FIELD EXPERIMENT HISTORY

Title: **Corn - Soybean - Wheat Response to Rotation**

Experiment: 09Rotation **Trial ID:** 3513 **Year:** 2012

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

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

Supported By: HATCH

Site Information

Field: ARS335 **Previous Crop:** See Factors **Soil Type:** Plano silt loam

Soil Test: **Date:** 6 /15/12 **pH:** 6.9 **OM (%)** 2.9 **P (ppm)** 19 **K (ppm)** 104

Plot Management

Tillage Operations: No-Till

Fertilizer:

	Analysis:	Rate lbs/A:	Date:
Preplant :	N/A	N/A	N/A
Starter :	N/A	N/A	N/A
Post plant :	28-0-0	70 gal/A	6 /14/12
Manure:	N/A	N/A	N/A

Herbicide: Roundup 42 oz/A 4/6/12
2,4-D LV4 16 oz/A 4/6/12
Dual II Mag 24 oz/A 5/9/12
Roundup 22 oz/A 6/1/12

Insecticide: Dimethoate 400 1pts/A 7/29/12

Hybrid: Corn: Susceptible: Pioneer 9917AM1
Resistant: Pioneer 0392AMX-R
Soybean: Susceptible: Pioneer 92M33
Resistant: Pioneer 92Y30
Wheat: Susceptible: Pioneer 25R47
Resistant: Excel 234

Planting Date: Corn: 5/11/2012
Soybean: 5/11/12
Wheat: 10/4/11

Planting Depth: 1.5"

Target Plant Density: C: 32579 ppa
S: 160000 ppa
W: 1.7 Million ppa

Row Width: 30"

Planting Method: C & S: Kinze 2000 Inter-row
W:JD750 No-Till drill

Harvest Date: Corn: 9/25/12
Silage: 9/4/12 Soybean: 10/3/12
Wheat: 7/2/12

Harvest Method: G:Massey 8XP
S: NH 707
W:Almaco combine

Notes: Seed corn treated with Poncho 250

Fungicide: Headline 6 oz/A 6/15/12

Experimental Design

Design: RCB split-split-block

Replications: 3

Plot Size Seeded: MP: 60' x 60' SP: 10’ x 30’

Experiment Size: 3.47 A; Corn = 1.24A

Harvest Plot Size: G: 5' x 60'

Factors/Treatments:

Rotation:

1) CC
2) SS
3) WW
4) CS- C
5) SC- S
6) GS1: CW- C
7) GS1: CSW- S (early)
8) GS1: CSW- W
9) GS2: CWS- C (early)
10) GS2: CWS- S
11) GS2: CWS- W
12) Flex: CWS- C (silage)
13) Flex: CWS- S
14) Flex: CWS- W (straw)

Hybrid: rotation based upon Fusarium resistance

1)Resistant onto Resistant
2)Susceptible onto Susceptible
3)R onto S
4)S onto R

Fungicide:

1) UTC
2) Fungicide

Results: Tables C-38,C-39,C-40 & C-41

Table C-38. Corn, Soybean and Wheat Rotation - Corn
Arlington, WI - 2012.

Rotation	Variety	Fungicide	Yield	Moisture	Test weight	Return $6.65/bu	Lodged			Harvest plants
							Total	Stalk	Root	
			bu/A	%	lbs/bu	$/A	%	%	%	plants/A
		Headline	168	24	54.0	1052	16.0	13.3	2.7	34229
		UTC	168	24	54.0	1047	15.9	13.6	2.3	33833
	RR:P0392		172	28	53.2	1062	4.3	3.0	1.3	33875
	RS:P0392		171	27	53.5	1060	3.2	2.1	1.0	34417
	SR:P9917		166	20	54.4	1049	29.9	25.5	4.4	34083
	SS:P9917		162	19	54.9	1025	26.4	23.1	3.3	33750
	RR:P0392	Headline	174	28	53.1	1074	4.5	3.3	1.2	33917
	RR:P0392	UTC	170	28	53.2	1050	4.1	2.6	1.5	33833
	RS:P0392	Headline	171	27	53.5	1061	2.6	1.6	1.0	34750
	RS:P0392	UTC	172	27	53.5	1060	3.7	2.7	1.0	34083
	SR:P9917	Headline	163	20	54.3	1034	29.4	23.8	5.6	34333
	SR:P9917	UTC	169	20	54.5	1065	30.4	27.2	3.2	33833
	SS:P9917	Headline	164	19	55.1	1039	27.6	24.4	3.2	33917
	SS:P9917	UTC	160	19	54.6	1012	25.2	21.9	3.4	33583
CC			165	31	52.1	1013	17.6	17.6	0.0	34417
CS			169	22	54.2	1060	13.2	11.5	1.8	33708
CSW			193	22	54.9	1209	15.2	12.5	2.8	34500
CWS			145	19	54.9	916	17.7	12.3	5.4	33500
CC		Headline	163	31	52.0	996	17.7	17.7	0.0	34833
CC		UTC	168	30	52.1	1030	17.4	17.4	0.0	34000
CS		Headline	171	22	54.2	1072	12.9	11.5	1.4	34333
CS		UTC	167	23	54.1	1048	13.6	11.5	2.1	33083
CSW		Headline	193	22	55.0	1214	15.6	11.7	3.8	35000
CSW		UTC	192	23	54.8	1204	14.9	13.2	1.7	34000
CWS		Headline	146	19	54.9	927	17.9	12.2	5.7	32750
CWS		UTC	143	20	54.9	904	17.5	12.3	5.2	34250
CC	RR:P0392		158	38	51.2	943	0.0	0.0	0.0	33833
CC	RS:P0392		161	38	51.0	963	0.0	0.0	0.0	36333
CC	SR:P9917		174	24	52.3	1086	35.6	35.6	0.0	33667
CC	SS:P9917		169	22	53.7	1059	34.7	34.7	0.0	33833
CS	RR:P0392		175	26	53.5	1087	0.0	0.0	0.0	34167
CS	RS:P0392		173	25	53.6	1074	3.1	1.5	1.6	32833
CS	SR:P9917		165	19	54.6	1042	17.9	15.0	2.9	34000
CS	SS:P9917		164	19	54.9	1038	32.0	29.4	2.6	33833

continued

Table C-38. Corn, Soybean and Wheat Rotation - Corn

(continue) **Arlington, WI - 2012.**

Rotation	Variety	Fungicide	Yield	Moisture	Test weight	Return $6.65/bu	Lodged			Harvest plants
							Total	Stalk	Root	
			bu/A	%	lbs/bu	$/A	%	%	%	plants/A
CSW	RR:P0392		197	27	53.6	1222	1.1	1.1	0.0	33000
CSW	RS:P0392		200	24	54.8	1248	1.9	0.0	1.9	35333
CSW	SR:P9917		187	19	55.7	1188	37.6	33.3	4.3	35500
CSW	SS:P9917		186	20	55.4	1176	20.3	15.4	4.8	34167
CWS	RR:P0392		159	22	54.3	998	16.1	10.8	5.2	34500
CWS	RS:P0392		152	21	54.6	956	7.6	7.1	0.5	33167
CWS	SR:P9917		138	17	55.1	880	28.4	18.2	10.2	33167
CWS	SS:P9917		130	17	55.5	828	18.8	13.1	5.8	33167
CC	RR:P0392	Headline	159	39	51.4	949	0.0	0.0	0.0	34000
CC	RR:P0392	UTC	157	37	51.1	937	0.0	0.0	0.0	33667
CC	RS:P0392	Headline	159	38	50.9	952	0.0	0.0	0.0	37667
CC	RS:P0392	UTC	163	38	51.1	975	0.0	0.0	0.0	35000
CC	SR:P9917	Headline	171	24	52.0	1070	37.4	37.4	0.0	33667
CC		UTC	177	24	52.7	1103	33.7	33.7	0.0	33667
CC	SS:P9917	Headline	161	22	53.7	1013	33.4	33.4	0.0	34000
CC	SS:P9917	UTC	176	23	53.6	1105	36.0	36.0	0.0	33667
CS	RR:P0392	Headline	182	26	53.1	1130	0.0	0.0	0.0	33333
CS	RR:P0392	UTC	168	25	53.9	1044	0.0	0.0	0.0	35000
CS	RS:P0392	Headline	171	25	53.8	1066	2.9	2.9	0.0	33667
CS	RS:P0392	UTC	174	26	53.4	1083	3.2	0.0	3.2	32000
CS	SR:P9917	Headline	161	19	54.4	1017	6.7	2.9	3.8	35667
CS	SR:P9917	UTC	169	20	54.8	1067	29.1	27.1	2.1	32333
CS	SS:P9917	Headline	170	19	55.6	1076	41.9	40.0	1.9	34667
CS	SS:P9917	UTC	158	19	54.2	1000	22.0	18.8	3.2	33000
CSW	RR:P0392	Headline	200	27	53.6	1236	1.0	1.0	0.0	33333
CSW	RR:P0392	UTC	195	26	53.6	1207	1.2	1.2	0.0	32667
CSW	RS:P0392	Headline	202	24	55.1	1260	2.9	0.0	2.9	36000
CSW	RS:P0392	UTC	198	25	54.4	1236	0.9	0.0	0.9	34667
CSW	SR:P9917	Headline	183	19	55.6	1164	40.5	33.9	6.5	36333
CSW	SR:P9917	UTC	192	20	55.7	1213	34.8	32.8	2.1	34667
CSW	SS:P9917	Headline	188	20	55.5	1194	18.0	12.1	5.9	34333
CSW	SS:P9917	UTC	183	19	55.3	1159	22.6	18.8	3.8	34000
CWS	RR:P0392	Headline	156	21	54.3	983	17.0	12.4	4.6	35000
CWS	RR:P0392	UTC	162	23	54.2	1012	15.1	9.3	5.9	34000
CWS	RS:P0392	Headline	153	21	54.3	966	4.4	3.3	1.1	31667
CWS	RS:P0392	UTC	151	22	54.9	946	10.8	10.8	0.0	34667

continued

Table C-38. Corn, Soybean and Wheat Rotation - Corn

(continue) **Arlington, WI - 2012.**

Rotation	Variety	Fungicide	Yield	Moisture	Test weight	Return $6.65/bu	Lodged			Harvest
							Total	Stalk	Root	plants
			bu/A	%	lbs/bu	$/A	%	%	%	plants/A
CWS	SR:P9917	Headline	138	16	55.3	885	33.0	21.0	12.0	31667
CWS	SR:P9917	UTC	138	17	54.9	876	23.9	15.4	8.5	34667
CWS	SS:P9917	Headline	137	17	55.6	872	17.3	12.3	5.1	32667
CWS	SS:P9917	UTC	123	16	55.4	783	20.3	13.9	6.5	33667
Mean			168	24	54.0	1049	15.9	13.4	2.5	34031
Probability(%)										
Rotation (R)			3.9	0.1	0.0	4.7	76.9	16.4	73.5	52.3
Variety (V)			6.7	0.0	0.0	47.7	0.0	8.2	0.0	71.7
R x V			7.4	0.0	15.8	2.2	13.0	47.5	4.5	15.9
Fungicide(F)			77.9	48.4	73.6	70.2	95.3	42.9	90.4	36.5
R x F			47.6	85.2	82.2	41.8	99.8	38.9	99.6	10.2
V x F			42.6	90.7	28.5	42.1	96.1	32.9	86.7	96.9
R x V x F			59.9	92.5	28.0	59.2	43.0	94.1	36.8	39.4
LSD(0.10)										
Rotation (R)			23	2.8	0.4	152	NS	NS	NS	NS
Variety (V)			7	1.1	0.4	NS	7.4	2.4	6.9	NS
R x V			22	3.0	NS	141	NS	NS	15.2	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-39. Corn, Soybean and Wheat Rotation - Silage
Arlington, WI - 2012.

Variety	Fungicide	Plant population	Whole Plant Dry Matter Yield	Moisture	Kernel milk	Crude protein	ADF	NDF	*In Vitro* Digest	NDFD	Starch	Milk per Ton	Milk per Acre
		plants/A	tons/A	%	%	%	%	%	%	%	%	lbs/T	lbs/T
	Headline	35063	5.8	47.8	42.5	7.5	20.3	36.9	86.8	64.2	39.7	3680	21406
	UTC	34256	5.7	49.3	42.5	7.5	20.4	37.2	86.4	63.4	39.7	3654	20909
RR:P0392		33772	5.5	52.0	49.2	7.8	21.9	39.4	85.9	64.1	37.0	3609	19835
RS:P0392		33235	6.1	49.9	48.3	7.9	20.0	36.4	87.1	64.5	39.5	3698	22605
SR:P9917		35386	5.8	46.7	40.0	7.0	20.5	37.3	86.1	62.8	40.3	3641	20911
SS:P9917		36246	5.7	45.6	32.5	7.2	18.9	35.1	87.3	63.8	42.1	3721	21280
RR:P0392	Headline	33988	5.5	52.3	45.0	7.8	22.0	39.8	85.8	64.3	36.5	3602	19761
RR:P0392	UTC	33557	5.5	51.6	53.3	7.7	21.7	39.0	85.9	63.8	37.5	3615	19908
RS:P0392	Headline	34633	6.3	49.5	51.7	8.0	20.1	36.2	87.4	65.1	39.2	3717	23416
RS:P0392	UTC	31836	5.9	50.3	45.0	7.9	20.0	36.7	86.8	63.9	39.8	3679	21794
SR:P9917	Headline	35063	5.6	45.0	33.3	6.8	20.0	36.4	86.7	63.6	41.5	3684	20674
SR:P9917	UTC	35708	5.9	48.4	46.7	7.1	21.0	38.2	85.5	62.0	39.1	3597	21149
SS:P9917	Headline	36569	5.8	44.5	40.0	7.3	19.0	35.3	87.2	63.8	41.7	3718	21773
SS:P9917	UTC	35924	5.6	46.8	25.0	7.1	18.8	35.0	87.3	63.7	42.5	3723	20787
Mean		34660	5.8	48.5	42.5	7.5	20.3	37.1	86.6	63.8	39.7	3667	21158
Probability(%)													
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
LSD (0.10)													
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-40. Corn, Soybean and Wheat Rotation - Soybean Arlington, WI - 2012.

Rotation			Disease/	Seed applied			Seed Composition	
Name	Sequence	#	variety rotation*	fungicide **	Yield	Lodg.	Protein	Oil
					bu/a	1 to 5	---- % ----	
				UTC	48.3	1.0	34.9	19.3
				Maxim	49.7	1.0	34.9	19.3
			RR:P92Y30		54.4	1.0	33.9	20.1
			SS:P92M33		45.8	1.0	35.9	18.6
			RS:P92M33		52.7	1.0	33.9	20.0
			SR:P92Y30		43.2	1.0	35.9	18.5
			RR:P92Y30	UTC	53.8	1.0	33.9	20.0
			RR:P92Y30	Maxim	55.1	1.0	33.8	20.1
			SS:P92M33	UTC	45.3	1.0	35.9	18.5
			SS:P92M33	Maxim	46.2	1.0	35.9	18.6
			RS:P92M33	UTC	51.8	1.0	33.9	20.1
			RS:P92M33	Maxim	53.6	1.0	33.9	20.0
			SR:P92Y30	UTC	42.4	1.0	35.9	18.6
			SR:P92Y30	Maxim	44.0	1.0	36.0	18.4
Continuous	S-S-S	2			39.3	1.0	35.2	19.2
Alternating	C-S	5			48.9	1.0	34.6	19.4
Grain system I	W-Cgrain-S	6			50.0	1.0	34.7	19.4
Grain system II	Cgrain-W-S	10			49.5	1.0	34.9	19.4
Livestock System	Csilage-W-S	13			57.5	1.0	35.1	19.1
Continuous	S-S-S	2		UTC	40.5	1.0	35.2	19.1
Continuous	S-S-S	2		Maxim	38.1	1.0	35.2	19.2
Alternating	C-S	5		UTC	46.7	1.0	34.5	19.5
Alternating	C-S	5		Maxim	51.0	1.0	34.8	19.3
Grain system I	W-Cgrain-S	6		UTC	49.4	1.0	34.8	19.3
Grain system I	W-Cgrain-S	6		Maxim	50.7	1.0	34.6	19.4
Grain system II	Cgrain-W-S	10		UTC	49.7	1.0	34.9	19.4
Grain system II	Cgrain-W-S	10		Maxim	49.3	1.0	34.9	19.4
Livestock System	Csilage-W-S	13		UTC	55.4	1.0	35.1	19.2
Livestock System	Csilage-W-S	13		Maxim	59.5	1.0	35.1	19.1
Continuous	S-S-S	2	RR:P92Y30		43.8	1.0	34.2	19.9
Continuous	S-S-S	2	SS:P92M33		36.7	1.0	36.1	18.5
Continuous	S-S-S	2	RS:P92M33		43.6	1.0	34.2	19.9
Continuous	S-S-S	2	SR:P92Y30		33.1	1.0	36.3	18.4
Alternating	C-S	5	RR:P92Y30		53.9	1.0	33.6	20.3
Alternating	C-S	5	SS:P92M33		43.2	1.0	35.7	18.6
Alternating	C-S	5	RS:P92M33		53.1	1.0	33.4	20.3
Alternating	C-S	5	SR:P92Y30		45.3	1.0	35.9	18.6

continued

Table C-40. Corn, Soybean and Wheat Rotation - Soybean

(continue) Arlington, WI - 2012.

Rotation			Disease/	Seed applied			Seed Composition	
Name	Sequence	#	variety rotation*	fungicide **	Yield	Lodg.	Protein	Oil
					bu/a	1 to 5	---- % ----	
Grain system I	W-Cgrain-S	6	RR:P92Y30		58.6	1.0	33.7	20.1
Grain system I	W-Cgrain-S	6	SS:P92M33		42.4	1.0	35.7	18.7
Grain system I	W-Cgrain-S	6	RS:P92M33		50.9	1.0	33.8	20.1
Grain system I	W-Cgrain-S	6	SR:P92Y30		48.3	1.0	35.5	18.6
Grain system II	Cgrain-W-S	10	RR:P92Y30		51.4	1.0	33.6	20.3
Grain system II	Cgrain-W-S	10	SS:P92M33		53.0	1.0	36.0	18.5
Grain system II	Cgrain-W-S	10	RS:P92M33		51.7	1.0	34.0	20.1
Grain system II	Cgrain-W-S	10	SR:P92Y30		41.9	1.0	36.0	18.6
Livestock System	Csilage-W-S	13	RR:P92Y30		64.5	1.0	34.2	19.8
Livestock System	Csilage-W-S	13	SS:P92M33		53.7	1.0	36.0	18.5
Livestock System	Csilage-W-S	13	RS:P92M33		64.3	1.0	34.3	19.8
Livestock System	Csilage-W-S	13	SR:P92Y30		47.3	1.0	36.0	18.5
Continuous	S-S-S	2	RR:P92Y30	UTC	43.1	1.0	34.3	19.7
Continuous	S-S-S	2	RR:P92Y30	Maxim	44.6	1.0	34.1	20.0
Continuous	S-S-S	2	SS:P92M33	UTC	35.2	1.0	36.3	18.3
Continuous	S-S-S	2	SS:P92M33	Maxim	38.2	1.0	35.9	18.7
Continuous	S-S-S	2	RS:P92M33	UTC	47.9	1.0	34.1	20.0
Continuous	S-S-S	2	RS:P92M33	Maxim	39.4	1.0	34.3	19.8
Continuous	S-S-S	2	SR:P92Y30	UTC	35.8	1.0	36.1	18.5
Continuous	S-S-S	2	SR:P92Y30	Maxim	30.4	1.0	36.4	18.2
Alternating	C-S	5	RR:P92Y30	UTC	55.0	1.0	33.5	20.3
Alternating	C-S	5	RR:P92Y30	Maxim	52.9	1.0	33.7	20.2
Alternating	C-S	5	SS:P92M33	UTC	41.6	1.0	35.5	18.7
Alternating	C-S	5	SS:P92M33	Maxim	44.8	1.0	35.8	18.6
Alternating	C-S	5	RS:P92M33	UTC	48.2	1.0	33.1	20.4
Alternating	C-S	5	RS:P92M33	Maxim	57.9	1.0	33.6	20.2
Alternating	C-S	5	SR:P92Y30	UTC	42.2	1.0	35.7	18.7
Alternating	C-S	5	SR:P92Y30	Maxim	48.5	1.0	36.1	18.4
Grain system I	W-Cgrain-S	6	RR:P92Y30	UTC	59.3	1.0	33.9	20.0
Grain system I	W-Cgrain-S	6	RR:P92Y30	Maxim	57.9	1.0	33.6	20.2
Grain system I	W-Cgrain-S	6	SS:P92M33	UTC	41.6	1.0	35.8	18.6
Grain system I	W-Cgrain-S	6	SS:P92M33	Maxim	43.1	1.0	35.7	18.7
Grain system I	W-Cgrain-S	6	RS:P92M33	UTC	47.8	1.0	34.0	20.1
Grain system I	W-Cgrain-S	6	RS:P92M33	Maxim	54.0	1.0	33.6	20.2
Grain system I	W-Cgrain-S	6	SR:P92Y30	UTC	48.8	1.0	35.6	18.6
Grain system I	W-Cgrain-S	6	SR:P92Y30	Maxim	47.9	1.0	35.5	18.7
Grain system II	Cgrain-W-S	10	RR:P92Y30	UTC	51.0	1.0	33.6	20.4
Grain system II	Cgrain-W-S	10	RR:P92Y30	Maxim	51.7	1.0	33.6	20.1
Grain system II	Cgrain-W-S	10	SS:P92M33	UTC	55.7	1.0	36.1	18.5
Grain system II	Cgrain-W-S	10	SS:P92M33	Maxim	50.2	1.0	36.0	18.6

continued

Table C-40. Corn, Soybean and Wheat Rotation - Soybean

(continue) Arlington, WI - 2012.

Rotation			Disease/	Seed applied			Seed Composition	
Name	Sequence	#	variety rotation*	fungicide **	Yield	Lodg.	Protein	Oil
					bu/a	1 to 5	---- % ----	
Grain system II	Cgrain-W-S	10	RS:P92M33	UTC	51.8	1.0	34.0	20.0
Grain system II	Cgrain-W-S	10	RS:P92M33	Maxim	51.6	1.0	33.9	20.2
Grain system II	Cgrain-W-S	10	SR:P92Y30	UTC	40.3	1.0	36.1	18.6
Grain system II	Cgrain-W-S	10	SR:P92Y30	Maxim	43.6	1.0	35.9	18.5
Livestock System	Csilage-W-S	13	RR:P92Y30	UTC	60.5	1.0	34.2	19.7
Livestock System	Csilage-W-S	13	RR:P92Y30	Maxim	68.5	1.0	34.2	19.9
Livestock System	Csilage-W-S	13	SS:P92M33	UTC	52.6	1.0	36.1	18.5
Livestock System	Csilage-W-S	13	SS:P92M33	Maxim	54.8	1.0	36.0	18.4
Livestock System	Csilage-W-S	13	RS:P92M33	UTC	63.4	1.0	34.3	19.8
Livestock System	Csilage-W-S	13	RS:P92M33	Maxim	65.3	1.0	34.2	19.7
Livestock System	Csilage-W-S	13	SR:P92Y30	UTC	44.9	1.0	36.0	18.5
Livestock System	Csilage-W-S	13	SR:P92Y30	Maxim	49.7	1.0	36.0	18.4
Mean					49.0	1.0	34.9	19.3
Probability (Pr>F) %								
Rotation (R)					<0.1	>50	18.2	7.4
Variety (V)					<0.1	>50	<0.1	<0.1
R x V					7.3	>50	12.5	31.2
Fungicide (F)					20.7	>50	>50	>50
R x F					26.1	>50	2.3	17.8
V x F					>50	>50	>50	20.7
R x V x F					>50	>50	>50	22.4
LSD (0.10)								
Rotation (R)					4.2	NS	NS	0.2
Variety (V)					2.9	NS	0.2	0.1
R x V					6.9	NS	NS	NS
Fungicide (F)					NS	NS	NS	NS
R x F					NS	NS	0.47	NS
V x F					NS	NS	NS	NS
CV(%)					12	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-41. Corn, Soybean and Wheat Rotation - Wheat
Arlington, WI - 2012.

Rotation						Test
Name*	Sequence	Variety **	Fungicide	Yield	Lodg	weight
				bu/A	1-5	lbs/bu
			UTC	70.4	1.0	61.8
			Prosaro @ GS10.5.1	77.6	1.0	62.0
		RR:Excel 234		69.4	1.0	62.6
		SS:P25R47		77.8	1.0	61.4
		RS:P25R47		75.4	1.0	61.1
		SR:Excel 234		73.5	1.0	62.5
		RR:Excel 234	UTC	69.7	1.0	62.6
		RR:Excel 234	Prosaro @ GS10.5.1	69.2	1.0	62.7
		SS:P25R47	UTC	74.2	1.0	61.3
		SS:P25R47	Prosaro @ GS10.5.1	81.4	1.0	61.4
		RS:P25R47	UTC	68.1	1.0	61.1
		RS:P25R47	Prosaro @ GS10.5.1	82.6	1.0	61.0
		SR:Excel 234	UTC	69.5	1.0	62.3
		SR:Excel 234	Prosaro @ GS10.5.1	77.4	1.0	62.7
Continuous	W-W-W			38.5	1.0	60.6
Grain system I	C-S-W			94.4	1.0	62.2
Grain system II	S-C-W			81.6	1.0	62.5
Livestock System	S-Csilage-W			81.5	1.0	62.3
Continuous	W-W-W		UTC	35.8	1.0	60.6
Continuous	W-W-W		Prosaro @ GS10.5.1	41.3	1.0	60.7
Grain system I	C-S-W		UTC	90.1	1.0	62.1
Grain system I	C-S-W		Prosaro @ GS10.5.1	98.7	1.0	62.3
Grain system II	S-C-W		UTC	76.5	1.0	62.5
Grain system II	S-C-W		Prosaro @ GS10.5.1	86.8	1.0	62.4
Livestock System	S-Csilage-W		UTC	79.2	1.0	62.2
Livestock System	S-Csilage-W		Prosaro @ GS10.5.1	83.8	1.0	62.4
Continuous	W-W-W	RR:Excel 234		36.8	1.0	60.8
Continuous	W-W-W	SS:P25R47		36.3	1.0	60.9
Continuous	W-W-W	RS:P25R47		37.1	1.0	60.0
Continuous	W-W-W	SR:Excel 234		44.1	1.0	60.7
Grain system I	C-S-W	RR:Excel 234		93.7	1.0	63.5
Grain system I	C-S-W	SS:P25R47		106.0	1.0	61.3
Grain system I	C-S-W	RS:P25R47		89.1	1.0	60.8
Grain system I	C-S-W	SR:Excel 234		88.9	1.0	63.2
Grain system II	S-C-W	RR:Excel 234		72.5	1.0	63.2
Grain system II	S-C-W	SS:P25R47		83.5	1.0	61.7
Grain system II	S-C-W	RS:P25R47		85.2	1.0	61.6
Grain system II	S-C-W	SR:Excel 234		85.3	1.0	63.3

continued

Table C-41. Corn, Soybean and Wheat Rotation - Wheat
(continue) Arlington, WI - 2012.

Rotation						Test
Name*	Sequence	Variety **	Fungicide	Yield	Lodg	weight
				bu/A	1-5	lbs/bu
Livestock System	S-Csilage-W	RR:Excel 234		74.7	1.0	63.0
Livestock System	S-Csilage-W	SS:P25R47		85.5	1.0	61.5
Livestock System	S-Csilage-W	RS:P25R47		90.3	1.0	61.9
Livestock System	S-Csilage-W	SR:Excel 234		75.6	1.0	62.8
Continuous	W-W-W	RR:Excel 234	UTC	34.4	1.0	61.1
Continuous	W-W-W	RR:Excel 234	Prosaro @ GS10.5.1	39.2	1.0	60.5
Continuous	W-W-W	SS:P25R47	UTC	37.7	1.0	60.8
Continuous	W-W-W	SS:P25R47	Prosaro @ GS10.5.1	34.8	1.0	61.1
Continuous	W-W-W	RS:P25R47	UTC	30.4	1.0	60.0
Continuous	W-W-W	RS:P25R47	Prosaro @ GS10.5.1	43.7	1.0	60.1
Continuous	W-W-W	SR:Excel 234	UTC	40.5	1.0	60.5
Continuous	W-W-W	SR:Excel 234	Prosaro @ GS10.5.1	47.7	1.0	61.0
Grain system I	C-S-W	RR:Excel 234	UTC	94.2	1.0	63.3
Grain system I	C-S-W	RR:Excel 234	Prosaro @ GS10.5.1	93.2	1.0	63.6
Grain system I	C-S-W	SS:P25R47	UTC	104.0	1.0	61.3
Grain system I	C-S-W	SS:P25R47	Prosaro @ GS10.5.1	107.9	1.0	61.4
Grain system I	C-S-W	RS:P25R47	UTC	77.6	1.0	60.8
Grain system I	C-S-W	RS:P25R47	Prosaro @ GS10.5.1	100.5	1.0	60.8
Grain system I	C-S-W	SR:Excel 234	UTC	84.6	1.0	62.9
Grain system I	C-S-W	SR:Excel 234	Prosaro @ GS10.5.1	93.2	1.0	63.5
Grain system II	S-C-W	RR:Excel 234	UTC	73.6	1.0	63.3
Grain system II	S-C-W	RR:Excel 234	Prosaro @ GS10.5.1	71.5	1.0	63.1
Grain system II	S-C-W	SS:P25R47	UTC	75.5	1.0	61.7
Grain system II	S-C-W	SS:P25R47	Prosaro @ GS10.5.1	91.5	1.0	61.7
Grain system II	S-C-W	RS:P25R47	UTC	78.1	1.0	61.7
Grain system II	S-C-W	RS:P25R47	Prosaro @ GS10.5.1	92.3	1.0	61.5
Grain system II	S-C-W	SR:Excel 234	UTC	78.9	1.0	63.4
Grain system II	S-C-W	SR:Excel 234	Prosaro @ GS10.5.1	91.8	1.0	63.3
Livestock System	S-Csilage-W	RR:Excel 234	UTC	76.5	1.0	62.6
Livestock System	S-Csilage-W	RR:Excel 234	Prosaro @ GS10.5.1	72.9	1.0	63.4
Livestock System	S-Csilage-W	SS:P25R47	UTC	79.7	1.0	61.6
Livestock System	S-Csilage-W	SS:P25R47	Prosaro @ GS10.5.1	91.2	1.0	61.4
Livestock System	S-Csilage-W	RS:P25R47	UTC	86.5	1.0	62.1
Livestock System	S-Csilage-W	RS:P25R47	Prosaro @ GS10.5.1	94.0	1.0	61.8
Livestock System	S-Csilage-W	SR:Excel 234	UTC	74.1	1.0	62.5
Livestock System	S-Csilage-W	SR:Excel 234	Prosaro @ GS10.5.1	77.0	1.0	63.0

continued

Table C-41. Corn, Soybean and Wheat Rotation - Wheat
(continue) Arlington, WI - 2012.

Rotation						Test
Name*	Sequence	Variety **	Fungicide	Yield	Lodg	weight
				bu/A	1-5	lbs/bu
Means				74.0	1.0	61.9
Probability						
Rotation (R)				<0.1	>50	0.3
Variety (V)				0.3	>50	<0.1
R x V				<0.1	>50	1.7
Fungicide (F)				<0.1	>50	38.1
R x V				>50	>50	>50
V x F				2.2	>50	>50
R x F x V				>50	>50	>50
LSD (0.10)						
Rotation (R)				6.1	NS	0.6
Variety (V)				3.5	NS	0.4
R x V				8.6	NS	0.9
Fungicide (F)				2.7	NS	NS
R x V				NS	NS	NS
V x F				5.2	NS	NS
CV %				11	0	1

** RS= Resistant planted in odd years; SR= Resistant planted in even years.
Fusarium resistant variety = Excel 234
Fusarium suseptible variety = P25R47

FIELD EXPERIMENT HISTORY

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

Experiment: **Trial ID:** 12V90 **Year:** 2012

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: No-till S(rp): No-till replant
C,S: Spring chisel plow, field cultivator, pulvimulcher C: Cultivated

Fertilizer:

	Analysis	Rate	Date	Crop
Starter	9-11-30-6S-Zn	150 lb/A	5/17/2012	Corn
Post plant	9-11-30-6S-Zn	150 lb/A	11/8/2011	Wheat- Continuous & GSI
Post plant	9-11-30-6S-Zn	150 lb/A	5/22/2012	Soybean
Post plant	28-0-0	27 gal/A	6/20/2012	Corn- Alternating & GSI
Post plant	28-0-0	40 gal/A	6/20/2012	Corn- Continuous
Post plant	46-0-0	65 lb/A	4/2/2012	Wheat- GSI
Post plant	46-0-0	152 lb/A	4/2/2012	Wheat- Continuous
Post plant	46-0-0	87 lb/A	5/21/2012	Wheat- Continuous & GSI
Manure	none	N/A	N/A	

Herbicide:

C,S	Parallel 1.67 pt
C,S	Roundup WeatherMax 32 oz
S	Poast Plus 1.5 pt
W	Affinity Brodspec 0.5 oz; 2,4-D Amine 0.5 pt

Insecticide: C,S: Baythroid-2 1.6 oz

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

Planting Date: W: 10/7/2011 C,S: 5/17/2012 S(rp): 6/6/2012 **Planting Depth:** C: 1.5" S,W: 1" **Row Width:** C: 30" W: 7.5" S: 7.5"

Target Plant Density: C: 35,000 S: 208,000 W:1,437,500 S(rp): 130,000 **Planting Method:** C: John Deere 1750 planter S: IH 5300 Drill W,S(rp): Great Plains No-Till Drill

Harvest Date: C: 10/2/2012 S: 9/27/2012 CS: 9/6/2012 W: 7/24/2012 **Harvest Method:** CS: hand harvested C,S,W: White plot combine

Notes: Seventh year of Rotation Study, Soybeans were overseeded to thicken stand

Experimental Design

Design: RCB **Replications:** 3

Plot Size Seeded: 60' x 60' **Experiment Size:** 3.09 A

Harvest Plot size: C: 60' x 10'; S: 60' x 13'; W: 60' x 13'; CS: 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-42,C-43,C44 & C45**

Table C-42. Corn, Soybean, and Wheat Rotation- Corn Marshfield, WI - 2012.

Rotation	Yield	Moisture	Test Weight	Harvest Population	Stalk Lodging
	bu/A	%	in.	ppa	%
Continuous	111.8	23.8	55.3	30,621	0.9
Alternating	130.0	22.3	57.2	32,041	1.0
Grain System I	146.2	22.9	56.1	32,525	0.6
Mean	129.3	23.0	56.2	31,729	0.9
Probability (%)					
Treatment	0.4	>50	2.6	4.4	>50
LSD 10%					
Treatment	15.4	NS	1.1	1,263	NS
CV (%)	15	12	2	5	123

Table C-43. Corn, Soybean, and Wheat Rotation- Corn Silage Marshfield, WI - 2012.

Rotation	Yield	Moisture	Kernel milk	Harvest Population	CP	ADF	NDF	NDFD	NFC	Starch	TDN	Milk per Ton	Milk per Acre
	tn dm/A	%	%	ppa	%	%	%	%	%	%	%	lb	lb
Continuous	5.8	54.9	53	34,267	7.8	23.8	48.1	65.4	40.3	31.8	68.1	3,365	17,363
Alternating	7.0	53.1	43	35,042	8.1	22.1	45.7	63.8	41.9	35.2	66.4	3,230	23,181
Grain System I	6.9	52.9	48	34,074	7.3	23.1	47.1	65.8	41.7	34.4	67.0	3,289	21,983
Mean	6.6	53.6	48	34,461	7.7	23.0	46.9	65.0	41.3	33.8	67.2	3,295	20,842
Probability (%)													
Treatment	0.3	49.4	32.3	>50	44.8	45.9	41.4	30.1	22.1	7.3	28.1	27.0	0.4
LSD 10%													
Treatment	0.6	NS	NS	NS	NS	NS	NS	NS	NS	2.3	NS	NS	1735
CV (%)	11	7	29	8	9	7	4	2	2	4	2	3	5

Table C-44. Corn, Soybean, and Wheat Rotation- Soybean Marshfield, WI - 2012.

Rotation	Yield	Moisture	Test Weight	Height	Lodging
	bu/A	%	lb/bu	in.	1 to 5
Continuous	24.9	10.0	58.1	22	1.0
Alternating	31.6	10.0	58.5	25	1.0
Grain System I	36.7	10.1	58.3	28	1.0
Mean	31.1	10.0	58.3	25	1.0
Probability (%)					
Treatment	>0.1	5.0	35.6	<0.1	>50
LSD 10%					
Treatment	4.2	0.1	NS	2	NS
CV (%)	17	1	1	9	0

Table C-45. Corn, Soybean, and Wheat Rotation- Wheat Marshfield, WI - 2012.

Rotation	Yield	Moisture	Test Weight	Height	Lodging
	bu/A	%	lb/bu	in.	1 to 5
Continuous	59.7	13.4	55.4	32	1.0
Grain System I	91.2	13.3	57.4	34	1.0
Mean	75.4	13.3	56.4	33	1.0
Probability (%)					
Treatment	<0.1	43.8	<0.1	0.2	>50
LSD 10%					
Treatment	9.6	NS	0.5	1	NS
CV (%)	15	2	1	4	0