

WHEAT (*Triticum aestivum* L. 'Freyr')  
Tan spot; *Pyrenophora tritici-repentis*  
Septoria; *Septoria* spp.  
Leaf rust; *Puccinia recondita*  
Fusarium head blight; *Fusarium graminearum*  
Wheat stem sawfly; *Cephus cinctus*

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**Evaluation of foliar fungicides Quilt, Quilt Xcel, Tilt, and Prosaro, and Warrior II insecticide treatments for control of leaf spot diseases, FHB, and wheat stem sawfly in spring wheat near Regent, ND, 2009.**

The experiment was conducted in a producer's field near Regent, ND (SW ¼, Section 18, T134N, R95W, Hettinger County, ND) with a previous cropping history of wheat in 2008. A randomized complete block design with four replications was used. Plots were 6.3 ft wide by 50 ft long with a 4 ft buffer strip of spring wheat seeded between each plot. A preplant application of glyphosate was made on 19 May to eliminate volunteer wheat and emerged weeds. Plots were seeded with a JD 1895 drill equipped with single disc openers and mid-row fertilizer disc openers on 26 May at the rate of 200 pl<sup>s</sup> m<sup>-2</sup>. Urea at the rate of 225 lbs/a (103.5 lbs/a N) was applied through the mid-row band disc openers of the drill and 75 lbs/a of 12-36-6-5 (9 lb/a N, 27 lbs/a P<sub>2</sub>O<sub>5</sub>, 4.5 lbs/a K<sub>2</sub>O, and 3.8 lbs/a S) as a starter was placed with the seed during the seeding operation. A post emergent herbicide application of Bromac Advanced (Bromoxynil + MCPA Ester) at 1 pt/a + Harmony GT XP (Thifensulfuron-methyl) at 0.6 oz/a + Puma (Fenoxaprop-P) at 0.66 pt/a was made with a pickup mounted sprayer on 3 Jul. Fungicide and insecticide applications at Feekes Growth Stage (FGS) 2, 4- to 5-leaf stage, were made on 30 Jun, and applications at FGS 8, flag leaf emerging, were made on 13 Jul. All fungicide and insecticide treatments were applied in 19.1 gal/a water at 30 psi using a CO<sub>2</sub> pressurized hand-held spray boom equipped with 8002VS flat fan nozzles. Tan spot disease evaluations were conducted on 9 Jul, and leaf spot disease evaluations and wheat stem sawfly evaluations were done on 4 and 5 Aug. Fungicide 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, and the flag leaf for the late season evaluation. Wheat stem sawfly evaluation was done by selecting 25 consecutive plants in a treated row near the end of each plot and dissecting main stem and tillers to observe larva. Crop injury observations were made at the same time as the disease evaluations. No crop injury from the fungicide or insecticide applications were 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 in the area recorded at the North Dakota Agricultural Weather Network (NDAWN) site at Mott in May, Jun, Jul and Aug was 1.79, 5.4, 2.5, and 1.39 inches respectively. Moist conditions in Jun, Jul, and Aug promoted tan spot, and septoria and cool weather conditions in 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. Harvest was with a Massy Ferguson 8XP combine on 17 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.

No significant difference in wheat stem sawfly infestation was observed. However, significant differences were noted for infection incidence and severity among fungicide treatments. Both early and late season applied fungicide treatments produced significantly higher yields while insecticide treatments whether applied singularly or in combination with a fungicide produced yields no better than the untreated check. All fungicide treatments except in combination with the insecticide had significantly greater yields than the untreated check. No significant differences were detected in test weight.

| Treatment                                     | Sawfly <sup>1</sup> | --- Early ---  |                | --- Late ---   |                | --- Grain <sup>6</sup> --- |         |       |
|---|---------------------|----------------|----------------|----------------|----------------|----------------------------|---------|-------|
|   |                     | I <sup>2</sup> | S <sup>3</sup> | I <sup>4</sup> | S <sup>5</sup> | Yield                      | Twt     |       |
|   | ----- % -----       |                |                |                |                |                            | bu/acre | lb/bu |
| Untreated check                               | 26.0                | 90.0           | 32.5           | 97.5           | 25.0           | 66.2                       | 62.9    |       |
| Quilt 7 oz @ FGS2                             | 24.0                | 42.5           | 4.5            | 97.5           | 16.8           | 80.9                       | 62.4    |       |
| Tilt at 2 oz @ FGS2                           | 32.0                | 45.0           | 6.5            | 100.0          | 25.0           | 83.2                       | 62.3    |       |
| Tilt at 2 oz + Warrior II @ 1.28 oz @ FGS2    | 16.0                | 60.0           | 6.0            | 92.6           | 14.3           | 75.9                       | 62.7    |       |
| Warrior II at 1.28 @FGS2                      | 24.0                | 87.5           | 29.3           | 100.0          | 25.0           | 69.9                       | 63.1    |       |
| Tilt at 2 oz @FGS2 FB Quilt 14 oz @ FGS8      | 19.0                | 52.5           | 6.5            | 37.5           | 1.3            | 79.6                       | 62.5    |       |
| Quilt 14 oz @ FGS8                            | 30.0                | 85.0           | 31.3           | 45.0           | 2.5            | 71.6                       | 62.9    |       |
| Prosaro at 6.5 oz+ NIS @ FGS2                 | 20.0                | 42.5           | 6.0            | 97.5           | 17.5           | 79.8                       | 62.4    |       |
| Quilt Xcel at 14 oz @ FGS8                    | 23.0                | 87.5           | 30.5           | 42.5           | 3.8            | 70.5                       | 63      |       |
| Quilt at 14 oz + Warrior II at 1.28 oz @ FGS8 | 31.0                | 9.0            | 33.8           | 50.0           | 1.5            | 66.5                       | 62.8    |       |
| Mean  | 24.5                | 6.8            | 18.7           | 76.0           | 13.0           | 74.4                       | 62.7    |       |
| CV%   | 36.3                | 14.2           | 17.3           | 21             | 35.7           | 4.3                        | 0.92    |       |
| LSD .05                                       | NS                  | 1.4            | 4.7            | 23.1           | 6.7            | 4.7                        | NS      |       |

<sup>1</sup> Percent of stems infested with sawfly.

<sup>2</sup> Percent incidence of plants exhibiting tan spot/septoria.

<sup>3</sup> Percent severity of infection on last three leaves.

<sup>4</sup> Percent of plants with flag leaf exhibiting tan spot/septoria

<sup>5</sup> Percent of severity of infection on flag leaf.

<sup>6</sup> Grain yield and test weight adjusted to 12% moisture basis.

No injury was detected from treatments.