

PLANT DISEASE AND INSECT ADVISORY



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Wheat Disease Update Bob Hunger, Extension Plant Pathologist

The following is a summary of disease observations made around Stillwater and on a trip through southwestern Oklahoma into Texas, and information from other states over the last week or so.



Leaf rust:

In Oklahoma, leaf rust pustules have been observed on many of the susceptible varieties (for the reaction of specific varieties to leaf rust and other diseases, please go to: <http://www.wit.okstate.edu/varietyinfo/jul2003wvcc.html>). To date, these are scattered pustules primarily on lower leaves, but the number of pustules is increasing and the potential is there for a significant amount of leaf rust to develop. Leaf rust also has been found in **south-central Kansas**, and although the incidence was low (trace to 5% incidence, the pustules were large (Jon Appel, Kansas Department of Agriculture).

Stripe rust:

In Oklahoma this past Monday (April 05th), Dr. Rick Grantham (Director – OSU Diagnostic Lab) Brian Olson (OSU plant disease diagnostician) and I found a few “stripes” of stripe rust in wheat at the Tipton and Altus stations, and in one field just west of Altus. These were limited to just one or two “stripes” per leaf on very scattered leaves. I also was contacted today (Friday, April 09th) by a producer from near Hinton, OK, who reported having stripe rust on lower leaves of 2174. Hence, there does appear to be some beginning infections of stripe rust in the state, and individuals should be watchful for the occurrence of this disease.

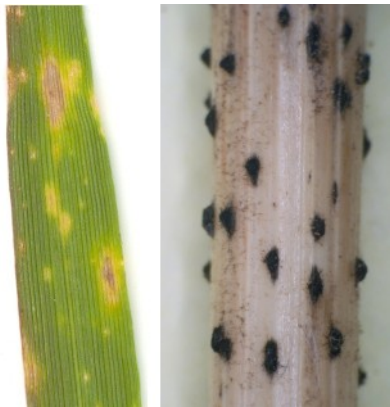


A stripe rust alert has been issued for wheat in **southwestern Arkansas** and on the **Grand Prairie in eastern Arkansas** (Dr. Gene Milus, Plant Pathologist, University of Arkansas). Dr. Milus also reported that leaf rust was still scattered, but continuing to develop.

Powdery mildew:

Reports of severe powdery mildew (PM) continue to be heard from across Oklahoma and other states. I have not yet seen PM on the flag leaves of wheat around Stillwater, but have seen PM on the lower leaves and stems of many varieties. Near Perkins, OK, PM has reached the second leaf below the flag and even the leaf just below the flag on a few tillers. Jagger, Jagalene, Cutter, and Ok 101 are four varieties highly susceptible to PM. Spraying to control PM usually is not considered, but with highly susceptible varieties

where PM is going to infect flag leaves, consideration for applying a fungicide should be made especially if the variety also is susceptible to leaf rust. Again, for the disease reactions of specific varieties go to: <http://www.wit.okstate.edu/varietyinfo/jul2003wvcc.html>. There are many fungicide choices, including Tilt, Quadris, Quilt, Stratego, and Headline. Trials at OSU have demonstrated that all of these fungicides can effectively control not only PM, but also the other foliar diseases of wheat including leaf and stripe rust, septoria, and tan spot. See below for an update providing information on these fungicides and their utility in controlling wheat foliar diseases.



Tan spot/Septoria:

Tan spot and/or septoria lesions can still be observed on lower leaves, but I have not seen movement of these symptoms onto the higher leaves. Such movement depends on cool temperatures and abundant rainfall. We have had temperatures conducive for the spread of tan spot & septoria, but the rainfall over the last couple of weeks has not been what would be considered ideal for the spread of tan spot and septoria up the foliage.

New fungicide registration:

A section 24c (special local needs) label has been obtained for the fungicide Quilt on wheat. This allows the application of Quilt onto wheat in Oklahoma up to growth stage 10.5, which is the stage where the head (or ear) is fully emerged. Quilt is a combination of **Quadris** (azoxystrobin) and **Tilt** (propiconazole), and is labeled for control of many wheat diseases, which includes all of the foliar diseases of concern in Oklahoma (the rusts, powdery mildew, septoria and tan spot). A few other items of interest related to Quilt include:

- Apply at 14 fl oz product/acre.
- Do not apply within 45 days of harvest for grain and straw.

Remember, any fungicide application on wheat usually needs to be at a growth stage earlier than 10.5 in order to obtain the maximum control.

Powdery Mildew in Wheat

Bob Hunger, Extension Plant Pathologist

Because of the widespread and severe outbreaks of powdery mildew (PM) over the last couple of weeks, I have received many inquiries about using fungicides to control this disease. Favorable weather coupled

with the wide planting of varieties very susceptible to PM (including Jagger, Jagalene, Cutter, and Ok 101) explain this outbreak. Spraying a fungicide to control PM usually is not considered necessary in Oklahoma; however, with highly susceptible varieties where PM is going to heavily infect flag leaves producers may want to consider applying a fungicide. This is especially true if the yield potential of the wheat is high (greater than 40 bu/acre) and if the variety also is susceptible to leaf rust. For example, the variety Jagger is highly susceptible to PM and leaf rust, and applying a fungicide to this variety will help to protect from losses to both of these foliar diseases. Fungicides available for use to control foliar diseases in wheat are listed in Table 1. REMEMBER, these are approximate costs for the product and do not include cost of application. If applied by air, apply in 3-5 gallons water and if applied by a ground rig, apply in 20-25 gallons of water. ALWAYS read the full label to be sure you are following the required procedures for the specific fungicide. For example, Quilt and Quadris have a 45 day pre-harvest interval (PHI) - that is, 45 days must elapse between application and harvest. For Tilt the PHI is 40 days and for Stratego the PHI is 35 days. For Headline, 14 days must pass before wheat is harvested for hay.

Table 1. Fungicides to control wheat foliar diseases and their approximate cost.

Fungicide & Company	Fungicide type	Rate per acre (oz)	Approximate cost/ounce	Approximate cost/acre
Tilt (Syngenta)	triazole	4	2.88	11.52
Quadris (Syngenta)	strobilurin	6.2-10.8	2.14	13.27-23.96
Headline (BASF)	strobilurin	6.0-9.0	2.03	12.18-18.27
Stratego (Bayer)	triazole + strobilurin	10	1.25	12.50
Quilt (Syngenta)	triazole + strobilurin	14	0.88	12.32

Now look at Table 2 (next page) to see the results from a fungicide trial last year in eastern Oklahoma (courtesy of Mr. Ken Jackson, Oklahoma State University). First note that the yield from these trials was very high (≥ 80 bu/A); hence, the yield potential was high. As you can see in Table 2, all of the fungicides significantly reduced the severity of powdery mildew on the Jagger wheat in this trial, but statistically significant increases in yield were not observed (although there was a trend for higher yields from wheat sprayed with fungicide). Hence, I would recommend applying a fungicide to control PM only if you feel the flag leaves are likely to become heavily infected with PM, or if you feel many of the secondary tillers will die (which several producers have indicated to me is happening this year). Again, use fungicides only on fields where the yield potential is high (≥ 40 bu/acre). Another consideration is the susceptibility of the variety to other diseases (e.g., leaf and stripe rust), because applying a fungicide now to protect against PM also will protect the wheat from leaf and stripe rust infections over the next 2-3 weeks or so.

Note in Table 2: The last fungicide listed is a physical mixture of Quadris and Tilt, which is now available under the Syngenta trade name of Quilt

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Effect of Foliar Fungicides on Powdery Mildew of Wheat, Haskell, OK, 2003

<Data provided by Mr. Ken Jackson, Oklahoma State University>

Fungicide and rate/acre	Growth stage ¹ applied	Date applied	Percent Powdery Mildew Incidence				Yield Bu/Acre
			Flag-2 29-Apr	Flag-1 29-Apr	Flag 29-Apr	Flag 12-May	
No treatment	-----	-----	43.8	27.5	4.0	25.0	85
Tilt – 4 fl oz	GS 9	10-Apr	13.8*	1.3*	0.0*	0.0*	91
Tilt – 4 fl oz	GS 10	17-Apr	31.3	9.0*	0.0*	0.0*	85
Quadris – 6.2 fl oz	GS 9	10-Apr	20.0*	5.0*	0.0*	2.5*	85
Quadris – 6.2 fl oz	GS 10	17-Apr	28.8	5.3*	0.0*	0.0*	85
Headline – 6.1 fl oz	GS 9	10-Apr	20.0*	5.0*	0.0*	1.5*	90
Headline – 6.1 fl oz	GS 10	17-Apr	35.0	13.8*	0.0*	2.5*	87
Stratego – 10 fl oz	GS 9	10-Apr	10.0*	0.0*	0.0*	0.0*	89
Stratego – 10 fl oz	GS 10	17-Apr	31.3	10.0*	0.0*	0.0*	88
Quadris (4.1 fl oz) + Tilt (4.0 fl oz)	GS 9	10-Apr	8.8*	0.0*	0.0*	0.0*	91
LSD 0.05			15.5	10.6	1.8	8.6	NS
PR>F			0.001	0.006	0.0043	0.0001	0.2263

¹GS 9 = flag leaf fully emerged. GS 10 = wheat in "boot" stage.

* = treatment mean significantly different from no treatment mean.