

Seed Treatment

Wheat (*Triticum aestivum* 'Glenn')

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Target diseases:

Fusarium crown rot; *Fusarium* spp.

Pythium; *Pythium* spp.

Common root rot; *Bipolaris sorokiniana*

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Chemtura HRSW seed treatment performance trial near Mott, ND, 2011.

This experiment was conducted in a field located near Mott, ND (NW ¼, section 20, T136N, R93W - Hettinger County, ND) where the previous crop was wheat in 2010. A randomized complete block design with four replications was used. Plots were 10 ft wide by 50 ft long with a 2 ft wide spring wheat buffer between plots. A burndown application of 0.75 ae/a glyphosate + ammonium sulfate was applied on 1 Jun. Prior to seeding, a fusarium infected seed lot was treated with Rancona Pinnacle (ipconazole, 0.434% + metalaxyl, 0.579%), Dividend Extreme (difenoconazole, 7.73% + mefenoxam, 1.93%), UBI 9346, UBI 9350, UBI 9290, UBI 4336, UBI 4384, Rancona Crest (ipconazole, 0.421% + metalaxyl, 0.562%, imidacloprid, 14.1%), Rancona Dimension singularly or in combination. Untreated seed was used as a check. Plots were seeded with a drill equipped with Cross-slot openers on 10 Jun 2011 at the rate of 350 pls m⁻². Urea at the rate of 220 lbs/a (101.2 lbs/a N) was applied through the drill in a separate band during the seeding operation. A post emergent herbicide, Wolverine at the rate of 1.7 pt/a was applied on 2 Jul. Plant counts and vigor were made on 22 Jun. Initial whole plant evaluation was done 8-15 Jul and root and crown evaluations at soft dough stage were made on 8-10 Aug. Harvest was with a Massy Ferguson 8 XP combine on 6 Sept. Grain yield and test weight were adjusted to a 12% moisture basis. All data was statistically analyzed using SAS Statistical Software.

Plant counts observed tended to be greater than the untreated check for most seed treatments. Significant vigor and tiller numbers were noted on a few seed treatments. Rainfall was above greater than normal for May and August and near normal for June, and July. Excessively wet conditions in the spring delayed seeding. No significant differences were detected for mature plant height, head density, and yield though head density and yield for most fungicide treatments tended to be higher than the untreated check.

Vigor and stand counts and soft dough root evaluation for Glenn HRSW at sixth-leaf stage with various seed treatments at Mott, ND, 2011.

Treatment	Rate	Initial whole plant evaluation						
		Plant density no m ⁻²	Vigor	Plant length mm	Tillers no plant ⁻¹	SCI ¹	Seminal roots no plant ⁻¹	Crown root no plant ⁻¹
Untreated Check		160.3	5.0	406.7	4.1	0.6	4.5	10.4
Rancona Pinnacle	325 mL	146.8	6.0	431.1	4.3	0.8	4.6	9.6
Dividend Extreme	130 mL	160.3	5.8	510.2	3.5	0.6	4.6	9.0
Dividend Extreme, Rancona 3.8 FS	195 mL, 3.4 mL	187.5	5.3	428.0	3.2	0.8	4.5	10.1
Rancona Pinnacle, Confidential	325 mL, 65 mL	177.6	6.0	444.7	2.4	1.5	4.2	7.8
Rancona Pinnacle, UBI 9346	325 mL, 25 mL	199.8	5.3	439.5	3.7	0.7	4.4	10.0
UBI 9350	325 mL	144.3	5.3	409.9	4.6	0.5	4.3	11.6
Rancona Crest WR	325 mL	180.1	6.0	436.9	3.3	0.8	4.5	10.6
Rancona Crest	325 mL	155.4	5.8	451.5	3.2	0.7	4.5	10.0
UBI 9290, UBI 4336, UBI 9346	200 mL, 6.3 mL, 25 mL	187.5	7.0	469.1	2.7	1.2	4.3	8.6
Rancona Dimension	80 mL	172.7	5.3	439.2	3.3	0.6	3.8	9.5
UBI 4384	300 mL	187.5	5.3	456.4	4.1	0.8	4.7	10.4
Mean		171.6	5.6	443.6	3.5	0.8	4.4	9.8
CV		23	12.3	9.8	20.4	58.4	10.6	24.8
LDS 0.05		NS	1.0	NS	1.2	NS	NS	NS

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

Color, mass, and subcrown internode rating of Glenn HRSW with various seed treatments at soft dough stage at Mott, ND, 2011.

Treatment	Rate	Root evaluation at soft dough		
		Color ¹	Mass ²	SCI ³
Untreated Check		1.6	3.1	1.4
Rancona Pinnacle	325 mL	1.8	2.9	1.4
Dividend Extreme	130 mL	1.7	3.2	1.4
Dividend Extreme, Rancona 3.8 FS	195 mL, 3.4 mL	1.6	3.3	1.3
Rancona Pinnacle, Confidential	325 mL, 65 mL	1.7	2.8	1.4
Rancona Pinnacle, UBI 9346	325 mL, 25 mL	1.5	3.1	1.4
UBI 9350	325 mL	1.4	3.4	1.2
Rancona Crest WR	325 mL	1.5	3.3	1.3
Rancona Crest	325 mL	1.6	3.0	1.3
UBI 9290, UBI 4336, UBI 9346	200 mL, 6.3 mL, 25 mL	1.6	3.1	1.5
Rancona Dimension	80 mL	1.6	3.2	1.4
UBI 4384	300 mL	1.7	3.2	1.3
Mean		1.6	3.1	1.4
CV		15.9	11.7	20.3
LDS 0.05		NS	NS	NS

¹Color 1-4, 1 = white, 4 = dark.

²Mass 1-4, 1 = few roots, 4 = many roots.

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

Grain yield, test weight, height, and head density of Glenn HRSW grown with various seed treatments at Mott, ND, 2011.

Treatment	Rate	Height mm	Grain ¹		
			Plant density no m ⁻²	Yield bu a ⁻¹	Test weight lb bu ⁻¹
Untreated Check		753.0	163.5	24.8	51.8
Rancona Pinnacle	325 mL	736.8	223.3	24.8	51.2
Dividend Extreme	130 mL	783.8	205.4	23.2	50.1
Dividend Extreme, Rancona 3.8 FS	195 mL, 3.4 mL	771.3	206.0	24.9	51.4
Rancona Pinnacle, Confidential	325 mL, 65 mL	725.8	161.6	26.4	52.5
Rancona Pinnacle, UBI 9346	325 mL, 25 mL	793.8	222.1	23.8	51.6
UBI 9350	325 mL	782.0	204.8	23.1	50.4
Rancona Crest WR	325 mL	769.8	216.5	26.3	51.6
Rancona Crest	325 mL	791.3	215.3	26.4	50.8
UBI 9290, UBI 4336, UBI 9346	200 mL, 6.3 mL, 25 mL	749.8	198.0	27.5	51.5
Rancona Dimension	80 mL	717.5	173.9	22.2	51.3
UBI 4384	300 mL	753.8	222.1	25.1	51.7
Mean		760.7	201.0	24.9	51.3
CV		7.3	23.7	13.7	3.4
LDS 0.05		NS	NS	NS	NS

¹Grain yield is reported on a 12% moisture basis.

Fargo: 2011 Seed Treatment Trial Information

Investigator: Marcia McMullen, NDSU Plant Pathology Dept.

Location: ND Ag. Experiment Station Plots, Fargo Campus

Planting Date: May 6, 2011, onto field plots that were drain tiled in fall of 2007

Cone Seeder plantings:

BASF seed treatment: SteeleND HRSW, on May 6

BASF program study: SteeleND HRSW, on May 6

Bayer seed treatment: Faller HRSW, on May 6

NuFarm seed treatment: Briggs HRSW, on May 6

Stand counts for seed treatment studies, May 26

Post planting herbicides applied on June 3: Wolverine for wheat

Disease notes, week of July 25; **Harvested** wheat Aug. 9

Weather: Rainfall: May, 4.28" total, = 2" above 30 year normal; June, 4", = 0.5" above normal; July, 4.1", = 1.2" above normal

Temp: May, 57° F avg., 58° normal; June, 66° F, 66° F normal; July, 75° F, 71° F normal; July had 4 days in 90s; Night time temperatures in July averaged 5 degrees above normal, with some nighttime temperatures not dropping below 73° F.

Dew Point: June, avg. 55°F, with 5 days above 60; July, 63°F avg., 6 days averaged above 70° F

Summary: 2011 growing season characterized by above normal rainfall early and warm July temperatures and dew points above normal; result was a multitude of diseases in plots. In barley, primary disease was net blotch, but also some barley yellow dwarf virus and bacterial streak occurred, and low FHB. In wheat, many diseases impacted crop, including tan spot, Stagonospora, bacterial leaf streak and black chaff, and barley yellow dwarf virus (grain aphid vectors treated for with malathion once, early, in jointing stage, but BYDV still severe). Bacterial leaf streak masked leaf spot diseases in Samson HRSW. **Leaf rust did not develop at all in our wheat plots in 2011.** Heat in July also was not favorable for small grain crop development.

9/19/2011 (2011 BASF SEED TRT TRIAL 1)

North Dakota State University

2011 BASF SEED TRT WHEAT: Steele ND spring wheat

Location: FARGO

Study Director: CHRIS WHARAM
Investigator: Marcia McMullen

Measurement Measurement type	Stand plants/2 ft	Yield Bu/acre	Twt Lbs/bu
Trt. Trt. Nr. Name	1	2	3
1 Untreated	29.75 a	51.17 b	56.93 b
2 Charter F2 5.4 FI Oz/Cwt	30.08 a	52.58 ab	57.45 ab
3 Stamina F3 4.6 FI Oz/Cwt	29.08 a	52.15 ab	56.93 b
4 Stamina F3 4.6 FI Oz/Cwt Acess 0.2 FI Oz/Cwt	29.25 a	54.03 a	57.80 a
LSD (P=.10)	2.931	2.419	0.753
Standard Deviation	2.896	2.390	0.744
CV	9.8	4.55	1.3
Replicate F	0.866	5.176	0.964
Replicate Prob(F)	0.5261	0.0059	0.4704
Treatment F	0.151	1.491	1.939
Treatment Prob(F)	0.9276	0.2572	0.1667

Means followed by same letter do not significantly differ (P=.10, LSD)

9/19/2011 (2011 BAYER SEED TRT WHEAT)

North Dakota State University

2011 BAYER SEED TRT WHEAT: Faller spring wheat

SP11NARDZC

Location: FARGO, ND

Study Directors: DENNIS SCOTT; Kevin Thorsness

Investigator: Marcia McMullen

Measurement	Stand count	Yield	Twt
Measurement type	per 2' row	bu/acre	lbs/bu
Trt. Trt.			
Nr. Name	1	2	3
1 Untreated ck	23.00 d	48.90 a	55.73 a
2 EverGol Energy 1 oz/cwt	28.13 bc	50.53 a	56.83 a
3 Proceed Conc. 1 oz/cwt	28.88 abc	52.03 a	56.00 a
4 Proceed Conc. 1.438 oz/cwt Bay Exp. 0.0399 oz a/cwt	29.25 abc	49.38 a	56.55 a
5 Dividend Extreme 2 oz/cwt	28.50 bc	49.48 a	56.28 a
6 Dividend Extreme 2 oz/cwt Rancona 0.05045 oz a/cwt	27.25 c	49.15 a	55.65 a
7 Charter 3.1 oz/cwt Apron xl 0.04 oz/cwt Stamina 0.4 oz/cwt	31.38 ab	50.53 a	56.58 a
8 Rancona Pinnacle 5 oz/cwt	31.63 ab	50.50 a	56.15 a
9 Proceed Conc. 1 oz/cwt Trilex FL 0.3195 oz/cwt	32.63 a	49.85 a	56.23 a
LSD (P=.05)	3.906	4.643	1.364
Standard Deviation	2.676	3.181	0.935
CV	9.24	6.36	1.66
Replicate F	0.865	0.618	0.178
Replicate Prob(F)	0.4729	0.6102	0.9106
Treatment F	4.595	0.371	0.703
Treatment Prob(F)	0.0017	0.9258	0.6863

Means followed by same letter do not significantly differ (P=.05, LSD)

9/19/2011 (2011 NUFARM SEED TRT WHEAT)

North Dakota State University

2011 NUFARM SEED TRT WHEAT: Briggs Hard Red Spring Wheat

F SAT 2011 001

Location: FARGO

Study Director: TOM KROLL

Investigator: Marcia McMullen

Measurement Measurement type	stand # per 2' row	Yield bu/acre	Twt lbs/bu
Trt. Trt. Nr. Name	1	2	3
1 Untreated Ck	30.25 ab	49.78 a	57.75 a
2 Sativa Im Max 5 Oz/Cwt	30.38 ab	50.30 a	57.85 a
3 NuFarm Exp. 1 5 Oz/Cwt	28.50 b	52.80 a	57.93 a
4 NuFarm Exp. 2F 5 Oz/Cwt	32.13 a	51.13 a	57.55 a
5 Rancona 3.8 0.51 Oz/Cwt Sebring 318fs 0.096 Oz/Cwt Senator 600fs 1.28 Oz/Cwt	32.50 a	51.95 a	58.60 a
6 Proceed MD 5 Oz/Cwt	33.25 a	50.43 a	57.38 a
7 Dividend Extreme 2 Oz/Cwt Cruiser 0.026 Oz/Cwt	30.75 ab	51.88 a	57.83 a
LSD (P=.05)	3.326	5.064	1.471
Standard Deviation	2.239	3.409	0.990
CV	7.2	6.66	1.71
Replicate F	0.724	13.025	0.249
Replicate Prob(F)	0.5506	0.0001	0.8608
Treatment F	2.096	0.403	0.606
Treatment Prob(F)	0.1045	0.8674	0.7225

Means followed by same letter do not significantly differ (P=.05, LSD)