

AGRONOMY NEWS

 *Grasslands For Tomorrow*

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2003 Fungicide Trial on 'CDC Falcon' Winter Wheat Lisbon, ND

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Introduction:

A cooperative project to evaluate fungicide treatments on winter wheat in 2003 was located in a commercial field of 'CDC Falcon' winter wheat grown on the Randy Mairs farm near Lisbon, ND. Cooperators in the project included: Blake Vander Vorst of Ducks Unlimited; Randy Mairs, grower; and Marcia McMullen and Scott Meyer, NDSU Extension Service, Fargo. The objective of the project was to evaluate fungicide treatments on winter wheat for leaf disease and head scab control. The project was supported by Ducks Unlimited, Emmett Lampert of Syngenta Crop Protection, Jeremy Frie of BASF Corp., and Kevin Thorsness of Bayer CropScience.

Materials and Methods:

'CDC Falcon' winter wheat was planted in September 2002 at the Randy Mairs farm near Lisbon, ND. Winter survival was good. Plots (9' by 20') were cut out of the commercial field of 'CDC Falcon' winter wheat in the spring. Fungicide treatments were applied by Scott Meyer of NDSU at several growth stages (Table 1). Early season fungicide applications were applied to determine effects of early leaf spot disease control. Early season treatments were applied on May 22, at the five leaf stage, with a bicycle sprayer equipped with XR8002 flat fan nozzles oriented vertical to the crop canopy.

Late season fungicide application was made just prior to flowering, at Feekes 10.5. These applications (Table 1) were made on June 16 with a hand-boom sprayer equipped with XR8001 nozzles oriented forward and backward toward the grain head at 60° from the vertical. Water volume was 18-20 gpa applied at 40 psi. Treatments were replicated four times, with plots arranged in a randomized complete block design. The spring weather was very wet, with May precipitation approximately 3" and June precipitation approximately 7". This wet weather favored early season development of tan spot.

July and August were relatively dry, with July precipitation totaling about 1.1" and August precipitation about 0.75".

Temperatures in July also frequently reached the high 80's and low 90's in mid-afternoon.

Fungal leaf spot ratings were taken on July 1 (early soft dough) and July 10 (late soft dough), with substantial development of Septoria leaf spot between those two dates. Fusarium head blight severity was quite low on both rating dates (Table 2). Plots were harvested by Scott Meyer on Aug. 7. Grain was cleaned with a Clipper Mill prior to determining yield and test weight. DON analysis was done by the NDSU Veterinary Toxicology Lab using gas chromatography methods. An analysis of variance was done to determine statistical differences among treatments.

Table 1. Fungicide Treatments, in fluid ounces per acre, 'CDC Falcon' Winter Wheat, Lisbon, ND 2003

Fungicide Treatments*

Trt #	Early Season, 5 Leaf (Feekes 2)	Late Heading (Feekes 10.5)	Manufacturer
1	Untreated	Untreated	
2	Tilt - 1 fl oz	Tilt - 3 fl oz	Syngenta
3	Untreated	Tilt - 4 fl oz	Syngenta
4	Stratego - 5 fl oz	Folicur - 4 fl oz	Bayer
5	Untreated	Folicur - 4 fl oz	Bayer
6	Headline - 3 fl oz	Headline - 6 fl oz	BASF
7	Untreated	Headline - 6 fl oz	BASF

* Tilt = propiconazole; Headline = pyrachlostrobin; Stratego = tilt + trifloxystrobin; Folicur = tebuconazole

Winter Cereal Sponsors

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South Dakota Game, Fish and Parks

North Dakota Game & Fish Department

Natural Resources Conservation Service (NRCS)

Day, Marshall, James River, Ransom and Wild Rice Conservation Districts

North Dakota Dept. of Health 319 Program

NDSU and SDSU Cooperative

Agronomy News

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RESULTS AND CONCLUSIONS

Winter wheat survival was good and uniform stands were observed in the fungicide plots. Fungal leaf spots developed substantially early in the season and continued to develop as the season progressed (Table 2). The predominant leaf spots were tan spot and Septoria leaf spot (*Stagonospora nodorum*). Leaf rust did not develop on 'CDC Falcon', and the severity of Fusarium head blight (scab) was very low due to the low precipitation in July (Table 2).

Table 2. Disease, yield, and test weight comparisons of fungicide treatments on 'CDC Falcon' winter wheat, Lisbon, ND, 2003

Trt #	Treatment and rate/Acre	Feekes growth stage applied	7/1 Fungal Leaf spot* % flag leaf	7/10 Fungal leaf spot* % flag leaf	Fusarium Head Blight*			Yield* bu/A	Test wt.* lbs/bu
					7/1 Field Severity	7/10 Field Severity	DON PPM		
1	Untreated		23.8 a	75 a	0.1 a	3 a	0.9 ab	65.6 a	61 a
2	Tilt 1 fl oz, Tilt 3 fl oz	2, 10.51	5.0 b	23 b	0 a	0.5 b	0.7 b	73.7 ba	61.1 ab
3	Tilt 4 fl oz	10.51	5.5 b	20 b	0 a	0.5 b	0.7 b	76.2 bc	61.1 ab
4	Stratego 5 fl oz Folicur 4 fl oz	2, 10.51	3.0 b	14 bc	0 a	0.5 b	0.7 b	77.9 bc	61.4 bc
5	Folicur 4 fl oz	10.51	5.5 b	21 b	0 a	0.3 b	0.7 b	76.3 bc	61 a
6	Headline 3 fl oz Headline 6 fl oz	2, 10.5	3.0 b	6 c	0 a	0.8 b	1.0 ab	80.7 c	61.4 bc
7	Headline 6 fl oz	10.5	6.3 b	20 b	0 a	1.0 b	1.1 a	74.5 b	61.5c

* Values followed by different letters are significantly different from each other at the 95% confidence level.

On July 10, at late soft dough stage, the lowest leaf disease severity observed was with the combination early season plus late season treatment of Headline. The second lowest leaf disease severity was with the combination treatment of Stratego at Feekes 2 followed by Folicur at Feekes 10.51. All treatments significantly reduced fungal leaf spot severity from the untreated check. All treatments were equal in reducing Fusarium head blight severity by July 10. DON (vomitoxin) levels were low, even for the untreated. However, the Headline treatments applied at late heading did slightly increase the DON level above the untreated check. Guidelines for Headline use from the manufacturer indicate that it should be applied before flowering to avoid any risk of increase in DON levels.

All fungicide treatments significantly increased yield over the untreated check (Table 2), with yield responses ranging from 8.2 to 15.2 bu/a. The highest yield response was with Headline applied at both Feekes 2 and Feekes 10.5; the second highest yield response was with Stratego applied at Feekes 2 followed by Folicur at Feekes 10.5. The two applications of Tilt, 1 fl oz at Feekes 2 followed by 3 fl oz at Feekes 10.5, might not have been quite as successful in reducing leaf diseases or improving yields as the other two treatments with the combined applications because less than half the full label rate (1 fl oz instead of 2 fl oz) of Tilt was applied at Feekes 2 and less than the *full label rate* (3 fl oz vs 4 fl oz) was applied at Feekes 10.5. For the Stratego/Folicur treatment and the Headline/Headline treatments, half the full label rate was applied early and the full label rate was applied at flowering.

Test weight increases were modest and ranged from 0 to 0.5 lb/bu. Based on product cost alone, without application cost, return on investment would have ranged from approximately \$15 to \$30/acre, based on varying prices of products and a \$3.00/bu wheat price.

FOLICUR RECEIVES SECTION 18 LABEL

Folicur 3.6F Foliar Fungicide was granted a section 18 specific exemption label to suppress fusarium headblight for application to wheat, including winter wheat, spring wheat, and durum in North and South Dakota. The Folicur labeled rate is 4 fluid ounces per acre and a spray surfactant should be tank-mixed with the Folicur. Ground sprayer requires a minimum of 10 gpa of spray solution per acre and a minimum of 3 gpa by air. Only one application per season may be made. Folicur may be applied up through the beginning of flowering (feekes 10.51 growth stage). Read and follow the label directions. Folicur is a registered trademark of Bayer CropScience.

Evaluation of Fungal Leaf Spot Control with Fungicide Treatments Winter Wheat 2003

Marcia McMullen and Scott Meyer
Extension Plant Pathologist and Research Specialist, NDSU, Fargo

Four winter wheat varieties (Jerry, Wesley, Harding, and 'CDC Falcon') were planted in a split plot design in a commercial field of Pat and Leonard Freeberg's, near Lisbon, ND in 2003. Fungicide treatments were applied at Feekes growth stage 2 and/or Feekes 10.51 to evaluate their control of fungal diseases on these four varieties (Table 1).

Winter survival of these four varieties was not uniform across the plot area, so only leaf disease severity was determined at early soft dough stage (July 1). Leaf rust and Fusarium head blight were minimal at this location on July 1 and were not recorded.

Results of leaf disease evaluations indicate that the Stratego early application followed by Folicur at flowering, and the Headline treatment applied early followed by the higher rate of Headline applied at flowering were the two treatments that resulted in the lowest leaf disease score (Table 1). All treatments significantly reduced flag leaf disease from the untreated check. Results indicate that 'CDC Falcon' had the highest leaf spot disease severity across treatments, while Harding had the lowest (Table 2).

Table 1. Effect of treatments across 4 varieties; Jerry, Wesley, Harding, CDC Falcon

Treatment Product	Rate/Acre	Feekes Growth Stage applied	Tan spot and Seporia* % flag leaf
Untreated			26.9 a
Tilt 3.6 EC, Tilt 3.6 EC	1 fl oz, 3 fl oz	2, 10.51	5.5 bc
Tilt 3.6 EC	4 fl oz	10.51	8.3 b
Stratego 250 SC, Folicur 3.6 F	5 fl oz, 4 fl oz	2, 10.51	3.8 c
Folicur 3.6 F	4 fl oz	10.51	6.8 bc
Headline 250 F Headline 250 F	3 fl oz, 6 fl oz	2, 10.5	3 c
Headline 250 F	6 fl oz	10.5	5.1 bc

**Disease values followed by same letter are not significantly different at 90% confidence level.*

Table 2. Average flag leaf disease of varieties across all treatments

Variety	% Leaf spot on flag leaf*
Jerry	8.4 b
Wesley	8.1 b
Harding	5.4 b
CDC Falcon	12.1 a

**Disease values followed by same letter are not significantly different at 90% confidence level.*



Janell Rath, Administrative Assistant for Ducks Unlimited started employment on February 2, 2004. She was previously employed as an Administrative Assistant for the Information Technology Division with Career and Technical Education. She is originally from Trail City, SD and grew up on a dairy farm 30 miles south of McLaughlin, SD. She has lived in Bismarck for 10 years, attended college at Bismarck State College for 2 of those years. She is married to Mike Rath who is employed at Dean Foods. They have 2 children, Jared - 4½ and Tyler - 2. Janell plays a big role in organizing "Agronomy News" before it goes to print. **Welcome Janell!**

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RETURN SERVICE REQUESTED

<u>DATES</u>	<u>TOURS</u>	<u>DATES</u>	<u>TOURS</u>
June 15-16, 2004	SDSU/DU Intensive Wheat Management Study—Horsch Anderson Product Showcase, 2.5 miles east of Andover, SD on Highway 12. Showcase viewing starts at 10:00 a.m. and the tour at 11:00 a.m. A lunch will be provided. 605-298-5663 or 701-355-3531	July 8, 2004	NDSU Williston Research Extension Center Tour, Williston, ND. 701-774-4315
June 24, 2004	Dakota Lakes Research Farm, 17 miles east of Pierre, SD on Highway 34. 605-224-6114	July 12, 2004	DU/NDSU Dickey County Intensive Wheat Management Study, 10 miles east of Ellendale, ND, 7:00 a.m. breakfast tour 701-349-3249, Ext. 2
June 28, 2004	SDSU Tour, Brookings, SD 605-688-4760	July 12, 2004	NDSU Casselton Agronomy Tour, Casselton, ND 701-347-4743
July 1, 2004	SDSU Northeast Research Station Tour, Watertown, SD South Shore Exit on I-29 605-688-5543	July 13, 2004	NDSU Carrington Research Extension Center Tour, Carrington, ND. 701-652-2951
July 6, 2004	NDSU Hettinger Research Extension Center, Hettinger, ND. 701-567-4323	July 14, 2004	NDSU North Central Research Extension Center Tour, Minot, ND. 701-857-7677
July 7, 2004	NDSU Dickinson Research Extension Center Tour, Dickinson, ND. 701-483-2348	July 15, 2004	NDSU Langdon Research Extension Center Tour, Langdon, ND. 701-256-2582
July 7, 2004	Renville County Crop Tour Tour starts at Mouse River Park near Tolley. Features: New NDSU Variety Releases, Winter Wheat trial with fungicide and Nitrogen timing, Variety Trials of HRSW, Durum, HRWW, Oats, Flax, Peas, Barley and other stops. 701-756-6392	July 19, 2004	NDSU/DU Ransom/Sargent County Research Plot Tour, 7.5 miles south of Lisbon, ND, 7:00 a.m. breakfast tour. 701-683-5823, Ext. 128
July 8, 2004 and September 9, 2004	CCSP Tour (Conservation Cropping Systems Project) 1 mile south of Forman, ND (featuring 10 no-till crop rotations). 701-724-3247, Ext. 3	July 22, 2004	Area IV SCD Research Farm/ USDA ARS Research Laboratory Tour, Mandan, ND 3:00 p.m. 701-663-6445

****CHECK WITH LOCAL EXTENSION STAFF FOR MORE TOUR INFORMATION****

Agronomy News on the Web

Agronomy News is on the GPRO web site at <http://prairie.ducks.org> and then click on Agronomy News. Back issues can be obtained by clicking on **Check Out the Archives**.

Reminder

Any one desiring to receive the *Agronomy News* newsletter by email should email Janell Rath or Blake Vander Vorst at jrath@ducks.org or bvandervorst@ducks.org. You can receive it either by mail or email or both. It will arrive one to two weeks earlier by email.