What are the product options?

Farmers have a lot of good options. There are a lot of fungicide products on the market with very good or excellent efficacy on stripe rust. There are some important differences in cost to consider. The cost of a fungicide treatment (product + application costs) generally ranges between \$10-\$25 per acre. Products containing the active ingredient tebuconazole, or propiconazole are often the least-cost options. More information about product efficacy can be found in the K-State publication "Foliar Fungicide Efficacy for Wheat Disease Management," EP130:

<http://www.ksre.ksu.edu/bookstore/pubs/EP130.pdf>

At what growth stage should the fungicide be applied?

It is important to protect the top leaves of the wheat because these leaves provide the majority of the resources the plants will use to produce grain. The limited systemic nature of the fungicides means that the fungicide will protect only those leaves present at the time of the application. Therefore, the most effective fungicides are applied between the time that the flag leaf has fully emerged and up to the flowering stages of growth. Some fungicides (Folicur, Prostaro, Caramba) can be applied into the flowering stages but then have a 30-day pre-harvest interval.

What levels of disease warrant a fungicide application?

Fungicides applications are most likely to result in a 10% yield response or greater if stripe rust or other diseases are established on the upper leaves prior to flowering. If the disease is only present in the low to mid-canopy at these growth stages, a fungicide application will only result in the desired yield response about 50-60% of the time. The uncertainty in the fungicide response is driven by uncertainty in weather conditions that influence additional disease development. See the publication "Evaluating the Need for Foliar Fungicides in Wheat," MF3057 for more information:

<http://www.ksre.ksu.edu/bookstore/pubs/MF3057.pdf>

What wheat varieties are most vulnerable?

Scouting in Kansas and reports from Oklahoma and Texas indicate that many of the most widely grown varieties are susceptible to stripe rust. In Kansas, Everest, Armour, and TAM 111 are popular varieties that are known to be susceptible to the disease. The varieties Garrison and Ruby Lee are highly susceptible and should be scouted carefully for signs of disease. There have also been reports of stripe rust on WB4458, LCS Mint, and 1863. Although these varieties can get the disease, they are generally considered less susceptible than Everest.

What weather conditions would favor disease development?

Stripe rust is favored by cool, wet weather. Nights with low temperatures in the 40's and 50's combined with dew are ideal for the infection and development of the disease. The progress of stripe rust is often reduced when nighttime temperatures are above 60 degrees. The warm temperatures do not kill the fungus, however, and the disease can reactivate if the conditions become more favorable again. It is unlikely that a few nights of low temperatures near 60 will stop the development of stripe rust.

A look at the 10-day weather forecast suggests that the nighttime temperatures in some areas of southeast and south central Kansas will be near the 60-degree threshold beginning this weekend

Kansas State University Department of Agronomy

2004 Throckmorton Plant Sciences Center | Manhattan, KS 66506

www.agronomy.ksu.edu | www.facebook.com/KState.Agron | www.twitter.com/KStateAgron

through the middle of next week. In central Kansas, the forecast indicates only one or two days of low temperatures near 60 degrees. The current forecast for western Kansas has zero days with a low temperature above 60 degrees. This suggests that development of the disease may slow in parts of southeastern Kansas; however, the temperature in other areas appears to be very favorable for stripe rust.

The bottom line...

All the current information suggests that we are headed for trouble with stripe rust in Kansas this year. Stripe rust is now present at low levels in many fields. The weather forecast indicates that conditions are likely to favor additional development of the disease. Wheat growers should be checking fields carefully for signs of disease and consider using fungicides to protect fields with good yield potential.

Erick DeWolf, Extension Plant Pathology
dewolf1@ksu.edu