

WHEAT (*Triticum aestivum* L. 'Reeder')
Tan spot; *Pyrenophora tritici-repentis*
Septoria; *Septoria* spp.
Leaf rust; *Puccinia recondita*
Fusarium head blight; *Fusarium graminearum*

R.O. Ashley, G. Martin, and D. Barondeau
Dickinson Research Extension Center,
Dickinson, ND, 58601
Hettinger County Agent
Mott, ND 58646

Evaluation of foliar fungicide treatments Gem, Stratego, and Prosaro for control of leaf spot diseases & FHB in spring wheat at Mott, ND, 2009.

The experiment was conducted in a producer's field near Mott, ND (NW ¼ Section 15, T136N, R93W, Hettinger County, ND) with a previous cropping history of wheat in 2008. A randomized complete block design with four replications was used. Plots were 10 ft wide by 50 ft long with a 3 ft buffer strip of winter wheat seeded between each plot. A preplant application of glyphosate was made on 5 May. Plots were seeded with a drill equipped with Cross-slot openers on 7 May at the rate of 200 pls m⁻². Urea at the rate of 110 lbs/a (50.6 lbs/a N) was applied through the drill in a separate band during the seeding operation. A post emergent herbicide application of Harmony GT XP (Thifensulfuron-methyl) at 0.6 oz/a + MCP Ester at 0.75 pt/a + Puma (Fenoxaprop-P) at 0.66 pt/a was applied with a pickup mounted field sprayer on 13 Jun. Fungicide applications at Feekes growth stage (FGS) 2 were made on 10 Jun, applications at FGS 9, flag leaf fully emerged, were made on 3 Jul and applications at FGS 10.51 (beginning flowering) were done on 17 Jul. All fungicide treatments were applied in 19.1 gal/a water at 30 psi using a CO₂ pressurized hand-held spray boom equipped with 8002VS flat fan nozzles. Tan spot disease evaluations were conducted on 17 Jun, leaf spot disease evaluations were done on 17 Jul, and tan spot, septoria and leaf rust evaluations were conducted on 24 Jul. Evaluations consisted of observations made on ten consecutive plants in the center row of each plot. Incidence was recorded as the percent of plants with at least one lesion observed, and severity was recorded as the average leaf area covered by lesions for all leaves for the early season evaluation, only the top three leaves for the mid-season evaluation, and the flag leaf for the late season evaluation. Crop injury observations were made at the same time as the disease evaluations. No crop injury from the fungicide applications was observed. No visual symptoms of Fusarium head blight (FHB) were detected in an evaluation of 10 consecutive heads in the center of each plot at soft dough. Grain samples from the control plots were sent to NDSU for DON analysis and no DON was detected in these samples. No further testing for DON in grain samples produced from fungicide treatments was done. Precipitation at the site was measured and recorded with the use of a RainWise™ self tipping bucket and a Hobo™ pendant temp/event logger in May, Jun, Jul and Aug was 2.07, 2.92, 3.96, 0.63 inches respectively. Moist conditions in May, Jun, and most of Jul promoted tan spot, and septoria and dry, cool weather conditions in late Jul and through Aug were not conducive for FHB development. Leaf rust was not prevalent in the area this year and therefore 24 Jul evaluation consisted of septoria and tan spot infections. Disease ratings reflect moisture conditions at the time the crop was susceptible to infection. Wheat stem sawfly damage was noted though no visual differences in injury among treatments were noted. Harvest was with a Massy Ferguson 8XP combine on 9 Sep. Grain yield and test weight were adjusted to a 12% moisture basis. All data was statistically analyzed using SAS Statistical software v 9.1 Proc ANOVA.

Significant differences in disease incidence and severity were noted during all three disease evaluations. Treatments where fungicides were applied shortly before the evaluation had lower incidence and severity ratings compared to treatments that did not have a fungicide applied within 2 weeks of the evaluation. No significant differences were observed for yield and test weight in this trial.

| Treatment ¹ | --- 17-Jun-09 ² --- | | | --- 17-Jul-09 ² --- | | | --- 24-Jul-09 ² --- | | |
|---|--------------------------------|------|----|--------------------------------|------|----|--------------------------------|------|----|
| | I | S | CI | I | S | CI | I | S | CI |
| | ----- % ----- | | | | | | | | |
| Untreated Check | 100.0 | 35.0 | 0 | 100.0 | 18.8 | 0 | 100.0 | 36.3 | 0 |
| Stratego 4 oz @ FGS2 | 60.0 | 10.0 | 0 | 95.0 | 12.5 | 0 | 100.0 | 27.5 | 0 |
| Gem 2 oz @ FGS2 | 62.5 | 7.5 | 0 | 95.0 | 21.3 | 0 | 100.0 | 40.0 | 0 |
| Stratego 8 oz @ FGS9 | 97.5 | 33.8 | 0 | 17.5 | 3.0 | 0 | 40.0 | 8.8 | 0 |
| Prosaro+ NIS 6.5 oz @ FGS9 | 100.0 | 31.2 | 0 | 20.0 | 2.5 | 0 | 56.3 | 6.3 | 0 |
| Prosaro+ NIS 6.5 oz @ FGS10.51 | 100.0 | 33.8 | 0 | 100.0 | 17.5 | 0 | 100.0 | 18.8 | 0 |
| Stra 4 oz @ FGS2 - Pro+NIS 6.5@FGS10.51 | 57.5 | 8.8 | 0 | 87.5 | 18.8 | 0 | 87.5 | 20.0 | 0 |
| Pro+NIS6.5 oz + test cmp 1pt @FGS10.51 | 100.0 | 31.3 | 0 | 100.0 | 16.3 | 0 | 100.0 | 17.5 | 0 |
| Mean | 84.7 | 23.9 | 0 | 76.9 | 13.8 | 0 | 85.5 | 21.9 | 0 |
| CV% | 5.1 | 16.1 | - | 7.2 | 35.4 | - | 7.8 | 23.8 | - |
| LSD.05 | 6.3 | 5.7 | - | 8.1 | 7.2 | - | 9.7 | 7.7 | - |

¹ Treatment is fungicide at rate specified per acre applied during the specified growth stage of wheat. FGS2 = Feekes Growth Stage 2 or 4- to 5-leaf, FGS9 = Feekes Growth Stage 9 or flag-leaf, FGS10.51 = Feekes Growth Stage 10.51 or flowering.

² Evaluation date. I = incidence of disease, S = severity of disease, and CI = crop injury from fungicide application.

| Treatment ¹ | --- Grain ² --- | |
|---|----------------------------|---------|
| | Yield | Test Wt |
| | bu/a | lb/bu |
| Untreated Check | 57.4 | 64.6 |
| Stratego 4 oz @ FGS2 | 73.0 | 64.3 |
| Gem 2 oz @ FGS2 | 61.9 | 64.2 |
| Stratego 8 oz @ FGS9 | 68.0 | 66.0 |
| Prosaro+ NIS 6.5 oz @ FGS9 | 64.3 | 65.1 |
| Prosaro+ NIS 6.5 oz @ FGS10.51 | 71.0 | 65.1 |
| Stratego 4 oz @ FGS2 - Pro+NIS 6.5@FGS10.51 | 65.1 | 65.3 |
| Pro+NIS6.5 oz + test cmp 1pt @FGS10.51 | 59.4 | 65.1 |
| Mean | 65.0 | 65.0 |
| CV% | 11.9 | 1.35 |
| LSD.05 | NS | NS |

¹ Treatment is fungicide at rate specified per acre applied during the specified growth stage of wheat. FGS2 = Feekes Growth Stage 2 or 4- to 5-leaf, FGS9 = Feekes Growth Stage 9 or flag-leaf, FGS10.51 = Feekes Growth Stage 10.51 or flowering.

² Grain yield and test weight reported on a 12% moisture basis.