FIELD EXPERIMENT HISTORY

Title: **Crop Rotation Response to Nrate**

Experiment: 09ACOSW **Trial ID:** 6264 **Year:** 2018

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

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 1809-17 to 1809-21

Table:1809-17. Corn, Soybean, Wheat, Oats and Alfalfa Rotation - Corn
Lancaster, WI - 2018.

Rotation	Nitrogen rate	Yield	Moisture	Test weight	AGI $3.44/bu
	N lb/A	bu/A	%	lbs/bu	$/A
CC-C		153	19.8	58.0	479
CCCMM-C1		229	19.6	58.1	717
CCCMM-C2		198	19.7	59.1	620
CCCMM-C3		168	19.3	57.6	528
CCOMM-C1		191	19.0	56.4	599
CCOMM-C2		187	19.2	56.9	587
CSb-C		194	19.4	58.3	608
CSbCOM-C1		222	19.7	59.0	695
CSbCOM-C2		199	19.1	57.6	624
CSbW-C		178	19.9	58.8	554
	0	136	19.2	57.5	427
	50	190	19.3	58.4	596
	100	209	19.5	57.9	653
	200	233	19.8	58.1	728
CC-C	0	76	19.9	58.0	238
CC-C	50	142	19.3	58.3	444
CC-C	100	163	20.1	58.0	509
CC-C	200	233	20.1	57.7	726
CCCMM-C1	0	219	19.3	58.7	687
CCCMM-C1	50	235	19.7	58.5	735
CCCMM-C1	100	241	19.7	57.7	752
CCCMM-C1	200	223	19.7	57.5	696
CCCMM-C2	0	110	19.0	57.3	345
CCCMM-C2	50	196	19.5	59.4	614
CCCMM-C2	100	237	19.9	59.6	740
CCCMM-C2	200	250	20.4	60.2	780
CCCMM-C3	0	80	19.1	56.1	250
CCCMM-C3	50	167	18.6	57.8	525
CCCMM-C3	100	200	19.5	58.6	625
CCCMM-C3	200	228	20.0	57.8	712
CCOMM-C1	0	168	18.9	56.3	529
CCOMM-C1	50	210	19.0	56.7	660
CCOMM-C1	100	165	18.8	55.8	519
CCOMM-C1	200	219	19.2	57.0	686

continue

Table:1809-17. Corn, Soybean, Wheat, Oats and Alfalfa Rotation - Corn
(continued) **Lancaster, WI - 2018.**

Rotation	Nitrogen rate	Yield	Moisture	Test weight	AGI $3.44/bu
	N lb/A	bu/A	%	lbs/bu	$/A
CCOMM-C2	0	128	18.5	55.3	404
CCOMM-C2	50	185	19.3	57.6	580
CCOMM-C2	100	208	19.0	56.7	651
CCOMM-C2	200	229	20.1	58.0	713
CS-C	0	122	19.3	57.8	383
CS-C	50	202	19.1	59.0	633
CS-C	100	213	19.4	57.9	666
CS-C	200	240	19.9	58.6	749
CSCOM-C1	0	200	19.4	59.8	626
CSCOM-C1	50	226	20.0	59.9	706
CSCOM-C1	100	240	19.8	58.6	749
CSCOM-C1	200	223	19.6	57.8	698
CSCOM-C2	0	157	18.9	58.0	494
CSCOM-C2	50	184	19.0	57.7	578
CSCOM-C2	100	220	19.0	57.1	690
CSCOM-C2	200	234	19.5	57.8	732
CSW-C	0	100	19.9	57.9	311
CSW-C	50	156	19.6	59.1	489
CSW-C	100	203	20.0	58.9	632
CSW-C	200	252	20.0	59.3	785
Mean		192	19.5	58.0	601
Probability(%)					
Rotation (R)		0.1	51.4	28.7	0.1
Nitrogen (N)		0.0	0.0	3.6	0.0
R x N		0.0	22.0	22.4	0.0
LSD (0.10)					
Rotation (R)		17	NS	NS	54
Nitrogen (N)		10	0.2	0.5	32
R x N		32	NS	NS	100

*AGI: Adjusted Gross Income

Table:1809-18. Corn, Soybean, Wheat, Oats and Alfalfa (Meadow) Rotation - Soybean Lancaster, WI - 2018.

Rotation	Nitrogen rate	Yield	Moisture	AGI $8.48/bu
	N lb/A	bu/A	%	$/A
CS-S		50	11.6	412
CSCOM-S		61	11.4	501
CSW-S		55	11.4	455
	0	55	11.5	455
	50	55	11.5	451
	100	56	11.5	466
	200	55	11.4	451
CS-S	0	47	11.5	388
CS-S	50	49	11.7	404
CS-S	100	54	11.7	448
CS-S	200	49	11.5	408
CSCOM-S	0	62	11.4	512
CSCOM-S	50	59	11.5	487
CSCOM-S	100	61	11.4	502
CSCOM-S	200	61	11.5	503
CSW-S	0	57	11.6	467
CSW-S	50	56	11.4	463
CSW-S	100	54	11.3	448
CSW-S	200	53	11.3	441
Mean		55	11.5	456
Probability(%)				
Rotation (R)		34	77.9	34
Nitrogen (N)		79	70.1	79
R x N		56	64.8	56
LSD (0.10)				
Rotation (R)		NS	NS	NS
Nitrogen (N)		NS	NS	NS
R x N		NS	NS	NS

*AGI: Adjusted Gross Income

Table:1809-19. 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	51	11.8	179
CSW-W	50	49	11.8	174
CSW-W	100	65	11.8	229
CSW-W	200	57	11.8	203
Mean		55	11.8	196
Probability(%)				
Nitrogen (N)		4.3	--	4.3
LSD (0.10)				
Nitrogen (N)		7	--	26

*AGI: Adjusted Gross Income

Table:1809-20. Corn, Soybean, Wheat, Oats and Alfalfa (Meadow) Rotation - Oats. Lancaster, WI - 2018.

Rotation	Nitrogen rate	Yield	Moisture	AGI $2.00/bu
	N lb/A	bu/A	%	$/A
CCOAA-O		44	5.8	77
CSCOA-O		39	5.8	68
			5.8	
	0	38	5.8	67
	50	40	5.8	70
	100	40	5.8	72
	200	46	5.8	82
CCOAA-O	0	39	5.8	69
CCOAA-O	50	44	5.8	77
CCOAA-O	100	42	5.8	75
CCOAA-O	200	50	5.8	88
CSCOA-O	0	37	5.8	66
CSCOA-O	50	36	5.8	63
CSCOA-O	100	38	5.8	68
CSCOA-O	200	43	5.8	76
Mean		41	5.8	73
Probability(%)				
Rotation (R)		34	--	34
Nitrogen (N)		30	--	30
R x N		88	--	88
LSD (0.10)				
Rotation (R)		NS	--	NS
Nitrogen (N)		NS	--	NS
R x N		NS	--	NS

*AGI: Adjusted Gross Income

Table:1809-21. Corn, Soybean, Wheat, Oats and Alfalfa (Meadow) Rotation - Alfalfa. Lancaster, WI - 2018.

Rotation	Nitrogen rate	Harvest Date 31-May	2-Jul	3-Aug	10-Sep	Total
	N lb/A	T dm/A	T dm/A	T dm/A	T dm/A	T dm/A
CCCMM-M1		1.2	1.3	--	--	2.5
CCCMM-M2		1.9	1.8	1.2	1.1	5.9
CCOMM-M1		1.8	1.6	1.1	1.2	5.8
CCOMM-M2		1.7	1.6	1.1	1.0	5.4
CSCOM-M		2.0	1.9	1.1	1.1	6.0
	0	1.7	1.6	1.1	1.1	5.1
	50	1.7	1.6	1.1	1.1	5.0
	100	1.7	1.6	1.1	1.1	5.1
	200	1.8	1.6	1.2	1.2	5.2
CCCMM-M1	0	1.3	1.4	--	--	2.6
CCCMM-M1	50	1.1	1.3	--	--	2.4
CCCMM-M1	100	1.2	1.3	--	--	2.4
CCCMM-M1	200	1.3	1.2	--	--	2.5
CCCMM-M2	0	1.8	1.8	1.3	1.1	6.0
CCCMM-M2	50	2.0	1.7	1.2	1.1	6.0
CCCMM-M2	100	1.9	1.8	1.2	1.0	5.8
CCCMM-M2	200	1.8	1.8	1.3	1.1	6.0
CCOMM-M1	0	1.7	1.6	1.1	1.1	5.5
CCOMM-M1	50	1.7	1.6	1.1	1.2	5.6
CCOMM-M1	100	2.0	1.6	1.2	1.3	6.1
CCOMM-M1	200	1.9	1.5	1.1	1.3	5.9
CCOMM-M2	0	1.9	1.6	1.1	0.9	5.5
CCOMM-M2	50	1.7	1.6	1.1	0.9	5.3
CCOMM-M2	100	1.7	1.7	1.2	1.0	5.6
CCOMM-M2	200	1.7	1.6	1.1	1.1	5.4
CSCOM-M	0	2.0	1.8	1.0	1.2	6.0
CSCOM-M	50	1.9	1.9	1.1	1.1	5.9
CSCOM-M	100	1.8	1.9	1.0	1.0	5.7
CSCOM-M	200	2.1	1.9	1.1	1.2	6.4
Mean		1.7	1.6	1.1	1.1	5.1
Probability(%)						
Rotation (R)		1.5	0.4	14.0	24.4	0.0
Nitrogen (N)		59.9	89.5	84.0	28.8	16.7
R x N		54.8	90.2	66.2	42.1	12.1
LSD (0.10)						
Rotation (R)		0.3	0.1	NS	NS	0.3
Nitrogen (N)		NS	NS	NS	NS	NS
R x N		NS	NS	NS	NS	NS