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Fungicide Options for Managing Foliar Diseases on Wheat

By John E. Watkins, Extension Plant Pathologist

Stripe and leaf rusts, tan spot and Septoria leaf blotch comprise the four primary foliar diseases of wheat in the central Great Plains. In eastern and south central Nebraska leaf rust and Septoria leaf blotch are common, and in the wheat-fallow-wheat regions of western Nebraska, tan spot is an important foliar disease. Stripe rust occurs statewide.

These diseases are most damaging when the upper leaves of infected plants become severely diseased before mid-June. This causes early loss of upper leaves, which reduces the grain filling period and results in smaller kernel size. Annually, foliar diseases cost Nebraska wheat growers an average of $5.5 million. When rust and tan spot or Septoria leaf blotch are both present in a field, they become an even greater threat to wheat production.

Treatment Criteria

Growers needing to decide whether to treat their wheat fields can follow certain guidelines. Monitoring the stripe and leaf rust situations in the southern Great Plains and the local leaf spot situation in early May gives a good indication of the potential for foliar disease development in Nebraska. For example, in 2003 stripe rust developed rapidly in Texas, Oklahoma, and Kansas, and as a result, stripe rust severities in Nebraska were high. The earliness or lateness of the winter wheat crop, susceptibility of the variety, current weather conditions, and long range forecasts are important factors in determining if spraying is advisable. If trace amounts of rust and leaf spots are present on the flag leaf in the early boot stage of development, and infection below the flag leaf is moderate to severe, there is a high potential that severe infection of the flag leaf will occur and a fungicide application is advised. Based on these criteria, a reasonably accurate decision as to whether to spray can be made during the early boot stage, while the flag leaf is still relatively free of infection. Sprinkler irrigated fields should be checked weekly in May and early June so that the buildup of rust and/or leaf spot can be detected early.

Profitability of Treatment

The cost of aerially applying fungicides to winter wheat during the growing season will be $15-$20 per acre, depending on the product used and application costs. At current wheat prices, a grower must realize at least a consistent eight to ten bushel per acre yield increase to break even. However, when the potential for severe damage from rust is high, the cost-benefit ratio usually favors chemical control.

Intensively managed wheat, grown under high seeding and fertility rates and irrigation, is at a greater risk of attack from stripe and leaf rusts, powdery mildew, tan spot and Septoria leaf blotch. Routine treatment of these fields often produces profitable results.

It usually is not cost effective to treat dryland wheat that has a yield potential less than 45 bushels per acre. Yield potentials for the intensively managed, irrigated wheat should be in the 70 to 80 bushels per acre range for cost effective fungicide treatment.

Treatment Products and Timing

Fungicides currently registered for leaf disease control on wheat include: Headline (pyraclostrobin), Quadris (azoxystrobin), Quilt (Syngenta), Stratego (propiconazole + trifloxystrobin), Tilt (propiconazole), PropiMax EC (propiconazole), Manzate 75 DF (mancozeb), Dithane DF, F-45, M-45 (mancozeb) and Penncozeb (mancozeb) *(Table I)*.

Table I. Fungicides registered for use on wheat to control foliar diseases.[1]

Product[2]	*Target diseases*	*Product rate/acre*	*Application timing*
Headline (BASF)	Leaf rust Stem rust Stripe rust Tan spot Septoria leaf spot Septoria glume blotch Powdery mildew Spot blotch	6-9 fl oz	Up to Feekes 10.5 (late heading emergence) plant stage
Quadris (Syngenta)	Leaf rust Stripe rust Stem rust Septoria leaf blotch Septoria glume blotch Tan spot Powdery mildew	6.2-10.8 fl oz	Feekes 6 (immediately after jointing) to 10.5 (flowering) plant stage.
Quilt (Syngenta)	Leaf rust Stem rust Stripe rust Tan spot Septoria glume blotch Septoria leaf blotch Powdery mildew Spot blotch Helminthosporium leaf blight	7-14 fl oz	Up to Feedkes 9 plant stage (ligule of flag leaf just visible)
Stratego (Bayer)	Leaf rust Stripe rust Stem rust Septoria leaf blotch Tan spot Powdery mildew	10.0 oz	Feekes 8 (emerging flag leaf) plant stage.
Tilt (Syngenta)	Leaf rust Stripe rust Stem rust Septoria leaf spot Septoria glume blotch Tan spot Powdery mildew	4.0 fl oz	Feekes 8 (emerging flag leaf) plant stage.
PropiMax EC (Dow AgroSciences)	Leaf rust Stripe rust Stem rust Septoria leaf spot Septoria glume blotch Tan spot Powdery mildew	4.0 fl oz	Feekes 10.5 (flowering); has a section 24(c) label for application up to Feekes 10.5.
Manzate 75DF (Griffin L.L.C.)	Leaf rust Septoria glume blotch Septoria leaf spot Tan spot	2.0 lb	Feekes 10 (boot) and again at 10.5 (flowering) plant stage.
Dithane DF F-45 M-45 (Dow AgroSciences)	Leaf rust Septoria glume blotch Septoria leaf spot Tan spot	2.1 lb 1.6 qts 2.0 lb	Feekes 10 (boot) and again at 10.5 (flowering) plant stage.
Penncozeb 80WP 75DF (Elf Atochem)	Leaf rust Septoria glume blotch Septoria leaf spot Tan spot	1.0-2.0 lb	Feekes 10 (boot) and again at 10.5 (flowering) plant stage.

[1]This list is presented for information only and no endorsement is intended for products listed nor criticism meant for products not listed. Consult the product label before buying and using a specific fungicide. Read and follow all label directions and restrictions.
[2]Most of the products listed in *Table I* recommend adding a spreader sticker and must be applied in sufficient water to ensure good coverage.

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