FIELD EXPERIMENT HISTORY

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

Experiment: 09CSW **Trial ID:** 6266 **Year:** 2018

Personnel: Joe Lauer, Thierno Diallo, Kent Kohn

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

Supported By: HATCH

Site Information

Field: 335 **Previous Crop:** See factors **Soil Type:** Plano Silt

Soil Test: Date: 11/12/18 **pH** 7 **OM (%)** 2.9 **P (ppm)** 20 **K (ppm)** 134

Plot Management

Tillage Operations:

		Analysis:	Rate lbs/A:	Date:
Fertilizer:	**Preplant :**	7-18-25	650	4 /30/18
	Starter :	N/A	N/A	N/A
	Post plant :	28-0-0	C: 714 S: 0 lb/A W: 80 lb/A	6 /12/18
	Manure:	N/A	N/A	N/A

Herbicide: C,S:Medal II 24 fl oz/a 4/30/18,
Maddog 22 oz/a 4/30/18
2,4-D low vol 4. 16.0 oz/a 4/30/18
Roundup Pmax 32.0 oz/a 5/18/18
Roundup Pmax 22.0 oz/a 6/14/18
w: Powerflex 2 oz/A 5/15/18
MPC Amine 8 oz/A 5/15/18

Hybrid: C: DKC57-97RIB
S: NK S14-A6
W: FS 624

Planting Date: C: 5/1/18
S: 5/8/18
W:10/15/17

Planting Depth: C: 1.5"
S,W: 1"

Planting Method: C,S: JD1700 with RTK
W: JD750 No-Till Drill

Harvest Method: C:MF 8XP combine
CS: NH 707
S,W: Almaco Plot combine

Target Plant Density: 35000

Row Width: C,S: 30"
W: 0.5"

Harvest Date: C: 10/12/18, CS: 9/17/18
S: 9/28/18, W: 7/17/18

Fungicide: N/A

Notes:

Experimental Design

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

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

Harvest Plot Size: 5' x 26 **Experiment Size:** 3.47 A

Factors/Treatments:

Rotation:	Cover Crop	Nitrogen Rate lb/A
1) CC	In Corn and Soybean plots use:	1) 0
2) SS	1) UTC	2) 30
3) WW	2) Oat pre-harvest	
4) CS-S	3) Oat post-harvest	
5) CS-C	4) Rye pre-harvest	
6) GS1: CSW-C	5) Rye post-harvest	
7) GS1: CSW-S	6) Oat/Rye in Strip/Wheel track post-harvest	
8) GS1: CSW-W		
9) GS2: CWS-W		
10) GS2: CWS-S		
11) GS2: CWS-W	In wheat plots use Berseem and Red Clover for Trtmts. 2-5, and for Trtmt. 6 use radish.	
12) Flex: CWS-C		
13) Flex: CWS-W		
14) Flex: CWS-S		

Results: Tables 1809-09 to 1809-12

Table: 1809 - 09 . Corn, Soybean and Wheat Rotation - Corn
Arlington, WI - 2018.

Rotation	Cover crop	Fertilizer	Yield	Moisture	Test weight	Lodged			Harvest	AGI
						Total	Stalk	Root	plants	$3.40/bu
			bu/A	%	lbs/bu	%	%	%	plants/A	$/A
CC-C			232	28.2	53.4	1.0	0.5	0.5	31944	677
CS-C			250	26.4	54.4	1.1	1.0	0.1	32694	738
CSW-C			225	29.8	53.3	0.9	0.6	0.4	31750	648
CWS-C(e)			240	28.4	54.0	0.8	0.5	0.3	32583	699
	Oat post-harvest		239	28.2	53.9	0.6	0.4	0.3	32500	697
	Oat pre-harvest		235	28.0	54.0	0.7	0.3	0.4	33458	686
	Oat/Rye in Strip/Wheel track		239	28.1	53.7	1.0	0.7	0.3	32333	698
	Rye post-harvest		236	27.8	53.4	1.0	0.8	0.1	31958	692
	Rye pre-harvest		234	28.2	53.5	1.3	1.2	0.1	31167	683
	UTC		236	28.9	54.2	1.1	0.5	0.6	32042	688
		0	236	28.2	53.7	1.2	0.8	0.4	32778	689
		30	237	28.2	53.8	0.7	0.5	0.2	31708	692
CC-C	Oat post-harvest		244	28.3	53.5	1.0	0.5	0.5	32500	712
CC-C	Oat pre-harvest		223	28.0	54.0	0.6	0.0	0.6	32667	652
CC-C	Oat/Rye in Strip/Wheel track		239	27.5	53.3	0.6	0.6	0.0	32167	701
CC-C	Rye post-harvest		226	27.9	52.5	1.5	1.1	0.5	30667	662
CC-C	Rye pre-harvest		228	28.5	53.6	0.5	0.5	0.0	29833	663
CC-C	UTC		232	29.0	53.6	1.6	0.5	1.2	33833	674
CS-C	Oat post-harvest		249	27.1	53.7	0.6	0.6	0.0	32167	733
CS-C	Oat pre-harvest		246	26.0	55.2	0.5	0.5	0.0	34833	729
CS-C	Oat/Rye in Strip/Wheel track		255	26.8	54.4	0.9	0.5	0.5	33333	752
CS-C	Rye post-harvest		249	26.9	54.2	1.7	1.7	0.0	32333	733
CS-C	Rye pre-harvest		243	26.7	54.0	2.3	2.3	0.0	31667	716
CS-C	UTC		257	25.2	55.1	0.5	0.5	0.0	31833	764
CSW-C	Oat post-harvest		224	29.4	54.2	0.5	0.0	0.5	32000	649
CSW-C	Oat pre-harvest		228	29.8	52.9	0.5	0.0	0.5	32500	657
CSW-C	Oat/Rye in Strip/Wheel track		227	29.4	53.0	2.4	1.8	0.6	31167	657
CSW-C	Rye post-harvest		221	29.4	53.1	0.6	0.6	0.0	31667	640
CSW-C	Rye pre-harvest		227	30.1	53.1	1.5	1.0	0.5	32667	654
CSW-C	UTC		220	30.6	53.5	0.0	0.0	0.0	30500	631
CWS-C(e)	Oat post-harvest		238	28.2	54.3	0.5	0.5	0.0	33333	694
CWS-C(e)	Oat pre-harvest		242	28.2	53.9	1.2	0.6	0.5	33833	706

continue

Table: 1809 - 09 . Corn, Soybean and Wheat Rotation - Corn
(continued) Arlington, WI - 2018.

Rotation	Cover crop	Fertilizer	Yield	Moisture	Test weight	Lodged			Harvest plants	AGI $3.40/bu
						Total	Stalk	Root		
			bu/A	%	lbs/bu	%	%	%	plants/A	$/A
CWS-C(e)	Oat/Rye in Strip/Wheel track		235	28.7	54.0	0.0	0.0	0.0	32667	683
CWS-C(e)	Rye post-harvest		249	27.0	53.8	0.0	0.0	0.0	33167	733
CWS-C(e)	Rye pre-harvest		238	27.3	53.3	1.0	1.0	0.0	30500	698
CWS-C(e)	UTC		237	30.8	54.5	2.1	1.1	1.1	32000	684
CC-C		0	232	28.2	53.2	1.0	0.5	0.5	32556	676
CC-C		30	233	28.2	53.6	0.9	0.5	0.4	31333	678
CS-C		0	251	26.5	54.5	1.4	1.3	0.2	33167	739
CS-C		30	249	26.4	54.3	0.7	0.7	0.0	32222	737
CSW-C		0	222	29.6	53.1	1.5	1.0	0.5	32500	641
CSW-C		30	227	30.0	53.5	0.4	0.2	0.2	31000	655
CWS-C(e)		0	240	28.4	54.0	0.9	0.5	0.4	32889	700
CWS-C(e)		30	239	28.3	53.9	0.7	0.5	0.2	32278	699
	Oat post-harvest	0	240	28.3	53.9	0.8	0.3	0.5	33000	698
	Oat post-harvest	30	239	28.2	53.9	0.5	0.5	0.0	32000	696
	Oat pre-harvest	0	234	28.0	54.0	0.8	0.0	0.8	33333	685
	Oat pre-harvest	30	235	28.0	53.9	0.6	0.6	0.0	33583	687
	Oat/Rye in Strip/Wheel track	0	237	27.9	53.6	1.4	0.9	0.5	32667	692
	Oat/Rye in Strip/Wheel track	30	241	28.3	53.8	0.5	0.5	0.0	32000	704
	Rye post-harvest	0	238	27.6	53.4	1.0	0.8	0.2	33417	697
	Rye post-harvest	30	235	28.0	53.4	0.9	0.9	0.0	30500	687
	Rye pre-harvest	0	231	27.9	53.2	2.4	2.4	0.0	32667	676
	Rye pre-harvest	30	237	28.4	53.8	0.3	0.0	0.3	29667	690
	UTC	0	237	29.3	54.2	0.8	0.5	0.3	31583	687
	UTC	30	236	28.5	54.1	1.3	0.5	0.8	32500	690
CC-C	Oat post-harvest	0	241	28.6	52.8	1.0	0.0	1.0	33000	700
CC-C	Oat post-harvest	30	248	28.0	54.2	1.0	1.0	0.0	32000	725
CC-C	Oat pre-harvest	0	224	27.7	54.2	1.1	0.0	1.1	29333	655
CC-C	Oat pre-harvest	30	223	28.3	53.7	0.0	0.0	0.0	36000	649
CC-C	Oat/Rye in Strip/Wheel track	0	241	28.1	52.9	0.0	0.0	0.0	33667	702
CC-C	Oat/Rye in Strip/Wheel track	30	238	26.8	53.7	1.1	1.1	0.0	30667	699
CC-C	Rye post-harvest	0	226	28.2	53.1	2.0	1.0	1.0	32333	658
CC-C	Rye post-harvest	30	227	27.7	52.0	1.1	1.1	0.0	29000	665
CC-C	Rye pre-harvest	0	228	27.7	53.0	1.0	1.0	0.0	31333	669
CC-C	Rye pre-harvest	30	227	29.3	54.2	0.0	0.0	0.0	28333	657
CC-C	UTC	0	232	28.8	53.5	0.9	0.9	0.0	35667	673
CC-C	UTC	30	233	29.1	53.6	2.3	0.0	2.3	32000	675

continue

Table: 1809 - 09 . Corn, Soybean and Wheat Rotation - Corn
(continued) Arlington, WI - 2018.

Rotation	Cover crop	Fertilizer	Yield	Moisture	Test weight	Lodged			Harvest plants	AGI $3.40/bu
						Total	Stalk	Root		
			bu/A	%	lbs/bu	%	%	%	plants/A	$/A
CS-C	Oat post-harvest	0	251	27.1	54.8	1.1	1.1	0.0	32000	737
CS-C	Oat post-harvest	30	248	27.0	52.5	0.0	0.0	0.0	32333	728
CS-C	Oat pre-harvest	0	247	26.2	55.1	0.0	0.0	0.0	35000	731
CS-C	Oat pre-harvest	30	245	25.7	55.2	1.0	1.0	0.0	34667	726
CS-C	Oat/Rye in Strip/Wheel track	0	255	26.6	54.6	1.8	0.9	0.9	33000	753
CS-C	Oat/Rye in Strip/Wheel track	30	255	27.0	54.2	0.0	0.0	0.0	33667	751
CS-C	Rye post-harvest	0	248	26.3	54.1	1.0	1.0	0.0	35333	733
CS-C	Rye post-harvest	30	250	27.5	54.2	2.4	2.4	0.0	29333	732
CS-C	Rye pre-harvest	0	238	27.2	53.5	4.7	4.7	0.0	33000	700
CS-C	Rye pre-harvest	30	248	26.2	54.6	0.0	0.0	0.0	30333	733
CS-C	UTC	0	263	25.7	54.9	0.0	0.0	0.0	30667	780
CS-C	UTC	30	251	24.8	55.3	1.0	1.0	0.0	33000	748
CSW-C	Oat post-harvest	0	225	29.6	54.0	1.0	0.0	1.0	33667	650
CSW-C	Oat post-harvest	30	224	29.2	54.3	0.0	0.0	0.0	30333	647
CSW-C	Oat pre-harvest	0	225	29.2	52.6	0.9	0.0	0.9	34333	653
CSW-C	Oat pre-harvest	30	230	30.3	53.1	0.0	0.0	0.0	30667	661
CSW-C	Oat/Rye in Strip/Wheel track	0	224	28.6	52.9	3.8	2.6	1.3	31667	652
CSW-C	Oat/Rye in Strip/Wheel track	30	230	30.1	53.2	1.0	1.0	0.0	30667	662
CSW-C	Rye post-harvest	0	220	29.3	52.4	1.2	1.2	0.0	32667	636
CSW-C	Rye post-harvest	30	223	29.4	53.8	0.0	0.0	0.0	30667	644
CSW-C	Rye pre-harvest	0	226	29.8	52.8	2.0	2.0	0.0	33333	652
CSW-C	Rye pre-harvest	30	228	30.4	53.4	1.1	0.0	1.1	32000	656
CSW-C	UTC	0	210	30.8	53.9	0.0	0.0	0.0	29333	603
CSW-C	UTC	30	229	30.4	53.2	0.0	0.0	0.0	31667	659
CWS-C(e)	Oat post-harvest	0	241	27.9	53.8	0.0	0.0	0.0	33333	705
CWS-C(e)	Oat post-harvest	30	235	28.5	54.7	0.9	0.9	0.0	33333	683
CWS-C(e)	Oat pre-harvest	0	240	28.8	54.3	1.1	0.0	1.1	34667	699
CWS-C(e)	Oat pre-harvest	30	243	27.7	53.6	1.3	1.3	0.0	33000	712
CWS-C(e)	Oat/Rye in Strip/Wheel track	0	227	28.2	53.9	0.0	0.0	0.0	32333	662
CWS-C(e)	Oat/Rye in Strip/Wheel track	30	242	29.1	54.2	0.0	0.0	0.0	33000	703
CWS-C(e)	Rye post-harvest	0	257	26.7	54.0	0.0	0.0	0.0	33333	758
CWS-C(e)	Rye post-harvest	30	241	27.4	53.7	0.0	0.0	0.0	33000	707
CWS-C(e)	Rye pre-harvest	0	232	26.9	53.5	2.1	2.1	0.0	33000	682
CWS-C(e)	Rye pre-harvest	30	244	27.7	53.1	0.0	0.0	0.0	28000	714
CWS-C(e)	UTC	0	242	32.0	54.7	2.2	1.1	1.1	30667	692
CWS-C(e)	UTC	30	232	29.7	54.3	2.0	1.0	1.0	33333	676
Mean			237	28.2	53.8	0.9	0.7	0.3	32243	691

continue

Table: 1809 - 09 . Corn, Soybean and Wheat Rotation - Corn

(continued) Arlington, WI - 2018.

Rotation	Cover crop	Fertilizer	Yield	Moisture	Test weight	Lodged			Harvest	AGI
						Total	Stalk	Root	plants	$3.40/bu
			bu/A	%	lbs/bu	%	%	%	plants/A	$/A
Mean			237	28.2	53.8	0.9	0.7	0.3	32243	691
Probability(%)										
Rotation (R)			26.8	22.7	7.8	97.0	66.8	62.9	58.6	25.8
Cover crop ('C)			66.6	52.2	39.1	82.3	36.7	54.4	31.0	77.4
Fertilizer (F)			58.0	88.0	64.5	10.5	22.9	15.8	5.8	65.0
R x C			18.8	38.0	83.0	40.0	65.0	47.2	86.4	21.7
R x F			70.9	93.4	76.4	65.1	63.3	94.6	95.0	85.8
C x F			86.7	87.1	93.4	25.9	2.4	8.0	23.5	93.8
R x C x F			78.5	98.2	77.7	78.5	76.4	36.3	33.6	90.2
LSD(0.10)										
Rotation (R)			NS	NS	0.7	NS	NS	NS	NS	NS
Cover crop ('C)			NS	NS	NS	NS	NS	NS	NS	NS
Fertilizer (F)			NS	NS	NS	NS	NS	NS	927	NS
R x C			NS	NS	NS	NS	NS	NS	NS	NS
R x F			NS	NS	NS	NS	NS	NS	NS	NS
C x F			NS	NS	NS	NS	1.1	0.6	NS	NS
R x C x F			NS	NS	NS	NS	NS	NS	NS	NS

AGI*: Adjusted Gross Income.

Table: 1809-10. Corn, Soybean and Wheat Rotation - Corn Silage
Arlington, WI - 2018.

			Whole Plant										
		Dry Matter		Kernel	Crude			*In Vitro*			Milk per		Plant
Cover crop	Fertilizer	Yield	Moisture	milk	protein	ADF	NDF	Digest	NDFD	Starch	Ton	Acre	population
		tons/A	%	%	%	%	%	%	%	%	lbs/T	lbs/T	plants/A
Oat post-harvest		10.9	47.6	3.5	6.2	16.5	33.4	85.2	55.8	37.4	3058	33429	28202
Oat pre-harvest		10.7	49.5	13.5	6.2	16.2	32.8	85.9	57.4	36.8	3025	32348	27700
Oat/Rye in Strip/Wheel tr		10.8	46.4	2.3	6.1	16.2	32.9	85.6	56.3	37.7	3068	33028	27253
Rye post-harvest		11.5	50.0	19.8	6.4	17.0	34.2	85.1	56.5	34.6	2956	34046	26862
Rye pre-harvest		10.5	47.6	4.2	6.2	15.7	32.6	85.7	55.9	38.2	3081	32312	27253
UTC		10.7	50.0	9.2	6.0	18.2	35.5	83.7	54.2	34.3	2889	31052	27923
	0	10.7	48.6	8.8	6.1	16.9	33.9	84.9	55.6	36.1	2991	31860	27402
	30	11.0	48.4	8.7	6.2	16.3	33.2	85.5	56.5	36.8	3034	33545	27662
Oat post-harvest	0	10.7	48.3	2.0	6.2	17.4	34.5	84.4	54.9	35.7	2971	31865	29598
Oat post-harvest	30	11.1	46.9	5.0	6.3	15.6	32.2	86.0	56.7	39.0	3145	34994	26806
Oat pre-harvest	0	10.4	49.9	18.3	6.1	16.7	33.5	85.6	57.0	36.0	2984	31072	27030
Oat pre-harvest	30	11.0	49.0	8.7	6.3	15.7	32.2	86.3	57.8	37.7	3067	33624	28370
Oat/Rye in Strip/Wheel tr	0	10.5	46.4	2.3	6.0	16.7	33.4	85.2	55.6	37.3	3041	32015	26694
Oat/Rye in Strip/Wheel tr	30	11.0	46.3	2.3	6.2	15.7	32.4	86.0	57.0	38.2	3096	34041	27811
Rye post-harvest	0	11.1	50.5	15.3	6.2	17.7	35.2	84.1	54.9	33.9	2910	32324	26583
Rye post-harvest	30	11.9	49.4	24.3	6.5	16.3	33.2	86.0	58.0	35.3	3001	35769	27141
Rye pre-harvest	0	10.3	46.8	3.3	6.2	15.5	32.2	85.9	56.4	38.7	3105	32123	26918
Rye pre-harvest	30	10.6	48.3	5.0	6.2	15.9	32.9	85.4	55.5	37.6	3056	32501	27588
UTC	0	10.8	49.7	11.7	6.1	17.5	34.8	84.2	54.6	35.2	2936	31760	27588
UTC	30	10.7	50.3	6.7	5.9	18.9	36.2	83.2	53.7	33.3	2841	30343	28258
Mean		10.9	48.5	8.8	6.2	16.6	33.6	85.2	56.0	36.5	3013	32702	27532
Probability(%)													
Cover crop ('C)		16.5	7.3	7.5	19.4	36.3	39.3	26.9	18.1	24.3	23.0	55.0	80.5
Fertilizer (F)		8.6	76.5	96.4	15.3	42.4	41.2	28.6	19.9	53.6	39.8	8.7	66.9
C x F		86.6	89.9	75.4	64.2	74.8	78.3	59.7	49.4	79.0	66.9	66.3	40.3
LSD(0.10)													
Cover crop ('C)		NS	2.4	10.9	NS	NS	NS	NS	NS	NS	NS	NS	NS
Fertilizer (F)		0.4	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
C x F		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Table: 1809 - 11 . Corn, Soybean and Wheat Rotation -Soybean
Arlington, WI - 2018.

Rotation	Cover crop	Fertilizer	Yield	Moisture	AGI $8.48/bu
			bu/A	%	$/A
CSW-S (e)			80.9	13.1	666.8
CWS(L)-S			78.2	13.2	644.4
CWS-S			76.4	13.2	630.0
SC-S			73.6	13.3	606.9
SS-S			65.7	13.2	541.2
	Oat-1Sep		75.0	13.3	618.1
	Oat-Post		75.6	13.2	623.2
	Oat/Rye		75.8	13.1	624.8
	Rye-1Sep		74.6	13.3	614.7
	Rye-Post		72.5	13.2	597.7
	UTC		76.3	13.2	628.9
		0	75.0	13.2	618.5
		30	74.9	13.2	617.3
CSW-S (e)	Oat-1Sep		81.3	13.4	669.9
CSW-S (e)	Oat-Post		80.6	13.1	664.7
CSW-S (e)	Oat/Rye		82.7	13.1	682.2
CSW-S (e)	Rye-1Sep		85.0	12.8	700.6
CSW-S (e)	Rye-Post		73.1	13.2	602.5
CSW-S (e)	UTC		82.6	13.2	681.0
CWS(L)-S	Oat-1Sep		78.1	13.0	644.2
CWS(L)-S	Oat-Post		81.8	13.4	673.9
CWS(L)-S	Oat/Rye		75.5	13.1	622.3
CWS(L)-S	Rye-1Sep		74.9	13.3	617.2
CWS(L)-S	Rye-Post		78.6	13.2	648.1
CWS(L)-S	UTC		80.2	13.1	660.8
CWS-S	Oat-1Sep		76.2	13.4	628.3
CWS-S	Oat-Post		78.1	13.0	644.1
CWS-S	Oat/Rye		78.0	13.0	643.5
CWS-S	Rye-1Sep		74.4	13.3	613.3
CWS-S	Rye-Post		73.9	13.3	609.2
CWS-S	UTC		77.8	13.2	641.7
SC-S	Oat-1Sep		75.1	13.3	619.2
SC-S	Oat-Post		71.1	13.3	586.3
SC-S	Oat/Rye		74.5	13.1	614.3

continue

Table: 1809 - 11 . Corn, Soybean and Wheat Rotation -Soybean
(continued) Arlington, WI - 2018.

Rotation	Cover crop	Fertilizer	Yield	Moisture	AGI $8.48/bu
			bu/A	%	$/A
SC-S	Rye-1Sep		74.2	13.5	611.5
SC-S	Rye-Post		72.0	13.1	593.7
SC-S	UTC		74.8	13.4	616.4
SS-S	Oat-1Sep		64.1	13.3	528.7
SS-S	Oat-Post		66.3	13.2	546.7
SS-S	Oat/Rye		68.1	13.3	561.6
SS-S	Rye-1Sep		64.4	13.3	530.9
SS-S	Rye-Post		64.9	13.1	534.8
SS-S	UTC		66.0	13.1	544.4
CSW-S (e)		0	81.0	13.1	667.3
CSW-S (e)		30	80.8	13.2	666.3
CWS(L)-S		0	78.7	13.2	648.7
CWS(L)-S		30	77.7	13.2	640.2
CWS-S		0	77.2	13.2	636.6
CWS-S		30	75.6	13.2	623.4
SC-S		0	72.8	13.3	600.2
SC-S		30	74.5	13.3	613.6
SS-S		0	65.5	13.2	539.6
SS-S		30	65.8	13.2	542.8
	Oat-1Sep	0	73.4	13.3	604.8
	Oat-1Sep	30	76.6	13.3	631.4
	Oat-Post	0	74.6	13.2	615.2
	Oat-Post	30	76.6	13.2	631.2
	Oat/Rye	0	77.0	13.2	634.6
	Oat/Rye	30	74.6	13.1	615.0
	Rye-1Sep	0	75.2	13.2	620.2
	Rye-1Sep	30	73.9	13.3	609.2
	Rye-Post	0	72.1	13.2	594.3
	Rye-Post	30	72.9	13.2	601.0
	UTC	0	77.9	13.2	641.9
	UTC	30	74.7	13.2	615.8
CSW-S (e)	Oat-1Sep	0	80.4	13.4	662.2
CSW-S (e)	Oat-1Sep	30	82.2	13.5	677.6
CSW-S (e)	Oat-Post	0	83.5	13.1	688.3
CSW-S (e)	Oat-Post	30	77.8	13.1	641.2

continue

Table: 1809 - 11 . Corn, Soybean and Wheat Rotation -Soybean
(continued) Arlington, WI - 2018.

Rotation	Cover crop	Fertilizer	Yield	Moisture	AGI $8.48/bu
			bu/A	%	$/A
CSW-S (e)	Oat/Rye	0	81.0	13.2	667.6
CSW-S (e)	Oat/Rye	30	84.5	13.1	696.9
CSW-S (e)	Rye-1Sep	0	83.8	12.8	690.9
CSW-S (e)	Rye-1Sep	30	86.1	12.9	710.2
CSW-S (e)	Rye-Post	0	74.8	13.1	616.8
CSW-S (e)	Rye-Post	30	71.3	13.2	588.1
CSW-S (e)	UTC	0	82.3	13.1	678.1
CSW-S (e)	UTC	30	83.0	13.3	683.8
CWS(L)-S	Oat-1Sep	0	76.1	13.0	627.2
CWS(L)-S	Oat-1Sep	30	80.2	13.1	661.3
CWS(L)-S	Oat-Post	0	78.9	13.4	650.1
CWS(L)-S	Oat-Post	30	84.7	13.3	697.8
CWS(L)-S	Oat/Rye	0	75.0	13.2	618.5
CWS(L)-S	Oat/Rye	30	75.9	13.0	626.1
CWS(L)-S	Rye-1Sep	0	78.2	13.3	644.7
CWS(L)-S	Rye-1Sep	30	71.5	13.3	589.6
CWS(L)-S	Rye-Post	0	80.0	13.3	659.6
CWS(L)-S	Rye-Post	30	77.2	13.2	636.6
CWS(L)-S	UTC	0	84.0	13.2	692.1
CWS(L)-S	UTC	30	76.4	13.1	629.6
CWS-S	Oat-1Sep	0	74.6	13.5	614.5
CWS-S	Oat-1Sep	30	77.9	13.3	642.0
CWS-S	Oat-Post	0	75.7	13.1	624.5
CWS-S	Oat-Post	30	80.5	13.0	663.7
CWS-S	Oat/Rye	0	82.0	13.1	676.4
CWS-S	Oat/Rye	30	74.0	13.0	610.6
CWS-S	Rye-1Sep	0	76.5	13.3	630.3
CWS-S	Rye-1Sep	30	72.3	13.4	596.3
CWS-S	Rye-Post	0	73.4	13.4	604.9
CWS-S	Rye-Post	30	74.4	13.2	613.6
CWS-S	UTC	0	81.2	13.2	669.2
CWS-S	UTC	30	74.5	13.2	614.2
SC-S	Oat-1Sep	0	74.2	13.3	612.0
SC-S	Oat-1Sep	30	76.0	13.3	626.5
SC-S	Oat-Post	0	70.1	13.2	577.9
SC-S	Oat-Post	30	72.1	13.3	594.7

continue

Table: 1809 - 11 . Corn, Soybean and Wheat Rotation -Soybean
(continued) Arlington, WI - 2018.

Rotation	Cover crop	Fertilizer	Yield	Moisture	AGI $8.48/bu
			bu/A	%	$/A
SC-S	Oat/Rye	0	74.7	13.1	615.7
SC-S	Oat/Rye	30	74.3	13.2	612.9
SC-S	Rye-1Sep	0	74.7	13.4	615.3
SC-S	Rye-1Sep	30	73.8	13.6	607.8
SC-S	Rye-Post	0	69.8	13.1	575.7
SC-S	Rye-Post	30	74.2	13.1	611.6
SC-S	UTC	0	73.3	13.4	604.5
SC-S	UTC	30	76.2	13.4	628.3
SS-S	Oat-1Sep	0	61.6	13.4	507.8
SS-S	Oat-1Sep	30	66.7	13.3	549.5
SS-S	Oat-Post	0	64.9	13.2	535.1
SS-S	Oat-Post	30	67.7	13.2	558.4
SS-S	Oat/Rye	0	72.2	13.3	595.0
SS-S	Oat/Rye	30	64.1	13.3	528.2
SS-S	Rye-1Sep	0	63.0	13.2	519.6
SS-S	Rye-1Sep	30	65.8	13.3	542.1
SS-S	Rye-Post	0	62.4	13.1	514.8
SS-S	Rye-Post	30	67.3	13.1	554.9
SS-S	UTC	0	68.6	13.2	565.5
SS-S	UTC	30	63.5	13.1	523.4
Mean	Mean		75.0	13.2	617.9
Probability(%)					
Rotation (R)			0.8	95.1	0.8
Cover crop ('C)			10.9	37.2	11.0
Fertilizer (F)			85.1	93.6	85.3
R x C			27.4	3.1	27.4
R x F			74.2	79.1	74.6
C x F			15.6	84.6	15.6
R x C x F			50.3	100.0	50.3
LSD(0.10)					
Rotation (R)			5.6	NS	46.3
Cover crop ('C)			NS	NS	NS
Fertilizer (F)			NS	NS	NS
R x C			NS	0.4	NS
R x F			NS	NS	NS
C x F			NS	NS	NS
R x C x F			NS	NS	NS

AGI*: Adjusted Gross Income.

Table: 1809 - 12 . Corn, Soybean and Wheat Rotation -Wheat.
Arlington, WI - 2018.

Rotation	Yield	Moisture	Test weight	AGI $3.04/bu
	bu/A	%	lbs/bu	$/A
CSW-W	70	13.1	53.2	315
CWS-W	60	14.0	51.4	271
CWSL-W(s)	68	13.1	51.1	308
WW-W	--	--	--	--
Mean	49	10.0	38.9	224
Probability(%)				
Rotation (R)	0.0	0.0	0.0	0.0
LSD(0.10)				
Rotation (R)	13	0.7	1.2	58

AGI*: Adjusted Gross Income.

-- No wheat to harvest from the continuous wheat plots.

FIELD EXPERIMENT HISTORY

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

Experiment: 09CSW **Trial ID:** 6334 **Year:** 2018

Personnel: Joe Lauer, Thierno Diallo, Kent Kohn, Jason Cavadini

Location: Marshfield, WI **County:** Marathon

Supported By: HATCH

Site Information

Field: 405 **Previous Crop:** See factors **Soil Type:** Withee Sil

Soil Test: Date: 4 /24/15 **pH** 7.4 **OM (%)** 3.1 **P (ppm)** 41 **K (ppm)** 124

Plot Management

Tillage Operations:

Fertilizer:	Analysis:	Rate lbs/A:	Date:
Preplant :	N/A	N/A	N/A
Starter :	C: 20-10-20-4S C: 7-9-13-2S	200 lbs 4 gal/A	5/18/18 5/18/18
Post plant :	S: 20-10-20-4S WW: 46-0-0 C: 28-0-0	150 lb/A 50 lb/A 40 gal	5/21/18 6/21/18 6/21/18
Manure:	N/A	N/A	N/A

Herbicide: C pre: Verdict 16 oz,
C pre: Roundup Pmax 32 oz
S post: Roundup Pmax 32 oz
post Me-too-Lachlor 1.3 pt
W: pre Roundup Pmax 32 oz

Hybrid: C: Masters Choice 4210
S: Renk RS147NR2
W: Pioneer 25R34

Planting Date: C: 5/17/18
S: 5/21/18
W: 5/18/18

Planting Depth: C: 1.5"
S,W: 1"

Planting Method: C: JD 1750 planter
S,W: Great Plains 1206 Ntdrill

Harvest Method: CS: Hand Harvest
C,S,W: Almaco plot combine

Target Plant Density: 35000

Row Width: C: 30"
S: 15"
W: 7.5"

Harvest Date: C: 11/1/18, CS: 9/21/18
S: 10/18/18, W: 9/10/18

Fungicide: N/A

Notes:

Experimental Design

Design: RCB split-split-block

Replications: 3

Plot Size Seeded: 60' x 60'

Harvest Plot Size: C: 60' x 5'; S,W: 60' x 5'; CS: 10' x 2.5'

Experiment Size: 3.09 A

Factors/Treatments:

Rotation: 2017 Treatments

1) CC
2) SS
3) WW
4) CS- C
5) SC- S
6) GS1: CSW- 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)

Results: Tables 1809-13 to 1809-16

Table: 1809 - 13 . Corn, Soybean and Wheat Rotation - Corn
Marshfield, WI - 2018.

Rotation	Yield	Moisture	Test weight	Lodged Stalk	Harvest plants	AGI $3.44/bu
	bu/A	%	lbs/bu	%	plants/A	$/A
Continuous	141	21.8	52.0	0.0	31170	429
Alternating	202	21.2	54.3	0.0	32912	619
Grain System I	177	21.7	51.7	0.0	33493	538
Mean	173	21.6	52.7	0.0	32525	529
Probability(%)						
Rotation (R)	1.5	28.8	0.7	--	28.7	1.4
LSD(0.10)						
Rotation (R)	25	NS	0.9	--	NS	74

AGI*: Adjusted Gross Income.

Table:1809 - 14. Corn, Soybean, and Wheat Rotation- Corn Silage
Marshfield, WI - 2018.

Rotation	Yield	Moisture	Kernel milk	Harvest Population	CP	ADF	NDF	NDFD	TDN	NFC	Starch	Milk per Ton	Milk per Acre
	tn dm/A	%	%	ppa	%	%	%	%	%	%	%	lb	lb
Continuous	5.85	60.7	50	31,170	4.7	28.4	47.5	73.9	76.5	50.0	27.2	4,034	23,559
Alternating	8.45	58.3	50	32,912	4.7	26.1	42.4	73.8	73.6	55.8	33.8	3,824	32,176
Grain System I	7.40	61.4	50	33,493	4.4	30.1	49.8	72.4	75.3	47.5	24.7	3,937	28,846
Mean	7.2	60.1	$50	32,525	4.6	28.2	46.6	73.4	75.2	51.1	28.6	3,931	28,194
Probability (%)													
Treatment	3.3	13.5	--	28.7	67.5	17.6	27.3	42.9	50.7	26.9	31.3	52.2	16.1
LSD 10%													
Treatment	1.3	NS	--	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Table: 1809 - 15 . Corn, Soybean and Wheat Rotation -Soybean
Marshfield, WI - 2018.

Rotation	Yield	Moisture	Test Weight	Height	Lodging	AGI $8.48/bu
	bu/A	%	lb/bu	in.	1 to 5	$/A
Continuous	38	20.6	52.0	25	1.0	312
Alternating	46	22.1	52.1	26	1.7	373
Grain System I	54	20.3	54.5	29	2.9	439
Mean	46	21.0	52.8	27	1.9	375
Probability (%)						
Treatment	7.6	53.8	35.5	55.5	10.9	8.0
LSD 10%						
Treatment	10.3	NS	NS	NS	NS	85.1

AGI*: Adjusted Gross Income.

Table: 1809 - 16 . Corn, Soybean and Wheat Rotation -Wheat.
Marshfield, WI - 2018.

Rotation	Yield	Moisture	Test Weight	Height	Lodging	AGI $4.75/bu
	bu/A	%	lb/bu	in.	1 to 5	$/A
Continuous	1	15.9	56.4	6	4.0	26
Grain System I	20	13.3	55.7	92	5.0	28
Mean	11	14.6	56.1	49	4.5	27
Probability (%)						
Treatment	4.6	5.8	28.9	4.6	3.5	21.7
LSD 10%						
Treatment	12	2	NS	56	1	NS

AGI*: Adjusted Gross Income.