

Wheat (*Triticum aestivum* 'Parshall')  
 Target diseases: *Fusarium* spp.  
                       *Pythium* spp.  
                       *Bipolaris sorokiniana*

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### Crusoe HRSW seed treatment performance trial near Mott, ND, 2008.

This experiment was conducted in a field located near Mott, ND (SE ¼ Section 14, T136N, R93W, Hettinger County, ND). The previous crop was wheat in 2007. A soil sample was collected on March 26 and analyzed by the North Dakota State University Soil Testing Laboratory. Nutrient levels reported were N=44 lb/a, P(Olsen) = 17 ppm, K = 382 ppm, pH = 6.2. Prior to seeding, seed was treated with Crusoe Pinnacle, Dividend XL RTA, Vitaflow 280+Metastar, Crusoe Pinnacle W, Crusoe Pinnacle AW, Enhance AW, Vitaflow 280 or one of two experimental fungicides. Untreated seed was used as a check. Plots were seeded with a drill equipped with Cross-slot openers on 9 May 2008 at the rate of 150 pls m<sup>-2</sup>. Urea at the rate of 116 lbs/a (53lbs/a N) was applied through the drill in a separate band during the seeding operation. A post emergent herbicide and foliar fungicide application of Bromac Advance (Bromoxynil Octanoate and Heptonic + MCPA Isooctyl Ester) at 1.5 pt/a, Puma (Fenoxaprop-P) at 0.66 pt/, and Tilt (Propiconazole) at 2 fl oz/a.. Plant counts were made on 15 May and 5 Jun. Initial root evaluations at the six-leaf stage were completed on 25 Jun. Soft dough root and crown evaluations were made on 28-29 Jul. Root samples taken during the soft dough analysis were submitted to the NDSU Plant Diagnostic Laboratory for identification of pathogens. *Fusarium* head blight was not observed probably because of the hot, dry growing conditions that occurred in Jul. Harvest was with a Massy Ferguson 8 XP 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.

Plant counts observed in initial and second counts tended to be greater than the untreated check for all seed treatments while vigor observed during the second count was significantly different compared to the untreated check for Crusoe Pinnacle, Dividend XL RTA and Crusoe Pinnacle AW. Rainfall was normal for June but below normal for May, July, and August. No significant differences or trends were observed in this trial for root mass or subcrown internode ratings but root color was significantly improved for Dividend XL RTA, and Crusoe Pinnacle AW. *Rhizoctonia* spp., *Phytium* spp., *Fusarium graminearum* and *Bipolaris sorokiniana* was not detected in tissue samples submitted from this trial for lab analysis. No significant differences were detected for mature plant height, head density, test weight, grain yields and protein.

Treatment	Rate	15 May		5 Jun	
		Plant count	Vigor	Plant count	Vigor
	ml kg <sup>-1</sup>	m <sup>-2</sup>		m <sup>-2</sup>	
Untreated Check	-	146	5.5	149	5.5
Crusoe Pinnacle	325	159	6.5	189	7.3
Experimental 1	325	175	7.0	176	6.5
Dividend XL RTA	325	176	6.8	190	7.3
Vitaflow 280 + Metastar	325 + 6.3	150	5.8	185	6.5
Experimental 2	370	164	6.8	177	6.5
Crusoe Pinnacle W	325	143	6.0	190	6.5
Crusoe Pinnacle AW	370	173	7.3	194	7.0
Enhance AW	250	153	6.8	156	5.5
Vitaflow 280	325	153	6.0	180	6.3
Mean		159	6.4	179	6.5
CV%		11.9	15.8	12.7	11.7
LSD .05		NS	NS	NS	1.1

Treatment	Rate	----- Initial root evaluation -----					
		Length	Stage	Tiller	Subcrown <sup>1</sup> internode	Seminal root	Crown root
	ml kg <sup>-1</sup>	mm		plant <sup>-1</sup>		plant <sup>-1</sup>	plant <sup>-1</sup>
Untreated Check	-	463	36	2.25	1.5	2.5	10.25
Crusoe Pinnacle	325	459	35	2.00	1.5	1.25	9.75
Experimental 1	325	459	36	1.75	1.5	1.5	9.25
Dividend XL RTA	325	483	37	1.75	1.25	2.25	9.5
Vitaflow 280 + Metastar	325 + 6.3	489	35	2.00	1.25	3.25	8.5
Experimental 2	370	474	35	2.50	1.5	2	10.5
Crusoe Pinnacle W	325	491	37	2.00	1.25	1.5	11.5
Crusoe Pinnacle AW	370	469	35	2.25	1.25	2	10
Enhance AW	250	491	35	1.75	1.5	2.25	9.25
Vitaflow 280	325	473	35	2.25	1.25	2.25	9.75
Mean		475	35.4	2.05	1.4	2.1	9.8
CV%		6.3	3.6	23.7	24.5	29.4	15.5
LSD .05		NS	NS	NS	NS	0.89	NS

<sup>1</sup> Subcrown internode rating, 1-4. 1 = less than 25% of the internode infected, 2 = 25 – 50% of the internode infected, 3 = 51-75% of the internode infected, multiple lesions, and 4 = 75-100% of the internode infected, lesions coalesced.

Treatment	Rate	Soft dough root evaluation		
		Root <sup>1</sup> mass	Root <sup>2</sup> color	Subcrown <sup>3</sup> internode
	ml kg <sup>-1</sup>			
Untreated Check	-	1.84	2.18	2.29
Crusoe Pinnacle	325	1.92	2.17	2.12
Experimental 1	325	1.81	2.12	2.12
Dividend XL RTA	325	1.92	1.96	2.06
Vitaflow 280 + Metastar	325 + 6.3	1.85	2.12	2.15
Experimental 2	370	1.90	2.05	2.20
Crusoe Pinnacle W	325	1.79	2.31	2.23
Crusoe Pinnacle AW	370	1.86	1.97	1.92
Enhance AW	250	1.93	2.11	2.53
Vitaflow 280	325	1.88	2.08	2.24
Mean		1.87	2.10	2.18
CV%		4.4	5.30	12.1
LSD .05		NS	0.16	NS

<sup>1</sup> Root mass: 1 to 4, 1 = few roots, 4 = many roots.

<sup>2</sup> Root color: 1 to 4, 1 = white, 4 = dark.

<sup>3</sup> Subcrown internode rating, 1-4. 1 = less than 25% of the internode infected, 2 = 25 – 50% of the internode infected, 3 = 51-75% of the internode infected, multiple lesions, and 4 = 75-100% of the internode infected, lesions coalesced.

Treatment	Rate	Harvest		----- Grain <sup>1</sup> -----		
		Plant height	Head density	Test weight	Yield	Protein
	ml kg <sup>-1</sup>	mm	m <sup>-2</sup>	lb bu <sup>-1</sup>	bu a <sup>-1</sup>	%
Untreated Check	-	520	245	57.7	19.2	17.4
Crusoe Pinnacle	325	515	249	57.8	19.2	17.4
Experimental 1	325	534	250	57.3	18.3	17.6
Dividend XL RTA	325	519	238	57.9	19.8	17.1
Vitaflow 280 + Metastar	325 + 6.3	513	242	57.8	20.0	17.5
Experimental 2	370	503	233	58.0	18.1	17.4
Crusoe Pinnacle W	325	534	241	58.0	19.3	17.3
Crusoe Pinnacle AW	370	523	247	58.2	18.6	17.0
Enhance AW	250	503	244	57.8	18.4	17.6
Vitaflow 280	325	511	253	56.6	17.1	17.8
Mean		517	244	57.7	18.8	17.4
CV%		4.4	15.9	1.3	8.5	2.2
LSD .05		NS	NS	NS	NS	NS

<sup>1</sup>Grain values adjust to a 12% moisture basis.