FIELD EXPERIMENT HISTORY

Title: **Crop Rotation Response to Nrate**

Experiment: 09ACOSW **Trial ID:** 6060 **Year:** 2016

Personnel: Joe Lauer, Thierno Diallo, Kent Kohn,

Location: Lancaster, WI **County:** Grant

Supported By:

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: Fall chiseled Chisel/disc/mulch - C on C

Fertilizer:

	Analysis:	Rate lbs/A:	Date:
Preplant :	N/A	N/A	N/A
Starter :	C: 9-23-30 S,W,O: 0-20-34	110 lbs/A 338 lbs/A	4/26/16 5/6/16
Post plant :	C: 34-0-0 W: 34-0-0	See rates 10 lbs/A	5/16/16 4/19/16
Manure:	N/A	N/A	N/A

Herbicide: C:Powermax 29 oz/a 5/17/16
Instigate 6 oz/a 5/3/16
Sequence 3 pts/a 6/17/16
S: Outlok/Firstrate 20 oz/a 5/26/16
Sequence 3 pts/a 6/17/16
O/A: butyrac 3 qt/a 5/27/16
W: MPCA 0.5pts/a 5/6/16

Planting Depth: C:1.5"

Hybrid: C: DKC54-38
S: Nutech 7204R2
W: Croplan 9203
A: DKA44-16RR
O: Std.Ogle

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

Planting Date: C: 4/26/16 W: 10/14/15
S: 5/16/16 A: 4/20/16
O: N/A

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:11/1/16 S: 10/13/16
O: 7/25/16 W: 7/25/16
A: 6/1; 6/27; 8/4; 9/30

Fungicide: N/A

Notes:

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-S
3) CSCOA-2C
4) CSCOA-O
5) CSCOA-A
6) CSCOA-1C
7) CCCAA-2C
8) CCCAA-3C
9) CCCAA-A
10) CCCAA-A
11) CCCAA-1C
12) CCOAA-2C
13) CCOAA-O
14) CCOAA-A
15) CCOAA-A
16) CCOAA-1C
17) CSW-S
18) CSW-C
19) CS-C
20) CSW-W
21) CS-S

Corn N-rate (lbs/A)

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

Results: Tables 1609-17 to 1609-21

Table:1609-17. Corn, Soybean, Wheat, Oats and Alfalfa (Meadow) Rotation - Corn Lancaster, WI - 2016.

Rotation	Nitrogen rate	Yield	Moisture	Test weight	AGI $3.44/bu
	N lb/A	bu/A	%	lbs/bu	$/A
CC-C		184	16.1	53.5	589
CS-C		216	15.9	54.1	692
CCCMM-C1		268	15.8	55.7	857
CCCMM-C2		237	15.6	54.8	758
CCCMM-C3		219	15.6	54.1	701
CCOMM-C1		284	16.4	55.1	906
CCOMM-C2		240	15.7	53.9	769
CSCOM-C1		274	16.3	55.2	875
CSCOM-C2		260	16.0	55.2	830
CSW-C		154	15.8	53.4	492
	0	173	15.4	53.7	555
	50	226	15.6	54.4	725
	100	262	16.2	54.8	838
	200	272	16.5	55.1	869
CC-C	0	77	15.9	52.7	246
CC-C	50	177	15.5	52.8	567
CC-C	100	227	16.3	53.9	725
CC-C	200	257	16.7	54.5	818
CCCMM-C1	0	224	15.1	55.0	718
CCCMM-C1	50	273	15.7	55.8	876
CCCMM-C1	100	292	16.0	55.9	934
CCCMM-C1	200	282	16.3	56.0	900
CCCMM-C2	0	174	14.7	53.9	557
CCCMM-C2	50	244	15.3	54.5	783
CCCMM-C2	100	262	16.1	55.5	838
CCCMM-C2	200	268	16.3	55.5	856
CCCMM-C3	0	149	15.1	53.3	479
CCCMM-C3	50	183	14.7	53.6	586
CCCMM-C3	100	268	16.2	54.4	856
CCCMM-C3	200	276	16.5	55.2	881
CCOMM-C1	0	276	16.2	55.3	882
CCOMM-C1	50	277	16.4	54.9	884
CCOMM-C1	100	281	16.5	55.0	897
CCOMM-C1	200	301	16.6	55.1	960

continue

Table:1609-17. Corn, Soybean, Wheat, Oats and Alfalfa (Meadow) Rotation - Corn (continued) **Lancaster, WI - 2016.**

Rotation	Nitrogen rate	Yield	Moisture	Test weight	AGI $3.44/bu
	N lb/A	bu/A	%	lbs/bu	$/A
CCOMM-C2	0	169	14.9	52.2	542
CCOMM-C2	50	241	15.6	54.2	773
CCOMM-C2	100	266	16.2	54.7	850
CCOMM-C2	200	285	16.2	54.6	912
CS-C	0	150	15.0	53.0	480
CS-C	50	209	15.9	54.6	670
CS-C	100	246	16.2	53.8	785
CS-C	200	261	16.4	55.0	833
CSCOM-C1	0	244	16.1	54.8	780
CSCOM-C1	50	271	16.3	55.4	866
CSCOM-C1	100	286	16.4	55.0	913
CSCOM-C1	200	295	16.7	55.5	940
CSCOM-C2	0	188	15.5	53.8	604
CSCOM-C2	50	260	15.7	55.7	834
CSCOM-C2	100	289	16.3	55.9	924
CSCOM-C2	200	301	16.5	55.5	960
CSW-C	0	82	15.8	52.9	262
CSW-C	50	129	14.9	52.7	414
CSW-C	100	206	15.9	54.3	661
CSW-C	200	197	16.5	53.9	630
Mean	Mean	234	15.9	54.5	747
Probability(%)					
Rotation (R)		0.0	0.4	2.8	0.0
Nitrogen (N)		0.0	0.0	0.0	0.0
R x N		0.0	0.0	0.2	0.0
LSD (0.10)					
Rotation (R)		10	0.3	1.0	33
Nitrogen (N)		6	0.1	0.2	19
R x N		19	0.4	1.1	61

*AGI: Adjusted Gross Income

Table:1609-18. Corn, Soybean, Wheat, Oats and Alfalfa (Meadow) Rotation - Soybean Lancaster, WI - 2016.

Rotation	Nitrogen rate	Yield	Moisture	AGI $8.48/bu
	N lb/A	bu/A	%	$/A
CS-S		46	11.5	378
CSCOM-S		45	11.5	369
CSW-S		52	11.5	432
	0	50	11.5	409
	50	47	11.5	386
	100	48	11.5	396
	200	46	11.5	380
CS-S	0	47	11.5	391
CS-S	50	46	11.5	375
CS-S	100	44	11.5	367
CS-S	200	46	11.5	379
CSCOM-S	0	39	11.5	324
CSCOM-S	50	50	11.5	411
CSCOM-S	100	49	11.5	407
CSCOM-S	200	40	11.5	332
CSW-S	0	62	11.5	513
CSW-S	50	45	11.5	372
CSW-S	100	50	11.5	413
CSW-S	200	52	11.5	428
Mean		48	11.5	393
Probability(%)				
Rotation (R)		48	--	48
Nitrogen (N)		95	--	95
R x N		71	--	71
LSD (0.10)				
Rotation (R)		NS	--	NS
Nitrogen (N)		NS	--	NS
R x N		NS	--	NS

*AGI: Adjusted Gross Income

Table:1609-19. Corn, Soybean, Wheat, Oats and Alfalfa (Meadow) Rotation - Wheat. Lancaster, WI - 2016.

Rotation	Nitrogen rate	Yield	Moisture	AGI $3.78/bu
	N lb/A	bu/A	%	$/A
CSW-W	0	40	12	142
CSW-W	50	64	12	229
CSW-W	100	58	12	205
CSW-W	200	68	12	241
Mean		58	12	204
Probability(%)				
Nitrogen (N)		12.9	--	12.9
LSD (0.10)				
Nitrogen (N)		NS	--	NS

*AGI: Adjusted Gross Income

Table:1609-20. Corn, Soybean, Wheat, Oats and Alfalfa (Meadow) Rotation - Oats. Lancaster, WI - 2014.

Rotation	Nitrogen rate	Yield	Moisture	AGI $2.00/bu
	N lb/A	bu/A	%	$/A
CCOAA-O		57	10	100
CSCOA-O		49	10	86
	0	50	10	88
	50	62	10	110
	100	54	10	96
	200	44	10	79
			10	
CCOAA-O	0	48	10	85
CCOAA-O	50	62	10	109
CCOAA-O	100	62	10	109
CCOAA-O	200	55	10	98
			10	
CSCOA-O	0	51	10	91
CSCOA-O	50	63	10	112
CSCOA-O	100	47	10	83
CSCOA-O	200	34	10	60
Mean		53	10	93
Probability(%)				
Rotation (R)		28	--	28
Nitrogen (N)		7	--	7
R x N		15	--	15
LSD (0.10)				
Rotation (R)		NS	--	NS
Nitrogen (N)		10	--	18
R x N		NS	--	NS

*AGI: Adjusted Gross Income

Table:1609-21 Corn, Soybean, Wheat, Oats and Alfalfa (Meadow) Rotation - Alfalfa. Lancaster, WI - 2016.

Rotation	Nitrogen rate	Harvest Date 1-Jun	27-Jul	4-Aug	30-Sep	Total
	N lb/A	T dm/A	T dm/A	T dm/A	T dm/A	T dm/A
CSCOM-M		0.6	0.8	1.2	0.5	3.2
CCOMM-M1		0.6	0.9	1.0	0.6	3.1
CCOMM-M2		1.6	1.0	1.2	0.7	4.4
CCCMM-M2		1.7	1.2	1.1	0.6	4.6
	0	1.1	0.9	1.1	0.6	3.8
	50	1.2	1.0	1.2	0.6	3.9
	100	1.1	1.0	1.1	0.6	3.8
	200	1.0	0.9	1.2	0.6	3.7
CSCOM-M	0	0.7	0.8	1.2	0.5	3.3
CSCOM-M	50	0.7	0.8	1.3	0.6	3.3
CSCOM-M	100	0.6	0.8	1.2	0.5	3.2
CSCOM-M	200	0.4	0.8	1.2	0.5	2.9
CCOMM-M1	0	0.7	0.8	1.0	0.6	3.1
CCOMM-M1	50	0.8	1.0	1.1	0.5	3.4
CCOMM-M1	100	0.5	0.9	1.0	0.6	2.9
CCOMM-M1	200	0.6	0.8	1.0	0.6	3.0
CCOMM-M2	0	1.5	0.9	1.2	0.7	4.3
CCOMM-M2	50	1.7	1.0	1.2	0.7	4.5
CCOMM-M2	100	1.6	1.0	1.2	0.7	4.5
CCOMM-M2	200	1.5	0.9	1.3	0.7	4.4
CCCMM-M2	0	1.7	1.1	1.1	0.7	4.6
CCCMM-M2	50	1.8	1.1	1.2	0.6	4.6
CCCMM-M2	100	1.7	1.3	1.1	0.6	4.8
CCCMM-M2	200	1.6	1.1	1.1	0.6	4.4
Mean		1.1	0.9	1.1	0.6	3.8
Probability(%)						
Rotation (R)		0.4	19.4	9.1	24.7	1.2
Nitrogen (N)		2.9	13.3	60.6	81.6	3.5
R x N		48.8	37.6	94.8	87.9	17.5
LSD (0.10)						
Rotation (R)		0.3	NS	0.1	NS	0.5
Nitrogen (N)		0.1	NS	NS	NS	0.1
R x N		NS	NS	NS	NS	NS