

**FIELD EXPERIMENT HISTORY**

**Title:** Crop Rotation Response to Nrate  
**Experiment:** 09ACOSW **Trial ID:** 6348 **Year:** 2019  
**Personnel:** Carrie Laboski, Joe Lauer, Thierno Diallo  
**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:** N/A **pH:** 6.8 **OM (%)** 2.3 **P (ppm)** 18 **K (ppm)** 124

**Plot Management**

**Tillage Operations:** C: Fall chisel

<b>Fertilizer:</b>	<b>Analysis:</b>	<b>Product Rate lbs/A:</b>	<b>Date:</b>
<b>Preplant :</b>	S,O,W :0-20-34	315	4/23/2019
<b>Starter :</b>	C: 9-23-30	195	5/16/2019
<b>Post plant :</b>	C: 34-0-0	See rates	6/9/2017
	W: 34-0-0	30	4/20/2017
	W,O: 34-0-0	315	5/22/2017
	A:0-8.4-37.5-2.9s-0.34B	400	6/18//2019
<b>Manure:</b>	N/A	N/A	N/A

**Herbicide:** C: Powermax 29 oz/a 5/26/19  
 Resicore 1.25 qt/ac  
 A: Raptor 5 oz/a 6/26/19  
 O: butyrac 3 qt/a 6/1/19  
 S: Warrant Ult 55 oz/a 6/6/19  
 powermax 29 oz/a 6/6/19  
 flexstar GT 3.5 3pts/ac 7/3/19

**Planting Depth:** C:1.5" **Hybrid:** C:LG 5499 STXRIB  
**Row Width:** C:30" S:15"  
 O/A/W: 7.5" S: Asgrow 21x7  
 W: Croplan 9203  
 A: Croplan Rebound 6.0  
 O: Dane

**Planting Date:** C: 5/16/19 W: 10/25/18  
 S: 5/31/18 A: 4/24/19  
 O: 4/24/19

**Planting Method:** White6100 No till planter

**Target Plant Density:** Corn: 32500 Plants/A  
 Soybean: 150000 Plants/A

**Harvest Method:** C: MF 8XP Combine.

**Harvest Date:** C:12/6/19 S: 10/28/19  
 O: 7/25/19 W: 7/25/19  
 A: 6/13; 7/12. 8/21/19

**Fungicide:** N/A

**Notes:** Lime (50-59) @ 2.4T/A on 4/21/17

**Experimental Design**

**Design:** RCB split-split-plot  
**Plot Size Seeded:** MP: 30' x 70'  
**Harvest Plot Size:** 5' x 25'  
**Factors/Treatments:**

**Replications:** 2  
**Experiment Size:** 2.7 A

<b>Rotation</b>	<b>Corn N-rate (lbs/A)</b>
1) CC	1) 0
2) CSCOA-2C	2) 50
3) CSCOA-10	3) 100
4) CSCOA-1A	4) 200
5) CSCOA-1C	
6) CSCOA-1S	
7) CCCAA-3C	
8) CCCAA-1A	
9) CCCAA-1C	
10) CCCAA-2A	
11) CCCAA-2C	
12) CCOAA-10	
13) CCOAA-1A	
14) CCOAA-2A	
15) CCOAA-1C	
16) CCOAA-2C	
17) CSW-1W	
18) CSW-1S	
19) CS-1S	
20) CSW-1C	
21) CS-1C	

**Results: Tables 1909-17 to 1909-21**

**Table:1909-17. Corn, Soybean, Wheat, Oats and Alfalfa Rotation - Corn  
Lancaster, WI - 2019.**

Rotation	Nitrogen rate N lb/A	Yield bu/A	Moisture %	Test weight lbs/bu	AGI \$3.54/bu \$/A
CC-C		135	19.7	52.9	434
CCCMM-C1		225	19.2	54.2	728
CCCMM-C2		189	19.2	53.2	611
CCCMM-C3		163	19.5	53.7	525
CCOMM-C1		225	20.1	54.1	723
CCOMM-C2		200	19.9	53.9	644
CSb-C		165	19.0	53.1	534
CSbCOM-C1		231	18.8	54.0	748
CSbCOM-C2		193	19.2	53.4	625
CSbW-C		172	18.6	52.7	557
	0	134	18.9	53.1	434
	50	175	18.7	53.4	567
	100	211	19.5	53.8	681
	200	239	20.1	53.9	768
CC-C	0	68	18.5	51.9	222
CC-C	50	117	19.9	53.2	377
CC-C	100	152	19.7	52.4	491
CC-C	200	202	20.7	54.2	648
CCCMM-C1	0	177	19.3	53.6	571
CCCMM-C1	50	214	18.5	54.2	695
CCCMM-C1	100	245	19.4	54.2	791
CCCMM-C1	200	264	19.6	54.7	853
CCCMM-C2	0	136	18.7	52.8	440
CCCMM-C2	50	165	19.6	52.9	532
CCCMM-C2	100	228	18.6	53.9	741
CCCMM-C2	200	226	20.0	53.3	729
CCCMM-C3	0	96	18.9	53.6	311
CCCMM-C3	50	129	18.8	53.1	419
CCCMM-C3	100	185	20.1	53.9	596
CCCMM-C3	200	241	20.5	54.4	774
CCOMM-C1	0	172	20.0	53.4	553
CCOMM-C1	50	238	19.3	54.6	769
CCOMM-C1	100	241	20.6	54.3	772
CCOMM-C1	200	248	20.4	54.2	798

continue

**Table:1909-17. Corn, Soybean, Wheat, Oats and Alfalfa Rotation - Corn**

(continued)

**Lancaster, WI - 2019**

Rotation	Nitrogen rate N lb/A	Yield bu/A	Moisture %	Test weight lbs/bu	AGI \$3.54/bu \$/A
CCOMM-C2	0	141	20.2	54.0	452
CCOMM-C2	50	179	18.6	53.6	582
CCOMM-C2	100	229	20.4	54.3	735
CCOMM-C2	200	251	20.3	53.9	808
CS-C	0	116	19.1	52.9	376
CS-C	50	134	18.0	52.8	438
CS-C	100	196	18.6	53.9	638
CS-C	200	213	20.4	52.9	683
CSCOM-C1	0	179	19.0	54.2	580
CSCOM-C1	50	232	18.5	54.0	752
CSCOM-C1	100	247	18.2	53.3	805
CSCOM-C1	200	265	19.7	54.4	856
CSCOM-C2	0	136	17.3	51.8	445
CSCOM-C2	50	189	18.8	53.6	614
CSCOM-C2	100	207	20.3	54.1	665
CSCOM-C2	200	241	20.3	54.1	775
CSW-C	0	120	17.9	52.5	391
CSW-C	50	152	17.7	51.8	496
CSW-C	100	179	19.2	53.6	581
CSW-C	200	235	19.7	52.8	759
Mean		190	19.3	53.5	613
<b>Probability(%)</b>					
Rotation (R)		0.0	31.1	6.5	0.0
Nitrogen (N)		0.0	0.1	2.6	0.0
R x N		0.2	84.1	69.7	0.1
<b>LSD (0.10)</b>					
Rotation (R)		14	NS	0.8	44
Nitrogen (N)		6	0.6	0.5	20
R x N		21	NS	NS	68

\*AGI: Adjusted Gross Income

**Table:1909-18. Corn, Soybean, Wheat, Oats and Alfalfa (Meadow) Rotation - Soybean  
Lancaster, WI - 2019.**

Rotation	Nitrogen rate N lb/A	Yield bu/A	Moisture %	AGI \$8.48/bu \$/A
CS-S		53	14.4	425
CSCOM-S		62	14.9	493
CSW-S		61	14.3	486
	0	62	14.6	493
	50	57	14.4	454
	100	58	14.6	464
	200	58	14.5	462
			0.0	
CS-S	0	58	14.5	461
CS-S	50	52	14.4	413
CS-S	100	52	14.5	415
CS-S	200	52	14.1	412
CSCOM-S	0	64	14.9	512
CSCOM-S	50	57	14.7	458
CSCOM-S	100	63	15.0	503
CSCOM-S	200	63	15.1	500
CSW-S	0	63	14.4	506
CSW-S	50	61	14.1	490
CSW-S	100	59	14.3	474
CSW-S	200	59	14.3	473
Mean		59	14.5	468
<b><u>Probability(%)</u></b>				
Rotation (R)		15	47.7	15
Nitrogen (N)		10	45.0	10
R x N		59	46.4	59
<b><u>LSD (0.10)</u></b>				
Rotation (R)		NS	NS	NS
Nitrogen (N)		NS	NS	NS
R x N		NS	NS	NS

\*AGI: Adjusted Gross Income

**Table:1909-19. Corn, Soybean, Wheat, Oats and Alfalfa (Meadow) Rotation - Wheat.  
Lancaster, WI - 2019.**

Rotation	Nitrogen rate N lb/A	Yield bu/A	Moisture %	AGI \$3.78/bu \$/A
CSW-W	0	40	15	178
CSW-W	50	67	15	297
CSW-W	100	55	15	244
CSW-W	200	57	15	253
Mean		54	15	243
<b><u>Probability(%)</u></b>				
Nitrogen (N)		28.0	--	28.0
<b><u>LSD (0.10)</u></b>				
Nitrogen (N)		NS	--	NS

\*AGI: Adjusted Gross Income

-- Average moisture for the trial: 15 %

**Table:1909-20. Corn, Soybean, Wheat, Oats and Alfalfa (Meadow)  
Rotation - Oats. Lancaster, WI - 2019.**

Rotation	Nitrogen rate N lb/A	Yield bu/A	Moisture %	AGI \$2.00/bu \$/A
CCOAA-O		44	16.6	77
CSCOA-O		39	13.1	68
	0	38	13.8	67
	50	40	13.5	70
	100	40	16.3	72
	200	46	16.0	82
CCOAA-O	0	39	15.0	69
CCOAA-O	50	44	14.0	77
CCOAA-O	100	42	19.0	75
CCOAA-O	200	50	18.5	88
CSCOA-O	0	37	12.5	66
CSCOA-O	50	36	13.0	63
CSCOA-O	100	38	13.5	68
CSCOA-O	200	43	13.5	76
Mean		41	14.9	73
<b><u>Probability(%)</u></b>				
Rotation (R)		36	43.8	36
Nitrogen (N)		22	26.6	22
R x N		25	49.1	25
<b><u>LSD (0.10)</u></b>				
Rotation (R)		NS	NS	NS
Nitrogen (N)		NS	NS	NS
R x N		NS	NS	NS

\*AGI: Adjusted Gross Income

**Table:1909-21. Corn, Soybean, Wheat, Oats and Alfalfa (Meadow) Rotation - Alfalfa.  
Lancaster, WI - 2019.**

Rotation	Nitrogen	Harvest Date			Total
	rate	13-Jun	12-Jul	21-Aug	
	N lb/A	T dm/A	T dm/A	T dm/A	T dm/A
CCCMM-M1		0.7	1.3	--	2.0
CCCMM-M2		2.3	1.2	1.5	4.9
CCOMM-M1		1.6	1.0	1.1	3.7
CCOMM-M2		2.4	1.1	1.3	4.9
CSCOM-M		1.9	1.2	1.0	4.1
	0	2.0	1.2	1.2	4.2
	50	1.8	1.2	1.2	3.9
	100	1.8	1.2	1.2	3.9
	200	1.6	1.1	1.3	3.8
CCCMM-M1	0	0.9	1.1	--	2.0
CCCMM-M1	50	0.7	1.2	--	2.0
CCCMM-M1	100	0.7	1.4	--	2.1
CCCMM-M1	200	0.6	1.3	--	1.9
CCCMM-M2	0	2.4	1.1	1.5	5.0
CCCMM-M2	50	2.0	1.1	1.5	4.6
CCCMM-M2	100	2.3	1.3	1.4	5.1
CCCMM-M2	200	2.5	1.0	1.5	5.0
CCOMM-M1	0	2.1	1.2	1.2	4.4
CCOMM-M1	50	1.6	1.0	1.1	3.6
CCOMM-M1	100	1.5	1.0	0.9	3.4
CCOMM-M1	200	1.4	0.8	1.2	3.4
CCOMM-M2	0	2.4	1.1	1.2	4.7
CCOMM-M2	50	2.6	1.2	1.3	5.0
CCOMM-M2	100	2.6	1.2	1.4	5.2
CCOMM-M2	200	2.2	1.1	1.4	4.7
CSCOM-M	0	2.3	1.3	1.0	4.6
CSCOM-M	50	1.9	1.3	1.0	4.2
CSCOM-M	100	1.7	1.0	1.1	3.7
CSCOM-M	200	1.6	1.3	1.0	3.9
Mean		1.8	1.2	1.2	3.9
<b><u>Probability(%)</u></b>					
Rotation (R)		2.1	58.5	4.5	1.0
Nitrogen (N)		3.4	75.5	69.0	20.5
R x N		32.3	20.4	51.3	41.8
<b><u>LSD (0.10)</u></b>					
Rotation (R)		0.6	NS	0.2	0.9
Nitrogen (N)		0.2	NS	NS	NS
R x N		NS	NS	NS	NS