Disease Update in Wheat

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There are three major foliar leaf diseases that commonly occur in Texas wheat fields, including Leaf Rust, Stripe Rust, and Powdery Mildew. On any given year, some regions of the state will usually have economically damaging levels of one or more of these diseases. In most years, significant Leaf Rust or Stripe Rust can be observed in the Blacklands and Northeast Texas. However, high rainfall across much of the state in the 2004-2005 season has resulted in foliar diseases in many areas of Texas. Below is an update on Leaf Rust, Stripe Rust, and Powdery Mildew and some management options.

Leaf Rust is considered a warm-season pathogen with optimum reproduction temperatures above 70º F. However, significant levels of Leaf Rust have been observed this spring across much of the Blacklands, and Southern Rolling Plains of Texas. We assume this is due to a warmer than normal winter/spring temperatures and wet conditions. Leaf Rust is being observed 4-6 weeks earlier this year (2005) than in the past. Hence management decisions regarding Leaf Rust need to be considered much earlier this year as plenty of Leaf Rust spores will be spreading to North Texas. Reports from LSU also indicate a tremendous amount of Leaf and Stripe Rust present in Louisiana.

Stripe Rust has been observed in several locations in the southern and central Blacklands of Texas. However, the Stripe Rust does not seem as widely distributed as the Leaf Rust. We have also observed Stripe Rust on varieties that were resistant last year, including Cutter and Jagalene.

Powdery Mildew has been observed in some fields in Williamson County and a few other locations. Fortunately, we have not observed the level of Powdery Mildew that occurred in 2004.

Factors to Consider for Managing Foliar Diseases in Wheat:

1. Variety resistance is the most economical management option. However, there have been several changes in the Leaf and Stripe Rust races the past couple of years. These race changes have resulted in the loss of resistance in many wheat varieties. Varieties that were rated "resistant" in 2003 and 2004 are no longer resistant to the predominant Leaf Rust races, especially in Hard wheat varieties.

2. Fungicides are an effective management option for Leaf Rust, Stripe Rust, and Powdery Mildew. However, the economical threshold is a not "black or white" and is dependent

on numerous factors, including yield potential, disease pressure, varietal resistance, grain price, and future weather.

General Comments about Fungicides:

- Fungicides protect yield, not enhance yield. If your field does not have good yield potential (>40 bushels), then a fungicide application probably will not be economical (**Table 1**).
- Fungicides typically provide a 10- 25% yield protection from Leaf Rust (**Table 2**). The yield protection may be higher for Stripe Rust.
- Fungicides should provide 2-3 weeks of protection from the foliar diseases.
- Protecting the flag-leaf is the highest priority, because 60-80% of grain yield comes from the flag-leaf.
- Early-season fungicide applications are likely not feasible, except under very heavy disease pressure.

Small Grains web-site:

- **http://croptesting.tamu.edu/** - this is a new web-site that covers most aspects of the Small Grains, including variety yields, weed management, entomology, and plant pathology.

Table 1. Labeled Fungicides for Foliar Disease Management:

Fungicide	Rate (oz/A)	Leaf rust control	Stripe Rust control	Chemical family
Headline	6.0 to 9.0	Good	Good	Strobilurin
Quadris	6.2-10.8	Good	Good	Strobilurin
Quilt	14.0	Good	Good	Strobilurin/ triazole
Propimax	4.0	Good	Good	Triazole
Stratego	10.0	Good	Good	Strobilurin/ triazole
Tilt	4.0	Good	Good	Triazole

Table 2. Estimated yield losses from Leaf Rust. Kansas State University

Rough Estimate of Percent Yield Loss For Different Leaf Rust Severities					
	Rust Severity on Flag Leaf				
Growth Stage	10%	25%	40%	65%	100%
Flowering	10	15	20	30	35
Milk	2	5	8	14	20
Soft Dough	1	3	4	7	10
Hard Dough	1	1	2	3	5

If you have any questions or comments regarding the current wheat crop, please give me a call.

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