

# Wheat Science News

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For information on Freeze Damage by Growth Stage, go to <http://www.ca.uky.edu/ukrec/newsltrs/News07-1.pdf>

## **Fungicidal Control of Fusarium Head Blight (Head Scab) and Deoxynivalenol (DON) in Wheat**

*Don Hershman, Extension Plant Pathologist*

**Background Information.** Fusarium head blight (FHB) of wheat, and deoxynivalenol (DON) accumulation in harvested grain, are periodically very serious problems in Kentucky. There was minimal FHB or DON in 2006 and 2007 in Kentucky, but each year brings new possibilities. Thus, it is imperative that you be on guard for FHB/DON in 2008.

For a variety of reasons, the Environmental Protection Agency (EPA) told every state that had a section 18 for tebuconazole (e.g., Folicur, Orius) in 2007, not to anticipate approval for 2008. The main reason is that the Bayer Fungicide, Proline (prothioconazole) is available and actually provides better FHB and DON control (see Table, below). Without going into detail, suffice it to say that section 18 labels cannot be granted in situations where an existing (i.e., effective) fungicide is available for a particular disease. Interestingly enough, there is the possibility that one or more tebuconazole fungicides will be granted a Section 3 label in time for use in wheat this spring. I have also heard rumblings from BASF that they expect metconazole (Caramba) to be labeled for wheat “anytime now”. However, for now the only product available with respectable control of both FHB and DON is Proline. Propiconazole (e.g., Tilt) is also labeled, but Proline is the better product for suppression of FHB and DON accumulation. *Note: Strobilurin fungicides (e.g., Quadis, Headline) or fungicide containing a strobilurin (e.g., Quilt, Stratego) are not recommended for FHB control because they may result in elevated DON levels compared to untreated wheat.*

**Efficacy of Foliar Applied Fungicides for FHB and DON Control in Winter Wheat**

<u>Fungicide</u>	<u>% FHB Control*</u>	<u>% DON Control*</u>
Proline	41.7	39.4
Folicur	32.3	16.5
Tilt	28.8	4.9

\*Winter wheat data summary of 66 uniform fungicide tests conducted across the U.S., 1998-2005. Data summarized by Pierce Paul, the Ohio State University.

**Proline Information.** The proper use of Proline will help suppress FHB and DON when used with other FHB/DON management tactics (see <http://www.ca.uky.edu/ukrec/newsltrs/news03-2.pdf>). However, Proline is not a “silver bullet” for managing FHB/DON. In other words, do not expect Proline to provide the same level of FHB/DON control as you have come to expect when fungicides are used to control other wheat diseases. The key is to think in terms of disease suppression, not control. Nevertheless, a 40% reduction in FHB and DON can have a significant economic impact locally, state-wide, and regionally if FHB is moderate to severe in 2008. But, be advised that significant losses due to FHB and/or DON can still occur even where Proline is applied if FHB is severe.

For FHB/DON suppression, the Proline 480SC Section 3 label indicates a use rate of 4.3 to 5.7 fl oz/A applied to wheat “within a time period from when at least 75% of the wheat heads on the main stem are fully emerged (~Feeke’s stage 10.4) to when 50% of the heads on the mainstem are in flower (~Feeke’s stage 10.52)”. Applications cannot be made within 30 days of harvest.

Although the Proline label allows for some flexibility in terms of timing of application, most of the efficacy data for Proline in suppressing FHB/DON are based on application at early flowering (Feeke’s stage 10.51).

Excellent fungicide coverage on wheat heads is crucial to achieve the greatest possible FHB/DON suppression. This is no small challenge since most spray systems used in wheat were developed to deliver pesticides to foliage (horizontal structures). In order to maximize coverage on heads (vertical targets), significant changes may need to be made to the sprayer boom system. Also, discipline must be exercised to ensure that proper sprayer pressure and volumes are used. The Proline label gives some suggestions on how to achieve acceptable spray coverage.

**Making Appropriate Fungicide Spray Decisions.** One desire we all have is for fungicides to be used only when needed. Regular field scouting for foliar fungal diseases has been successfully used by growers for many years to determine if and when to spray fungicides. However, this is not possible with FHB since once symptoms are present it is TOO LATE to spray. Below are some general guidelines to help you determine if you should spray Proline for FHB/DON suppression.

**During period leading up to, during and immediately after head emergence:**

- ◆ Soil moisture has been good for the past month (relates to spore production, dispersal of *Fusarium graminearum* spores, and crop infection).
- ◆ Crop has good yield potential (relates to economics and crop density, which increases canopy humidity and may increase spore production, facilitate spore dispersal, and encourage crop infection).
- ◆ Temperatures 68-86 F (relates to spore production and crop infection).
- ◆ Humidity is high (80% day or night) and/or free water (such as dew) is present on the heads during this period (relates to spore production, dispersal, and crop infection).

If most or all of the above conditions exist when the crop is just beginning to flower, consider spraying as soon as possible.

**New Web-Based FHB Prediction Tool.** In addition to the above general guidelines, an exciting new tool can also be used to help determine the FHB risk and need to spray. This tool is a web-based, disease forecasting model made available by Penn State University, The Ohio State University, Kansas State University, and the U.S. Wheat and Barley Scab Initiative. This forecasting model, utilizes real-time weather data from numerous National Weather Service stations within each state. Go to [www.wheatcab.psu.edu/](http://www.wheatcab.psu.edu/) and click on “Risk map tool”.

You will be asked if you are growing winter or spring wheat. At this point you will come to a U.S. map and are asked to click on the state of interest. The FHB Risk Management Tool page will have a map that shows where the weather data are being retrieved. To the upper left corner of the page is a calendar section labeled “Assessment Date”. This section needs a bit of explaining. You will note right away that the tool will only let you click on the current date and the preceding 7 days. So, if you estimate your crop will begin to flower (the beginning of FHB susceptibility) on May 7, but it is only May 3, the best you will be able to do is to determine if the weather on May 3 (or the previous 7 days) is favorable for FHB. My advice is to begin determining the FHB risk using this model 1-2 weeks out from crop flowering. Keep checking your wheat and keep checking the model every 1-2 days. By the time your crop reaches early flowering, you should have a good feel for the FHB risk in your area. If the forecast model says the FHB risk is high (medium if you are not a risk taker), and the forecast matches your local weather and crop reality, then you might consider spraying as soon as possible. The FHB Risk Management Tool also includes a commentary section that will give you a text risk assessment based on the opinion of the local state Extension Specialist (that’s me for KY).

Once you actually see it and play around with it, what I have said above will make much more sense. The model does have several practical limitations in predicting final FHB levels; these are clearly discussed within the Prediction Center website. Perhaps the greatest limitation of the model is that it does not account for weather conditions during flowering and grain fill. Specifically, disease-favorable weather occurring during late flowering and grain fill can greatly impact final FHB/DON levels. The bottom line is that final FHB/DON levels may not always be reflected by the model’s risk output. The authors of the model discuss this limitation under “Reality Check” in the “Model Details” section of the Prediction Center.

We all hope that FHB is non-existent this spring. However, if this is not the case, wheat producers now have an additional tool to use to minimize FHB and DON development this spring.

Visit our Website:  
<http://www.ca.uky.edu/ukrec/welcome2.htm>

## **FOLIAR FUNGICIDES FOR WHEAT DISEASE CONTROL**

**Don Hershman, Extension Plant Pathologist**

**2008 Management of Small Grain Diseases (NCERA-184)**

**Fungicide Efficacy for Control of Wheat Diseases**

Each year, the North Central Regional Committee on Management of Small Grain Diseases revises and disseminates a fungicide efficacy table. Efficacy ratings for each fungicide listed in the following table were determined by field testing fungicides over several years and locations by the members of the committee. Efficacy is based on proper application timing to achieve optimum effectiveness of the fungicide as determined by labeled instructions and overall level of disease in the field at the time of application. Differences in efficacy among fungicide products were determined by direct comparisons among products in field tests and are based on a single application of the labeled rate as listed in the table.

### **Efficacy of Fungicides for Wheat Disease Control Based on Appropriate Application Timing.**

	Product	Fungicide(s)	Rate/A (fl. oz)	Powdery mildew	Stagonospora leaf/glume blotch	Septoria leaf blotch	Tan spot	Stripe rust	Leaf rust	Head scab
<b>Strobilurin</b>	<b>Headline 2.09 EC</b>	<b>Pyraclostrobin 23.6%</b>	<b>6.0 to 9.0</b>	G <sup>1</sup>	VG	VG	E	E <sup>2</sup>	E	NR
	<b>Quadris 2.08 SC</b>	<b>Azoxystrobin 22.9%</b>	<b>6.2 to 10.8</b>	F(G) <sup>3</sup>	VG	VG	E	E <sup>2</sup>	E	NR
<b>Triazole</b>	<b>Proline 480 SC</b>	<b>Prothioconazole 41%</b>	<b>5.0 (5.7 Scab)</b>	-- <sup>4</sup>	VG	VG	VG	--	VG	G(VG) <sup>3</sup>
	<b>PropiMax 3.6 EC</b>	<b>Propiconazole 41.8%</b>	<b>4.0</b>	VG	VG	VG	VG	VG	VG	F
	<b>Tilt 3.6 EC</b>	<b>Propiconazole 41.8%</b>	<b>4.0</b>	VG	VG	VG	VG	VG	VG	F
<b>Premix</b>	<b>Quilt 200SC</b>	<b>Azoxystrobin 7.0% Propiconazole 11.7%</b>	<b>14.0</b>	VG	VG	VG	VG	VG	VG	NR
	<b>Stratego 250 EC</b>	<b>Propiconazole 11.4% Trifloxystrobin 11.4%</b>	<b>10.0</b>	G	VG	VG	VG	VG	G	NR
<b>Section 18 triazole<sup>5</sup></b>	<b>Folicur 3.6 F</b>	<b>Tebuconazole 38.7%</b>	<b>4.0</b>	G	VG	VG	VG	E	E	G

<sup>1</sup> Efficacy categories: NR=Not Recommended; F=Fair; G=Good; VG=Very Good; E=Excellent

<sup>2</sup> Efficacy may be significantly reduced if solo strobilurin products are applied after infection of has occurred

<sup>3</sup> (G) indicates greater efficacy at higher application rates

<sup>4</sup> Insufficient data to make statement about efficacy of this product

<sup>5</sup> Folicur is not currently labeled for use on wheat in the U.S. However, there are indications that Folicur (and other tebuconazole fungicides) may receive a section 3 label soon. Folicur, thus, has been included in this table in case a section 3 label is granted by EPA in time for the KY use season in wheat.

This information is provided only as a guide. It is the responsibility of the pesticide applicator by law to read and follow all current label directions. No endorsement is intended for products listed, nor is criticism meant for products not listed. Members of NCR-184 assume no liability resulting from the use of these products.

## ***Suction Trap Counts – Where are the Aphids?***

*Doug Johnson, Extension Entomologist*

The period of Jan – March 2008 has been a slow year for cereal aphids compared to the same time frame in 2007. In 2008, one or more oat bird-cherry aphids (OBCA) were captured on three of the thirteen sample dates, with a peak count of 10 on March 28, and a total twelve aphids captured on all sample dates as of this writing. In 2007 during this same time frame, OBCA were taken in six of thirteen sample dates, with a peak count of 88 on March 30, and a total of one hundred twelve aphids captured on all sample dates. These numbers are from samples taken weekly from the suction trap at the UK-REC in Princeton, Caldwell Co. KY. In 2008, samples from the suction trap on UK's Spindletop Farm in Lexington, Fayette, yielded even fewer aphids, with only two aphids captured one each of two sample dates. The Spindletop suction trap was not yet in operation for this period in 2007.

These numbers may only be used as an index and only for aphid movement by flight. It certainly does not tell the complete story, but is beginning to give us a glimpse of the activity of these serious vectors of the yellow dwarf viruses. The two suction traps are supported by the KY Small Grain Growers, and Kentucky Soybean Growers associations and the UK-IPM program.

Our lack of trap captures from the spring should indicate less movement of the Barley yellow virus complex than we saw last spring, and that was pretty meager. However, FALL infection still remains the number one risk factor. Fall infection is most often linked to planting date. Wheat planted before the Hessian fly free date (Oct 15 for west central KY) is more likely to have problems with Barley yellow dwarf than are crops planted after this date.

## ***Corn Planted Into Standing Grasses: Does This = Armyworms?***

*Doug Johnson, Extension Entomologist*

Several agents have noted that weather has prevented or slowed producers from controlling standing weeds into which they intend to plant corn. This begs the question: will this situation result in armyworm problems? Certainly from the insect standpoint we always recommend that weeds, especially grass weeds, be controlled well before corn is planted or at least before it emerges. Corn planted into standing grass can be infested by two different insects, the black cutworm and the "true" armyworm. Additionally, damp cool weather favors the insects over the corn.

The best prevention for this is having the grass weeds dead (not just dying) before the corn emerges. If young corn plants emerge into a stand of grass weeds that is still green, the chance of insect infestation goes up. Producers that find themselves in this situation should scout their fields regularly for the presence of these insects. They will certainly not appear in every field, and will not be economically important in most fields. But the situation does present a greater risk than normal.

Once the insects are detected in damaging numbers they are not hard to control. Cutworms should be controlled if there are 3% cut plants and two live larvae per 100 plants. Armyworm threshold is if 2 larvae are found on 24-30% of the plants OR 1 larvae per plant on 75% of the plants. If the producer is using "corn borer B.t." varieties, the Herculex I and Herculex XTRA types claim both black cutworm and armyworm activity.

# **University of Kentucky Wheat Field Day**

***MAY 20, 2008 8:30 - Noon (CDT)***

***UKREC Farm PRINCETON, KY***

- ◆ ***No-Till Variety Trial and Wheat Breeding Program***
- ◆ ***A Summary of Ryegrass Control with Herbicides Over Multiple Studies***
- ◆ ***Fungicide Labeling Issues***
- ◆ ***Breeding for Scab Resistance***
- ◆ ***On-The-Go Sensing and its Relevance for Farming and Research***
- ◆ ***What Happened to the Nitrogen this Year***
- ◆ ***Canola Update and Research***
- ◆ ***When Is Tillage Necessary***
- ◆ ***Planting Date and Insecticides for Control of Aphids***

***... More Information Concerning CCA & Pesticide Credits Available Later ...***