

Wheat Fungicide Options for 2008

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Yield-reducing fungal diseases

Fungal diseases including leaf rust, powdery mildew, and leaf and glume blotches can cause significant reductions in the yield of winter wheat in New York. Losses are greatest when disease develops on the two upper leaves during flag (top) leaf emergence (late May) through kernel dough (late June) stages. Spores of leaf rust are borne on air currents from southern regions and are deposited by rainfall in June to July – the earlier they arrive, the greater the potential for secondary cycles of spore production and yield loss. Powdery mildew spores are generally present in the atmosphere above wheat fields. Infection of leaves can result in yield loss to susceptible varieties when cool humid conditions persist into June. Warm temperatures retard mildew development. Fungal leaf and glume blotches, especially *Stagonospora nodorum* blotch (Figure 1), cause small to moderate yield losses almost every year. Most New York-adapted varieties are susceptible. Leaf blotches begin almost invisibly as small leaf spots in the lower canopy in fall and early spring. Splashing rain in spring and early summer moves spores to the upper canopy where they induce blighting of flag leaves and glumes. Additional spores may also arrive on air currents.

When 24 or more hours of leaf wetness coincide with the onset of wheat flowering, *Fusarium* head blight can cause significant yield losses and contamination of grain with more than 2 parts per million of the mycotoxin deoxynivalenol (DON or vomitoxin) and that grain is usually rejected by flour mills. *Fusarium* infection later during grain maturation has much less effect on yield yet it can also result in significant DON contamination.

Foliar fungicides available in New York in 2008

Considering the current high grain price, producers should consider protecting their wheat yield and quality with a well-timed application(s) of foliar fungicide. Table 1 compares the relative efficacy of fungicides available in New York this spring. Be aware that some products (e.g., Folicur, Proline, Stratego) labeled in other states or Canadian provinces are not currently registered in New York. The estimated average cost of fungicide plus application is about \$25 per acre but varies widely. There is recent interest in an early spring application of fungicide co-applied with nitrogen fertilizer and or herbicide. However, there is no consistent evidence of economic return from early spring fungicides except where wheat follows wheat. An application of fungicide (strobilurin, triazole, or mixture) between flag leaf emergence and heading is optimal for protecting flag leaves from disease. We discourage application of stobilurin fungicide after heads have emerged because it is has been associated with increased levels of DON in grain. Suppression of *Fusarium* head blight and reduction (about 25% on average) of DON contamination is best accomplished with an application of Tilt (propiconazole) at the onset of flowering (Figure 2). More efficacious products will likely be registered in New York in future years. Pay particular attention to days to harvest restrictions on late-applied fungicide products. New York advisories on the general risk of severe *Fusarium* head blight based on local weather and the date of onset of flowering in your wheat field can be accessed at the Penn State *Fusarium* Head Blight Assessment Tool site (www.wheatcab.psu.edu/riskTool.html) by choosing the winter wheat model and clicking on the map of New York state. Foliar fungicides have no effect on viral diseases such as wheat spindle streak mosaic or barley yellow dwarf. It is the responsibility of the applicator to read and follow all product label directions.



Figure 1. *Stagonospora nodorum* blotch is a principal target for foliar fungicide application to wheat in New York.



Figure 2. The onset of wheat flowering is the optimal time to apply fungicide for reduction of Fusarium head blight and deoxynivalenol contamination.

Table 1. Efficacy of foliar fungicides for wheat disease control*

	Product	Fungicide(s)	Amount/A (fl. oz)	Powdery mildew	Stagonospora leaf/glume blotch	Septoria leaf blotch	Leaf rust	Fusarium head blight	Latest rec. timing (wheat stage)
Strobilurin	Headline 2.09 EC	Pyraclostrobin 23.6%	6.0 to 9.0	G ¹	VG	VG	E	NR	Boot
	Quadris 2.08 SC	Azoxystrobin 22.9%	6.2 to 10.8	F(G) ²	VG	VG	E	NR	Boot
Triazole	PropiMax 3.6 EC	Propiconazole 41.8%	4.0	VG	VG	VG	VG	NR	Flag leaf collar visible
	Tilt 3.6 EC	Propiconazole 41.8%	4.0	VG	VG	VG	VG	F	50% flowering
Premix	Quilt 200 SC	Azoxystrobin 7.0% Propiconazole 11.7%	14.0	VG	VG	VG	E	NR	Beginning of head emergence

* Adapted for New York from information developed by the USDA-CSREES Committee on Management of Small Grain Diseases (NCERA-184). Efficacy ratings for each fungicide listed were determined by field testing the materials over multiple 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. 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.

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

² (G) indicates greater efficacy at higher application rates