

## FIELD EXPERIMENT HISTORY

**Title:** Alfalfa - Corn Response to Rotation  
**Experiment:** 09AC **Trial ID** 6529 **Year** 2021  
**Personnel:** Joe Lauer, Thierno Diallo, Kent Kohn  
**Location:** Arlington, WI **County:** Columbia  
**Supported By:** HATCH

### Site Information

**Field:** ARS333 **Previous Crop:** See Factors **Soil Type:** Plano Silt Loam  
**Soil Test Date** 11/12/18 **pH** 6.4 **OM (%)** 3.3 **P (ppm)** 11 **K (ppm)** 93

### Plot Management

<b>Tillage Operations:</b>	<b>Analysis:</b>	<b>Rate lbs/A:</b>	<b>Date:</b>
NT			
<b>Fertilizer:</b>	<b>Preplant :</b> N/A	N/A	N/A
	<b>Starter :</b> N/A	N/A	N/A
	<b>Post plant :</b> 32-0-0	CC: 593	6/07/21
		CA: 500	6/07/21
<b>Herbicide:</b>	<b>Manure:</b> N/A	N/A	N/A
C: Status @ 4 oz/A + Durango DMA @ 24 oz/A 6/16/21		<b>Insecticide:</b>	
Rifle @ 16 oz/A 5/26/20		<b>Hybrid:</b> C:Jung 56SS538RIB	
A: Lambda T-2 @ 1.6 oz/A 6/10/21		A: Dekalb DKA40-51RR	
Durango DMA @ 48 oz/A 5/26/21			
Lambda T-2 @ 1.6 oz/A + Volunteer @ 8oz/A			
+ Durango DMA @ 36 oz/A 07/09/21			
<b>Irrigation:</b> None	<b>Planting Depth:</b> C:1.5"	<b>Row Width:</b> 30"	
<b>Planting Date:</b> C:5/12/21	A: 0.25"		
A:4/23/21		<b>Planting Method:</b> JD1700 w RTK	
<b>Target Plant Density:</b> 35000 plants/A		A: JD750 No-Till Drill	
<b>Harvest Date:</b> C: 10/14/21		<b>Harvest Method:</b> C: MF 8XP	
S: 9/21/21		S: Hagee harvester	
<b>Notes:</b> A: 6/2; 7/1; 7/29; 8/30/21		Al: Almaco Harvester	

### Experimental Design

<b>Design:</b> RCB split-split-block	<b>Replications:</b> 3
<b>Plot Size Seeded:</b> 75' x 60	<b>Experiment Size:</b> 3.47 A
<b>Factors/Treatments:</b>	<b>Harvest Plot Size:</b> G:5' x 71'
<b><u>Rotation - 2021 Treatments:</u></b>	S: 5' x 71'
1) AAACC-2A	A:4.33' x 71'
2) AAACC-3A	
3) AAACC-1C	
4) AAACC-2C	
5) AAACC-1A	
6) AACC- 2C	
7) AACC- 1A	
8) AACC- 2A	
9) AACC- 1C	
10) AACC- 2C (Silage)	
11) AACC- 1A	
12) AACC- 2A	
13) AACC- 1C (Silage)	
14) CC- Grain & Silage (S/S,S/G,G/S,G/G)	

**Results: Tables 2109-01, 2109-02 & 2109-03**

**Table:2109-01. Alfalfa-Corn Rotation Study - Corn.  
Arlington, WI - 2021.**

Rotation	Density	Yield bu/A	Moisture %	Test weight lbs/bu	Lodged			Harvest density plants/A	*AGI \$5.22/bu \$/A
					Total %	Stalk %	Root %		
AAACC-1C		243	29.0	51.3	3.0	3.0	0.0	37611	1148
AAACC-2C		211	32.9	52.8	1.0	1.0	0.0	36667	978
AACC-1C		240	27.5	51.6	2.0	2.0	0.0	37611	1140
AACC-2C		217	32.2	52.0	1.9	1.5	0.4	37333	1009
CC-CC		217	32.3	51.9	0.9	0.9	0.0	36722	1010
	25000	209	29.7	51.7	0.8	0.8	0.0	24733	985
	30000	220	30.4	53.0	2.0	2.0	0.0	30733	1033
	35000	229	30.7	52.0	1.7	1.7	0.0	35000	1074
	40000	231	31.3	51.5	1.5	1.5	0.0	39067	1081
	45000	235	30.9	51.6	1.2	1.0	0.1	44933	1100
	50000	229	31.5	51.6	3.5	3.3	0.3	48667	1068
AAACC-1C	25000	221	28.2	50.9	0.0	0.0	0.0	26000	1046
AAACC-1C	30000	238	28.3	50.7	4.3	4.3	0.0	30667	1125
AAACC-1C	35000	245	29.2	53.3	4.8	4.8	0.0	33667	1157
AAACC-1C	40000	256	28.8	51.0	0.8	0.8	0.0	39667	1207
AAACC-1C	45000	254	29.8	51.1	0.0	0.0	0.0	45667	1193
AAACC-1C	50000	247	29.4	50.9	8.0	8.0	0.0	50000	1162
AAACC-2C	25000	199	32.0	52.0	2.6	2.6	0.0	24333	926
AAACC-2C	30000	208	33.0	58.4	0.0	0.0	0.0	29333	965
AAACC-2C	35000	215	32.8	51.3	0.0	0.0	0.0	35000	997
AAACC-2C	40000	223	32.8	51.6	1.6	1.6	0.0	40333	1034
AAACC-2C	45000	211	32.9	51.5	0.0	0.0	0.0	42333	981
AAACC-2C	50000	208	34.0	51.9	2.0	2.0	0.0	48667	963
AACC-1C	25000	218	26.0	51.8	0.0	0.0	0.0	24000	1042
AACC-1C	30000	234	26.4	51.8	3.1	3.1	0.0	32000	1118
AACC-1C	35000	239	27.1	51.5	3.5	3.5	0.0	37000	1136
AACC-1C	40000	246	29.1	51.0	0.9	0.9	0.0	36667	1162
AACC-1C	45000	263	27.5	51.8	1.4	1.4	0.0	46000	1250
AACC-1C	50000	240	28.5	51.4	3.5	3.5	0.0	50000	1134
AACC-2C	25000	204	30.9	51.6	1.3	1.3	0.0	25000	957
AACC-2C	30000	207	32.2	52.0	0.0	0.0	0.0	30667	962
AACC-2C	35000	217	32.9	52.1	0.0	0.0	0.0	34667	1010
AACC-2C	40000	209	33.2	51.9	4.3	4.3	0.0	41000	971
AACC-2C	45000	227	31.5	52.0	2.2	1.5	0.7	45333	1061
AACC-2C	50000	234	32.3	52.1	3.5	2.0	1.4	47333	1091
CC-CC	25000	204	31.4	52.3	0.0	0.0	0.0	24333	955
CC-CC	30000	213	32.0	52.1	2.4	2.4	0.0	31000	994
CC-CC	35000	229	31.6	51.8	0.0	0.0	0.0	34667	1071
CC-CC	40000	222	32.7	51.9	0.0	0.0	0.0	37667	1032
CC-CC	45000	219	32.5	51.8	2.2	2.2	0.0	45333	1017
CC-CC	50000	214	33.6	51.7	0.7	0.7	0.0	47333	989
Mean		225	30.8	51.9	1.8	1.7	0.1	37189	1057
<b>Probability(%)</b>									
Rotation (R)		0.0	0.0	44.3	19.6	19.9	14.5	38.1	0.0
Density (D)		0.0	0.1	54.5	16.2	25.7	52.4	0.0	0.1
R x D		71.1	78.9	57.9	24.4	24.7	65.3	12.1	72.5
<b>LSD(0.10)</b>									
Rotation (R)		8	0.7	NS	NS	NS	NS	NS	40
Density (D)		9	1	NS	NS	NS	NS	1167	44
R x D		NS	NS	NS	NS	NS	NS	NS	NS

\*AGI - Adjusted Gross Income.

**Table:2109-02. Alfalfa-Corn Rotation Study -Alfalfa.  
Arlington, WI - 2021.**

Rotation	Harvest Date				Total
	2-Jun T Dm/A	1-Jul T Dm/A	29-Jul T Dm/A	30-Aug T Dm/A	
AAACC-1A	0.0	0.2	0.2	0.4	0.8
AAACC-2A	0.8	0.5	0.2	0.3	1.7
AAACC-3A	0.8	0.5	0.3	0.3	1.9
AACC(S)-1A	0.0	0.2	0.2	0.3	0.7
AACC(S)-2A	0.7	0.4	0.3	0.2	1.6
AACC-1A	0.0	0.3	0.3	0.4	0.9
AACC-2A	0.8	0.5	0.3	0.2	1.8
Mean	0.4	0.4	0.2	0.3	1.3
<b><u>Probability (%)</u></b>					
Rotation (R)	0.1	5.2	94.5	1.5	5.1
<b><u>LSD 10%</u></b>					
Rotation (R)	0.4	0.2	NS	0.1	0.7

**Table: 2109-03. Alfalfa-Corn Rotation Study - Silage.**  
**Arlington, WI 2021**

Rotation	Density	Whole Plant											Harvest density plants/A
		Dry Matter		Kernel milk	Crude protein	ADF	NDF	<i>In Vitro</i>		Starch	Milk per		
		Yield	Moisture					Digest	NDFD		Ton	Acre	
T/A	%	%	%	%	%	%	%	%	lb	lb			
AACC-1Cs		10.5	51.3	5.6	6.5	15.9	32.2	86.9	59.4	37.7	3150	33200	38222
AACC-2Cs		9.4	51.6	8.9	6.4	16.1	32.7	86.6	59.1	37.7	3163	29800	37556
	25000	9.1	52.2	9.2	6.6	15.5	31.9	87.4	60.7	37.7	3174	28710	31000
	30000	9.7	51.1	6.7	6.5	16.2	32.6	86.6	59.1	37.4	3138	30391	30833
	35000	9.9	52.2	6.7	6.3	17.3	34.0	86.1	59.1	35.3	3063	30354	38500
	40000	10.6	50.6	5.0	6.5	15.9	31.8	86.9	59.1	39.0	3210	34090	42000
	45000	10.4	51.3	7.5	6.5	15.3	31.8	87.1	59.5	38.7	3205	33334	41667
	50000	10.2	51.1	8.3	6.4	16.0	32.5	86.4	58.1	38.1	3150	32122	43333
AACC(S)-1C	25000	9.3	52.8	10.0	6.4	16.6	33.4	86.7	60.1	35.5	3077	28594	34000
AACC(S)-1C	30000	10.0	51.0	5.0	6.6	15.7	32.0	86.9	59.4	38.1	3162	31500	28333
AACC(S)-1C	35000	10.7	51.2	5.0	6.2	17.7	34.4	85.9	58.9	34.8	3024	32419	39333
AACC(S)-1C	40000	11.4	50.1	5.0	6.8	14.1	29.4	88.4	60.7	41.5	3313	37685	40000
AACC(S)-1C	45000	10.9	51.8	3.3	6.5	15.8	32.6	86.5	58.6	37.8	3170	34629	41667
AACC(S)-1C	50000	10.9	50.7	5.0	6.4	15.4	31.5	87.0	59.0	38.6	3153	34375	46000
AACC(S)-2C	25000	8.8	51.7	8.3	6.7	14.3	30.4	88.2	61.4	39.9	3270	28827	28000
AACC(S)-2C	30000	9.4	51.3	8.3	6.4	16.6	33.2	86.3	58.8	36.7	3114	29281	33333
AACC(S)-2C	35000	9.1	53.1	8.3	6.4	16.9	33.6	86.4	59.4	35.9	3102	28290	37667
AACC(S)-2C	40000	9.8	51.1	5.0	6.2	17.7	34.2	85.5	57.6	36.6	3107	30494	44000
AACC(S)-2C	45000	9.9	50.8	11.7	6.5	14.8	31.0	87.7	60.3	39.7	3240	32039	41667
AACC(S)-2C	50000	9.5	51.4	11.7	6.4	16.5	33.5	85.7	57.2	37.6	3148	29868	40667
Mean		10.0	51.4	7.2	6.5	16.0	32.4	86.8	59.3	37.7	3156	31500	37889
<b>Probability(%)</b>													
Rotation (R)		0.0	65.1	3.6	62.1	66.7	59.4	58.8	70.0	97.2	72.0	0.0	78.8
Density (D)		0.5	66.6	67.3	91.0	41.0	59.2	69.7	65.1	29.3	28.3	0.8	1.7
R x D		49.1	74.9	39.7	35.2	8.7	10.4	14.9	54.6	13.0	10.3	20.8	70.9
<b>LSD(0.10)</b>													
Rotation (R)		0.4	NS	2.6	NS	NS	NS	NS	NS	NS	NS	1398	NS
Density (D)		0.6	NS	NS	NS	NS	NS	NS	NS	NS	NS	2422	7276
R x D		NS	NS	NS	NS	2.4	NS	NS	NS	NS	NS	NS	NS

## FIELD EXPERIMENT HISTORY

**Title:** Alfalfa - Corn Response to Rotation  
**Experiment:** 09AC **Trial ID** 6528 **Year** 2021  
**Personnel:** Joe Lauer, Thierno Diallo, Kent Kohn, Jason Cavadini  
**Location:** Marshfield, WI **County:** Marathon  
**Supported By:** HATCH

### Site Information

**Field:** 402 **Previous Crop:** See Factors **Soil Type:** Plano Silt Loam  
**Soil Test Date** 10/10/19 **pH** 7.3 **OM (%)** 3.3 **P (ppm)** 23 **K (ppm)** 88

### Plot Management

<b>Tillage Operations:</b>	No-Till	<u>Analysis:</u>	<u>Rate lbs/A:</u>	<u>Date:</u>
	<b>Preplant :</b>	9-23-30 0-0-60	170 lbs 150 lbs	5/13/21 5/13/21
<b>Fertilizer:</b>	<b>Starter :</b>	N/A	N/A	N/A
	<b>Post plant :</b>	C: 29-0-0	40 gal	6 /16/21
<b>Herbicide:</b>	<b>Manure:</b>	N/A	N/A	N/A
C: Verdict 16 oz/ac Roundup PowerMax 32 oz/ac A: None			<b>Insecticide:</b> N/A	
			<b>Hybrid:</b> C: Legand LNG 9085 A: Dairyland 3420 wet	
<b>Irrigation:</b>	None	<b>Planting Depth:</b>	C:1.5" A: 0.25"	<b>Row Width:</b> 30"
<b>Planting Date:</b>	C:5/13/21 A: 5/13/21		<b>Planting Method:</b> JD1750	A: Brillion seeder
<b>Target Plant Density:</b>			<b>Harvest Method:</b> C: Almaco Plot Combine CS: Hand harvest A: MARS Forage plot harvester	
<b>Harvest Date:</b>	C: 11/4/21 CS: 9/15/21 A: 6/15, 7/19 , 831/21			
<b>Notes:</b>				

### Experimental Design

<b>Design:</b> RCB	<b>Replications:</b> 3
<b>Plot Size Seeded:</b> 60 x 60	<b>Experiment Size:</b> 5.40 A
<b>Factors/Treatments:</b>	<b>Harvest Plot Size:</b> G: 60' x 5' S: .10' x 2.5' A: 60' x 3.5'
<b><u>Rotation - 2021 Treatments:</u></b>	
1) AAACC-3A	
2) AAACC-1C	
3) AAACC-2C	
4) AAACC-1A	
5) AAACC-2A	
6) AACC-2C	
7) AACC-1A	
8) AACC- 2A	
9) AACC- 1C	
10) AACC- 2C(Silage)	
11) AACC- 1A	
12) AACC- 2A	
13) AACC- 1C(Silage)	
14) CC- Grain & Silage (S/S,S/G,G/S,G/G)	

**Results: Tables 2109-04, 2109-05 & 2109-06**

**Table: 2109-04 Alfalfa and Corn Rotation- Corn  
Marshfield, WI - 2021.**

Rotation	Yield	Moisture	Test Weight	Stalk Lodging	Harvest Population	*AGI \$5.22/bu
	bu/A	%	in.	%	ppa	\$/A
AAACC	140	23.8	52.6	7.1	29589	673
AAACC	144	24.6	52.5	4.5	30073	691
AACC	128	28.9	52.5	3.2	25878	606
AACC	166	24.3	52.4	4.6	31363	800
Continuous Corn	106	24.5	52.5	4.6	28911	509
Mean	137	25.2	52.5	4.8	29163	656
<u>Probability (%)</u>						
Treatment	2.5	0.3	80.1	57.4	10.2	2.4
<u>LSD 10%</u>						
Treatment	26	2	NS	NS	NS	124

**Table: 2109-05 Alfalfa and Corn Rotation- Established Alfalfa  
Marshfield, WI - 2021.**

Rotation	Yield 15-Jun tn dm/A	Yield 19-Jul tn dm/A	Yield 31-Aug tn dm/A	Yield Season tn dm/A
AAACC-1A	-	0.6	1.7	2.3
AAACC-2A	-	0.9	1.6	2.6
AAACC-3A	1.3	0.9	0.6	2.8
AACC-1A	-	0.5	1.7	2.3
AACC-2A	-	0.8	1.7	2.5
AACC(S)-1A	-	0.7	1.4	2.2
AACC(S)-2A	-	0.9	1.6	2.5
Mean	1.3	0.8	1.5	2.5
<u>Probability (%)</u>				
Rotation (R)	-	2.1	0.0	9.4
<u>LSD 10%</u>				
Rotation (R)	-	0.2	0.3	0.3
-	New seeding, no data			

Table:2109-06 Alfalfa and Corn Rotation- Corn Silage

Marshfield, WI - 2021.

Rotation	Yield tn dm/A	Moisture %	Kernel milk %	Harvest Population ppa	CP %	ADF %	NDF %	NDFD %	NFC %	Starch %	TDN %	Milk per	
												Ton lb	Acre lb
AACsCs	7.1	63.3	50	32912	6.7	24.1	42.4	56.8	47.6	36.1	71.0	3209	23870
AACsCs	4.9	69.3	50	30202	5.8	27.4	47.6	60.1	43.6	30.7	71.3	3202	19892
Mean	6.0	66.3	50	31557	6.3	25.7	45.0	58.5	45.6	33.4	71.1	3206	21881
<u>Probability (%)</u>													
Treatment	11.2	3.1	-	22.2	31.2	16.1	12.3	2.4	28.2	31.1	84.4	94.9	41.6
<u>LSD 10%</u>													
Treatment	NS	3.2	-	NS	NS	NS	NS	1.5	NS	NS	NS	NS	NS