

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

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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.

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

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Rancona HRSW seed treatment performance trial near Mott, ND, 2009.

This experiment was conducted in a field located near Mott, ND (NW ¼ Section 15, T136N, R93W, Hettinger County, ND). The previous crop was wheat in 2008. A soil sample was collected on April 21 and analyzed by the North Dakota State University Soil Testing Laboratory. Nutrient levels reported were N=61 lb/a, P (Olsen) = 16 ppm, K= 110 ppm, pH=6.5, and OM = 2.2%. Roundup Original Max (Glyphosate) at the rate of 16 fl oz/a + Actimaster (AMS) at the rate of 32 fl oz/a was applied 5 May to control emerged volunteer wheat and weeds. Prior to seeding, seed was treated with Vitaflo 280, Rancona Pinnacle, Rancona Crest, UBI 9291-00 or UBI 9292-00. Untreated seed was used as a check. Plots were seeded with a drill equipped with Cross-slot openers on 7 May at the rate of 150 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 and foliar fungicide application of Harmony GT XP (Thifensulfuron-methyl) at 0.6 oz/acre, MCP Ester at 0.75 pt/acre, Puma (Fenoxaprop-P) at 0.66 pt/acre + Tilt (Propiconazole) at 2 oz/acre. Plant emergence estimates were made on 14 and 21 May with plant stand counts and vigor ratings made on 28 May. Soft dough root and crown evaluations were made on 20 Jul. Harvest was with a massy Ferguson 8 XP combine on 28 Aug. Grain yield and test weight were adjusted to a 12% moisture basis. All data was statistically analyzed using SAS Statistical Software.

No significant differences in emergence, plant stands, or vigor ratings were noted though treated seed tended to emerge faster, stand densities and vigor tended to be greater than the untreated check. Treated seed subcrown internodes exhibited significantly fewer lesions than the untreated check. Head density tended to be greater for treated seed compared to the untreated check but not significantly. No significant differences were detected in yield or test weight. Wheat stem sawfly injury was noted in this trial but did not appear to favor any particular treatment.

Treatment Name	Rate (ml/Kg)	Emergence ¹		Plant ²	
		7 DAP	14 DAP	Stand density	Vigor
		----- % -----		m ⁻²	%
Untreated Check	-	0	55.0	184.0	100.0
Vitaflo 280	260	0	61.3	206.8	116.3
Rancona Pinnacle	325	0	58.8	203.5	118.8
Rancona Crest	325	0	60.0	210.7	116.3
UBI 9291-00	325	0	61.3	218.3	130.0
UBI 9292-00	325	0	61.3	192.0	112.5
Mean		0	59.6	202.5	115.6
CV%		-	12.7	18.2	21.9
LSD .05		-	NS	NS	NS

¹ Crop emergence and crop injury 7 days after plant = 14 May, 14 days after planting = 21 May.

² Plant stand and vigor ratings = 28 May

Treatment Name	Rate (ml/Kg)	Root Evaluation ¹			Grain ²		
		Root color	Root mass	SCI	Head density m ⁻²	Yield bu/a	Test wt lb/bu
Untreated Check	-	1.98	2.58	1.17	537.5	69.5	65.8
Vitaflo 280	260	1.87	2.67	1.03	583.3	68.7	65.7
Rancona Pinnacle	325	2.02	2.50	1.04	545.8	67.2	66.0
Rancona Crest	325	1.93	2.39	1.04	585.4	66.3	64.7
UBI 9291-00	325	2.05	2.62	1.00	647.9	74.6	65.5
UBI 9292-00	325	2.10	2.70	1.04	612.5	73.7	65.6
Mean		2.0	2.6	1.1	585.4	70.0	65.5
CV%		19.3	10.1	6.1	13.8	7.3	1.7
LSD .05		NS	NS	0.0963	NS	NS	NS

¹ Root Evaluation: Color 1-4: 1= white, 4= dark; Mass 1-4: 1 = few roots, 4 = many roots; SCI Subcrown Internode Rating: 1 = 0 to 25% of root covered by lesions, 2 = 25 to 50% covered by lesions; 3 = 50 to 75% covered by lesions; 4 = 75 to 100% covered by lesions and or lesions coalesce

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

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^s m⁻². 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 P₂O₅, 4.5 lbs/a K₂O, 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 CO₂ 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 ¹	--- Early ---		--- Late ---		--- Grain ⁶ ---		
		I ²	S ³	I ⁴	S ⁵	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	

¹ Percent of stems infested with sawfly.

² Percent incidence of plants exhibiting tan spot/septoria.

³ Percent severity of infection on last three leaves.

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

⁵ Percent of severity of infection on flag leaf.

⁶ Grain yield and test weight adjusted to 12% moisture basis.

No injury was detected from treatments.

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

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Vincit HRSW seed treatment performance trial near Mott, ND, 2009.

This experiment was conducted in a field located near Mott, ND (NW ¼ Section 15, T136N, R93W, Hettinger County, ND). The previous crop was wheat in 2008. A soil sample was collected on April 21 and analyzed by the North Dakota State University Soil Testing Laboratory. Nutrient levels reported were N=61 lb/a, P (Olsen) = 16 ppm, K= 110 ppm, pH=6.5, and OM = 2.2%. Roundup Original Max (Glyphosate) at the rate of 16 fl oz/a + Actimaster (AMS) at the rate of 32 fl oz/a was applied 5 May to control emerged volunteer wheat and weeds. Prior to seeding, seed was treated with Vincit Minima, Vincit 5, Vincit Minima + Metalaxyl, Vincit 5 + Metalaxyl, or Raxil MD. Untreated seed was used as a check. Plots were seeded with a drill equipped with Cross-slot openers on 7 May at the rate of 150 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 and foliar fungicide application of Harmony GT XP (Thifensulfuron-methyl) at 0.6 oz/acre, MCP Ester at 0.75 pt/acre, Puma (Fenoxaprop-P) at 0.66 pt/acre + Tilt (Propiconazole) at 2 oz/acre. Plant emergence estimates were made on 14 and 21 May with plant stand counts and vigor ratings made on 28 May. Soft dough root and crown evaluations were made on 20 Jul. Harvest was with a massy Ferguson 8 XP combine on 28 Aug. Grain yield and test weight were adjusted to a 12% moisture basis. All data was statistically analyzed using SAS Statistical Software.

Plant counts and vigor observed tended to be greater than the untreated check for seed treatments. No significant difference were observed for root color, mass or subcrown internode ratings though root mass tended to be greater for seed treatments than the untreated check. No significant differences for test weight were detected. Significant differences were detected in head density counts for all seed treatments compared to the untreated check except for the high rate of Vincit Minima and the high rate of Vincit 5 + Metalaxyl and Raxil MD. Grain yield for both seed treatment rates of Vincit 5 and for Vincit Minima + Metalaxyl were significantly higher than the untreated check. Wheat stem sawfly injury was noted in this trial but did not appear to favor any particular treatment.

Trt Name	Rate fl oz/cwt	Crop Emergence ¹		Plant ²		Crop Injury ¹	
		7 DAP ----- % -----	14 DAP ----- % -----	Stand m ⁻²	Vigor %	7 DAP ----- % -----	14 DAP ----- % -----
Untreated Check		0	51.2	142.7	100.0	0	0
Vincit Minima	3.07	0	57.5	162.3	121.3	0	0
Vincit Minima	6.14	0	57.5	168.7	128.8	0	0
Vincit 5	1.54	0	51.3	149.5	110.0	0	0
Vincit 5	3.07	0	56.3	149.9	107.5	0	0
Vincit Minima + Metalaxyl	3.07 + 0.3	0	58.8	156.9	116.3	0	0
Vincit 5 + Metalaxyl	1.54 + 0.3	0	52.5	159.7	116.3	0	0
Raxil MD	5	0	55.0	164.1	130.0	0	0
Mean		0	55	156.7	116	0	0
CV%		-	11.8	14.7	17.7	-	-
LSD 0.05		-	NS	NS	NS	-	-

¹ Crop emergence and crop injury 7 days after plant = 14 May, 14 days after planting = 21 May.

² Plant stand and vigor ratings = 28 May.

Trt Name	Rate	Root Evaluation ¹			Head density	Grain ²	
		Color	Mass	SCI		Yield	Test wt
	fl oz/cwt				m ⁻²	bu/acre	lb/bu
Untreated Check		1.52	2.80	1.2	493	59.9	65.6
Vincit Minima	3.07	1.78	3.07	1.05	594	62.6	66.1
Vincit Minima	6.14	1.68	2.92	1.2	533	61.4	64.8
Vincit 5	1.54	1.58	3.23	1.1	624	65.6	65.4
Vincit 5	3.07	1.92	3.03	1.23	611	66.1	66.1
Vincit Minima + Metalaxyl	3.07 + 0.3	1.54	3.02	1.15	626	66.3	65.1
Vincit 5 + Metalaxyl	1.54 + 0.3	1.53	3.10	1.18	534	60.6	64.9
Raxil MD	5	1.32	3.18	1.15	556	62.3	65.2
Mean		1.61	3.04	1.16	571	63.1	65.4
CV%		21.6	12.2	14.2	8.7	4.8	1.5
LSD 0.05		NS	NS	NS	73	4.5	NS

¹ Root Evaluation: Color 1-4: 1= white, 4= dark; Mass 1-4: 1 = few roots, 4 = many roots; SCI Subcrown Internode Rating: 1 = 0 to 25% of root covered by lesions, 2 = 25 to 50% covered by lesions; 3 = 50 to 75% covered by lesions; 4 = 75 to 100% covered by lesions and or lesions coalesce

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

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

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Vincit HRWW seed treatment performance trial near New Hradec, ND, 2009.

This experiment was conducted in a field located near New Hradec, ND (NE 1/4 Section 4, T141N, R96W-Dunn County, ND). The previous crop was spring wheat in 2008. Roundup Original Max (Glyphosate) at the rate of 32 fl oz/a + Actimaster (AMS) at the rate of 32 fl oz/a was applied 20 Sep to control emerged volunteer wheat and weeds. Prior to seeding, seed was treated with Vincit Minima, Vincit 5, Vincit Minima + Metalaxyl, Vincit 5 + Metalaxyl, or Raxil MD. Untreated seed was used as a check. Plots were seeded with a drill equipped with Cross-slot openers on 2 Oct 2008 at the rate of 150 pls m⁻². As plots were seeded 100 g of ground wheat seed known to be contaminated with *Tilletia tritici* was added at the rotary distribution unit of the planter for each plot seeded. Urea at the rate of 100 lbs/a (46 lbs/a N) + 60 lbs/a of 11-52-0 (6.6 lbs/a N, 31.2 lbs/a P₂O₅) + 20 lbs/a 0-0-60 (12 K₂O) was applied through the drill in a separate band during the seeding operation. An additional 30.7 lbs/a N and 3.6 lbs/a S was top dressed on 17 Apr in the form of liquid fertilizer (11 gal/a 26-0-0-3). A post emergent herbicide and foliar fungicide application of Buctril (bromoxynil) at 1 pt/a, Puma (Fenoxaprop-P) at 0.66 pt/a + Tilt (Propiconazole) at 2 oz/a was made on 21 May 2009. Plant emergence estimates were made on 9 and 16 Oct 2008 with vigor scores on 16 Oct 2008 and crop injury scores on 16 and 30 Oct 2008. Soft dough root and crown evaluations were made on 13-15 Jul 2009. Harvest was with a Massy Ferguson 8 XP combine on 13 Aug 2009. Grain yield and test weight were adjusted to a 12% moisture basis. Bunted kernels in a 50 g grain sample from each plot were counted after harvest. All data was statistically analyzed using SAS Statistical Software.

No significant differences were detected in any of the characteristics measured except for the number of bunted kernels. The number of bunted kernels found in treated seed was less than found in the untreated check. Seed treatments tended to improve root color, root mass and reduce root lesions compared to the untreated check. Head density and grain yields also tended to be greater for treated seed compared to the untreated check.

Treatment	Rate	Emergence ¹		Vigor ²		Crop Injury ³	
		7 DAP	14 DAP	14 DAP	14 DAP	14 DAP	28 DAP
Name	Rate	----- % -----					
Untreated Check	fl oz/cwt	0	48.8	100.0	0	0	
Vincit Minima	3.07	0	55.0	98.8	0	0	
Vincit Minima	6.14	0	48.8	103.8	0	0	
Vincit 5	1.54	0	51.3	102.5	0	0	
Vincit 5	3.07	0	55.0	101.3	0	0	
Vincit Minima + Metalaxyl	3.07 + 0.3	0	52.5	107.5	0	0	
Vincit Minima + Metalaxyl	1.54	0	56.3	110.0	0	0	
Raxil MD	5.00	0	53.8	105.0	0	0	
Mean		0	52.7	103.6	0	0	
CV%		-	9	5.6	-	-	
LSD .05		NS	NS	NS	NS	NS	

¹ Emergence, 7 days after planting = 9 Oct 2008, 14 days after planting = 16 Oct 2008.

² Vigor, 14 days after planting = 16 Oct 2008.

³ Crop injury, 14 days after planting = 16 Oct 2008, 28 days after planting = 30 Oct 2008.

Treatment	Rate	Root evaluation ¹			Plant height	Head density	Bunted kernels	Grain ²	
		Color	Mass	SCI				Test wt	Yield
Name					inches	#/yd ²	#/50g	lb/bu	bu/a
Untreated Check	fl oz/cwt	2.07	2.10	1.27	28	633	23.5	60.2	93.4
Vincit Minima	3.07	2.00	2.17	1.18	29.3	708	0.75	60.9	95.3
Vincit Minima	6.14	1.87	2.32	1.15	28.2	733	1.75	61.3	96.9
Vincit 5	1.54	2.05	2.43	1.04	29.6	782	1.00	60.9	98.6
Vincit 5	3.07	1.72	2.32	1.12	29.9	691	1.50	60.8	96.6
Vincit Minima + Metalaxyl	3.07 + 0.3	1.70	2.39	1.09	29.8	808	4.50	61.1	99.3
Vincit Minima + Metalaxyl	1.54	1.85	2.47	1.10	29.7	765	3.75	60.9	96.3
Raxil MD	5.00	1.97	2.55	1.17	29.1	784	4.50	60.6	94.9
Mean		1.9	2.33	1.14	29.2	738	5.2	60.8	96.4
CV%		14.9	15.7	10.2	6.01	14.3	71	1.3	4.1
LSD .05		NS	NS	NS	NS	NS	5.4	NS	NS

¹ Root Evaluation: Color 1-4: 1= white, 4= dark; Mass 1-4: 1 = few roots, 4 = many roots; SCI Subcrown Internode Rating: 1 = 0 to 25% of root covered by lesions, 2 = 25 to 50% covered by lesions; 3 = 50 to 75% covered by lesions; 4 = 75 to 100% covered by lesions and or lesions coalesce

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