

## FIELD EXPERIMENT HISTORY

**Title:** Corn - Soybean - Wheat - Alfalfa (Meadow) Response to Rotation  
**Experiment:** 09ACOSW **Trial ID:** 6022 **Year:** 2015  
**Personnel:** J. G. Lauer, B. Meyer, T. H. Diallo, K. D. Kohn, M. K. Kazula  
**Location:** Lancaster, WI **County:** Grant  
**Supported By:** HATCH

### Site Information

**Field:** 300 B **Previous Crop:** See factors **Soil Type:** Fayette Silt Loam  
**Soil Test:** **Date:** **pH:** 6.8 **OM (%)** 2.3 **P (ppm)** 18 **K (ppm)** 124

### Plot Management

**Tillage Operations:** Chisel, Disk, Mulch on all except in bean grounds

#### Fertilizer:

	<u>Analysis:</u>	<u>Rate lbs/A:</u>	<u>Date:</u>
<b>Preplant :</b>	N/A	N/A	N/A
<b>Starter :</b>	C: 9-23-30	195 lb/A	5/21/15
	S,W,O:0-18-36	86 lb/A	5/6/15
<b>Post plant :</b>	C: 34-0-0	C:See rates	5/21/15
	W: 34-0-0	W: 30 lb/A	5/6/15
<b>Manure:</b>	N/A	N/A	N/A

#### Herbicide:

C:Instigage 5/22/15  
 Hallex GT 6/24/15  
 S:Outlook/Firstrate 5/22/15  
 Sequence 7/03/15  
 O: Harmony SG 0.6 oz/ac 6/5/15  
 W:Huskie 5/8/15

**Planting Depth:** C: 1.5"

**Hybrid:** A: Legacy L449 R2  
 C: Legacy L5522-VT3 pro  
 O: Std. Ogle  
 S: O'Soy245NR2y  
 W: PIP 25R47

**Row Width:** C:30" S:15"  
O/A/W:7.5"

#### Planting Date:

C:5/15/15  
 S:5/01/14  
 A:4/30/15  
 O:4/30/15

**Planting Method:** White 6100 no-till corn planter

#### Target Plant Density:

Corn: 32500 Plants/A  
 Soybean: 150000 Plants/A

**Harvest Method:** C:Massey 8XP

#### Harvest Date:

C:10/23/15 S:10/23/14  
 O:7/30/14  
 A:6/01/15,6/29/15,8/3/15,9/17/15  
 W:7/30/14

**Fungicide:** N/A

**Notes:** Oats and Wheat yield samples where discarded at Madison West Lab during closing.

### Experimental Design

**Design:** RCB split-split-plot

**Replications:** 2

**Plot Size Seeded:** MP: 30' x 70'

**Experiment Size:** 2.7 A

**Harvest Plot Size:** 5' x 50'

#### Factors/Treatments:

##### Tillage

- |               |               |
|---------------|---------------|
| 1) CC- 1C     | 12) CCOMM- M1 |
| 2) CSCM- O    | 13) CCOMM- M2 |
| 3) CSCM- M    | 14) CCOMM- C1 |
| 4) CSCM- C1   | 15) CCOMM- C2 |
| 5) CSCM- S    | 16) CCOMM- O  |
| 6) CSCM- C2   | 17) CSW- S    |
| 7) CCMM- M1   | 18) CSW- C    |
| 8) CCMM- M2   | 19) CS- S     |
| 9) CCMM- C2   | 20) CSW- W    |
| 10) CCMM- C1  | 21) CS- C     |
| 11) CCCMM- C3 |               |

##### Rotation: 2014 Treatments

- 1) 0
- 2) 50 (1967 to 1976 = 75)
- 3) 100 (1967 to 1976 = 150)
- 4) 200 (1967 to 1976 = 300)

##### Tillage:

- 1) Conventional Tillage (Fall chisel, Spring disc and Cultimulching)  
All, except Corn after Soybean
- 2) No-Till

**Results:** Tables 1509-20 & 1509-21 & 1509-22

**Table:1509-20. Corn, Soybean, Wheat, Oats and Alfalfa (Meadow) Rotation - Corn  
Lancaster, WI - 2015.**

Rotation	Nitrogen rate N lb/A	Yield bu/A	Moisture %	Test weight lbs/bu	AGI \$3.44/bu \$/A
CC-C		112	16.1	52.8	381
CCCMM-C1		180	17.8	52.8	610
CCCMM-C2		168	16.3	53.1	573
CCCMM-C3		153	17.1	52.7	521
CCOMM-C1		209	17.5	52.5	711
CCOMM-C2		175	17.3	52.8	597
CS-C		154	17.3	52.5	523
CSCOM-C1		176	16.6	53.4	603
CSCOM-C2		187	17.5	52.8	637
CSW-C		170	16.9	52.4	578
	0	127	16.1	52.8	436
	50	166	16.7	53.0	566
	100	186	17.3	52.9	634
	200	194	18.0	52.4	657
CC-C	0	42	14.6	52.8	144
CC-C	50	99	15.2	52.8	340
CC-C	100	137	15.8	53.0	470
CC-C	200	169	18.8	52.6	570
CCCMM-C1	0	162	16.3	53.3	555
CCCMM-C1	50	166	17.7	52.6	563
CCCMM-C1	100	184	18.0	53.1	625
CCCMM-C1	200	207	19.0	52.0	698
CCCMM-C2	0	118	15.5	52.7	404
CCCMM-C2	50	161	16.0	52.5	550
CCCMM-C2	100	193	16.8	53.7	657
CCCMM-C2	200	200	17.0	53.5	681
CCCMM-C3	0	110	15.6	52.3	379
CCCMM-C3	50	149	16.9	53.4	508
CCCMM-C3	100	173	17.1	53.4	591
CCCMM-C3	200	179	18.8	51.7	605
CCOMM-C1	0	188	16.7	53.1	641
CCOMM-C1	50	219	17.7	52.9	745
CCOMM-C1	100	221	17.1	52.4	754
CCOMM-C1	200	209	18.6	51.6	705
CCOMM-C2	0	158	16.2	53.7	543
CCOMM-C2	50	184	17.4	53.0	627
CCOMM-C2	100	176	17.9	52.5	597
CCOMM-C2	200	182	17.6	52.0	620

continue

**Table:1509-21. Corn, Soybean, Wheat, Oats and Alfalfa (Meadow) Rotation - Corn**  
(continued) **Lancaster, WI - 2015.**

Rotation	Nitrogen rate N lb/A	Yield bu/A	Moisture %	Test weight lbs/bu	*AGI \$3.44/bu \$/A
CS-C	0	88	16.7	52.0	302
CS-C	50	147	16.9	52.7	503
CS-C	100	190	17.5	52.8	648
CS-C	200	188	18.0	52.5	638
CSCOM-C1	0	167	16.2	53.7	571
CSCOM-C1	50	167	15.9	53.5	574
CSCOM-C1	100	187	17.6	53.1	634
CSCOM-C1	200	185	16.7	53.4	631
CSCOM-C2	0	130	16.9	52.5	442
CSCOM-C2	50	200	16.7	53.7	683
CSCOM-C2	100	216	18.0	52.9	731
CSCOM-C2	200	205	18.3	52.1	692
CSW-C	0	111	16.6	51.7	380
CSW-C	50	164	16.4	52.6	562
CSW-C	100	187	17.3	52.6	638
CSW-C	200	216	17.6	52.6	733
Mean		168	17.0	52.8	573
<b>Probability(%)</b>					
Rotation (R)		0.1	3.7	49.8	0.1
Nitrogen (N)		0.0	0.0	1.8	0.0
R x N		0.7	2.6	8.1	0.6
<b>LSD (0.10)</b>					
Rotation (R)		20	0.7	NS	67
Nitrogen (N)		9	0.3	0.3	30
R x N		30	1.1	1.1	102

\*AGI: Adjusted Gross Income

**Table:1509-22. Corn, Soybean, Wheat, Oats and Alfalfa (M) Rotation - Soybean  
Lancaster, WI - 2015.**

Rotation	Nitrogen rate N lb/A	Yield bu/A	Moisture %	AGI \$8.48/bu \$/A
CS-S		64	12	524
CSCOM-S		71	12	582
CSW-S		72	12	595
	0	70	12	574
	50	69	12	566
	100	69	12	570
	200	68	12	559
CS-S	0	62	12	509
CS-S	50	66	12	542
CS-S	100	66	11	544
CS-S	200	61	12	501
CSCOM-S	0	73	12	606
CSCOM-S	50	73	13	602
CSCOM-S	100	67	12	557
CSCOM-S	200	68	12	565
CSW-S	0	73	12	606
CSW-S	50	67	12	553
CSW-S	100	74	12	609
CSW-S	200	74	12	612
Mean		69	12	567
<b>Probability(%)</b>				
Rotation (R)		91.9	2238	91.9
Nitrogen (N)		11.4	4321	11.4
R x N		37.2	2114	37.2
<b>LSD (0.10)</b>				
Rotation (R)		NS	NS	NS
Nitrogen (N)		NS	NS	NS
R x N		NS	NS	NS

**Table:1509-21. Corn, Soybean, Wheat, Oats and Alfalfa (Meadow) Rotation - Alfalfa.  
Lancaster, WI - 2015.**

Rotation	Nitrogen rate N lb/A	Harvest Date				Total T dm/A
		11-Jun T dm/A	7-Jul T dm/A	13-Aug T dm/A	5-Sep T dm/A	
CCCMM-M2		1.5	0.8	0.9	0.7	3.9
CCOMM-M1		1.2	0.7	0.7	0.7	3.3
CCOMM-M2		1.3	1.0	0.7	0.7	3.7
CSCOM-M		1.2	0.8	0.9	0.8	3.7
	0	1.3	0.8	0.8	0.7	3.7
	50	1.3	0.9	0.8	0.7	3.7
	100	1.3	0.9	0.8	0.7	3.7
	200	1.2	0.8	0.8	0.8	3.5
CCCMM-M2	0	1.6	0.9	0.9	0.7	4.1
CCCMM-M2	50	1.5	0.8	0.9	0.7	3.8
CCCMM-M2	100	1.5	0.9	0.9	0.8	4.0
CCCMM-M2	200	1.4	0.7	0.9	0.8	3.8
CCOMM-M1	0	1.2	0.7	0.7	0.7	3.2
CCOMM-M1	50	1.2	0.7	0.7	0.7	3.2
CCOMM-M1	100	1.3	0.8	0.6	0.6	3.3
CCOMM-M1	200	1.2	0.7	0.7	0.7	3.3
CCOMM-M2	0	1.2	0.9	0.7	0.8	3.6
CCOMM-M2	50	1.4	1.0	0.7	0.6	3.7
CCOMM-M2	100	1.2	1.0	0.7	0.6	3.5
CCOMM-M2	200	1.4	1.0	0.8	0.7	3.9
CSCOM-M	0	1.3	0.8	0.9	0.8	3.8
CSCOM-M	50	1.4	0.9	0.9	0.9	4.0
CSCOM-M	100	1.3	0.8	0.9	0.8	3.9
CSCOM-M	200	0.8	0.7	0.8	0.9	3.3
Mean		1.3	0.8	0.8	0.7	3.6
<b>Probability(%)</b>						
Rotation (R)		36.5	37.2	3.5	21.9	18.8
Nitrogen (N)		20.5	12.0	86.3	0.4	48.2
R x N		5.3	54.0	48.0	0.3	8.8
<b>LSD (0.10)</b>						
Rotation (R)		NS	NS	0.1	NS	NS
Nitrogen (N)		NS	NS	NS	0.0	NS
R x N		0.3	NS	NS	0.1	0.5