

FIELD EXPERIMENT HISTORY

Title: Corn - Soybean - Wheat Response to Rotation: Cover Crops
Experiment: 09CSW **Trial ID:** 6490 **Year:** 2020
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:

Fertilizer:	Preplant :	Analysis:	Rate lbs/A:	Date:
		N/A	N/A	N/A
	Starter :	N/A	N/A	N/A
	Post plant :	C: 32-0-0 W: 46-0-0	C: 593 S: 0 lb/A W: 90 lb/A	6//19/20 4/22/19
	Manure:	N/A	N/A	N/A
Herbicide:	C,S: Durango DMA @ 48 oz/a 8/20/20 Roundup Pmax 32.0 oz/a 6/16/20 Weedone 650 @10.5 oz/a 4/24/20 w: Powerflex 2 oz/A 5/15/18 MPC Amine 8 oz/A 5/15/18		Hybrid: C: Dekalb DKC52-35RIB S: NK Brand S14-B2X W: Growmark FS 624	
Planting Date:	C: 5/8/20 S: 5/5/20 W: 10/04/19	Planting Depth: C: 1.5" S,W: 1"	Planting Method:	C,S: JD1700 with RTK W: JD750 No-Till Drill
Target Plant Density: 35000			Harvest Method:	C:MF 8XP combine
			Row Width: C,S: 30" W: 0.5"	CS: NH 707 S,W: Almaco Plot combine
Harvest Date:	C: 10/8/20, CS: 9/22/20 S: 10/22/20, W: 7/22/20		Fungicide: N/A	

Notes: 2020 Even out year, no cover crop or N treatment. Rotation and Density for corn.

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:	Plant Density:
1) CC	1) 25000 ppa
2) SS	2) 30000 ppa
3) WW	3) 35000 ppa
4) CS-C	4) 40000 ppa
5) CS-S	5) 45000 ppa
6) GS1: CSW-C	6) 50000 ppa
7) GS1: CSW-S(e)	
8) GS1: CSW-W	
9) GS2: CWS-C(e)	
10) GS2: CWS-W	
11) GS2: CWS-S	
12) Flex: CWS-C(s)	
13) Flex: CWS-W(s)	
14) Flex: CWS-S	

Results: Tables 2009-09 to 2009-12

**Table: 2009 - 09 . Corn, Soybean and Wheat Rotation - Corn
Arlington, WI - 2020.**

Rotation	Density	Yield bu/A	Moisture %	Test weight lbs/bu	Lodged			Harvest plants plants/A	AGI \$3.58/bu \$/A
					Total %	Stalk %	Root %		
CC-C		204	37.7	53.1	0.2	0.1	0.1	33389	594
CS-C		251	30.5	52.6	0.6	0.2	0.4	37111	764
CSW-C		230	35.1	53.4	0.3	0.3	0.0	35972	680
CWS-C(e)		256	29.1	55.5	2.0	0.4	1.6	36611	788
	25K	212	34.1	55.5	0.7	0.5	0.2	25208	633
	30K	229	33.8	54.2	0.7	0.1	0.6	30417	685
	35K	239	33.2	54.5	0.5	0.0	0.5	33625	718
	40K	247	32.8	52.7	1.0	0.1	0.8	38375	742
	45K	242	32.3	52.9	0.7	0.2	0.5	41167	732
	50K	241	32.3	52.1	1.1	0.5	0.6	45833	728
CC-C	25K	187	38.3	53.1	0.0	0.0	0.0	24833	541
CC-C	30K	200	37.1	53.7	0.6	0.0	0.6	27333	585
CC-C	35K	212	37.4	53.5	0.0	0.0	0.0	32167	617
CC-C	40K	204	38.8	52.7	0.0	0.0	0.0	34667	589
CC-C	45K	205	37.3	52.7	0.5	0.5	0.0	38833	596
CC-C	50K	217	37.2	53.0	0.0	0.0	0.0	42500	634
CS-C	25K	226	32.0	53.3	0.0	0.0	0.0	25000	682
CS-C	30K	244	31.5	52.6	0.6	0.0	0.6	30833	739
CS-C	35K	262	30.0	52.6	0.5	0.0	0.5	35000	800
CS-C	40K	261	31.0	51.8	0.0	0.0	0.0	42333	793
CS-C	45K	261	28.7	53.3	0.0	0.0	0.0	41500	805
CS-C	50K	250	29.6	51.7	2.5	1.1	1.4	48000	768
CSW-C	25K	200	36.4	52.8	0.6	0.6	0.0	24667	589
CSW-C	30K	215	36.0	52.3	0.5	0.5	0.0	32000	632
CSW-C	35K	226	35.6	59.1	0.0	0.0	0.0	33000	666
CSW-C	40K	268	34.2	52.2	0.0	0.0	0.0	38667	799
CSW-C	45K	229	34.3	52.5	0.4	0.4	0.0	41333	680
CSW-C	50K	239	34.1	51.8	0.4	0.4	0.0	46167	713
CWS-C(e)	25K	236	29.8	62.9	2.1	1.4	0.7	26333	722
CWS-C(e)	30K	257	30.5	58.1	1.1	0.0	1.1	31500	785
CWS-C(e)	35K	257	29.7	52.8	1.6	0.0	1.6	34333	788
CWS-C(e)	40K	254	27.2	54.3	3.8	0.5	3.4	37833	787
CWS-C(e)	45K	275	29.0	53.0	1.9	0.0	1.9	43000	845
CWS-C(e)	50K	259	28.4	52.0	1.4	0.4	1.1	46667	800

continue

Table: 2009 - 09 . Corn, Soybean and Wheat Rotation - Corn**(continued) Arlington, WI - 2020.**

Rotation	Density	Yield bu/A	Moisture %	Test weight lbs/bu	Lodged			Harvest plants plants/A	AGI \$3.54/bu \$/A
					Total %	Stalk %	Root %		
Mean		235	33.1	53.7	0.8	0.2	0.5	35771	706
<u>Probability(%)</u>									
Rotation (R)		0.2	0.2	40.9	3.0	46.0	1.5	0.3	0.0
Density (D)		0.0	3.1	38.0	90.4	19.6	80.2	0.0	0.0
R x D		0.0	62.9	39.0	32.2	19.5	55.8	4.8	0.1
<u>LSD(0.10)</u>									
Rotation (R)		15	2	NS	1	NS	1	1112	39
Density (D)		7	1	NS	NS	NS	NS	1163	23
R x D		17	NS	NS	NS	NS	NS	2325	53

AGI*: Adjusted Gross Income.

**Table: 2009 - 11 . Corn, Soybean and Wheat Rotation - Soybean
Arlington, WI - 2020.**

Rotation	Yield bu/A	Moisture %	AGI \$10.21/bu \$/A
CSW-S(e)	69.3	13.8	690
CWS(L)-S	63.6	13.6	634
CWS-S	56.5	14.4	562
SC-S	61.2	13.1	610
SS-S	58.8	12.8	587
Mean	61.9	13.5	617
<u>Probability(%)</u>			
Rotation (R)	42.4	0.5	41.9
<u>LSD(0.10)</u>			
Rotation (R)	NS	0.6	NS

AGI*: Adjusted Gross Income.

**Table: 2009 - 12 . Corn, Soybean and Wheat Rotation -Wheat.
Arlington, WI - 2020.**

Rotation	Yield bu/A	Moisture %	Test weight lbs/bu	AGI \$4.69/bu \$/A
CSW-W	77	17.0	53.6	381
CWS(L)-W(s)	73	17.0	53.3	358
CWS-W	68	17.3	53.2	337
WW-W	--	--	--	--
Mean	73	17.1	53.4	358
<u>Probability(%)</u>				
Rotation (R)	68.3	27.0	83.1	68.0
<u>LSD(0.10)</u>				
Rotation (R)	NS	NS	NS	NS

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:** 6503 **Year:** 2020
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 Silt
Soil Test: Date: 20/19/ **pH** 7.2 **OM (%)** 3.1 **P (ppm)** 54 **K (ppm)** 126

Plot Management

Tillage Operations:

Fertilizer:	Preplant :	Analysis:	Rate lbs/A:	Date:
		N/A	N/A	N/A
	Starter :	20-10-20-4S 0-0-60	200 lbs 150 lbs	5/2/20 5/2/20
	Post plant :	C: 28-0-0	40 gal	6 /18/20
	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 W: pre Roundup Pmax 32 oz	Hybrid: C:Pioneer P8989AMXT S: Pioneer P09A53X W: Bolles (HRS)
---	---

Planting Date: C: 5/5/20 S: 5/4/20 W: 5/1/19	Planting Depth: C: 1.5" S,W: 1"	Planting Method: C: JD 1750 planter S,W: Great Plains 1206 Ntdrill
---	---	--

Target Plant Density: 35000	Harvest Method: CS: Hand Harvest C,S,W: Almaco plot combine
------------------------------------	---

Harvest Date: C: 11/3/20, CS: 9/22/20 S: 10/06/20, W: 7/28/20	Row Width: C: 30" S: 15" W: 7.5"
---	---

Notes:	Fungicide: N/A
---------------	-----------------------

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: 2020Treatments

- 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 2009-13 to 2009-16

**Table: 2009-13 Corn, Soybean, and Wheat Rotation- Corn
Marshfield, WI - 2020.**

Rotation	Yield bu/A	Moisture %	Test Weight in.	Harvest Population ppa	Stalk Lodging %	AGI \$3.58/bu \$/A
Continuous	116	14.5	59.7	31,944	0.0	390
Alternating	161	13.5	59.7	34,074	0.0	539
Grain System I	139	14.2	59.9	32,138	0.0	466
Mean	139	14.1	59.8	32,718	0.0	465
<u>Probability (%)</u>						
Treatment	22.4	55.0	66.4	54.1	-	22.4
<u>LSD 10%</u>						
Treatment	NS	NS	NS	NS	-	NS

**Table: 2009 - 15 . Corn, Soybean and Wheat Rotation -Soybean
Marshfield, WI - 2020.**

Rotation	Yield bu/A	Moisture %	Test Weight lb/bu	Height in.	Lodging 1 to 5	AGI \$8.48/bu \$/A
Continuous	45	13.9	57.8	19	1	445
Alternating	40	14.0	57.5	17	1	396
Grain System I	45	14.0	57.9	19	1	452
Mean	43	14.0	57.7	18	1	431
<u>Probability (%)</u>						
Treatment <u>LSD 10%</u>	63.5	53.0	54.0	63.9	-	63.4
Treatment	NS	NS	NS	NS	-	NS

AGI*: Adjusted Gross Income.

**Table: 2009 - 16 . Corn, Soybean and Wheat Rotation -Wheat.
Marshfield, WI - 2020.**

Rotation	Yield bu/A	Moisture %	Test Weight lb/bu	Height in.	Lodging 1 to 5	AGI \$4.69/bu \$/A
Continuous	9	11.2	54.0	23	1.0	46
Grain System I	19	10.9	54.3	27	1.0	95
Mean	14	11.0	54.1	25	1.0	70
<u>Probability (%)</u>						
Treatment	1.7	21.7	3.8	2.1	-	1.7
<u>LSD 10%</u>						
Treatment	4	NS	0	2	-	19

AGI*: Adjusted Gross Income.