

FIELD EXPERIMENT HISTORY

Title: Alfalfa - Corn Response to Rotation
Experiment: 09Rotation **Trial ID:** 3635 **Year:** 2012
Personnel: J.G. Lauer, Dan Undersander T.H. Diallo, K. D. Kohn, K. Silvera
Location: Arlington, WI **County:** Columbia
Supported By: HATCH

Site Information

Field: ARS333 **Previous Crop:** See Factors **Soil Type:** Plano silt loam
Soil Test Date: 11/6/2012 **pH:** 6.5 **OM (%)** 4.1 **P (ppm)** 28 **K (ppm)** 167

Plot Management

Tillage Operations: No-Till

Fertilizer:	Analysis:	Rate lbs/A:	Date:
Preplant :	N/A	N/A	N/A
Starter :	N/A	N/A	N/A
Post plant :	28-0-0	200	6 /13/12
Manure:	N/A	N/A	N/A

Herbicide: Roundup 42 oz/A 4/6/12
 2.4D 16 oz/A 4/6/12
 Dual 24 oz/A 5/21/12
 Hornet 3 oz/A 5/21/12
 Laudis 3 oz/A 6/5/12
 Clarity 8 oz/A 6/5/12

Insecticide: Force 4.4 lbs/A

Irrigation: None **Hybrid:** C: DeKalb DKC53-78(GENSS)
 A: FS seed-2-99

Planting Date: C: 5/14/12 **Planting Depth:** C: 1.5"
 A: 6/1/12 A: 0.5" **Row Width:** C: 30"
 A: 6"

Target Plant Density: C: 32000 **Planting Method:** C: Kinze 2000 Inter-row
 A: JD750 No-Till drill

Harvest Date: G: 10/12/12 **Harvest Method:** G: Massey 8XP
 S: 9/12/12 S: NH 707
 A: 5/14; 6/20; 7/28/12 A: Almaco Harvester

Notes: Seed corn treated with Poncho 250

Experimental Design

Design: RCB split-split-block **Replications:** 3
Plot Size Seeded: MP: 60' x 75' SP: 10' x 35' **Experiment Size:** 3.47 A
Harvest Plot Size: G: 5' x 35'
Factors/Treatments:

Rotation:

- | | |
|--------------|---|
| 1) AAACC- 1A | 8) AACC- 1C (Ruark) |
| 2) AAACC- 2A | 9) AACC- 2C |
| 3) AAACC- 3A | 10) AACC- 1A |
| 4) AAACC- 1C | 11) AACC- 2A |
| 5) AAACC- 2C | 12) AACC- 1C (Silage)(Ruark) |
| 6) AACC- 1A | 13) AACC- 2C (Silage) |
| 7) AACC- 2A | 14) CC- Grain & Silage (S/S, S/G, G/S, G/G) (Ruark) |

N on Corn plots:

- 1) 0
- 2) Recommended AN
- 3) Recommended ESN
- 4) Recommended ESN- 20%
- 5) Recommended Super U
- 6) Recommended Super U - 20%
- 7) Recommended Agrotain
- 8) Recommended Urea

Results: Tables C-30, C-31 & C-32

**Table C-30. Corn/Alfalfa Rotation Study - Corn.
Arlington, WI - 2012.**

Rotation	Yield bu/A	Moisture %	Test weight lbs/bu	Return \$6.65/bu \$/A	Lodged			Harvest density plants/A
					Total %	Stalk %	Root %	
AAACC-1C	173	16.2	57.2	1097	2.7	1.8	1.0	37167
AAACC-2C	172	16.5	55.6	1089	9.5	9.5	0.0	35500
AACC-1C	195	16.0	57.2	1239	4.8	4.8	0.0	35167
AACC-2C	179	16.7	55.5	1138	2.9	2.9	0.0	35833
CC-CC	163	18.1	54.4	1030	0.9	0.9	0.0	34083
Mean	176	16.7	56.0	1119	4.2	4.0	0.2	35550
<u>Probability(%)</u>								
Rotation (R)	1.0	0.0	0.0	1	0.0	0.1	0.0	6.1
<u>LSD(0.10)</u>								
Rotation (R)	19	1.0	0.9	121	3.3	3.4	0.3	2472

**Table C-31. Alfalfa and Corn Rotation- Alfalfa
Arlington, WI - 2012.**

Rotation	Harvest Date			Total
	14-May	12-Jun	28-Jul	
	t dm/A	t dm/A	t dm/A	t dm/A
AAACC-1A	---	0.0	0.6	0.6
AAACC-2A	2.3	0.7	0.4	3.4
AAACC-3A	2.2	0.6	0.3	3.1
AACC(s)-1A	---	0.0	1.0	1.0
AACC(s)-2A	2.4	1.0	0.5	3.9
AACC-1A	---	0.0	0.4	0.4
AACC-2A	2.4	0.7	0.5	3.5
Mean	2.3	0.4	0.5	2.3
Probability (%)				
Rotation (R)	59.6	0.0	1.8	0.0
LSD 10%	NS	0.1	0.2	0.2

---Establishment year: First cutting was July 28

**Table C-32. Corn, Alfalfa Rotation - Silage
Arlington, WI - 2012.**

Rotation	Harvest density plants/A	Whole Plant										
		Dry Matter		Kernel milk %	Crude		<i>In Vitro</i>		Milk per			
		Yield t/A	Moisture %			protein %	ADF %	NDF %	Digest %	NDFD %	Starch %	Ton lb
AACC(s)-1C	34521	7.5	41	23	7.9	17.4	33.3	88.0	63.8	42.0	3783	28202
AACC(s)-2C	33707	7.3	45	31	7.1	17.0	33.3	88.6	65.7	42.6	3799	27670
Mean	34114	7.4	43	27	7.5	17.2	33.3	88.3	64.7	42.3	3791	27936
<u>Probability(%)</u>												
Rotation (R)	69.4	74.6	8	26	2.7	70.5	99.0	31.7	21.8	74.0	59.6	78.6
<u>LSD(0.10)</u>												
Rotation (R)	NS	NS	3.8	NS	0.6	NS	NS	NS	NS	NS	NS	NS

FIELD EXPERIMENT HISTORY

Title: Alfalfa/Corn Rotation Study
Experiment: 09Rotation **Trial ID:** 12V91 **Year:** 2012
Personnel: M.G. Bertram, M.D. Ruark, M.R. Naber, J.A. Arriaga
Location: Stratford, WI **County:** Marathon
Supported by: Marshfield Ag. Research Station

Site Information

Field: 402 **Previous Crop:** Alfalfa/Corn **Soil Type:** Withee silt loam
Soil Test : **Date:** 11/7/11 **pH** 7.1 **SOM (%)** 3.2 **P (ppm)** 22 **K (ppm)** 49

Plot Management

Tillage Operations: A,C: Spring chisel plow, field cultivator, pulvimulcher No Corn Cultivation

Fertilizer:

	<u>Analysis</u>	<u>Rate</u>	<u>Date</u>	<u>Crop</u>
Starter	None			
Preplant	0-0-60	200 lb/A	4/12/2012	Alfalfa and Corn
Post plant	28-0-0	40 gal/A	6/20/2012	Corn- 2nd yr
	28-0-0	13 gal/A	6/20/2012	Corn- 1st yr
	Various	Various	5/17/2012	Corn N Rate Study
	8% Boron	1.0 pt/A	8/7/2012	Alfalfa
Manure	None			

Herbicide: C: Parallel 1.67 pt **Insecticide:** A,C: Baythroid-2 1.6 oz/A
C,A(ns): Roundup WeatherMax 32 oz A: Baythroid XL 1.6 oz/A
A(est): Raptor 5 oz

Irrigation: None **Hybrid:** Corn: Pioneer P8906HR (89 HX,LL,RR)
Alfalfa(ns): Croplan Consistency 4.10RR
Alfalfa(2yr): Dairyland HybriForce-2420/Wet
Alfalfa(3yr): Dairyland HybriForce-2400

Planting Date: A(ns),C 5/17/2012 **Planting Depth:** C: 1.5"
A: 0.25" **Row Width:** C: 30"
A: 7.5"

Target Plant Density: C: 35,000 **Planting Method:** C: John Deere 1750 planter
A: 17 lb A: IH 5300 Drill

Harvest Date: C: 11/16/2012 CS: 9/6/12 **Harvest Method:** CS: hand harvested
A(est): 6/5/2012, 7/16/2012, 8/28/2012 C: Massey plot combine
A(ns): 8/3/2012 A: MARS forage plot harvester

Notes: Third year of establishing Rotation Study

Experimental Design

Design: RCB **Replications:** 3
Plot Size Seeded: 60' x 60' **Experiment Size:** 5.40 A
Harvest Plot size: C: 60' x 5'; CS: 10' x 2.5'; A: 60' x 3.5'

Factors/Treatments:

<u>Rotation</u>	<u>N Source</u>	<u>Rate (lb N/A)</u>	<u>Rate (lb N/A)</u>
		<u>AACC,AACsCs</u>	<u>CC</u>
3 year Alfalfa, 2 year Corn			
2 year Alfalfa, 2 year Corn	None	0	0
2 year Alfalfa, 2 year Corn Silage	Agrotain	85	125
Continuous Corn	AN	60	100
	AN	85	125
	ESN	60	100
	ESN	85	125
	SU	85	125
	Urea	85	125

Results: Tables . C-33, C-34 & C-35

**Table. C33. Alfalfa and Corn Rotation- Corn
Marshfield, WI - 2012.**

Rotation	Yield bu/A	Moisture %	Test	Harvest	Stalk
			Weight in.	density plants/A	Lodging %
AA <u>ACC</u>	110.2	18.7	54.4	29,524	1.7
AA <u>CC</u>	124.9	19.3	54.2	29,363	1.9
A <u>ACC</u>	125.1	19.8	55.1	30,428	1.0
A <u>CC</u>	101.4	19.6	53.4	26,118	2.8
CC	112.2	19.9	54.3	26,435	1.7
Mean	114.8	19.5	54.3	28,374	1.8
<u>Probability (%)</u>					
Treatment	11.7	>50	24.3	0.4	21.7
<u>LSD 10%</u>					
Treatment	17.2	NS	NS	2,159	NS
CV (%)	19	9	3	10	87

**Table. C34. Alfalfa and Corn Rotation- Established Alfalfa
Marshfield, WI - 2012.**

Rotation	Yield	Yield	Yield	Yield
	5-Jun	16-Jul	28-Aug	Season
	tn dm/A	tn dm/A	tn dm/A	tn dm/A
<u>AA</u> ACC	2.04	0.82	0.38	3.23
AA <u>A</u> CC	1.75	0.86	0.25	2.86
<u>A</u> ACC	1.83	1.01	0.31	3.15
<u>AA</u> CsCs	1.85	0.97	0.41	3.23
Mean	1.87	0.92	0.34	3.12
<u>Probability (%)</u>				
Treatment	27.8	>50	33.7	>50
<u>LSD 10%</u>				
Treatment	NS	NS	NS	NS
<u>CV (%)</u>	9	20	31	11

continued

**Table C-34. Alfalfa and Corn Rotation- New Seeding Alfalfa
continue Marshfield, WI - 2012.**

Rotation	Yield	Yield
	3-Aug	Season
	tn dm/A	tn dm/A
<u>AA</u> ACC	0.66	0.66
<u>A</u> ACC	0.76	0.76
<u>AA</u> CsCs	0.42	0.42
Mean	0.61	0.61
<u>Probability (%)</u>		
Treatment	20.3	20.3
<u>LSD 10%</u>		
Treatment	NS	NS
<u>CV (%)</u>	31	31

**Table. C-35. Alfalfa and Corn Rotation- Corn Silage
Marshfield, WI - 2012.**

Rotation	Kernel Harvest											Milk per	
	Yield tn dm/A	Moisture %	milk %	density plants/A	CP %	ADF %	NDF %	NDFD %	NFC %	Starch %	TDN %	Ton lb	Acre lb
AACsCs	5.7	57.1	63	33,686	7.4	22.9	46.8	64.9	41.7	32.7	68.3	3370	19,267
AACsCs	6.0	59.1	61	34,074	8.7	22.7	42.7	66.4	42.4	26.9	66.3	3245	19,361
Mean	5.8	58.1	62	33,880	8.1	22.8	44.8	65.6	42.1	29.8	67.3	3308	19,314
<u>Probability (%)</u>													
Treatment	>50	13.8	>50	>50	25.6	>50	23.3	2.6	40.0	4.2	30.8	34.3	>50
<u>LSD 10%</u>													
Treatment	NS	2.2	NS	NS	NS	NS	NS	0.7	NS	3.6	NS	NS	NS
CV (%)	14	5	13	7	12	4	7	0	2	5	3	4	13