

## FIELD EXPERIMENT HISTORY

**Year:** 2009  
**Title:** Corn/Soybean/Wheat Rotation Study  
**Experiment:** 2991  
**Personnel:** Dr. Shawn Conley, Dr. Joe Lauer, John Gaska, Kent Kohn, and Thierno Diallo  
**Organization:** UW Madison, Dept. of Agronomy  
**Location:** Arlington Agricultural Research Station, Arlington, WI

## FIELD INFORMATION

Field: 335  
 Soil Type: Plano Silt Loam  
 Soil Test Results: pH: 6.9 O.M: 3.1% P: 19 ppm K: 127 ppm  
 Fertilizer Applied: Soybean: None  
 Wheat: 90 lb/a as 46-0-0  
 Corn: 200 lb/a as 32-0-0  
 Tillage Operations: No-till  
 Previous Crop: Corn/Soybean/Wheat  
 Previous Herbicide: Roundup  
 Irrigation: None

## EXPERIMENTAL PROCEDURE

Exp. Design: RCB Split plot  
 Replicates: 3  
 Variables: Factors/Treatments:

	<u>System</u>	<u>Rotation</u>	
	Continuous	Corn, Soybean or Winter Wheat	
	Alternating	Corn/Soybean	
	Grain system I	Corn/Soybean(early)/Winter Wheat(red clover)	
	Grain system II	Corn(early)/Winter Wheat(red clover)/Soybean	
	Livestock system	Corn(silage)/Winter Wheat(straw removed )/Soybean	
	<u>Corn</u>	<u>Soybean</u>	<u>Wheat</u>
Area Planted:	10' x 60'	10' x 60'	10' x 60'
Area Harvested:	5' x 27'	5' x 56'	5' x 26'
Row Spacing:	30"	30"	7.5"
Seeding Rate (spa):	32,500 seeds/acre	150,000 seeds/acre	1.7 million seeds/a
Hybrid/Variety:	DeKalb DKC54-49 DeKalb DKC57-79	NK S21-N6	Kaskaskia Pioneer 25R78
Planting Date:	6 & 8-May-09	12-May-09	6-Oct-08
Planting Equip:	Kinze 2000 Interplant	Kinze 2000 Interplant	JD 750 No-Till Drill
Harvesting Date:	9/14/2009 & 11/4/2009	12-Oct-09	6-Aug-09
Harvesting Equip:	707 silage harvester Kincaid plot combine	Almaco plot combine	Almaco plot combine
Foliar Fungicide Treatments	UTC Headline SBR 7.8 fl oz/a @ VT Quadris 6 fl oz/a @ VT Quilt 14 fl oz/a @ R3	UTC Headline 6 fl oz/a @R3 Quadris 6 fl oz/a @R3 Quilt 14 fl oz/a @R3 Date: 7/27/2009	UTC Quilt @ GS 9.0 Quilt @ GS 10.51 Proline @ GS10.51
	<u>Material</u>	<u>Rate</u>	<u>Date</u>
Herbicides:	Glyphos X-TRA	32 fl oz/a	22-Jun-09
	Honcho Plus	32 fl oz/a	4-May-09
	Dual II Magnum	24 fl oz/a	4-May-09
Insecticides:	Force 3G- continuous corn only	4.4 lbs/a	6-May-09

Results: Tables C-40, C-41, C-42 and C-43

**Table C- 40. Corn, Soybean and Wheat Rotation - Corn  
Arlington, WI - 2009.**

Rotation	Variety	Fungicide	Yield bu/A	Moisture %	Test weight lbs/bu	Grower return \$/A	Lodged			Harvest plants plants/A	Grain Composition			Ethanol	
							Total %	Stalk %	Root %		Oil %	Starch %	Protein %	per bu gallons	per A gallons
		HeadlineSBR 7.8 oz/a @VT	197	32.5	49.5	651	5.7	3.3	2.5	30333	3.3	59.4	7.6	2.86	564
		Quadris 6 fl oz/a @ VT	195	33.0	49.7	641	5.6	3.6	2.1	31000	3.3	59.3	7.6	2.86	556
		Quilt 14 fl oz/a @ VT	196	32.7	49.2	645	3.5	3.2	0.4	31438	3.3	59.3	7.6	2.86	560
		UTC	194	32.3	49.1	640	5.0	3.5	1.6	30125	3.2	59.3	7.5	2.87	555
	DKC54-49		195	30.8	50.2	651	3.8	3.5	0.4	30750	3.3	59.3	7.5	2.87	561
	DKC57-79		196	34.4	48.6	637	6.0	3.3	2.9	30698	3.3	59.4	7.7	2.85	557
	DKC54-49	HeadlineSBR 7.8 oz/a @VT	197	30.8	50.7	656	3.6	3.7	0.0	31000	3.2	59.6	7.6	2.87	565
	DKC54-49	Quadris 6 fl oz/a @ VT	194	30.9	50.5	647	3.8	3.1	0.8	31375	3.3	59.2	7.4	2.87	557
	DKC54-49	Quilt 14 fl oz/a @ VT	195	31.3	50.2	647	3.3	3.1	0.3	30083	3.3	59.3	7.5	2.87	559
	DKC54-49	UTC	196	30.3	49.4	655	4.6	4.2	0.5	30542	3.3	59.1	7.4	2.87	563
	DKC57-79	HeadlineSBR 7.8 oz/a @VT	198	34.1	48.4	646	7.8	2.9	4.9	29667	3.3	59.2	7.7	2.85	563
	DKC57-79	Quadris 6 fl oz/a @ VT	196	35.2	48.8	634	7.4	4.1	3.4	30625	3.4	59.4	7.8	2.84	555
	DKC57-79	Quilt 14 fl oz/a @ VT	197	34.0	48.3	644	3.7	3.3	0.5	32792	3.3	59.3	7.8	2.85	561
	DKC57-79	UTC	192	34.2	48.8	626	5.3	2.7	2.7	29708	3.2	59.5	7.7	2.86	547
	CC		175	35.2	49.0	569	10.6	5.2	5.4	30958	3.2	59.0	7.2	2.86	501
	SC		198	29.3	51.3	663	5.2	5.0	0.3	30625	3.1	59.5	7.3	2.88	568
	SC(e)W		186	33.1	45.0	609	1.9	2.4	0.0	32063	3.5	59.7	8.3	2.85	527
	WCS(e)		223	32.7	52.2	735	1.9	1.0	1.0	29250	3.3	59.2	7.6	2.86	638
	CC	HeadlineSBR 7.8 oz/a @VT	166	34.8	47.2	540	14.8	4.8	9.9	30667	3.1	59.1	7.1	2.87	476
	CC	Quadris 6 fl oz/a @ VT	180	35.3	49.5	585	11.5	6.2	5.3	30000	3.3	58.8	7.5	2.84	512
	CC	Quilt 14 fl oz/a @ VT	180	35.3	49.4	583	5.4	4.4	1.0	31167	3.2	58.9	7.1	2.86	514
	CC	UTC	176	35.6	50.1	568	10.9	5.6	5.4	32000	3.2	59.2	7.1	2.86	502

continued

**Table C- 40. Corn, Soybean and Wheat Rotation - Corn**(continued) **Arlington, WI - 2009.**

Rotation	Variety	Fungicide	Yield bu/A	Moisture %	Test weight lbs/bu	Grower return \$/A	Lodged			Harvest plants plants/A	Grain Composition			Ethanol	
							Total %	Stalk %	Root %		Oil %	Starch %	Protein %	per bu gallons	per A gallons
SC		HeadlineSBR 7.8 oz/a @VT	204	29.4	52.4	684	5.7	5.7	0.0	29167	3.1	59.3	7.5	2.88	586
SC		Quadris 6 fl oz/a @ VT	194	29.9	51.4	648	4.9	4.9	0.0	31000	3.2	59.4	7.2	2.87	556
SC		Quilt 14 fl oz/a @ VT	193	29.6	51.6	648	5.2	5.2	0.0	31333	3.2	59.6	7.3	2.87	555
SC		UTC	199	28.4	49.9	673	5.1	4.1	1.0	31000	3.1	59.5	7.3	2.89	575
SC(e)W		HeadlineSBR 7.8 oz/a @VT	193	33.1	45.8	635	1.1	1.6	0.0	32500	3.5	59.9	8.3	2.84	546
SC(e)W		Quadris 6 fl oz/a @ VT	179	34.2	46.6	585	2.1	2.6	0.0	32500	3.6	60.1	8.1	2.85	510
SC(e)W		Quilt 14 fl oz/a @ VT	189	32.5	43.7	620	2.4	2.8	0.0	33250	3.5	59.7	8.5	2.85	536
SC(e)W		UTC	182	32.6	43.8	597	2.1	2.6	0.0	30000	3.6	59.1	8.1	2.85	516
WCS(e)		HeadlineSBR 7.8 oz/a @VT	226	32.6	52.8	744	1.1	1.1	0.0	29000	3.3	59.3	7.7	2.86	645
WCS(e)		Quadris 6 fl oz/a @ VT	226	32.7	51.2	743	3.8	0.6	3.3	30500	3.2	59.0	7.7	2.87	647
WCS(e)		Quilt 14 fl oz/a @ VT	222	33.3	52.3	730	1.1	0.5	0.6	30000	3.3	59.1	7.5	2.86	635
WCS(e)		UTC	219	32.4	52.7	723	1.6	1.6	0.0	27500	3.2	59.4	7.7	2.86	626
CC	DKC54-49		180	33.6	50.5	591	3.6	3.6	0.0	30000	3.2	59.0	7.2	2.87	517
CC	DKC57-79		170	36.9	47.6	547	17.7	6.8	10.8	31917	3.2	59.1	7.1	2.85	485
SC	DKC54-49		199	27.7	52.4	676	8.1	7.6	0.5	31750	3.1	59.4	7.2	2.89	576
SC	DKC57-79		196	31.0	50.2	651	2.3	2.3	0.0	29500	3.1	59.5	7.4	2.86	561
SC(e)W	DKC54-49		184	31.5	44.9	609	0.7	1.2	0.0	31750	3.5	59.8	7.9	2.85	523
SC(e)W	DKC57-79		188	34.7	45.1	610	3.1	3.6	0.0	32375	3.5	59.6	8.6	2.84	532
WCS(e)	DKC54-49		218	30.6	53.0	728	2.8	1.6	1.2	29500	3.2	59.2	7.5	2.88	628
WCS(e)	DKC57-79		228	34.9	51.5	742	1.0	0.3	0.8	29000	3.3	59.2	7.8	2.84	649

continued

**Table C- 40. Corn, Soybean and Wheat Rotation - Corn**  
(continued) **Arlington, WI - 2009.**

Rotation	Variety	Fungicide	Yield bu/A	Moisture %	Test weight lbs/bu	Grower return \$/A	Lodged			Harvest plants plants/A	Grain Composition			Ethanol	
							Total %	Stalk %	Root %		Oil %	Starch %	Protein %	per bu gallons	per A gallons
CC	DKC54-49	HeadlineSBR 7.8 oz/a @VT	176	32.5	48.3	580	2.3	2.3	0.0	29667	3.0	59.5	7.1	2.90	510
CC	DKC54-49	Quadris 6 fl oz/a @ VT	182	33.4	51.2	597	3.3	3.3	0.0	30000	3.2	58.7	7.3	2.86	521
CC	DKC54-49	Quilt 14 fl oz/a @ VT	187	34.5	51.9	609	5.6	5.6	0.0	29333	3.3	58.7	7.4	2.84	532
CC	DKC54-49	UTC	176	34.0	50.4	577	3.2	3.2	0.0	31000	3.2	59.0	7.2	2.87	506
CC	DKC57-79	HeadlineSBR 7.8 oz/a @VT	156	37.1	46.1	499	27.2	7.3	19.9	31667	3.2	58.8	7.2	2.84	442
CC	DKC57-79	Quadris 6 fl oz/a @ VT	179	37.2	47.8	574	19.6	9.0	10.7	30000	3.4	58.9	7.6	2.81	503
CC	DKC57-79	Quilt 14 fl oz/a @ VT	172	36.1	46.8	556	5.1	3.1	2.0	33000	3.1	59.2	6.8	2.88	496
CC	DKC57-79	UTC	175	37.2	49.7	559	18.7	7.9	10.8	33000	3.1	59.4	7.0	2.86	499
SC	DKC54-49	HeadlineSBR 7.8 oz/a @VT	203	27.3	53.6	691	10.2	10.2	0.0	31667	3.2	59.3	7.3	2.89	588
SC	DKC54-49	Quadris 6 fl oz/a @ VT	200	27.7	52.7	680	7.8	7.8	0.0	32333	3.1	59.2	7.1	2.88	577
SC	DKC54-49	Quilt 14 fl oz/a @ VT	195	28.0	53.0	659	5.4	5.4	0.0	30333	3.2	59.5	7.3	2.89	563
SC	DKC54-49	UTC	199	27.7	50.4	674	9.1	7.1	2.0	32667	3.0	59.6	7.1	2.90	575
SC	DKC57-79	HeadlineSBR 7.8 oz/a @VT	205	31.6	51.1	678	1.1	1.1	0.0	26667	3.1	59.4	7.7	2.86	585
SC	DKC57-79	Quadris 6 fl oz/a @ VT	187	32.1	50.0	617	2.1	2.1	0.0	29667	3.2	59.6	7.3	2.86	535
SC	DKC57-79	Quilt 14 fl oz/a @ VT	192	31.2	50.2	637	5.0	5.0	0.0	32333	3.1	59.6	7.3	2.85	546
SC	DKC57-79	UTC	200	29.2	49.3	672	1.2	1.2	0.0	29333	3.1	59.5	7.4	2.88	576
SC(e)W	DKC54-49	HeadlineSBR 7.8 oz/a @VT	198	33.3	48.5	651	-0.5	0.0	0.0	32000	3.5	60.2	8.4	2.82	557
SC(e)W	DKC54-49	Quadris 6 fl oz/a @ VT	176	32.4	46.5	582	-0.5	0.0	0.0	34500	3.6	60.3	7.7	2.86	503
SC(e)W	DKC54-49	Quilt 14 fl oz/a @ VT	187	30.6	42.7	621	1.1	1.5	0.0	32000	3.5	60.0	7.7	2.87	534
SC(e)W	DKC54-49	UTC	174	29.7	42.0	582	2.9	3.3	0.0	28500	3.6	58.7	7.6	2.86	497
SC(e)W	DKC57-79	HeadlineSBR 7.8 oz/a @VT	188	32.8	43.2	619	2.8	3.2	0.0	33000	3.5	59.7	8.2	2.85	535
SC(e)W	DKC57-79	Quadris 6 fl oz/a @ VT	183	36.0	46.7	589	4.7	5.2	0.0	30500	3.6	59.8	8.4	2.84	518

continued

**Table C- 40. Corn, Soybean and Wheat Rotation - Corn  
Arlington, WI - 2009.**

Rotation	Variety	Fungicide	Yield bu/A	Moisture %	Test weight lbs/bu	Grower return \$/A	Lodged			Harvest plants/A	Grain Composition			Ethanol	
							Total %	Stalk %	Root %		Oil %	Starch %	Protein %	per bu gallons	per A gallons
SC(e)W	DKC57-79 Quilt 14 fl oz/a @ VT		191	34.5	44.8	619	3.7	4.2	0.0	34500	3.6	59.5	9.4	2.84	539
SC(e)W	DKC57-79 UTC		189	35.6	45.6	612	1.3	1.8	0.0	31500	3.5	59.6	8.6	2.83	534
WCS(e)	DKC54-49 HeadlineSBR 7.8 oz/a @VT		209	30.3	52.6	700	2.1	2.1	0.0	30667	3.3	59.6	7.6	2.88	604
WCS(e)	DKC54-49 Quadris 6 fl oz/a @ VT		218	30.0	51.6	729	4.6	1.1	3.5	28667	3.1	58.8	7.6	2.89	628
WCS(e)	DKC54-49 Quilt 14 fl oz/a @ VT		211	32.3	53.2	697	1.1	0.0	1.1	28667	3.3	59.1	7.4	2.88	608
WCS(e)	DKC54-49 UTC		234	29.8	54.8	785	3.3	3.3	0.0	30000	3.2	59.2	7.5	2.87	673
WCS(e)	DKC57-79 HeadlineSBR 7.8 oz/a @VT		242	34.9	53.1	788	0.0	0.0	0.0	27333	3.4	58.9	7.8	2.84	687
WCS(e)	DKC57-79 Quadris 6 fl oz/a @ VT		234	35.4	50.8	758	3.0	0.0	3.0	32333	3.3	59.2	7.8	2.84	665
WCS(e)	DKC57-79 Quilt 14 fl oz/a @ VT		234	34.4	51.3	762	1.0	1.0	0.0	31333	3.4	59.0	7.7	2.84	662
WCS(e)	DKC57-79 UTC		203	35.0	50.6	661	0.0	0.0	0.0	25000	3.1	59.6	7.8	2.85	580
Means			195	32.6	49.4	644	4.9	3.4	1.6	30724	3.3	59.3	7.6	2.86	559
<b>Probability(%)</b>															
Rotation (R)			23.8	29.7	27.2	12.2	7.1	31.2	0.3	9.9	6.4	0.9	6.8	52.61	20
Variety(V)			94.1	0.0	2.7	21.7	14.8	73.2	2.0	93.3	48.3	86.0	8.6	0.31	61
Fungicide(F)			79.0	39.5	82.9	80.4	34.6	99.0	15.7	32.6	44.4	88.1	75.1	67.64	84
R x V			17.1	71.2	40.8	22.7	0.5	0.1	0.1	14.9	85.9	90.7	28.1	50.38	19
R x F			16.2	77.9	8.9	18.6	25.1	99.2	2.1	38.4	31.1	14.1	34.7	56.31	24
V x F			80.4	33.1	62.3	76.4	37.3	70.3	11.9	5.1	31.2	4.1	65.5	82.05	86
R x V x F			0.3	7.9	11.6	0.4	0.5	32.1	7.3	11.3	38.9	39.6	2.2	6.64	1
<b>LSD(0.10)</b>															
Rotation (R)			NS	NS	NS	NS	5.6	NS	2.3	1712	0.2	0.3	0.6	NS	NS
Variety(V)			NS	0.8	1.1	NS	NS	NS	1.6	NS	NS	NS	0.3	0.01	NS
Fungicide(F)			NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
R x V			NS	NS	NS	NS	6.0	4.4	3.3	NS	NS	NS	NS	NS	NS
R x F			NS	NS	5.3	NS	NS	NS	3.5	NS	NS	NS	NS	NS	NS
V x F			NS	NS	NS	NS	NS	NS	NS	1885	NS	0.3	NS	NS	NS
R x V x F			36	4.6	NS	107	7.7	NS	5.0	NS	NS	NS	0.7	0.04	100



**Table C- 42. Corn/Soybean/Wheat Rotation - Soybean  
Expt. 2991 - Arlington, WI**

Name	Rotation		Foliar Applied		Seed Composition			
	Sequence	#	Fungicide *	Yield bu/a	Lodg. 1 to 5	Protein %	Oil %	BSR % incidence
			UTC	50.6	1.0	34.2	19.7	16
			Headline	52.7	1.0	34.1	19.6	13
			Quadris	52.9	1.0	34.1	19.7	13
			Quilt	51.0	1.0	34.1	19.7	16
Continuous	S-S-S	2		40.1	1.0	33.8	20.0	34
Alternating	C-S	4		51.5	1.0	34.0	19.8	22
Grain system I	W-Cgrain-S	6		53.9	1.0	34.2	19.6	5
Grain system II	Cgrain-W-S	10		52.3	1.0	34.2	19.6	5
Livestock System	Csilage-W-S	13		61.1	1.0	34.4	19.4	5
Continuous	S-S-S	2	UTC	38.3	1.0	33.9	20.0	35
Continuous	S-S-S	2	Headline	41.4	1.0	33.9	19.8	33
Continuous	S-S-S	2	Quadris	39.8	1.0	33.7	20.1	32
Continuous	S-S-S	2	Quilt	41.0	1.0	33.8	20.0	37
Alternating	C-S	4	UTC	51.9	1.0	34.4	19.8	25
Alternating	C-S	4	Headline	53.4	1.0	33.8	19.8	20
Alternating	C-S	4	Quadris	51.5	1.0	34.0	19.7	17
Alternating	C-S	4	Quilt	49.3	1.0	34.0	19.8	25
Grain system I	W-Cgrain-S	6	UTC	49.5	1.0	34.2	19.7	7
Grain system I	W-Cgrain-S	6	Headline	54.6	1.0	33.9	19.7	5
Grain system I	W-Cgrain-S	6	Quadris	57.8	1.0	34.4	19.5	5
Grain system I	W-Cgrain-S	6	Quilt	53.9	1.0	34.3	19.6	5
Grain system II	Cgrain-W-S	10	UTC	53.7	1.0	34.3	19.6	7
Grain system II	Cgrain-W-S	10	Headline	51.9	1.0	34.3	19.6	3
Grain system II	Cgrain-W-S	10	Quadris	53.2	1.0	34.3	19.7	5
Grain system II	Cgrain-W-S	10	Quilt	50.5	1.0	34.1	19.6	5
Livestock System	Csilage-W-S	13	UTC	59.6	1.0	34.4	19.5	5
Livestock System	Csilage-W-S	13	Headline	62.4	1.0	34.5	19.3	2
Livestock System	Csilage-W-S	13	Quadris	62.2	1.0	34.3	19.4	5
Livestock System	Csilage-W-S	13	Quilt	60.2	1.0	34.4	19.3	8
<b>Mean</b>				51.8	1.0	34.1	19.7	14
<b>Probability (Pr&gt;F) %</b>								
Rotation (R)				0.2	>50	44.7	0.4	<0.1
Fungicide (F)				14.0	>50	>50	>50	12.8
R x F				>50	>50	>50	>50	>50
<b>LSD (0.10)</b>								
Rotation (R)				5.9	NS	NS	0.2	6.6
Fungicide (F)				NS	NS	NS	NS	NS
R x F				NS	NS	NS	NS	NS
<b>CV(%)</b>				6	0	1	1	35

\* Fungicide applications @ R3 growth stage on 27-Jul-09  
Headline 6 fl oz/a, Quadris 6 fl oz/a and Quilt 14 fl oz/a

**Table C- 43 . Corn/Soybean/Wheat Rotation - Wheat  
Expt. 2991 - Arlington, WI**

Rotation		Variety	Fungicide	Yield bu/A	Test Wt lbs/bu	Height in.	Lodging 1 to 5
Name	Sequence						
			UTC	50.4	56.2	31.9	1.0
			Quilt @ GS 9.0	55.1	56.7	32.2	1.0
			Quilt @ GS 10.51	59.0	57.3	32.0	1.0
			Proline @ GS10.51	58.0	57.5	31.8	1.0
		Kaskaskia		52.3	57.6	35.0	1.0
		Pioneer 25R78		58.9	56.2	28.9	1.0
		Kaskaskia	UTC	47.9	57.0	35.8	1.0
		Kaskaskia	Quilt @ GS 9.0	50.9	57.4	34.8	1.0
		Kaskaskia	Quilt @ GS 10.51	57.8	58.1	34.7	1.0
		Kaskaskia	Proline @ GS10.51	52.7	57.9	34.8	1.0
		Pioneer 25R78	UTC	52.9	55.4	28.0	1.0
		Pioneer 25R78	Quilt @ GS 9.0	59.2	56.0	29.5	1.0
		Pioneer 25R78	Quilt @ GS 10.51	60.1	56.4	29.4	1.0
		Pioneer 25R78	Proline @ GS10.51	63.3	57.1	28.8	1.0
Continuous	W-W-W			38.9	55.7	27.0	1.0
Grain system I	C-S-W			62.9	57.7	32.4	1.0
Grain system II	S-C-W			54.8	57.3	33.6	1.0
Livestock System	S-Csilage-W			65.9	57.0	34.8	1.0
Continuous	W-W-W		UTC	27.8	54.0	28.5	1.0
Continuous	W-W-W		Quilt @ GS 9.0	39.8	56.3	26.8	1.0
Continuous	W-W-W		Quilt @ GS 10.51	47.1	56.3	27.3	1.0
Continuous	W-W-W		Proline @ GS10.51	40.8	56.2	25.5	1.0
Grain system I	C-S-W		UTC	57.4	57.2	32.5	1.0
Grain system I	C-S-W		Quilt @ GS 9.0	63.9	57.1	33.3	1.0
Grain system I	C-S-W		Quilt @ GS 10.51	65.1	58.2	32.3	1.0
Grain system I	C-S-W		Proline @ GS10.51	65.1	58.4	31.5	1.0
Grain system II	S-C-W		UTC	52.8	57.0	32.0	1.0
Grain system II	S-C-W		Quilt @ GS 9.0	52.1	56.3	33.3	1.0
Grain system II	S-C-W		Quilt @ GS 10.51	56.2	57.5	34.2	1.0
Grain system II	S-C-W		Proline @ GS10.51	58.0	58.3	35.0	1.0
Livestock System	S-Csilage-W		UTC	63.7	56.8	34.5	1.0
Livestock System	S-Csilage-W		Quilt @ GS 9.0	64.5	57.1	35.2	1.0
Livestock System	S-Csilage-W		Quilt @ GS 10.51	67.5	57.1	34.3	1.0
Livestock System	S-Csilage-W		Proline @ GS10.51	68.0	57.2	35.0	1.0
Continuous	W-W-W	Kaskaskia		34.0	56.0	30.4	1.0
Continuous	W-W-W	Pioneer 25R78		43.7	55.4	23.7	1.0
Grain system I	C-S-W	Kaskaskia		59.3	58.1	35.7	1.0
Grain system I	C-S-W	Pioneer 25R78		66.4	57.3	29.2	1.0
Grain system II	S-C-W	Kaskaskia		53.2	58.3	36.9	1.0
Grain system II	S-C-W	Pioneer 25R78		56.4	56.2	30.3	1.0
Livestock System	S-Csilage-W	Kaskaskia		62.8	58.0	37.0	1.0
Livestock System	S-Csilage-W	Pioneer 25R78		69.1	56.0	32.5	1.0
Continuous	W-W-W	Kaskaskia	UTC	26.7	55.1	33.0	1.0
Continuous	W-W-W	Kaskaskia	Quilt @ GS 9.0	34.5	56.7	30.0	1.0
Continuous	W-W-W	Kaskaskia	Quilt @ GS 10.51	48.9	56.3	30.0	1.0
Continuous	W-W-W	Kaskaskia	Proline @ GS10.51	26.1	55.9	28.7	1.0

continued



**Table C- 43 . Corn/Soybean/Wheat Rotation - Wheat**  
(continued) **Expt. 2991 - Arlington, WI**

Rotation		Variety	Fungicide	Yield bu/A	Test Wt lbs/bu	Height in.	Lodging 1 to 5
Name	Sequence						
Continuous	W-W-W	Pioneer 25R78	UTC	28.9	52.8	24.0	1.0
Continuous	W-W-W	Pioneer 25R78	Quilt @ GS 9.0	45.0	55.9	23.7	1.0
Continuous	W-W-W	Pioneer 25R78	Quilt @ GS 10.51	45.2	56.3	24.7	1.0
Continuous	W-W-W	Pioneer 25R78	Proline @ GS10.51	55.6	56.4	22.3	1.0
Grain system I	C-S-W	Kaskaskia	UTC	50.8	57.3	35.3	1.0
Grain system I	C-S-W	Kaskaskia	Quilt @ GS 9.0	59.0	57.6	36.3	1.0
Grain system I	C-S-W	Kaskaskia	Quilt @ GS 10.51	63.4	59.0	35.3	1.0
Grain system I	C-S-W	Kaskaskia	Proline @ GS10.51	64.0	58.6	35.7	1.0
Grain system I	C-S-W	Pioneer 25R78	UTC	64.0	57.1	29.7	1.0
Grain system I	C-S-W	Pioneer 25R78	Quilt @ GS 9.0	68.7	56.6	30.3	1.0
Grain system I	C-S-W	Pioneer 25R78	Quilt @ GS 10.51	66.8	57.3	29.3	1.0
Grain system I	C-S-W	Pioneer 25R78	Proline @ GS10.51	66.2	58.1	27.3	1.0
Grain system II	S-C-W	Kaskaskia	UTC	52.6	57.9	36.3	1.0
Grain system II	S-C-W	Kaskaskia	Quilt @ GS 9.0	48.6	57.2	36.0	1.0
Grain system II	S-C-W	Kaskaskia	Quilt @ GS 10.51	53.5	58.4	37.3	1.0
Grain system II	S-C-W	Kaskaskia	Proline @ GS10.51	58.0	59.6	38.0	1.0
Grain system II	S-C-W	Pioneer 25R78	UTC	53.0	56.1	27.7	1.0
Grain system II	S-C-W	Pioneer 25R78	Quilt @ GS 9.0	55.7	55.3	30.7	1.0
Grain system II	S-C-W	Pioneer 25R78	Quilt @ GS 10.51	58.9	56.6	31.0	1.0
Grain system II	S-C-W	Pioneer 25R78	Proline @ GS10.51	58.1	56.9	32.0	1.0
Livestock System	S-Csilage-W	Kaskaskia	UTC	61.6	57.8	38.3	1.0
Livestock System	S-Csilage-W	Kaskaskia	Quilt @ GS 9.0	61.5	58.2	37.0	1.0
Livestock System	S-Csilage-W	Kaskaskia	Quilt @ GS 10.51	65.4	58.8	36.0	1.0
Livestock System	S-Csilage-W	Kaskaskia	Proline @ GS10.51	62.6	57.5	36.7	1.0
Livestock System	S-Csilage-W	Pioneer 25R78	UTC	65.8	55.7	30.7	1.0
Livestock System	S-Csilage-W	Pioneer 25R78	Quilt @ GS 9.0	67.5	56.0	33.3	1.0
Livestock System	S-Csilage-W	Pioneer 25R78	Quilt @ GS 10.51	69.6	55.4	32.7	1.0
Livestock System	S-Csilage-W	Pioneer 25R78	Proline @ GS10.51	73.5	56.8	33.3	1.0
Means				55.6	56.9	32.0	1.0
<b>Probability</b>							
Rotation ( R)				0.2	0.7	<0.1	>50
Variety (V)				0.2	0.2	<0.1	>50
R x V				49.5	26.0	0.1	>50
Fungicide (F)				<0.1	<0.1	41.8	>50
R x V				6.1	5.6	<0.1	>50
V x F				7.0	48.0	<0.1	>50
R x F x V				0.4	32.5	0.5	>50
<b>LSD (0.10)</b>							
Rotation ( R)				7.7	0.7	0.5	NS
Variety (V)				2.6	0.6	0.3	NS
R x V				NS	NS	0.6	NS
Fungicide (F)				2.8	0.5	0.4	NS
R x V				9.1	1.2	0.9	NS
V x F				4.3	NS	0.5	NS
<b>CV %</b>				10	2	3	0

## FIELD EXPERIMENT HISTORY

**Title:** Corn/Soybean/Wheat Rotation Study  
**Experiment:** 09 CSW Rotation **Trial ID:** 09V90 **Year:** 2009  
**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:** 11/1/07 **pH** 6.6 **SOM (%)** 3.4 **P (ppm)** 60 **K (ppm)** 174

### Plot Management

**Tillage Operations:** C,S,W: Spring chisel plow, Field cultivator **C:** Cultivated  
**Fertilizer:**

	<u>Analysis</u>	<u>Rate</u>	<u>Date</u>	<u>Crop</u>
<b>Starter</b>	9-11-30	150 lb/A	Planting	Corn
<b>Post Plant</b>	9-11-30	150 lb/A	5/18/2009	Soybean and Wheat
<b>Post plant</b>	28-0-0	27 gal/A	6/29/2009	Corn- Alternating
<b>Post plant</b>	28-0-0	40 gal/A	6/29/2009	Corn- Continuous & GSI
<b>Post plant</b>	46-0-0	65 lb/A	6/2/2009	Wheat- GSI
<b>Post plant</b>	46-0-0	152 lb/A	6/2/2009	Wheat- Continuous
<b>Manure</b>	none	N/A	N/A	

**Herbicide:** C,S Dual II Magnum 1.33 pt **Insecticide:** None  
 C,S Ignite 22 oz  
 W 2,4-D Amine 1 pt

**Irrigation:** None **Hybrid:** Corn: Pioneer 39B23 (88 HX,LL,RR)  
 Soybean: Dahlco 8061LL (0.6)  
 Wheat: SD Cert. Briggs HRS

**Planting Date:** C,S,W: 5/11/2009 **Planting Depth:** C: 1.5"  
 S,W: 1" **Row Width:** C: 30"  
 S,W: 6"

**Target Plant Density:** C: 35,000 S: 206,000 **Planting Method:** C: John Deere 1750 planter  
 W: 2,100,000 S,W: John Deere 450 Drill

**Harvest Date:** C: 11/16/2009 CS: 10/19/2009 **Harvest Method:** C,CS: hand harvested  
 S: 9/29/2009 W: 8/24/2009 S,W: John Deere plot combine

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

### Experimental Design

**Design:** RCB **Replications:** 3  
**Plot Size Seeded:** 60' x 60' **Experiment Size:** 1.98 A  
**Harvest Plot size:** C: 60' x 2.5'; 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-44, C-45, C-46 and C-47.

**Table C-44. Corn, Soybean, and Wheat Rotation- Corn  
Marshfield, WI - 2009.**

Rotation	Yield bu/A	Moisture %	Test Weight in.	Harvest Population ppa	Stalk Lodging %
Continuous	145.2	30.6	46.4	31,524	1.8
Alternating	155.4	28.8	47.0	33,848	0.8
Grain System I	165.5	29.8	46.9	34,913	1.5
Mean	155.3	29.8	46.8	33,428	1.3
<u>Probability (%)</u>					
Treatment	2.6	2.1	3.4	0.3	36.9
<u>LSD 10%</u>					
Treatment	11.9	1.0	0.4	1,491	NS
CV (%)	9	4	1	6	114

**Table C-45. Corn, Soybean, and Wheat Rotation- Corn Silage  
Marshfield, WI - 2009.**

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	7.8	63.4	69	35,816	8.3	17.3	38.7	63.7	48.6	38.9	74.6	3814	29,759
Alternating	8.3	62.8	58	36,978	8.3	17.7	39.3	63.6	48.0	37.9	73.8	3760	31,106
Grain System I	8.4	63.8	59	36,977	8.1	17.0	38.7	64.8	48.7	39.5	75.1	3858	32,517
Mean	8.2	63.3	62	36,590	8.2	17.3	38.9	64.1	48.4	38.8	74.5	3811	31,128
<u>Probability (%)</u>													
Treatment	32.5	>50	0.1	26.0	>50	>50	>50	>50	>50	>50	12.1	7.2	>50
<u>LSD 10%</u>													
Treatment	NS	NS	5	NS	NS	NS	NS	NS	NS	NS	1.0	63	NS
CV (%)	11	3	10	5	4	8	5	2	5	6	1	1	11

**Table C-46. Corn, Soybean, and Wheat Rotation- Soybean  
Marshfield, WI - 2009.**

Rotation	Yield bu/A	Moisture %	Test		
			Weight lb/bu	Height in.	Lodging 1 to 5
Continuous	29.7	13.7	56.8	22	1.0
Alternating	38.7	13.5	56.4	28	1.1
Grain System I	42.6	13.6	56.4	30	1.6
Mean	37.0	13.6	56.6	27	1.2
<u>Probability (%)</u>					
Treatment	<0.1	7.4	32.8	<0.1	0.9
<u>LSD 10%</u>					
Treatment	2.6	0.1	NS	2	0.3
CV (%)	9	1	1	7	30

**Table C-47. Corn, Soybean, and Wheat Rotation- Wheat Marshfield, WI - 2009.**

Rotation	Yield bu/A	Moisture %	Test		
			Weight lb/bu	Height in.	Lodging 1 to 5
Continuous	34.8	19.2	55.4	37	2.0
Grain System I	40.1	18.8	55.5	36	2.0
Mean	37.4	19.0	55.5	36	2
<u>Probability (%)</u>					
Treatment	0.2	45.0	>50	4.3	>50
<u>LSD 10%</u>					
Treatment	2.4	NS	NS	1.2	NS
<u>CV (%)</u>					
	8	6	2	4	30