

## FIELD EXPERIMENT HISTORY

**Title:** Corn/Soybean/Wheat Rotation Study

**Experiment:** 09CSW **Trial ID:** 3496 **Year:** 2011

**Personnel:** J. G. Lauer, J.M. Gaska, T. H. Diallo, K. D. Kohn,

**Location:** Arlington, WI **County:** Columbia

**Supported By:** HATCH

### Site Information

**Field:** 335 **Previous Crop:** Corn/Soybean/Wheat **Soil Type:** Plano Silt Loam

**Soil Test:** **Date:** 6 /15/11 **pH:** 6.2 **OM (%)** 3.2 **P (ppm)** 19 **K (ppm)** 102

### Plot Management

**Tillage Operations:** Field Cultivator Soil Finisher

<b>Fertilizer:</b>	<b>Analysis:</b>	<b>Rate lbs/A:</b>	<b>Date:</b>
<b>Preplant :</b>	N/A	N/A	N/A
<b>Starter :</b>	N/A	N/A	N/A
	CC: 28-0-0	CC: 190 lb/A	C: 6/16/11
	CS:28-0-0	CS: 160lb/A	W: 4/13/11
	W: 46-0-0	W: 100 lb/A	
<b>Manure:</b>	N/A	N/A	N/A

**Herbicide:** Roundup PowerMax: 22 oz/A 5-3-11  
Dual II Mag: 24 oz/A 5-3-11  
Roundup PowerMax: 22 oz/A 6-17-11

**Insecticide:** None

**Hybrid:** See Factors/Treatments

**Planting Date:** Corn: 5/6/11 **Planting Depth:** C: 1.5"  
Soybean: 5/4/11 S: 1"  
W: 1"

**Row Width:** C/S: 30"  
W: 7.5"

**Target Plant Density:** C: 32500 Plants/A  
S: 150000 Plants/A  
W: 1.7million Plants/A

**Planting Method:** C:Kinze Interplant  
S:JD Plot Drill  
W:JD750 Drill

**Harvest Date:** Corn: 10/12/11 **Harvest Method:** Corn: MF 8XP Silage:  
Silage: 9/7/11 Soybean: 10/06/11 NH 707 S/W:  
Wheat: 7/26/11 Almaco

**Notes:**

### Experimental Design **Post plant :**

**Design:** RCB split-split plot **Replications:** 3

**Plot Size Seeded:** 10' x 30' **Experiment Size:** 3.27 A

**Harvest Plot Size:** 5' x 26

### **Factors/Treatments:**

<b>Rotation:</b>	<b>Hybrid/Variety:</b>	<b>Fungicide:</b>
Continuous: Corn, Soybean or Winter Wheat	Resistant: Corn: Pioneer 37N68	C: Headline 6.0 fl oz/A
Rotation: Corn/Soybean	Soybean: Pioneer 92Y30	S: Maxim .08 fl oz/cwt
Grain Syst I: Corn/Soybean(early)/Winter Wheat	Wheat: Illinois IL01-11934	W: Headline 9 fl oz/A
Grain Syst II: Corn(early)/Winter Wheat/Soybean	Suscptible: Corn: Pioneer 37N16	Prosaro 6.5 fl oz/A
Lvstck Syst: Corn(silage)/Winter Wheat(straw rmvd)/Soybean	Soybean: 92M33	
	Wheat: Pioneer 25R47	

**Results: Tables C-45, C-46, C-47 and C-48**

**Table C-45. Corn, Soybean and Wheat Rotation - Corn**  
**Arlington, WI - 2011.**

Rotation	Variety	Fungicide	Yield bu/A	Moisture %	Test weight lbs/bu	Grower return \$/A	Lodged			Harvest plants/A
							Total %	Stalk %	Root %	
		Headline	184	19.2	56.1	985	9.7	9.3	0.4	35141
		UTC	188	19.3	56.1	1007	10.5	8.3	2.1	34813
	RR: P37N68		187	18.9	55.5	1002	5.0	3.8	1.1	34401
	RS: P37N16		189	19.2	56.8	1011	13.1	10.4	2.7	35253
	SR: P37N68		185	19.4	55.6	991	5.6	4.4	1.2	34960
	SS: P37N16		183	19.6	56.5	979	16.6	16.6	0.0	35295
	RR: P37N68	Headline	183	18.8	55.4	980	6.2	5.1	1.0	34708
	RR: P37N68	UTC	191	19.0	55.6	1023	3.7	2.5	1.2	34094
	RS: P37N16	Headline	188	18.9	56.8	1009	9.9	9.9	0.0	35323
	RS: P37N16	UTC	189	19.4	56.8	1013	16.2	10.8	5.4	35183
	SR: P37N68	Headline	182	19.5	55.7	975	6.0	5.5	0.5	35406
	SR: P37N68	UTC	188	19.2	55.5	1007	5.3	3.4	1.9	34513
	SS: P37N16	Headline	182	19.6	56.6	975	16.7	16.7	0.0	35127
	SS: P37N16	UTC	184	19.7	56.5	983	16.6	16.6	0.0	35462
CC			193	19.0	55.0	1035	1.5	0.5	1.0	33843
CS			177	15.9	57.1	960	14.3	13.8	0.5	35016
CSW			188	16.1	57.2	1020	17.8	14.6	3.2	35742
CWS			186	26.1	55.1	968	6.7	6.4	0.3	35309
CC		Headline	190	18.9	54.7	1019	1.4	0.6	0.8	34206
CC		UTC	196	19.0	55.3	1052	1.6	0.4	1.2	33480
CS		Headline	177	15.8	57.3	959	12.9	12.8	0.1	34876
CS		UTC	177	15.9	56.9	960	15.7	14.8	0.9	35155
CSW		Headline	183	15.9	57.2	991	16.1	15.9	0.2	35881
CSW		UTC	194	16.3	57.1	1048	19.4	13.3	6.2	35602
CWS		Headline	186	26.2	55.1	971	8.4	8.0	0.4	35602
CWS		UTC	185	26.1	55.1	966	5.0	4.8	0.2	35016
CC	RR: P37N68		199	19.5	53.7	1066	1.7	0.3	1.4	32502
CC	RS: P37N16		194	18.8	55.8	1044	0.6	0.6	0.0	34457
CC	SR: P37N68		193	19.4	54.7	1034	2.6	0.0	2.6	34290
CC	SS: P37N16		185	18.2	55.9	998	1.0	1.0	0.0	34122
CS	RR: P37N68		176	16.2	56.6	954	4.7	3.8	0.8	33675
CS	RS: P37N16		184	15.8	58.2	998	18.6	18.6	0.0	35127
CS	SR: P37N68		172	15.8	56.0	934	7.3	6.2	1.1	35518
CS	SS: P37N16		176	15.7	57.6	954	26.6	26.6	0.0	35742

continue

**Table C-45. Corn, Soybean and Wheat Rotation - Corn**(continued) **Arlington, WI - 2011.**

Rotation	Variety	Fungicide	Yield bu/A	Moisture %	Test weight lbs/bu	Grower return \$/A	Lodged			Harvest plants/A
							Total %	Stalk %	Root %	
CSW	RR: P37N68		199	16.7	56.7	1079	1.4	0.2	1.2	36244
CSW	RS: P37N16		182	15.9	57.7	988	28.7	18.1	10.6	35574
CSW	SR: P37N68		193	16.3	56.7	1044	5.4	4.4	1.0	35071
CSW	SS: P37N16		179	15.5	57.5	969	35.6	35.6	0.0	36077
CWS	RR: P37N68		172	23.3	54.8	910	12.0	10.9	1.1	35183
CWS	RS: P37N16		194	26.1	55.4	1014	4.4	4.2	0.2	35853
CWS	SR: P37N68		183	26.0	54.9	954	7.2	7.2	0.0	34960
CWS	SS: P37N16		193	29.1	55.2	996	3.2	3.2	0.0	35239
CC	RR: P37N68	Headline	197	19.7	52.7	1055	2.0	0.4	1.7	33061
CC	RR: P37N68	UTC	201	19.2	54.7	1076	1.4	0.3	1.1	31944
CC	RS: P37N16	Headline	189	18.5	56.1	1018	1.2	1.2	0.0	35071
CC	RS: P37N16	UTC	200	19.2	55.5	1071	0.0	0.0	0.0	33843
CC	SR: P37N68	Headline	194	19.4	54.6	1039	1.6	0.0	1.6	34625
CC	SR: P37N68	UTC	192	19.3	54.9	1028	3.7	0.0	3.7	33954
CC	SS: P37N16	Headline	179	18.1	55.6	962	0.7	0.7	0.0	34066
CC	SS: P37N16	UTC	192	18.4	56.1	1034	1.3	1.3	0.0	34178
CS	RR: P37N68	Headline	175	16.1	57.0	949	4.2	4.2	0.0	33731
CS	RR: P37N68	UTC	177	16.4	56.2	958	5.1	3.5	1.6	33619
CS	RS: P37N16	Headline	181	15.7	58.1	980	16.3	16.3	0.0	34960
CS	RS: P37N16	UTC	188	15.9	58.3	1016	21.0	21.0	0.0	35295
CS	SR: P37N68	Headline	168	15.7	56.1	913	4.3	4.0	0.3	35295
CS	SR: P37N68	UTC	176	15.8	56.0	954	10.3	8.3	1.9	35742
CS	SS: P37N16	Headline	184	15.9	58.0	995	26.7	26.7	0.0	35518
CS	SS: P37N16	UTC	168	15.6	57.2	913	26.5	26.5	0.0	35965
CSW	RR: P37N68	Headline	191	16.4	57.1	1035	1.2	0.3	0.9	36523
CSW	RR: P37N68	UTC	208	17.0	56.4	1123	1.5	0.0	1.5	35965
CSW	RS: P37N16	Headline	185	16.0	57.2	1001	20.3	20.3	0.0	35295
CSW	RS: P37N16	UTC	180	15.8	58.1	974	37.0	15.8	21.2	35853
CSW	SR: P37N68	Headline	187	16.1	57.3	1015	4.5	4.5	0.0	36188
CSW	SR: P37N68	UTC	198	16.6	56.1	1073	6.2	4.3	2.0	33954
CSW	SS: P37N16	Headline	168	15.2	57.4	914	38.3	38.3	0.0	35518
CSW	SS: P37N16	UTC	189	15.8	57.6	1023	33.0	33.0	0.0	36635

continue

**Table C-45. Corn, Soybean and Wheat Rotation - Corn**(continued) **Arlington, WI - 2011.**

Rotation	Variety	Fungicide	Yield bu/A	Moisture %	Test weight lbs/bu	Grower return \$/A	Lodged			Harvest plants/A
							Total %	Stalk %	Root %	
CWS	RR: P37N68	Headline	167	23.1	54.6	883	17.2	15.6	1.6	35518
CWS	RR: P37N68	UTC	177	23.5	55.0	936	6.9	6.3	0.7	34848
CWS	RS: P37N16	Headline	198	25.5	55.6	1036	1.9	1.9	0.0	35965
CWS	RS: P37N16	UTC	191	26.7	55.2	993	6.8	6.5	0.3	35742
CWS	SR: P37N68	Headline	180	26.9	54.9	934	13.4	13.4	0.0	35518
CWS	SR: P37N68	UTC	186	25.1	54.9	974	1.0	1.0	0.0	34401
CWS	SS: P37N16	Headline	199	29.2	55.2	1030	1.0	1.0	0.0	35406
CWS	SS: P37N16	UTC	186	29.0	55.2	962	5.5	5.5	0.0	35071
Mean			186	19.3	56.1	996	10	9	1	34977
<b>Probability(%)</b>										
Rotation (R)			66.9	0.4	0.0	60.4	32.5	35.0	40.2	0.6
Variety (V)			59.3	75.5	0.1	54.9	5.9	5.7	56.9	8.2
R x V			5.8	6.8	57.6	13.1	8.3	17.0	43.5	12.7
Fungicide(F)			11.6	59.2	96.2	11.0	61.0	56.7	19.9	18.0
R x F			33.7	88.9	21.7	33.0	38.9	67.7	34.7	46.8
V x F			72.7	60.6	82.8	69.7	20.6	86.2	46.0	30.0
R x V x F			33.8	56.3	16.3	31.4	34.0	75.1	49.3	79.7
<b>LSD(0.10)</b>										
Rotation (R)			NS	3.6	0.6	NS	NS	NS	NS	713
Variety (V)			NS	NS	0.6	NS	8.2	8.5	NS	628
R x V			23	3.4	NS	NS	19.7	NS	NS	NS
Fungicide(F)			NS	NS	NS	NS	NS	NS	NS	NS
R x F			NS	NS	NS	NS	NS	NS	NS	NS
V x F			NS	NS	NS	NS	NS	NS	NS	NS
R x V x F			NS	NS	NS	NS	NS	NS	NS	NS

\* RS= Resistant planted in odd years

RR = Resistant all years

SR= Resistant planted in even years

SS = Susceptible all years

**Table C-46. Corn, Soybean and Wheat Rotation - Silage  
Arlington, WI - 2011.**

Variety	Fungicide	Plant population plants/A	Whole Plant										Milk per	
			Dry Matter		Kernel milk %	Crude protein %	ADF %	NDF %	In Vitro		Starch %	Ton	Acre	
			Yield tons/A	Moisture %					Digest %	NDFD %		lbs/T	lbs/T	
	Headline	36083	5.8	53.3	44.6	5.7	21.9	42.4	80.6	54.4	40.9	3217	18908	
	UTC	35667	5.8	52.5	42.9	5.8	21.1	42.1	81.3	55.7	41.4	3260	19168	
RR: P37N68		35167	5.4	55.4	43.3	5.9	23.0	44.4	79.9	54.7	38.5	3156	16948	
RS: P37N16		36500	6.5	50.3	45.8	5.7	19.6	39.6	82.5	55.9	44.1	3351	21714	
SR: P37N68		35500	5.7	54.8	44.2	5.7	22.0	42.4	80.5	54.4	40.9	3215	18390	
SS: P37N16		36333	5.9	51.1	41.7	5.7	21.6	42.5	80.9	55.3	41.2	3231	19099	
RR: P37N68	Headline	35667	5.6	54.7	45.0	5.8	21.9	42.7	80.5	54.3	40.5	3209	17910	
RR: P37N68	UTC	34667	5.2	56.0	41.7	6.0	24.0	46.1	79.2	55.0	36.5	3103	15986	
RS: P37N16	Headline	36000	6.4	50.7	43.3	5.7	21.1	41.3	81.2	54.5	42.4	3262	20730	
RS: P37N16	UTC	37000	6.6	49.9	48.3	5.8	18.0	37.9	83.8	57.3	45.8	3440	22697	
SR: P37N68	Headline	35667	5.3	58.1	41.7	5.6	25.1	46.2	77.8	52.2	36.6	3025	16347	
SR: P37N68	UTC	35333	6.0	51.4	46.7	5.8	18.8	38.5	83.3	56.6	45.2	3404	20433	
SS: P37N16	Headline	37000	6.1	49.7	48.3	5.6	19.6	39.4	82.8	56.5	44.3	3372	20644	
SS: P37N16	UTC	35667	5.6	52.5	35.0	5.9	23.7	45.7	78.9	54.1	38.1	3091	17555	
Mean		35875	5.8	52.9	43.8	5.8	21.5	42.2	80.9	55.1	41.2	3238	19038	
<b>Probability(%)</b>														
Hybrid (H)		47.9	3.3	6.0	72.5	43.7	30.1	25.1	37.5	73.2	17.3	33.3	4.7	
Fungicide (F)		45.7	99.4	53.2	53.1	31.3	52.4	83.4	51.5	29.5	78.3	57.2	81.3	
H x F		46.7	29.9	12.0	7.3	82.9	3.6	3.1	3.4	17.7	2.5	3.0	11.2	
<b>LSD (0.10)</b>														
Hybrid (H)		NS	0.6	3.5	NS	NS	NS	NS	NS	NS	NS	NS	2689	
Fungicide (F)		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
H x F		NS	NS	NS	9.1	NS	4.4	5.6	3.7	NS	5.8	259	NS	

**Table C-47. Corn, Soybean and Wheat Rotation - Soybean  
Arlington, WI - 2011.**

Name	Rotation		Disease/ variety rotation*	Seed applied fungicide **	Yield bu/a	Lodg. 1 to 5	Seed Composition	
	Sequence	#					Protein ---- % ----	Oil
				UTC	62.0	1.0	33.8	19.4
				Maxim	62.3	1.0	33.8	19.5
			RR:P92Y30		63.1	1.0	32.8	20.2
			SS:P92M33		61.4	1.0	34.9	18.7
			RS:P92M33		59.9	1.0	34.8	18.7
			SR:P92Y30		64.1	1.0	32.8	20.2
			RR:P92Y30	UTC	63.5	1.0	32.8	20.1
			RR:P92Y30	Maxim	62.8	1.0	32.7	20.3
			SS:P92M33	UTC	61.2	1.0	34.9	18.7
			SS:P92M33	Maxim	61.7	1.0	34.9	18.7
			RS:P92M33	UTC	58.8	1.0	34.8	18.7
			RS:P92M33	Maxim	61.1	1.0	34.8	18.8
			SR:P92Y30	UTC	64.5	1.0	32.8	20.2
			SR:P92Y30	Maxim	63.7	1.0	32.8	20.2
Continuous	S-S-S	2			54.3	1.0	34.2	19.5
Alternating	C-S	4			63.0	1.0	33.4	19.5
Grain system I	W-C <sub>grain</sub> -S	7			65.5	1.0	33.3	19.6
Grain system II	C <sub>grain</sub> -W-S	11			65.7	1.0	33.9	19.5
Livestock System	C <sub>silage</sub> -W-S	14			62.3	1.0	34.3	19.2
Continuous	S-S-S	2		UTC	56.5	1.0	34.1	19.5
Continuous	S-S-S	2		Maxim	52.2	1.0	34.2	19.5
Alternating	C-S	4		UTC	61.5	1.0	33.6	19.4
Alternating	C-S	4		Maxim	64.5	1.0	33.3	19.6
Grain system I	W-C <sub>grain</sub> -S	7		UTC	63.9	1.0	33.3	19.6
Grain system I	W-C <sub>grain</sub> -S	7		Maxim	67.0	1.0	33.3	19.7
Grain system II	C <sub>grain</sub> -W-S	11		UTC	67.3	1.0	33.9	19.4
Grain system II	C <sub>grain</sub> -W-S	11		Maxim	64.1	1.0	33.9	19.5
Livestock System	C <sub>silage</sub> -W-S	14		UTC	60.7	1.0	34.3	19.2
Livestock System	C <sub>silage</sub> -W-S	14		Maxim	63.8	1.0	34.3	19.3
Continuous	S-S-S	2	RR:P92Y30		56.4	1.0	32.9	20.3
Continuous	S-S-S	2	SS:P92M33		55.0	1.0	35.3	18.7
Continuous	S-S-S	2	RS:P92M33		50.5	1.0	35.3	18.7
Continuous	S-S-S	2	SR:P92Y30		55.5	1.0	33.2	20.2
Alternating	C-S	4	RR:P92Y30		61.0	1.0	32.5	20.1
Alternating	C-S	4	SS:P92M33		64.4	1.0	34.4	18.8
Alternating	C-S	4	RS:P92M33		59.7	1.0	34.6	18.8
Alternating	C-S	4	SR:P92Y30		66.8	1.0	32.3	20.3

continue

**Table C-47. Corn, Soybean and Wheat Rotation - Soybean**  
(continued) **Arlington, WI - 2011.**

Name	Rotation		Disease/ variety rotation*	Seed applied fungicide **	Yield bu/a	Lodg. 1 to 5	Seed Composition	
	Sequence	#					Protein	Oil
							---- % ----	
Grain system I	W-C <sub>grain</sub> -S	7	RR:P92Y30		64.8	1.0	32.3	20.4
Grain system I	W-C <sub>grain</sub> -S	7	SS:P92M33		64.0	1.0	34.2	19.0
Grain system I	W-C <sub>grain</sub> -S	7	RS:P92M33		64.5	1.0	34.3	18.9
Grain system I	W-C <sub>grain</sub> -S	7	SR:P92Y30		68.5	1.0	32.4	20.3
Grain system II	C <sub>grain</sub> -W-S	11	RR:P92Y30		68.8	1.0	32.7	20.2
Grain system II	C <sub>grain</sub> -W-S	11	SS:P92M33		62.4	1.0	35.2	18.6
Grain system II	C <sub>grain</sub> -W-S	11	RS:P92M33		65.6	1.0	34.8	18.8
Grain system II	C <sub>grain</sub> -W-S	11	SR:P92Y30		66.1	1.0	32.8	20.2
Livestock System	C <sub>silage</sub> -W-S	14	RR:P92Y30		64.8	1.0	33.5	19.9
Livestock System	C <sub>silage</sub> -W-S	14	SS:P92M33		61.4	1.0	35.4	18.4
Livestock System	C <sub>silage</sub> -W-S	14	RS:P92M33		59.3	1.0	35.2	18.5
Livestock System	C <sub>silage</sub> -W-S	14	SR:P92Y30		63.6	1.0	33.2	20.0
Continuous	S-S-S	2	RR:P92Y30	UTC	59.6	1.0	32.8	20.2
Continuous	S-S-S	2	RR:P92Y30	Maxim	53.2	1.0	32.9	20.3
Continuous	S-S-S	2	SS:P92M33	UTC	55.7	1.0	35.2	18.7
Continuous	S-S-S	2	SS:P92M33	Maxim	54.4	1.0	35.3	18.7
Continuous	S-S-S	2	RS:P92M33	UTC	52.3	1.0	35.4	18.7
Continuous	S-S-S	2	RS:P92M33	Maxim	48.7	1.0	35.3	18.7
Continuous	S-S-S	2	SR:P92Y30	UTC	58.3	1.0	33.1	20.4
Continuous	S-S-S	2	SR:P92Y30	Maxim	52.6	1.0	33.4	20.1
Alternating	C-S	4	RR:P92Y30	UTC	56.2	1.0	32.8	19.9
Alternating	C-S	4	RR:P92Y30	Maxim	65.8	1.0	32.2	20.4
Alternating	C-S	4	SS:P92M33	UTC	64.3	1.0	34.6	18.8
Alternating	C-S	4	SS:P92M33	Maxim	64.4	1.0	34.2	18.8
Alternating	C-S	4	RS:P92M33	UTC	58.3	1.0	34.7	18.6
Alternating	C-S	4	RS:P92M33	Maxim	61.2	1.0	34.4	18.9
Alternating	C-S	4	SR:P92Y30	UTC	67.1	1.0	32.3	20.3
Alternating	C-S	4	SR:P92Y30	Maxim	66.6	1.0	32.2	20.3
Grain system I	W-C <sub>grain</sub> -S	7	RR:P92Y30	UTC	67.7	1.0	32.3	20.3
Grain system I	W-C <sub>grain</sub> -S	7	RR:P92Y30	Maxim	61.9	1.0	32.3	20.5
Grain system I	W-C <sub>grain</sub> -S	7	SS:P92M33	UTC	63.7	1.0	34.0	19.1
Grain system I	W-C <sub>grain</sub> -S	7	SS:P92M33	Maxim	64.3	1.0	34.4	18.8
Grain system I	W-C <sub>grain</sub> -S	7	RS:P92M33	UTC	59.3	1.0	34.4	18.9
Grain system I	W-C <sub>grain</sub> -S	7	RS:P92M33	Maxim	69.7	1.0	34.2	19.0
Grain system I	W-C <sub>grain</sub> -S	7	SR:P92Y30	UTC	65.0	1.0	32.5	20.1
Grain system I	W-C <sub>grain</sub> -S	7	SR:P92Y30	Maxim	72.1	1.0	32.2	20.4
Grain system II	C <sub>grain</sub> -W-S	11	RR:P92Y30	UTC	71.8	1.0	32.6	20.2
Grain system II	C <sub>grain</sub> -W-S	11	RR:P92Y30	Maxim	65.7	1.0	32.8	20.2
Grain system II	C <sub>grain</sub> -W-S	11	SS:P92M33	UTC	60.7	1.0	35.2	18.6
Grain system II	C <sub>grain</sub> -W-S	11	SS:P92M33	Maxim	64.1	1.0	35.1	18.5

continue

**Table C-47. Corn, Soybean and Wheat Rotation - Soybean**  
(continued) **Arlington, WI - 2011.**

Name	Rotation		Disease/ variety rotation*	Seed applied fungicide **	Yield bu/a	Lodg. 1 to 5	Seed Composition	
	Sequence	#					Protein ---- % ----	Oil
Grain system II	C <sub>grain</sub> -W-S	11	RS:P92M33	UTC	68.4	1.0	34.6	18.8
Grain system II	C <sub>grain</sub> -W-S	11	RS:P92M33	Maxim	62.9	1.0	35.0	18.7
Grain system II	C <sub>grain</sub> -W-S	11	SR:P92Y30	UTC	68.4	1.0	33.0	20.0
Grain system II	C <sub>grain</sub> -W-S	11	SR:P92Y30	Maxim	63.7	1.0	32.6	20.4
Livestock System	C <sub>silage</sub> -W-S	14	RR:P92Y30	UTC	62.0	1.0	33.6	19.8
Livestock System	C <sub>silage</sub> -W-S	14	RR:P92Y30	Maxim	67.5	1.0	33.3	20.0
Livestock System	C <sub>silage</sub> -W-S	14	SS:P92M33	UTC	61.5	1.0	35.3	18.4
Livestock System	C <sub>silage</sub> -W-S	14	SS:P92M33	Maxim	61.2	1.0	35.4	18.5
Livestock System	C <sub>silage</sub> -W-S	14	RS:P92M33	UTC	55.7	1.0	35.2	18.5
Livestock System	C <sub>silage</sub> -W-S	14	RS:P92M33	Maxim	62.8	1.0	35.2	18.5
Livestock System	C <sub>silage</sub> -W-S	14	SR:P92Y30	UTC	63.7	1.0	33.0	20.0
Livestock System	C <sub>silage</sub> -W-S	14	SR:P92Y30	Maxim	63.5	1.0	33.3	20.0
Mean					62.2	1.0	33.8	19.5
<b>Probability (Pr&gt;F) %</b>								
Rotation (R)					1.1	>50	12.3	25.2
Variety (V)					<0.1	>50	<0.1	<0.1
R x V					3.2	>50	>50	>50
Fungicide (F)					>50	>50	>50	9.4
R x F					<0.1	>50	>50	41.9
V x F					31.0	>50	>50	16.6
R x V x F					0.3	>50	>50	27.0
<b>LSD (0.10)</b>								
Rotation (R)					4.6	NS	NS	NS
Variety (V)					1.5	NS	0.2	0.1
R x V					5.4	NS	NS	NS
Fungicide (F)					NS	NS	NS	0.1
R x F					4.9	NS	NS	NS
V x F					NS	NS	NS	NS
<b>CV(%)</b>					6	0	1	1

\* RS= Resistant planted in odd years

SR= Resistant planted in even years

RR = Resistant all years

SS = Susceptible all years

\*\* Maxim (fludioxonil) applied at 0.08 fl oz/cwt



**Table C-48. Corn, Soybean and Wheat Rotation - Wheat  
Arlington, WI - 2011.**

Rotation		Variety **	Fungicide	Yield bu/A	Lodg 1-5	Test weight lbs/bu	1000 kernel wt. g	FHB Rating July 6, 2011		DON ppm
Name*	Sequence							Incidence %	Severity %	
			UTC	77.5	1.0	58.9	30.8	11.4	32.1	1.0
			Prosaro @ GS10.5.1	75.3	1.0	58.9	31.5	6.2	19.8	0.8
		RR:IL01-11934		75.1	1.0	59.9	31.0	10.0	24.5	0.6
		SS:P25R47		77.6	1.0	58.1	32.1	9.3	29.9	1.2
		RS:P25R47		80.2	1.0	58.0	31.3	7.2	18.5	1.3
		SR:IL01-11934		72.9	1.0	59.6	30.1	8.8	31.0	0.6
		RR:IL01-11934	UTC	76.3	1.0	59.7	30.6	14.4	29.3	0.7
		RR:IL01-11934	Prosaro @ GS10.5.1	73.8	1.0	60.1	31.4	5.5	19.6	0.5
		SS:P25R47	UTC	76.9	1.0	58.2	31.4	10.7	37.7	1.3
		SS:P25R47	Prosaro @ GS10.5.1	78.3	1.0	58.1	32.7	7.9	22.1	1.2
		RS:P25R47	UTC	83.0	1.0	58.2	30.4	9.8	24.1	1.4
		RS:P25R47	Prosaro @ GS10.5.1	77.4	1.0	57.8	32.2	4.7	12.9	1.2
		SR:IL01-11934	UTC	74.0	1.0	59.5	30.6	10.9	37.3	0.6
		SR:IL01-11934	Prosaro @ GS10.5.1	71.8	1.0	59.8	29.7	6.6	24.6	0.6
Grain system I	C-S-W			89.8	1.0	59.3	31.8	9.2	27.3	0.5
Grain system II	S-C-W			59.0	1.0	58.5	30.3	7.4	24.6	1.3
Livestock System	S-C <sub>silage</sub> -W			80.5	1.0	58.9	31.4	9.8	25.9	1.0
Grain system I	C-S-W		UTC	95.9	1.0	59.4	31.6	13.0	33.9	0.5
Grain system I	C-S-W		Prosaro @ GS10.5.1	83.7	1.0	59.3	31.9	5.4	20.8	0.5
Grain system II	S-C-W		UTC	57.7	1.0	58.4	29.8	10.1	30.6	1.5
Grain system II	S-C-W		Prosaro @ GS10.5.1	60.2	1.0	58.5	30.7	4.8	18.5	1.0
Livestock System	S-C <sub>silage</sub> -W		UTC	79.0	1.0	58.8	30.9	11.2	31.8	1.1
Livestock System	S-C <sub>silage</sub> -W		Prosaro @ GS10.5.1	82.1	1.0	59.0	31.9	8.4	20.1	0.9
Grain system I	C-S-W	RR:IL01-11934		91.4	1.0	60.3	31.1	12.7	26.9	0.3
Grain system I	C-S-W	SS:P25R47		90.7	1.0	58.7	32.2	11.9	34.1	0.7
Grain system I	C-S-W	RS:P25R47		89.9	1.0	58.4	32.3	4.2	17.4	0.8
Grain system I	C-S-W	SR:IL01-11934		87.2	1.0	60.0	31.6	7.8	31.0	0.3

continue

**Table C-48. Corn, Soybean and Wheat Rotation - Wheat**  
(continued) **Arlington, WI - 2011.**

Rotation		Variety **	Fungicide	Yield bu/A	Lodg 1-5	Test weight lbs/bu	1000 kernel wt. g	FHB Rating July 6, 2011		DON ppm
Name*	Sequence							Incidence %	Severity %	
Grain system II	S-C-W	RR:IL01-11934		56.8	1.0	59.3	30.4	7.2	22.7	0.7
Grain system II	S-C-W	SS:P25R47		62.6	1.0	57.6	31.4	9.7	33.2	1.6
Grain system II	S-C-W	RS:P25R47		61.0	1.0	57.7	30.7	7.7	17.0	1.9
Grain system II	S-C-W	SR:IL01-11934		55.5	1.0	59.2	28.6	5.1	25.2	0.7
Livestock System	S-C <sub>silage</sub> -W	RR:IL01-11934		77.0	1.0	59.9	31.6	9.9	23.8	0.7
Livestock System	S-C <sub>silage</sub> -W	SS:P25R47		79.4	1.0	58.1	32.7	6.3	22.3	1.4
Livestock System	S-C <sub>silage</sub> -W	RS:P25R47		89.7	1.0	57.8	31.0	9.8	21.0	1.2
Livestock System	S-C <sub>silage</sub> -W	SR:IL01-11934		76.0	1.0	59.6	30.2	13.3	36.7	0.7
Grain system I	C-S-W	RR:IL01-11934	UTC	98.2	1.0	60.2	30.6	20.7	33.2	0.3
Grain system I	C-S-W	RR:IL01-11934	Prosaro @ GS10.5.1	84.5	1.0	60.5	31.6	4.8	20.6	0.3
Grain system I	C-S-W	SS:P25R47	UTC	95.0	1.0	58.7	31.9	14.6	40.3	0.8
Grain system I	C-S-W	SS:P25R47	Prosaro @ GS10.5.1	86.5	1.0	58.7	32.6	9.1	27.9	0.7
Grain system I	C-S-W	RS:P25R47	UTC	99.6	1.0	58.8	31.7	7.2	29.4	0.7
Grain system I	C-S-W	RS:P25R47	Prosaro @ GS10.5.1	80.3	1.0	58.0	32.9	1.3	5.4	0.8
Grain system I	C-S-W	SR:IL01-11934	UTC	90.9	1.0	60.0	32.4	9.4	32.8	0.4
Grain system I	C-S-W	SR:IL01-11934	Prosaro @ GS10.5.1	83.6	1.0	59.9	30.8	6.3	29.2	0.3
Grain system II	S-C-W	RR:IL01-11934	UTC	54.7	1.0	59.3	30.2	10.5	24.9	0.6
Grain system II	S-C-W	RR:IL01-11934	Prosaro @ GS10.5.1	58.8	1.0	59.3	30.6	4.0	20.6	0.8
Grain system II	S-C-W	SS:P25R47	UTC	62.4	1.0	57.7	30.0	10.9	41.2	1.9
Grain system II	S-C-W	SS:P25R47	Prosaro @ GS10.5.1	62.8	1.0	57.5	32.8	8.6	25.3	1.3
Grain system II	S-C-W	RS:P25R47	UTC	62.3	1.0	57.9	29.9	11.8	24.1	2.3
Grain system II	S-C-W	RS:P25R47	Prosaro @ GS10.5.1	59.7	1.0	57.4	31.6	3.6	10.0	1.5
Grain system II	S-C-W	SR:IL01-11934	UTC	51.3	1.0	58.7	29.1	7.4	32.1	0.9
Grain system II	S-C-W	SR:IL01-11934	Prosaro @ GS10.5.1	59.7	1.0	59.8	28.1	2.9	18.3	0.6
Livestock System	S-C <sub>silage</sub> -W	RR:IL01-11934	UTC	76.0	1.0	59.5	31.0	12.0	29.9	1.0
Livestock System	S-C <sub>silage</sub> -W	RR:IL01-11934	Prosaro @ GS10.5.1	78.1	1.0	60.4	32.1	7.9	17.8	0.3
Livestock System	S-C <sub>silage</sub> -W	SS:P25R47	UTC	73.3	1.0	58.2	32.4	6.7	31.5	1.3
Livestock System	S-C <sub>silage</sub> -W	SS:P25R47	Prosaro @ GS10.5.1	85.6	1.0	58.0	32.9	5.9	13.1	1.5

continue

**Table C-48. Corn, Soybean and Wheat Rotation - Wheat**  
(continued) **Arlington, WI - 2011.**

Rotation		Variety **	Fungicide	Yield bu/A	Lodg 1-5	Test weight lbs/bu	1000 kernel wt. g	FHB Rating July 6, 2011		DON ppm
Name*	Sequence							Incidence %	Severity %	
Livestock System	S-C <sub>silage</sub> -W	RS:P25R47	UTC	87.1	1.0	57.8	29.8	10.3	18.7	1.2
Livestock System	S-C <sub>silage</sub> -W	RS:P25R47	Prosaro @ GS10.5.1	92.3	1.0	57.9	32.2	9.2	23.3	1.3
Livestock System	S-C <sub>silage</sub> -W	SR:IL01-11934	UTC	79.7	1.0	59.7	30.2	15.9	47.0	0.7
Livestock System	S-C <sub>silage</sub> -W	SR:IL01-11934	Prosaro @ GS10.5.1	72.3	1.0	59.6	30.2	10.7	26.3	0.7
Means				76.4	1.0	58.9	31.1	8.8	26.0	0.9
<b><u>Probability</u></b>										
Rotation ( R)				<0.1	>50	19.5	9.1	10.3	>50	1.9
Variety (V)				2.3	>50	<0.1	0.3	13.5	6.5	<0.1
R x V				19.4	>50	>50	25.3	0.1	>50	7.9
Fungicide (F)				19.0	>50	>50	6.7	<0.1	<0.1	8.9
R x V				<0.1	>50	>50	>50	34.4	>50	25.5
V x F				>50	>50	27.5	11.3	43.2	>50	>50
R x F x V				22.0	>50	>50	>50	>50	36.9	4.9
<b><u>LSD (0.10)</u></b>										
Rotation ( R)				5.6	NS	NS	1.1	1.8	NS	0.3
Variety (V)				3.9	NS	0.4	0.8	NS	8.3	0.2
R x V				NS	NS	NS	NS	3.4	NS	0.4
Fungicide (F)				NS	NS	NS	0.7	2.3	4.7	0.1
R x V				6.5	NS	NS	NS	NS	NS	NS
V x F				NS	NS	NS	NS	NS	NS	NS
<b>CV %</b>				9	0	1	5	63	45	36

\* Continuous wheat data not included due to extensive weed competition

\*\* RS= Resistant planted in odd years; SR= Resistant planted in even years.

Fusarium resistant variety = IL01-11934

Fusarium susceptible variety = P25R47

## FIELD EXPERIMENT HISTORY

**Title:** Corn/Soybean/Wheat Rotation Study  
**Experiment:** Trial ID: 11V90 Year: 2011  
**Personnel:** M.G. Bertram  
**Location:** Stratford, WI County: Marathon  
**Supported by:** Marshfield Ag. Research Station

### Site Information

**Field:** 405 **Previous Crop:** Corn/Soybean/Wheat **Soil Type:** Withee silt loam  
**Soil Test :** **Date:** 11/7/11 **pH** 7.0 **SOM (%)** 3.3 **P (ppm)** 49 **K (ppm)** 162

### Plot Management

**Tillage Operations:** W: Fall disk, field cultivator, pulvimulcher  
 C,S: Fall chisel plow, Spring disk, field cultivator C: Cultivated

**Fertilizer:**

	<u>Analysis</u>	<u>Rate</u>	<u>Date</u>	<u>Crop</u>
<b>Starter</b>	None			
<b>Pre Plant</b>	9-11-30-6S-Zn	150 lb/A	5/20/2011	Corn, Soybean, Wheat
<b>Post plant</b>	28-0-0	27 gal/A	6/30/2011	Corn- Alternating
<b>Post plant</b>	28-0-0	40 gal/A	6/30/2011	Corn- Continuous & GSI
<b>Post plant</b>	46-0-0	65 lb/A	5/24/2011	Wheat- GSI
<b>Post plant</b>	46-0-0	152 lb/A	5/24/2011	Wheat- Continuous
<b>Manure</b>	none	N/A	N/A	

**Herbicide:** C,S Parallel 1.67 pt **Insecticide:** None  
 C,S Roundup WeatherMax 32 oz  
 W Affinity Brodspec 1 oz

**Irrigation:** None **Hybrid:** Corn: Pioneer P8906HR (89 HX,LL,RR)  
 Soybean: Croplan R2T0860 (0.8)  
 Wheat: Pioneer 25R47

**Planting Date:** W: 10/8/2010 **Planting Depth:** C: 1.5" **Row Width:** C: 30"  
 C,S: 5/20/2011 S,W: 1" W: 6" S: 7.5"

**Target Plant Density:** C: 35,000 S: 225,000 **Planting Method:** C: John Deere 1750 planter  
 W: 1,800,000 S: IH 5300 Drill  
 W: John Deere 450 Drill

**Harvest Date:** C: 11/3/2011 CS: 9/22/2011 **Harvest Method:** Silage: hand harvested  
 S: 10/6/2011 W: 8/15/2011 C: Massey plot combine  
 S,W: White plot combine

**Notes:** Sixth year of establishing Rotation Study

### Experimental Design

**Design:** RCB **Replications:** 3  
**Plot Size Seeded:** 60' x 60' **Experiment Size:** 3.09 A  
**Harvest Plot size:** C: 60' x 5'; S: 60' x 13'; W: 60' x 13'; Silage: 10' x 2.5'

### **Factors/Treatments:**

#### Rotation

Continuous- Corn, Soybean, or Winter Wheat  
 Rotation- Corn/Soybean  
 Grain System I- Corn/Soybean/Winter Wheat

**Results:** Tables C-49, C-50, C-51 and C-52

**Table C-49. Corn, Soybean, and Wheat Rotation- Corn  
Marshfield, WI - 2011.**

Rotation	Yield bu/A	Moisture %	Test Weight in.	Harvest Population ppa	Stalk Lodging %
Continuous	163.2	20.7	49.7	32,073	0.2
Alternating	171.6	19.9	50.4	32,331	0.6
Grain System I	170.6	20.2	49.8	33,267	0.6
Mean	168.5	20.3	50.0	32,557	0.5
<u>Probability (%)</u>					
Treatment	1.5	8.0	11.2	7.7	34.3
<u>LSD 10%</u>					
Treatment	4.9	0.5	0.6	898	NS
CV (%)	4	3	1	3	137

**Table C-50. Corn, Soybean, and Wheat Rotation- Corn Silage  
Marshfield, WI - 2011.**

Rotation	Yield tn dm/A	Moisture %	Kernel milk %	Harvest Population ppa	CP %	ADF %	NDF %	NDFD %	NFC %	Starch %	TDN %	Milk per	
												Ton lb	Acre lb
Continuous	7.5	65.2	59	35,235	7.9	19.1	38.4	59.8	48.6	43.7	74.5	3,778	28,271
Alternating	8.5	65.0	52	35,429	8.4	20.1	40.1	59.3	46.2	41.3	73.2	3,678	31,151
Grain System I	8.2	67.2	56	35,041	8.3	20.0	39.2	60.0	47.1	42.4	74.4	3,768	31,047
Mean	8.1	65.8	56	35,235	8.2	19.7	39.2	59.7	47.3	42.4	74.0	3,741	30,156
<u>Probability (%)</u>													
Treatment	0.2	1.1	2.6	>50	26.2	1.9	5.0	>50	9.4	11.0	17.6	20.7	26.5
<u>LSD 10%</u>													
Treatment	0.4	1.2	4	NS	NS	0.5	1.0	NS	1.7	1.8	1.3	NS	NS
CV (%)	7	2	9	7	4	1	1	2	2	2	1	2	7

**Table C-51. Corn, Soybean, and Wheat Rotation- Soybean  
Marshfield, WI - 2011.**

Rotation	Yield bu/A	Moisture %	Test		
			Weight lb/bu	Height in.	Lodging 1 to 5
Continuous	50.4	11.6	57.5	34	1.0
Alternating	56.9	11.7	57.7	35	1.2
Grain System I	55.2	11.5	57.6	34	1.2
Mean	54.2	11.6	57.6	34	1.1
<u>Probability (%)</u>					
Treatment	<0.1	31.2	5.6	>50	30.4
<u>LSD 10%</u>					
Treatment	1.9	NS	0.2	NS	NS
CV (%)	4	2	0	5	30

**Table C-52. Corn, Soybean, and Wheat Rotation- Wheat  
Marshfield, WI - 2011.**

Rotation	Yield bu/A	Moisture %	Test		
			Weight lb/bu	Height in.	Lodging 1 to 5
Continuous	28.3	15.2	49.2	27	1.5
Grain System I	30.6	15.2	49.2	26	2.8
Mean	29.5	15.2	49.2	26.3	2.2
<u>Probability (%)</u>					
Treatment	34.4	>50	>50	>50	0.2
<u>LSD 10%</u>					
Treatment	NS	NS	NS	NS	0.6
CV (%)	14	2	2	4	24