FIELD EXPERIMENT HISTORY

Title: Crop Rotation Response to N rate
Experiment: 09ACOSW **Trial ID:** 6165 **Year:** 2017
Personnel: Douglas R Wiedenbeck, Bill Meyer
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

Fertilizer:

	Analysis:	Product Rate lbs/A:	Date:
Preplant :	S:0-20-34	315	5/22/2017
Starter :	C: 9-23-30	195	5/15/2017
Post plant :	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: 0-8-37-3S-0.3B	400	7/31/2017
Manure:	N/A	N/A	N/A

Herbicide: C: Powermax 29 oz/a 5/3/17
A,W: Cornbelt Salvan 1.6 pt/a, PwrMax 29.0 oz/A 4/19/17
2,4-D 1 pts/a, 10/5/17
PwrMax 32 oz/a 10/5/17

Planting Depth: C:1.5"
Row Width: C:30" S:15" O/A/W: 7.5"

Hybrid: C: Pioneer P0157 AMX
S: Nutech 7172R2
W:Pioneer 25R25
A: Croplan Rebound 6.0
O:Ogle

Planting Date: C: 5/15/17 W: 10/25/16
S: 6/1/17 A: 5/15-4/18/17
O: 4/18/17

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:10/27/17S: 10/10/17
O: 7/25/17 W: 7/25/17
A: 5/30; 7/3; 7/28; 8/31

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'
Replications: 2
Experiment Size: 2.7 A

Factors/Treatments:

Rotation

1) CC
2) CSCOA-2C
3) CSCOA-1O
4) CSCOA-1A
5) CSCOA-1C
6) CSCOA-1S
7) CCCAA-3C
8) CCCAA-1A
9) CCCAA-1C
10) CCCAA-2A
11) CCCAA-2C
12) CCOAA-1O
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

Corn N-rate (lbs/A)

1) 0
2) 50
3) 100
4) 200

Results: Tables 1709-17 to 1709-21

Table:1709-17. Corn, Soybean, Wheat, Oats and Alfalfa (Meadow) Rotation - Corn
Lancaster, WI - 2017.

Rotation	Nitrogen rate	Yield	Moisture	Test weight	AGI $3.44/bu
	N lb/A	bu/A	%	lbs/bu	$/A
CC-C		157	19.5	56.1	493
CS-C		197	19.1	56.9	619
CCCMM-C1		205	20.5	57.0	639
CCCMM-C2		204	19.2	56.7	640
CCCMM-C3		198	19.5	56.3	619
CCOMM-C1		203	19.5	57.4	634
CCOMM-C2		205	19.5	56.8	641
CSCOM-C1		233	19.1	57.3	730
CSCOM-C2		201	19.3	57.6	630
CSW-C		170	20.2	55.8	529
	0	153	19.4	56.4	479
	50	194	19.4	56.9	609
	100	216	19.5	57.0	676
	200	226	19.8	56.8	705
CC-C	0	101	20.5	55.7	314
CC-C	50	126	19.7	55.8	395
CC-C	100	181	18.8	56.5	569
CC-C	200	221	19.2	56.7	692
CCCMM-C1	0	183	19.5	57.2	574
CCCMM-C1	50	212	20.8	57.0	656
CCCMM-C1	100	212	20.6	57.1	658
CCCMM-C1	200	215	21.0	56.7	667
CCCMM-C2	0	134	18.2	56.1	422
CCCMM-C2	50	204	18.9	56.9	640
CCCMM-C2	100	247	19.3	56.8	772
CCCMM-C2	200	232	20.2	56.8	724
CCCMM-C3	0	135	19.7	56.1	423
CCCMM-C3	50	195	19.2	56.2	612
CCCMM-C3	100	218	19.9	56.3	681
CCCMM-C3	200	242	19.0	56.6	759
CCOMM-C1	0	178	18.8	57.5	560
CCOMM-C1	50	214	19.5	57.5	669
CCOMM-C1	100	218	19.2	57.8	685
CCOMM-C1	200	200	20.3	57.0	623

continue

Table:1709-17. Corn, Soybean, Wheat, Oats and Alfalfa (Meadow) Rotation - Corn (continued) **Lancaster, WI - 2017.**

Rotation	Nitrogen rate	Yield	Moisture	Test weight	AGI $3.44/bu
	N lb/A	bu/A	%	lbs/bu	$/A
CCOMM-C2	0	164	19.1	56.3	515
CCOMM-C2	50	219	19.3	57.3	687
CCOMM-C2	100	214	19.7	57.1	669
CCOMM-C2	200	222	20.0	56.4	692
CS-C	0	132	19.4	56.4	414
CS-C	50	187	18.8	57.4	587
CS-C	100	222	19.2	57.2	696
CS-C	200	248	18.8	56.8	778
CSCOM-C1	0	223	18.1	56.7	705
CSCOM-C1	50	231	18.8	57.4	725
CSCOM-C1	100	238	19.5	57.6	745
CSCOM-C1	200	239	19.9	57.7	745
CSCOM-C2	0	172	19.8	57.4	537
CSCOM-C2	50	198	18.7	57.6	624
CSCOM-C2	100	217	18.7	57.7	682
CSCOM-C2	200	217	19.8	57.6	678
CSW-C	0	105	20.7	55.0	326
CSW-C	50	157	19.7	56.1	491
CSW-C	100	193	20.2	56.2	601
CSW-C	200	223	20.0	56.2	696
Mean		197	19.5	56.8	617
Probability(%)					
Rotation (R)		1.2	36.6	5.3	1.2
Nitrogen (N)		0.0	8.4	0.0	0.0
R x N		0.0	4.4	7.2	0.0
LSD (0.10)					
Rotation (R)		24	NS	0.8	75
Nitrogen (N)		8	0.3	0.2	25
R x N		31	1.3	0.9	95

*AGI: Adjusted Gross Income

Table:1709-18. Corn, Soybean, Wheat, Oats and Alfalfa (Meadow) Rotation - Soybean Lancaster, WI - 2017.

Rotation	Nitrogen rate	Yield	Moisture	AGI $8.48/bu
	N lb/A	bu/A	%	$/A
CS-S		50	9.7	414
CSCOM-S		53	9.7	435
CSW-S		55	9.7	457
	0	57	9.7	467
	50	49	9.7	406
	100	53	9.7	436
	200	52	9.7	432
CS-S	0	54	9.7	443
CS-S	50	47	9.7	386
CS-S	100	51	9.7	424
CS-S	200	49	9.7	403
CSCOM-S	0	60	9.7	498
CSCOM-S	50	47	9.7	384
CSCOM-S	100	52	9.7	426
CSCOM-S	200	52	9.7	431
CSW-S	0	56	9.7	458
CSW-S	50	54	9.7	448
CSW-S	100	56	9.7	459
CSW-S	200	56	9.7	462
Mean		53	9.7	435
Probability(%)				
Rotation (R)		29	--	29
Nitrogen (N)		13	--	13
R x N		66	--	66
LSD (0.10)				
Rotation (R)		NS	--	NS
Nitrogen (N)		NS	--	NS
R x N		NS	--	NS

*AGI: Adjusted Gross Income

Table:1709-19. Corn, Soybean, Wheat, Oats and Alfalfa (Meadow) Rotation - Wheat. Lancaster, WI - 2017.

Rotation	Nitrogen rate	Yield	Moisture	AGI $3.78/bu
	N lb/A	bu/A	%	$/A
CSW-W	0	53	8.1	188
CSW-W	50	59	8.1	208
CSW-W	100	49	8.1	175
CSW-W	200	52	8.1	183
Mean		53	8.1	189
Probability(%)				
Nitrogen (N)		51.0	--	51.0
LSD (0.10)				
Nitrogen (N)		13	--	47

*AGI: Adjusted Gross Income

Table:1709-20. Corn, Soybean, Wheat, Oats and Alfalfa (Meadow) Rotation - Oats. Lancaster, WI - 2017.

Rotation	Nitrogen rate	Yield	Moisture	AGI $2.00/bu
	N lb/A	bu/A	%	$/A
CCOAA-O		98	7	173
CSCOA-O		81	7	144
			7	
	0	85	7	151
	50	83	7	148
	100	86	7	153
	200	103	7	183
CCOAA-O	0	95	7	169
CCOAA-O	50	84	7	148
CCOAA-O	100	98	7	174
CCOAA-O	200	114	7	202
CSCOA-O	0	75	7	133
CSCOA-O	50	83	7	147
CSCOA-O	100	75	7	132
CSCOA-O	200	92	7	163
Mean		90	7	158
Probability(%)				
Rotation (R)		19	--	19
Nitrogen (N)		11	--	11
R x N		43	--	43
LSD (0.10)				
Rotation (R)		NS	--	NS
Nitrogen (N)		NS	--	NS
R x N		NS	--	NS

*AGI: Adjusted Gross Income

Table:1709-21. Corn, Soybean, Wheat, Oats and Alfalfa (Meadow) Rotation - Alfalfa. Lancaster, WI - 2017.

Rotation	Nitrogen rate	Harvest Date				Total
		30-May	3-Jul	28-Jul	31-Aug	
	N lb/A	T dm/A	T dm/A	T dm/A	T dm/A	T dm/A
CCCMM-M1		1.2	1.4	--	--	2.6
CCCMM-M2		1.6	1.6	1.2	0.8	5.1
CCOMM-M1		1.5	1.4	1.3	0.9	5.1
CCOMM-M2		1.8	1.5	1.2	0.7	5.3
CSCOM-M		1.6	1.5	1.3	1.0	5.3
	0	1.6	1.6	1.2	0.9	4.8
	50	1.5	1.5	1.2	0.9	4.7
	100	1.5	1.5	1.3	0.9	4.6
	200	1.5	1.4	1.2	0.9	4.6
CCCMM-M1	0	1.4	1.5	--	--	2.9
CCCMM-M1	50	1.0	1.4	--	--	2.4
CCCMM-M1	100	1.1	1.3	--	--	2.4
CCCMM-M1	200	1.3	1.5	--	--	2.8
CCCMM-M2	0	1.6	1.7	1.1	0.7	5.2
CCCMM-M2	50	1.7	1.5	1.2	0.8	5.2
CCCMM-M2	100	1.4	1.5	1.2	0.8	5.0
CCCMM-M2	200	1.5	1.6	1.3	0.8	5.2
CCOMM-M1	0	1.6	1.6	1.2	1.0	5.3
CCOMM-M1	50	1.5	1.4	1.3	0.9	5.0
CCOMM-M1	100	1.5	1.4	1.3	0.9	5.1
CCOMM-M1	200	1.5	1.3	1.3	0.9	5.0
CCOMM-M2	0	1.8	1.5	1.2	0.7	5.2
CCOMM-M2	50	1.9	1.6	1.2	0.8	5.4
CCOMM-M2	100	1.8	1.4	1.3	0.7	5.2
CCOMM-M2	200	1.8	1.5	1.2	0.7	5.2
CSCOM-M	0	1.7	1.6	1.3	1.0	5.5
CSCOM-M	50	1.6	1.7	1.3	1.0	5.5
CSCOM-M	100	1.6	1.6	1.3	1.0	5.5
CSCOM-M	200	1.3	1.2	1.2	1.0	4.7
Mean		1.5	1.5	1.2	0.9	4.7
Probability(%)						
Rotation (R)		1.5	77.7	24.5	11.1	0.1
Nitrogen (N)		36.2	11.4	16.1	97.5	29.7
R x N		31.3	31.0	10.2	76.5	30.4
LSD (0.10)						
Rotation (R)		0.2	NS	NS	NS	0.4
Nitrogen (N)		NS	NS	NS	NS	NS
R x N		NS	NS	NS	NS	NS