

WHEAT (*Triticum aestivum* L. 'Reeder')
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 Quilt and Tilt foliar fungicide singularly and in combination with Warrior insecticide treatments for control of leaf diseases, FHB and wheat stem sawfly in spring wheat at Mott, ND 2008.

This experiment was conducted in a field located near Mott, ND (SE ¼, Section 14, T136N, R93W – Hettinger County, ND) with a previous cropping history of spring wheat in 2007. A randomized complete block design with four replications was used. Plots were 10 ft wide by 50 ft long with a 3 ft wide winter wheat buffer between plots. A soil sample was collected on March 26 and analyzed by the North Dakota State University Soil Testing Laboratory. Soil nutrient levels reported were N = 44 lb/a, P (Olsen) = 17 ppm, K = 382 ppm, pH = 6.2. A burndown application of 0.5 ae/acre glyphosate + 1 qt Actamaster/acre was applied on 4 May. Plots were seeded with a drill equipped with Cross-slot openers on 9 May 2008 at the rate of 150 pls m⁻². Urea at the rate of 116 lbs/a (53 lbs/a N) was applied through the drill in a separate band during the seeding operation. A post emergent herbicide application of Bromax Advance (Bromoxynil Octanoate and Heptonic + MCPA Isooctyl Ester) at 1.5 pt/a, and Puma (Fenoxaprop-P) at 0.66 pt/a. Fungicide and fungicide/insecticide applications at 5 leaf stage were made on 11 Jun, applications at flag leaf stage were made on 2 Jul and applications at heading were done on 11 Jul. All 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 23 Jun, leaf spot disease evaluations were done on 10 Jul and leaf rust evaluations were conducted on 21 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. White heads and lodging were used as an indication of potential stem mining by wheat stem sawfly. Plants exhibiting these symptoms were dissected and then determined to have been caused by wheat stem sawfly or some other cause. No crop injury from the fungicide/insecticide applications was observed. No visual symptoms of FHB were detected. 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 North Dakota Agricultural Weather Network Mott, ND weather station in May, Jun, Jul, and Aug was 1.7, 2.04, 1.7, and .74 inches respectively or less than 70% of normal. Moist conditions near the end of May and the into the third week of Jun promoted tan spot but dry, hot weather conditions at the end of June and throughout July were not conducive for any of the leaf diseases or FHB development. Disease ratings reflect moisture conditions at the time the crop was susceptible to infection. Wheat stem sawfly did not have significant impact on the crop at this site. Harvest was with a Massy Ferguson 8XP combine on 25 Aug. Grain yield, test weight, and protein were adjusted to a 12% moisture basis. All data was statistically analyzed using SAS Statistical software v 9.1 Proc ANOVA.

Treatment	Rate	Crop stage/application	----- 23 Jun evaluation -----		
			CI ¹	I ²	S ³
	acre ⁻¹			----- % -----	
Untreated Check			0	40.0	3.00
Quilt	7oz	4 to 5 leaf	0	0.0	0.00
Warrior II / Quilt	1.28oz/7 oz	4 to 5 leaf	0	0.0	0.00
Tilt	2oz	4 to 5 leaf	0	0.0	0.00
Warrior II/ Tilt	1.28oz/2oz	4 to 5 leaf	0	0.0	0.00
Warrior II	1.28oz	4 to 5 leaf	0	42.5	2.25
Quilt	14oz	flag	0	42.5	2.50
Tilt / Quilt	2oz/14oz	4 to 5 leaf/flag	0	0.0	0.00
Warrior	1.28oz	flag	0	42.5	2.00
Warrior	1.28oz	early heading	0	40.0	2.75
Warrior II /Tilt	1.28oz/4oz	early heading	0	42.5	3.00
Warrior II/Quilt	1.28oz/14oz	flag	0	42.5	2.75
Mean			0	24.4	1.5208
CV%			-	27.2	36.534
LSD .05			NS	9.5	0.80
SE			0	3.31672	0.2778
Rep F Prob			-	0.0812	0.3445
Trt F Prob			-	<.0001	<.0001

¹ CI = crop injury.

²I = Disease incidence.

³S= Disease severity.

Treatment Name	Rate	Crop stage/application	10 Jul evaluation		
			CI ¹	I ²	S ³
	acre ⁻¹		----- % -----		
Untreated Check			0	7.5	5.00
Quilt	7oz	4 to 5 leaf	0	2.5	2.50
Warrior II / Quilt	1.28oz/7 oz	4 to 5 leaf	0	5.0	5.00
Tilt	2oz	4 to 5 leaf	0	12.5	7.50
Warrior II/ Tilt	1.28oz/2oz	4 to 5 leaf	0	5.0	5.00
Warrior II	1.28oz	4 to 5 leaf	0	5.0	5.00
Quilt	14oz	flag	0	0.0	0.00
Tilt / Quilt	2oz/14oz	4 to 5 leaf/flag	0	0.0	0.00
Warrior	1.28oz	flag	0.25	7.5	7.50
Warrior	1.28oz	early heading	0	10.0	7.50
Warrior II /Tilt	1.28oz/4oz	early heading	0	7.5	5.00
Warrior II/Quilt	1.28oz/14oz	flag	0	0.0	0.00
Mean			0.0208	5.2	0.42
CV%			693	125	117
LSD .05			NS	NS	NS
SE			0.1863	3.2592	0.2436
Rep F Prob			0.4051	0.6374	0.872
Trt F Prob			0.4671	0.1618	0.2172

¹ CI = crop injury.

²I = Disease incidence.

³S= Disease severity.

Treatment	Rate	Crop stage/application	--- 21 Jul evaluation ---			1 Aug	25 Aug
			CI ¹	I ²	S ³	White heads	Lodging
	acre ⁻¹		----- % -----				
Untreated Check			0	0	0	0.00	12.50
Quilt	7oz	4 to 5 leaf	0	0	0	0.50	12.50
Warrior II / Quilt	1.28oz/7 oz	4 to 5 leaf	0	0	0	0.25	11.25
Tilt	2oz	4 to 5 leaf	0	0	0	0.50	12.50
Warrior II/ Tilt	1.28oz/2oz	4 to 5 leaf	0	0	0	0.25	13.75
Warrior II	1.28oz	4 to 5 leaf	0	0	0	0.50	10.00
Quilt	14oz	flag	0	0	0	1.00	10.00
Tilt / Quilt	2oz/14oz	4 to 5 leaf/flag	0	0	0	0.50	12.50
Warrior	1.28oz	flag	0	0	0	0.25	11.25
Warrior	1.28oz	early heading	1	0	0	0.50	13.75
Warrior II /Tilt	1.28oz/4oz	early heading	1.5	0	0	1.00	11.25
Warrior II/Quilt	1.28oz/14oz	flag	1	0	0	0.00	13.75
Mean			0.29167	0	0	0.44	12.08
CV%			128	-	-	138	23
LSD .05			0.5361	NS	NS	NS	NS
SE			0.18634	0	0	0.3018	1.3989
Rep F Prob			0.4051	-	-	0.3532	0.9109
Trt F Prob			<.0001	-	-	0.3648	0.5338

¹ CI = crop injury.

²I = Disease incidence.

³S= Disease severity.

Treatment	Rate	Crop stage/application	Grain ¹	
			Test weight	Yield
	acre ⁻¹		lb/bu	bu/a
Untreated Check			54.9	20.6
Quilt	7oz	4 to 5 leaf	54.7	22.3
Warrior II / Quilt	1.28oz/7 oz	4 to 5 leaf	55.5	22.1
Tilt	2oz	4 to 5 leaf	55.1	21.7
Warrior II/ Tilt	1.28oz/2oz	4 to 5 leaf	54.6	21.8
Warrior II	1.28oz	4 to 5 leaf	55.1	23.1
Quilt	14oz	flag	55.4	21.7
Tilt / Quilt	2oz/14oz	4 to 5 leaf/flag	55.7	22.2
Warrior	1.28oz	flag	55.1	20.8
Warrior	1.28oz	early heading	54.7	20.5
Warrior II /Tilt	1.28oz/4oz	early heading	54.8	22.8
Warrior II/Quilt	1.28oz/14oz	flag	55.2	23.0
Mean			55.1	21.9
CV%			1.1	8.9
LSD .05			NS	NS
SE			0.3019	0.9688
Rep F Prob			0.2236	0.43
Trt F Prob			0.2599	0.6064

¹Grain values adjusted to a 12% moisture basis.