FIELD EXPERIMENT HISTORY

Title: **Alfalfa - Corn Response to Rotation**

Experiment: 09AC **Trial ID** 6673 **Year** 2022

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

		Analysis:	Rate lbs/A:	Date:
Tillage Operations: NT				
	Preplant :	N/A	N/A	N/A
Fertilizer:	**Starter :**	N/A	N/A	N/A
	Post plant :	32-0-0	CC: 593 CA: 500	6/21/22 6/21/22
Herbicide:	**Manure:**	N/A	N/A	N/A

C:Rdup PrMAX @ 20 oz/acre 5/17/22 6/22
Detonate @ 8 oz/acre 5/17/22
Medal II EC @ 24 oz/acre 5/17/22
Bellum @ 6 oz/acre 5/17/22
A: Rdup PrMAX @ 40 oz/acre 6/2 - 9/22
Rdup PrMAX @ 20 oz/acre + Lambda T-2 @ 1.6 oz/acre 6/29/22

Insecticide:

Hybrid: C: Jung 56SS538
A: DK 40-51 RR

Irrigation: None

Planting Date: C:5/12/22
A:5/7/22

Planting Depth: C:1.5"
A: 0.25"

Row Width: 30"

Target Plant Density: 35000 plants/A

Planting Method: JD1700 w RTK
A: JD750 No-Till Drill

Harvest Date: C: 10/31/22
S: 9/20/22

Harvest Method: C: MF 8XP
S: Hagee harvester
Al: Almaco Harvester

Notes: A: 6/1; 6/29; 7/29; 8/26/22

Experimental Design

Design: RCB split-split-block

Replications: 3

Plot Size Seeded: 75' x 60

Experiment Size: 3.47 A

Harvest Plot Size: G:5' x 71'
S: 5' x 71'
A:4.33' x 71'

Factors/Treatments:

Rotation - 2022 Treatments:

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

Results: Tables 2209-01, 2209-02 & 2209-03

Table:2209-01. Alfalfa-Corn Rotation Study - Corn.
Arlington, WI - 2022.

Rotation	Density	Yield	Moisture	Test weight	Lodged			Harvest density	*AGI $6.09/bu
					Total	Stalk	Root		
		bu/A	%	lbs/bu	%	%	%	plants/A	$/A
AAACC-1C		235	24.7	52.3	1.3	1.3	0.0	36000	1332
AAACC-2C		184	27.2	50.8	2.2	1.1	1.1	35056	1033
AACC-1C		233	25.5	51.8	1.5	1.1	0.4	37444	1321
AACC-2C		179	26.2	51.8	5.3	1.3	4.0	34889	1008
CC-CC		182	27.6	50.8	2.7	2.4	0.4	36778	1024
	25000	192	24.6	52.6	3.3	2.5	0.8	25867	1091
	30000	201	25.4	51.9	4.1	2.1	2.0	29400	1141
	35000	210	26.0	51.6	2.8	2.0	0.8	34133	1190
	40000	207	26.6	51.3	1.5	1.5	0.0	37600	1170
	45000	205	27.0	51.2	1.6	0.3	1.3	41933	1153
	50000	199	27.8	50.5	2.3	0.1	2.2	47267	1116
AAACC-1C	25000	218	23.5	52.7	0.0	0.0	0.0	26000	1241
AAACC-1C	30000	237	24.3	52.4	0.0	0.0	0.0	30667	1346
AAACC-1C	35000	241	23.5	53.0	2.0	2.0	0.0	33333	1372
AAACC-1C	40000	244	24.7	52.5	5.7	5.7	0.0	36333	1386
AAACC-1C	45000	231	25.8	52.0	0.0	0.0	0.0	41667	1306
AAACC-1C	50000	237	26.5	51.3	0.0	0.0	0.0	48000	1339
AAACC-2C	25000	169	25.3	52.1	1.4	1.4	0.0	22667	955
AAACC-2C	30000	179	26.2	50.8	7.5	5.3	2.2	30667	1012
AAACC-2C	35000	185	27.6	50.8	0.0	0.0	0.0	34333	1042
AAACC-2C	40000	195	27.6	50.5	0.0	0.0	0.0	38000	1094
AAACC-2C	45000	189	28.2	50.2	0.0	0.0	0.0	40000	1057
AAACC-2C	50000	185	28.1	50.3	4.3	0.0	4.3	44667	1038
AACC-1C	25000	227	23.4	53.4	7.5	4.9	2.6	26667	1297
AACC-1C	30000	229	25.0	52.3	0.0	0.0	0.0	30667	1298
AACC-1C	35000	245	25.5	51.3	0.0	0.0	0.0	35333	1388
AACC-1C	40000	233	25.5	51.8	0.0	0.0	0.0	38000	1319
AACC-1C	45000	231	26.0	51.8	1.5	1.5	0.0	44333	1307
AACC-1C	50000	234	27.3	50.5	0.0	0.0	0.0	49667	1316
AACC-2C	25000	168	24.3	53.4	5.1	3.8	1.3	26000	957
AACC-2C	30000	176	24.7	52.7	10.0	2.2	7.8	26000	1000
AACC-2C	35000	182	26.5	51.4	4.0	0.0	4.0	32667	1027
AACC-2C	40000	180	27.1	51.0	1.8	1.8	0.0	37667	1013
AACC-2C	45000	193	26.6	51.6	6.3	0.0	6.3	40667	1088
AACC-2C	50000	172	28.0	50.8	4.3	0.0	4.3	46333	963
CC-CC	25000	178	26.4	51.5	2.4	2.4	0.0	28000	1004
CC-CC	30000	186	27.0	51.2	3.2	3.2	0.0	29000	1048
CC-CC	35000	199	26.7	51.3	7.8	7.8	0.0	35000	1119
CC-CC	40000	185	28.3	50.5	0.0	0.0	0.0	38000	1037
CC-CC	45000	180	28.2	50.5	0.0	0.0	0.0	43000	1009
CC-CC	50000	166	29.3	49.7	2.9	0.7	2.2	47667	925
Mean		202	26.2	51.5	2.6	1.4	1.2	36033	1144
Probability(%)									
Rotation (R)		0.0	0.0	0.0	25.6	86.7	0.9	3.8	0.0
Density (D)		5.0	0.0	0.0	79.5	47.8	55.6	0.0	6.9
R x D		95.2	53.5	41.3	73.6	53.8	88.0	81.9	95.2
LSD(0.10)									
Rotation (R)		9	0.5	0	NS	NS	2	1572	52
Density (D)		10	1	0	NS	NS	NS	1723	57
R x D		NS	NS	NS	NS	NS	NS	NS	NS

*AGI - Adjusted Gross Income.

Table:2209-02. Alfalfa-Corn Rotation Study -Alfalfa.
Arlington, WI - 2022.

Rotation	Harvest Date				Total
	1-Jun	29-Jun	29-Jul	26-Aug	
	T Dm/A	T Dm/A	T Dm/A	T Dm/A	T Dm/A
AAACC-1A	0.0	0.0	0.5	0.5	1.0
AAACC-2A	0.9	0.2	0.2	0.2	1.5
AAACC-3A	0.7	0.3	0.2	0.2	1.3
AACC(S)-1A	0.0	0.0	0.5	0.4	0.9
AACC(S)-2A	0.9	0.4	0.2	0.2	1.7
AACC-1A	0.0	0.0	0.6	0.5	1.1
AACC-2A	0.8	0.3	0.2	0.2	1.4
Mean	0.5	0.2	0.3	0.3	1.3
Probability (%)					
Rotation (R)	0.0	0.0	0.0	0.0	0.0
LSD 10%					
Rotation (R)	0.1	0.1	0.1	0.1	0.2

Table:2209-03. Alfalfa-Corn Rotation Study - Silage.
Arlington, WI 2022

		Whole Plant											
		Dry Matter		Kernel	Crude			*In Vitro*			Milk per		Harvest
Rotation	Density	Yield	Moisture	milk	protein	ADF	NDF	Digest	NDFD	Starch	Ton	Acre	density
		T/A	%	%	%	%	%	%	%	%	lb	lb	plants/A
AACC-1Cs		9.6	59.0	32.2	7.0	15.6	32.4	87.1	60.3	37.8	3410	32613	37111
AACC-2Cs		7.9	59.1	38.3	7.2	15.3	32.4	86.9	59.7	37.3	3384	26665	36222
	25000	8.2	59.3	36.7	7.2	15.0	32.0	87.3	60.3	38.1	3442	28342	27500
	30000	8.3	58.8	35.0	7.1	14.9	31.8	87.2	59.8	38.3	3413	28544	30333
	35000	9.2	58.9	37.5	7.2	14.7	31.2	87.8	61.0	38.4	3424	31620	35667
	40000	8.2	59.1	30.0	7.0	15.5	32.5	86.9	59.8	37.6	3397	28028	38167
	45000	9.1	59.3	35.8	7.1	16.1	33.3	86.6	59.9	36.8	3386	31054	40833
	50000	9.1	59.1	36.7	6.9	16.5	33.7	86.2	59.2	36.1	3323	30245	47500
AACC(S)-1C	25000	9.3	59.2	36.7	7.0	15.4	32.3	86.9	59.5	38.2	3427	31814	29000
AACC(S)-1C	30000	9.2	58.2	30.0	7.1	14.5	31.0	87.9	60.9	39.6	3470	32023	30667
AACC(S)-1C	35000	10.1	58.6	36.7	7.0	14.5	30.8	88.0	61.3	38.5	3403	34462	35333
AACC(S)-1C	40000	9.6	58.9	33.3	6.9	15.6	32.6	87.2	60.7	38.1	3437	33095	41667
AACC(S)-1C	45000	9.3	59.8	25.0	7.1	16.2	33.4	86.8	60.3	37.2	3440	32131	37667
AACC(S)-1C	50000	9.8	59.6	31.7	6.7	17.2	34.6	85.8	59.0	35.2	3285	32150	48333
AACC(S)-2C	25000	7.2	59.4	36.7	7.4	14.7	31.7	87.6	61.0	38.1	3457	24869	26000
AACC(S)-2C	30000	7.5	59.4	40.0	7.2	15.4	32.5	86.6	58.8	36.9	3355	25065	30000
AACC(S)-2C	35000	8.3	59.3	38.3	7.3	14.8	31.5	87.6	60.7	38.3	3446	28778	36000
AACC(S)-2C	40000	6.9	59.3	26.7	7.1	15.3	32.5	86.7	58.9	37.1	3357	22961	34667
AACC(S)-2C	45000	8.9	58.8	46.7	7.0	16.0	33.3	86.5	59.6	36.4	3332	29976	44000
AACC(S)-2C	50000	8.4	58.6	41.7	7.1	15.7	32.8	86.6	59.4	37.1	3360	28341	46667
Mean		8.7	59.1	35.3	7.1	15.4	32.4	87.0	60.0	37.5	3397	29639	36667
Probability(%)													
Rotation (R)		0.0	89.1	12.8	0.3	57.4	95.8	66.9	31.7	56.8	41.1	0.0	51.8
Density (D)		42.6	99.1	88.8	15.2	14.4	17.5	25.0	54.5	51.2	33.6	56.3	0.0
R x D		64.3	73.3	38.7	48.8	66.0	71.7	58.9	41.2	72.3	32.0	66.2	16.1
LSD(0.10)													
Rotation (R)		0.7	NS	NS	0.1	NS	NS	NS	NS	NS	NS	2408	NS
Density (D)		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	4020
R x D		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS