

FIELD EXPERIMENT HISTORY

Expt. Number:	9689	Year: 1996
Title:	Managing Corn Seed Decay and Seedling Blight in Reduced Tillage Systems	
Personnel:	J.G. Lauer, C. Grau, K.D. Hudelson	
Location:	Arlington Research Station, Arlington, WI	
Supported by:	Gustafson, Inc., Hatch Project 1890	

FIELD INFORMATION

Field:	338				
Soil Type:	Plano Silt Loam				
Soil Test Results:	Test Date: 4/95	pH: 7.0	P (ppm): 50	K (ppm): 105	OM (%): 4.0
Fertilizer:	19-Apr 150 lbs N/a 46-0-0 24-Apr 150 lbs/a 6-24-24 starter				
Tillage Operations:	None				
Previous Crop:	Corn				
Irrigation:	None				

EXPERIMENTAL PROCEDURE

Exp. Design:	RCB Split-Split Plot		
Replicates:	4		
Variables:	A: Tillage, B: Seed Quality, C: Seed Treatment		
	Seed Treatments:		Rates
		Captan 400	1.76 fl oz
		Captan 400 + Apron FL	1.76 fl oz + 0.1 fl oz
		Captan 400 + Apron FL + Raxil	1.76 fl oz + 0.1 fl oz + 1.0 oz
		Captan 400 + Apron FL + LS015	1.76 fl oz + 0.1 fl oz + 1.25 oz
		Captan 400 + Apron FL + Dynacoot	1.76 fl oz + 0.1 fl oz + 2.0 oz
		Maxim + Apron FL	0.08 fl oz + 0.09 fl oz
		Untreated Control	
Area Planted:	10' x 30'		
Area Harvested:	5.0' x 27'		
Row Spacing:	30"		
Hybrid/Variety:	Pioneer 3556 (Poor Seedling Vigor) Pioneer 3475 (Average Seedling Vigor)		
Planting Date:	24-Apr		
Soil Temperature:	52.2 F		
Planting Equip:	Zone Till: JD 7000 Planter w/ 3 fluted coulters No-Till: JD 7000 Planter w/ 1 fluted and 2 ripple coulters		
Planting Rate:	32,000 seeds/acre		
Harvesting Date:	15-Oct		
Harvesting Equip:	Gleaner Plot Combine		

	<u>Date</u>	<u>Material</u>	<u>Rate</u>	<u>Method</u>
Insecticide:	24-Apr	Lorsban	8 oz/1000 ft	planter
Herbicides:	25-Apr	Roundup	4 pts/a	preemerg
	3-May	Lasso	2 qts/a	preemerg
	3-May	Bladex 90DF	2.2 lbs/a	preemerg
	30-May	Basagran	2 pts/a	post
	3-Jul	Basagran	2 pts/a	post
	24-Jul	Buctril	1.5 pts/a	post - drop nozzles

Results: Table E-42.

**Table E-42. Corn Seed Decay and Seedling Blight in Reduced Tillage Systems
Arlington, WI 1996 (Gustafson)**

Tillage	Seedling Vigor	Seed Treatment	Root and Plant Ratings - 42 Days after Planting																				
			Days After Planting			No. of Plants Rated	No. of Seeds Rated	Kernel Rot	Root Discolor	Leaf Collars	Total Leaves		Primary Longevity	Root Length	Seminal Root		Nodal Root		Whole Plant Dry Wt	Final Stand	Broken Stalks	Moist	Yield
			35	41	47						Visible	Number			Length	Number	Length	g/plant					
	\1\		% Emergence					\2\	\3\		\4\	cm	cm	cm	cm	g/plant	plants/A	%	%	bu/A			
NT			67.0	80.7	79.8	4.6	4.8	1.3	1.5	1.0	3.1	1.4	6.3	3.6	21.1	1.2	2.0	0.24	23969	8.1	36.3	148.5	
ZT			78.0	86.8	86.2	4.7	4.9	1.3	1.4	1.1	3.5	1.3	6.9	3.5	22.5	2.0	4.2	0.25	25329	10.8	36.0	152.3	
	LQ P3556		82.4	90.6	89.9	4.9	5.0	1.3	1.4	1.1	3.4	1.4	6.5	4.1	24.0	2.1	4.4	0.22	26562	6.4	34.9	159.4	
	MQ P3475		62.6	76.9	76.1	4.5	4.7	1.3	1.5	1.1	3.2	1.4	6.6	3.0	19.5	1.2	1.8	0.27	22736	12.5	37.4	141.4	
NT	LQ P3556		77.8	87.7	88.1	4.8	5.0	1.3	1.5	1.0	3.2	1.4	6.3	4.1	23.2	1.5	2.5	0.22	26343	7.0	35.3	157.9	
NT	MQ P3475		56.2	73.6	71.5	4.4	4.7	1.3	1.5	1.0	3.0	1.4	6.3	3.1	18.9	0.9	1.3	0.26	21596	9.1	37.3	139.1	
ZT	LQ P3556		87.0	93.5	91.7	4.9	5.0	1.3	1.4	1.2	3.6	1.3	6.8	4.1	24.9	2.6	6.2	0.23	26781	5.9	34.4	160.9	
ZT	MQ P3475		69.0	80.2	80.7	4.5	4.8	1.3	1.5	1.1	3.4	1.3	6.9	3.0	20.1	1.4	2.3	0.28	23877	15.8	37.5	143.7	
		Control	50.1	60.1	59.1	4.3	4.8	1.8	1.6	1.1	3.4	1.5	5.6	4.0	24.4	2.0	3.6	0.26	17928	10.9	36.0	128.9	
		Captan 400	78.3	87.6	88.0	4.9	5.0	1.2	1.4	1.1	3.4	1.3	7.7	3.6	23.8	2.3	5.0	0.26	26156	9.2	35.2	158.9	
		Captan+Apron FL	76.7	89.6	88.5	4.9	4.9	1.2	1.5	1.0	3.2	1.4	6.2	3.4	20.1	1.1	1.4	0.23	25914	9.4	36.4	158.8	
		Captan+Apron FL+Raxil	75.7	88.0	85.6	4.6	4.9	1.1	1.4	1.1	3.3	1.3	6.7	3.6	20.0	1.6	3.7	0.22	26600	7.1	35.9	158.0	
		Captan+Apron FL+LS015	77.3	87.6	87.0	4.8	4.7	1.2	1.4	1.0	3.3	1.3	6.8	3.5	22.3	1.5	2.2	0.24	26237	8.3	36.6	150.5	
		Captan+Apron FL+Dynacoat	74.3	85.6	85.9	4.8	4.9	1.1	1.4	1.1	3.3	1.3	6.4	3.3	19.6	1.3	2.9	0.24	24724	10.2	36.0	151.6	
		Maxim+Apron FL	75.1	87.8	86.9	4.4	4.7	1.6	1.4	1.1	3.2	1.3	6.5	3.7	22.2	1.7	3.1	0.26	24986	11.0	36.8	146.3	
NT		Control	44.8	56.7	57.2	4.3	4.9	1.7	1.7	1.0	3.2	1.6	4.9	4.0	22.0	1.4	2.0	0.28	17142	5.1	36.6	124.0	
ZT		Control	55.4	63.5	61.0	4.4	4.8	1.8	1.5	1.1	3.7	1.5	6.2	4.0	26.8	2.5	5.2	0.25	18715	16.8	35.5	133.7	
NT		Captan 400	75.1	86.3	86.7	5.0	5.0	1.2	1.4	1.0	3.4	1.3	7.7	3.6	23.7	2.3	3.5	0.26	26257	9.0	35.4	159.7	
ZT		Captan 400	81.4	88.9	89.4	4.9	5.0	1.2	1.5	1.2	3.5	1.3	7.8	3.6	23.9	2.2	6.4	0.26	26055	9.4	34.9	158.0	
NT		Captan+Apron FL	72.0	85.2	85.1	4.8	4.9	1.2	1.5	1.0	3.1	1.4	6.5	3.5	20.8	0.7	0.9	0.23	24321	8.5	36.0	155.3	
ZT		Captan+Apron FL	81.4	94.0	91.9	5.0	5.0	1.2	1.4	1.0	3.3	1.4	5.8	3.4	19.4	1.5	2.0	0.24	27507	10.3	36.8	162.3	
NT		Captan+Apron FL+Raxil	68.8	86.0	81.3	4.3	4.8	1.1	1.4	1.1	3.0	1.4	6.3	3.5	18.9	1.2	3.4	0.20	25692	6.3	36.7	151.7	
ZT		Captan+Apron FL+Raxil	82.6	90.0	90.0	4.9	5.0	1.1	1.4	1.1	3.5	1.2	7.1	3.7	21.1	2.0	3.9	0.25	27507	8.0	35.2	164.3	
NT		Captan+Apron FL+LS015	71.1	82.6	81.5	4.8	4.6	1.2	1.3	1.0	3.2	1.4	6.4	3.7	22.9	1.3	1.9	0.24	25450	10.9	35.9	151.8	
ZT		Captan+Apron FL+LS015	83.6	92.7	92.5	4.8	4.8	1.1	1.4	1.1	3.4	1.3	7.2	3.3	21.7	1.7	2.5	0.25	27023	5.7	37.3	149.3	
NT		Captan+Apron FL+Dynacoat	68.1	82.7	82.2	4.9	5.0	1.2	1.5	1.0	3.1	1.4	5.9	3.4	18.8	0.6	1.0	0.23	23958	9.4	35.9	153.6	
ZT		Captan+Apron FL+Dynacoat	80.4	88.5	89.7	4.6	4.9	1.1	1.3	1.2	3.5	1.2	6.9	3.2	20.3	1.9	4.7	0.25	25491	10.9	36.2	149.7	
NT		Maxim+Apron FL	69.0	85.2	84.8	4.3	4.6	1.6	1.6	1.0	3.0	1.4	6.0	3.6	20.4	1.0	1.2	0.25	24966	7.4	37.7	143.7	
ZT		Maxim+Apron FL	81.1	90.5	89.0	4.5	4.8	1.6	1.3	1.2	3.5	1.2	7.1	3.7	24.0	2.4	5.0	0.26	25007	14.6	35.9	148.8	
	LQ P3556	Control	57.3	63.0	63.5	4.6	5.0	1.8	1.5	1.1	3.5	1.5	5.6	4.4	25.2	2.5	5.0	0.22	19078	3.9	35.9	135.2	
	MQ P3475	Control	42.9	57.1	54.8	4.0	4.6	1.8	1.6	1.1	3.4	1.6	5.5	3.6	23.5	1.4	2.3	0.31	16779	17.9	36.2	122.5	
	LQ P3556	Captan 400	84.5	92.5	91.2	5.0	5.0	1.1	1.4	1.2	3.6	1.2	8.1	4.3	27.0	2.8	6.8	0.25	28233	8.6	34.0	166.7	
	MQ P3475	Captan 400	72.0	82.6	84.9	4.9	5.0	1.2	1.5	1.0	3.3	1.4	7.4	2.9	20.7	1.7	3.0	0.27	24079	9.8	36.3	151.1	
	LQ P3556	Captan+Apron FL	86.4	98.4	96.7	5.0	5.0	1.2	1.5	1.0	3.0	1.5	5.6	4.0	21.7	1.1	1.3	0.20	26983	6.3	35.5	162.1	
	MQ P3475	Captan+Apron FL	67.0	80.8	80.2	4.8	4.9	1.2	1.5	1.1	3.3	1.3	6.8	2.9	18.5	1.1	1.5	0.27	24845	12.5	37.3	155.5	

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Tillage	Seedling Vigor	Seed Treatment	Root and Plant Ratings - 42 Days after Planting																			
			Days After Planting			No. of Plants	No. of Seeds	Kernel	Root	Leaf	Total Leaves		Primary Root	Seminal Root		Nodal Root		Whole Plant	Final Stand	Broken Stalks	Moist	Yield
			35	41	47	Rated	Rated	Rot	Discolor	Collars	Visible	Longevity	Length	Number	Length	Number	Length	Dry Wt	plants/A	%	%	bu/A
	\1\		% Emergence					\2\	\3\			\4\	cm	cm	cm	g/plant	plants/A	%	%	bu/A		
	LQ P3556	Captan+Apron FL+Raxil	85.3	95.2	92.7	4.6	4.9	1.0	1.4	1.1	3.6	1.3	7.0	4.3	23.9	2.5	6.2	0.24	29000	7.4	34.5	169.1
	MQ P3475	Captan+Apron FL+Raxil	66.0	80.7	78.5	4.5	4.9	1.2	1.5	1.0	2.9	1.4	6.4	2.9	16.1	0.8	1.1	0.21	24200	6.8	37.4	146.9
	LQ P3556	Captan+Apron FL+LS015	90.6	94.7	96.5	5.0	5.0	1.2	1.4	1.0	3.2	1.4	7.0	3.8	22.9	1.5	1.8	0.22	28717	6.1	34.7	160.4
	MQ P3475	Captan+Apron FL+LS015	64.0	80.6	77.6	4.5	4.4	1.1	1.3	1.1	3.3	1.3	6.6	3.1	21.7	1.5	2.6	0.27	23756	10.5	38.5	140.7
	LQ P3556	Captan+Apron FL+Dynacoat	87.1	94.7	94.4	4.8	4.9	1.2	1.4	1.1	3.3	1.3	5.8	3.9	21.4	1.8	4.6	0.22	27386	5.8	34.4	161.5
	MQ P3475	Captan+Apron FL+Dynacoat	61.4	76.5	77.5	4.8	5.0	1.1	1.4	1.1	3.2	1.3	7.0	2.7	17.7	0.8	1.1	0.26	22062	14.5	37.6	141.8
	LQ P3556	Maxim+Apron FL	85.2	95.5	94.4	5.0	5.0	1.6	1.4	1.1	3.4	1.3	6.6	4.3	26.2	2.4	5.1	0.22	26539	6.9	35.1	161.1
	MQ P3475	Maxim+Apron FL	65.0	80.2	79.4	3.8	4.4	1.6	1.5	1.1	3.1	1.4	6.4	3.0	18.2	1.0	1.2	0.29	23434	15.2	38.5	131.4
NT	LQ P3556	Control	49.5	60.1	62.0	4.5	5.0	1.8	1.8	1.0	3.1	1.8	4.5	4.1	21.1	1.7	2.4	0.21	17908	2.5	37.7	123.9
ZT	LQ P3556	Control	65.2	66.0	65.0	4.8	5.0	1.8	1.3	1.2	3.8	1.2	6.6	4.6	29.4	3.4	7.6	0.22	20247	5.4	34.1	146.6
NT	MQ P3475	Control	40.2	53.3	52.5	4.0	4.8	1.7	1.5	1.1	3.3	1.4	5.4	3.9	22.9	1.2	1.7	0.35	16375	7.7	35.4	124.1
ZT	MQ P3475	Control	45.7	60.9	57.1	4.0	4.5	1.8	1.7	1.1	3.5	1.7	5.7	3.3	24.2	1.6	2.8	0.27	17182	28.1	37.0	120.9
NT	LQ P3556	Captan 400	81.5	89.4	90.8	5.0	5.0	1.1	1.4	1.0	3.4	1.2	7.5	4.3	26.9	2.5	3.5	0.25	28637	10.6	34.0	165.4
ZT	LQ P3556	Captan 400	87.5	95.7	91.6	5.0	5.0	1.1	1.4	1.4	3.7	1.2	8.7	4.4	27.0	3.0	10.2	0.25	27830	6.7	34.1	168.0
NT	MQ P3475	Captan 400	68.8	83.2	82.6	5.0	5.0	1.3	1.5	0.9	3.3	1.5	7.9	3.0	20.5	2.1	3.5	0.27	23877	7.4	36.8	154.1
ZT	MQ P3475	Captan 400	75.3	82.1	87.2	4.8	5.0	1.2	1.6	1.1	3.3	1.4	6.9	2.9	20.9	1.4	2.7	0.27	24281	12.2	35.8	148.1
NT	LQ P3556	Captan+Apron FL	85.3	95.9	94.8	5.0	5.0	1.1	1.6	1.0	3.0	1.6	5.4	3.9	21.3	0.5	0.7	0.19	25733	7.7	35.1	160.2
ZT	LQ P3556	Captan+Apron FL	87.5	100.8	98.6	5.0	5.0	1.3	1.3	1.0	3.1	1.5	5.7	4.1	22.2	1.7	2.0	0.21	28233	4.8	35.9	163.9
NT	MQ P3475	Captan+Apron FL	58.7	74.5	75.3	4.5	4.8	1.3	1.5	1.1	3.2	1.3	7.6	3.1	20.3	0.9	1.1	0.26	22909	9.2	37.0	150.3
ZT	MQ P3475	Captan+Apron FL	75.3	87.2	85.1	5.0	5.0	1.2	1.6	1.1	3.5	1.4	5.9	2.8	16.7	1.4	1.9	0.28	26781	15.8	37.7	160.8
NT	LQ P3556	Captan+Apron FL+Raxil	78.0	93.2	90.8	4.5	4.8	1.0	1.3	1.1	3.4	1.3	7.2	4.3	23.0	1.7	5.6	0.21	28959	6.5	35.6	167.3
ZT	LQ P3556	Captan+Apron FL+Raxil	92.7	97.3	94.6	4.8	5.0	1.1	1.4	1.2	3.8	1.3	6.8	4.2	24.9	3.2	6.8	0.26	29040	8.3	33.4	170.9
NT	MQ P3475	Captan+Apron FL+Raxil	59.5	78.8	71.7	4.0	4.8	1.2	1.5	1.1	2.6	1.6	5.3	2.7	14.8	0.8	1.1	0.18	22425	6.0	37.8	136.2
ZT	MQ P3475	Captan+Apron FL+Raxil	72.6	82.6	85.3	5.0	5.0	1.1	1.4	1.0	3.2	1.2	7.5	3.2	17.4	0.8	1.1	0.24	25975	7.6	37.1	157.7
NT	LQ P3556	Captan+Apron FL+LS015	86.4	89.4	93.5	5.0	5.0	1.3	1.3	1.0	3.1	1.3	7.2	3.9	24.4	1.3	1.4	0.22	29363	8.2	34.3	159.2
ZT	LQ P3556	Captan+Apron FL+LS015	94.8	100.0	99.5	5.0	5.0	1.1	1.6	1.1	3.4	1.5	6.9	3.7	21.4	1.8	2.1	0.21	28072	4.1	35.0	161.5
NT	MQ P3475	Captan+Apron FL+LS015	55.7	75.8	69.6	4.5	4.3	1.2	1.4	1.1	3.2	1.5	5.7	3.4	21.5	1.3	2.4	0.25	21538	13.6	37.5	144.4
ZT	MQ P3475	Captan+Apron FL+LS015	72.3	85.3	85.6	4.5	4.5	1.1	1.2	1.1	3.4	1.2	7.5	2.9	22.0	1.6	2.9	0.29	25975	7.4	39.5	137.1
NT	LQ P3556	Captan+Apron FL+Dynacoat	84.5	94.6	92.7	4.8	5.0	1.3	1.6	1.0	3.2	1.4	5.3	4.1	20.6	1.1	2.0	0.21	26943	8.1	34.1	168.6
ZT	LQ P3556	Captan+Apron FL+Dynacoat	89.7	94.8	96.2	4.8	4.8	1.1	1.3	1.3	3.5	1.2	6.3	3.7	22.3	2.4	7.2	0.24	27830	3.5	34.8	154.4
NT	MQ P3475	Captan+Apron FL+Dynacoat	51.6	70.9	71.7	5.0	5.0	1.1	1.5	1.0	3.0	1.3	6.6	2.8	17.1	0.1	0.1	0.25	20973	10.8	37.6	138.5
ZT	MQ P3475	Captan+Apron FL+Dynacoat	71.2	82.1	83.2	4.5	5.0	1.1	1.4	1.2	3.4	1.3	7.5	2.7	18.4	1.4	2.1	0.27	23151	18.3	37.5	145.0
NT	LQ P3556	Maxim+Apron FL	79.1	91.3	92.4	5.0	5.0	1.6	1.5	1.0	3.2	1.3	6.6	4.5	25.5	1.8	2.4	0.22	26862	5.4	36.4	160.9
ZT	LQ P3556	Maxim+Apron FL	91.3	99.7	96.5	5.0	5.0	1.7	1.3	1.2	3.7	1.3	6.7	4.2	26.9	3.0	7.8	0.22	26217	8.3	33.8	161.3
NT	MQ P3475	Maxim+Apron FL	59.0	79.1	77.2	3.5	4.3	1.6	1.7	1.0	2.8	1.5	5.4	2.8	15.3	0.1	0.1	0.28	23071	9.4	39.1	126.5
ZT	MQ P3475	Maxim+Apron FL	70.9	81.3	81.5	4.0	4.5	1.5	1.4	1.2	3.4	1.2	7.4	3.2	21.1	1.9	2.3	0.31	23797	20.9	38.0	136.3

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Tillage	Seedling Vigor	Seed Treatment	Root and Plant Ratings - 42 Days after Planting																			
			Days After Planting			No. of Plants Rated	No. of Seeds Rated	Kernel Rot	Root Discolor	Leaf Collars	Total Leaves Visible	Primary Root Longevity	Root Length	Seminal Root Number	Seminal Root Length	Nodal Root Number	Nodal Root Length	Whole Plant Dry Wt	Final Stand	Broken Stalks	Moist	Yield
			35	41	47			\2\	\3\		\4\	cm	cm	cm	cm	g/plant	plants/A	%	%	bu/A		
Mean	\1\		72.5	83.8	83.0	4.7	4.9	1.3	1.5	1.1	3.3	1.4	6.6	3.6	21.8	1.6	3.1	0.25	24649	9.4	36.1	150.4
Probability (%)																						
Tillage (T)			0.4	7.5	1.6			> 50	26.2	16.0	5.5	1.9	8.9	> 50	37.6	13.7	13.6	34.5	12.1	> 50	> 50	39.2
Seedling Vigor (V)			< 0.1	< 0.1	< 0.1			> 50	35.9	27.0	4.5	> 50	> 50	< 0.1	0.4	0.4	4.2	1.0	< 0.1	11.1	0.2	0.6
T x V			40.5	> 50	0.7			9.2	> 50	23.3	> 50	> 50	> 50	> 50	> 50	18.0	21.0	> 50	19.1	27.4	32.1	> 50
Seed Treatment (S)			< 0.1	< 0.1	< 0.1			< 0.1	> 50	> 50	26.4	34.8	11.3	5.0	8.4	3.6	4.2	24.7	< 0.1	> 50	16.6	< 0.1
T x S			> 50	> 50	> 50			> 50	> 50	9.2	45.2	> 50	> 50	> 50	> 50	39.6	41.7	47.7	42.0	31.1	8.0	> 50
V x S			23.2	37.5	27.9			> 50	> 50	23.9	0.6	> 50	> 50	42.6	39.9	9.3	3.7	4.0	25.2	40.6	9.1	> 50
T x V x S			39.8	> 50	> 50			> 50	37.7	> 50	> 50	2.7	35.1	30.0	> 50	> 50	> 50	> 50	44.3	> 50	18.6	34.4
LDS (0.10)																						
Tillage (T)			3.3	5.4	3.0			NS	NS	NS	0.3	< 0.1	0.6	NS	NS	NS	NS	NS	NS	NS	NS	NS
Seedling Vigor (V)			3.9	1.7	1.4			NS	NS	NS	0.1	NS	NS	0.2	2.0	0.4	1.9	0.02	1215	NS	1.0	8.6
Seed Treatment (S)			5.2	4.9	4.8			0.1	NS	NS	NS	NS	NS	0.3	3.2	0.4	1.1	NS	1335	NS	NS	9.3
CV%			12.3	9.9	9.9			18.8	26.3	15.0	10.6	22.4	30.5	16.3	25.2	59.8	92.7	20.5	9.2	102.7	4.7	10.4

\1\ LQ=Low Quality, MQ=Medium Quality

\2\ Kernel rot with 1=deterioration 2=no deterioration

\3\ Root discoloration with 1=none, 2=trace, 3=light, 4=moderate, and 5=severe

\4\ Longevity of primary root with 1=living, 2=blighted, 3=dead or pruned