

FIELD EXPERIMENT HISTORY

Title: Alfalfa establishment in corn harvested for silage
Experiment: 18InterSeed **Trial ID:** 3650 **Year:** 2012
Personnel: John Grabber, J.G. Lauer, Mark Renz, T. H . Diallo and K.D. Kohn
Location: Arlington, WI **County:** Columbia
Supported By: USDA-ARS

Site Information

Field: **Previous Crop:** Corn **Soil Type:**
Soil Test Date: 11/15/12 **pH:** 7 **OM (%)** 4.5 **P (ppm)** 175 **K (ppm)** 387

Plot Management

Tillage Operations: No-Till

Fertilizer:	Preplant :	<u>Analysis:</u>	<u>Rate lbs/A:</u>	<u>Date:</u>
		N/A	N/A	N/A
	Starter :	46-0-0	70	5 /14/12
	Post plant :	46-0-0	90	6 /12/12
	Manure:	N/A	N/A	N/A
Herbicide:	Roundup Power Max 32 oz/A 5/12/26		Insecticide:	None
	Roundup Power Max 24 oz/A 6/26/12			
Irrigation:			Hybrid:	C: Pioneer 0441AM1 A: WL325 RR.LH
Planting Date:	C: 5/14/12		Row Width:	C: 30"
	A: 5/15/12		Planting Depth:	C: 1.5" A: 0.5"
Target Plant Density:	See Factors		Planting Method:	C: Kinze Narrow Row Planter A: No-Till Drill
Harvest Date:	C: 9/17/12		Harvest Method:	NH 707 chopper

Notes:

Experimental Design

Design: RCB split-split-plot **Replications:** 4
Plot Size Seeded: 10' x 25" **Experiment Size:** 0.9 A
Harvest Plot Size: 5' x 22'

Factors/Treatments:

Corn plant density:

- 1) 25,000 Plants/A
- 2) 35,000 Plants/A

Alfalfa plant density

- 1) 8 lb/A
- 2) 16 lb/A

Apogee treatments:

- 1) 13 oz/A @ V4-5 + 13 oz/A @ V6-7
- 2) 26 oz/A @ V4-5 + 26 oz/A @ V6-7
- 3) 13 oz/A @ V6-7
- 4) 26 oz/A @ V6-7
- 5) 52 oz/A @ V6-7
- 6) Alfalfa UTC
- 7) Corn UTC (no alfalfa)
- 8) 52 oz/A @ V6-7 (no alfalfa)
- 9) 26 oz/A @ V4-5 + 26 oz/A @ V6-7

Results: Table C-62

**Table C-62. Alfalfa established in corn harvested for silage
Arlington, WI - 2012.**

Corn density plants/A	Alfalfa density lbs/A	Apogee treatments	Dry		Whole Plant								Plant height Inch	Harvest density plts/A	
			Matter Yield tons/A	Moisture %	Crude Milk %	protein %	ADF %	NDF %	<i>In Vitro</i> Digest %	NDFD %	Starch %	Milk per			
												Ton lbs/T	Acre lbs/T		
		13 oz/A @ V4-5 & V6-7	5	50.7	39	7.4	18	34	88.8	67.2	40.9	3807	19724	63.2	38625
		26 oz/A @ V4-5 & V6-7	5	53.3	54	7.8	19	35	88.5	67.2	39.3	3795	18771	62.8	38031
		13 oz/A @ V6-7	5	53.6	48	7.6	19	36	88.5	67.8	38.5	3795	18492	64.3	38129
		26 oz/A @ V6-7	5	51.3	42	7.5	18	35	88.8	67.5	40.0	3806	18727	62.2	38625
		52 oz/A @ V6-7	5	54.3	48	7.7	19	36	88.7	68.6	37.6	3798	17776	59.9	37375
		Alfalfa UTC	5	51.9	48	7.7	18	35	88.4	67.1	38.9	3796	20136	63.2	37781
		Corn UTC (No Alfalfa)	6	51.9	42	7.6	18	33	89.0	66.9	40.9	3829	22236	63.4	38563
		Corn UTC,52 oz/A	6	52.4	53	7.6	18	34	88.5	66.8	39.9	3798	22406	64.8	37344
		Corn UTC, 26 oz/A @ V4-5 & V6-7	6	53.1	50	7.5	17	34	88.8	66.5	41.0	3810	23744	65.4	38233
	16 lbs/A		5	52.7	48	7.7	19	35	88.5	67.1	38.8	3797	18827	63.0	37986
	8 lbs/A		6	52.2	46	7.5	18	34	88.9	67.5	40.5	3810	21620	63.5	38171
	16 lbs/A	13 oz/A @ V4-5 & V6-7	5	51.8	43	7.7	19	35	88.2	66.6	38.6	3794	18012	62.3	38188
	16 lbs/A	26 oz/A @ V4-5 & V6-7	5	53.6	56	7.8	18	35	88.7	67.6	39.8	3809	18289	62.6	37938
	16 lbs/A	13 oz/A @ V6-7	5	54.9	51	7.8	20	37	88.2	67.7	36.5	3777	17357	62.3	38250
	16 lbs/A	26 oz/A @ V6-7	5	51.3	41	7.5	18	34	89.1	67.8	40.7	3820	18020	61.9	38625
	16 lbs/A	52 oz/A @ V6-7	4	53.9	50	7.8	19	36	88.5	68.4	36.8	3790	16236	62.4	37500
	16 lbs/A	Alfalfa UTC	5	52.0	47	7.9	19	36	87.8	66.4	37.0	3769	17956	64.8	38000
	16 lbs/A	Corn UTC (No Alfalfa)	5	52.2	41	7.7	18	33	89.1	67.3	40.6	3838	20944	62.3	38000
	16 lbs/A	Corn UTC,52 oz/A	5	52.4	54	7.7	19	35	88.2	66.6	38.7	3784	20746	65.9	36875
	16 lbs/A	Corn UTC, 26 oz/A @ V4-5 & V6-7	6	52.6	48	7.7	18	34	88.4	65.8	40.8	3797	21887	63.0	38500

continued

Table C-62. Alfalfa established in corn harvested for silage
 continue **Arlington, WI - 2012.**

Corn density plants/A	Alfalfa density lbs/A	Apogee treatments	Dry Matter		Whole Plant								Plant height Inch	Harvest density plts/A		
			Yield tons/A	Moisture %	Crude Milk %	protein %	ADF %	NDF %	<i>In Vitro</i> Digest %	NDFD %	Starch %	Milk per				
													Ton lbs/T	Acre lbs/T		
	8 lbs/A	13 oz/A @ V4-5 & V6-7	6	49.6	36	7.1	17	33	89.4	67.8	43.2	3819	21436	64.1	39063	
	8 lbs/A	26 oz/A @ V4-5 & V6-7	5	52.9	53	7.8	19	35	88.4	66.9	38.9	3781	19253	63.0	38125	
	8 lbs/A	13 oz/A @ V6-7	5	52.3	45	7.4	18	35	88.9	67.9	40.4	3813	19627	66.4	38008	
	8 lbs/A	26 oz/A @ V6-7	5	51.3	44	7.5	18	35	88.5	67.2	39.4	3793	19434	62.5	38625	
	8 lbs/A	52 oz/A @ V6-7	5	54.7	46	7.7	19	35	89.0	68.9	38.5	3806	19317	57.5	37250	
	8 lbs/A	Alfalfa UTC	6	51.8	49	7.6	18	34	89.1	67.7	40.7	3823	22315	61.6	37563	
	8 lbs/A	Corn UTC (No Alfalfa)	6	51.7	43	7.4	17	33	88.9	66.6	41.1	3821	23528	64.5	39125	
	8 lbs/A	Corn UTC,52 oz/A	6	52.4	51	7.5	17	34	88.9	67.1	41.0	3812	24067	63.8	37813	
	8 lbs/A	Corn UTC, 26 oz/A @ V4-5 & V6-7	7	53.5	51	7.4	17	33	89.1	67.1	41.2	3823	25602	67.9	37966	
25000			5	53.2	49	7.7	18	35	88.5	67.0	39.1	3796	18966	65.1	32438	
35000			6	51.7	45	7.5	18	34	88.9	67.6	40.3	3812	21481	61.4	43719	
25000		13 oz/A @ V4-5 & V6-7	5	51.4	42	7.5	18	34	88.9	67.2	41.1	3808	18672	64.0	32500	
25000		26 oz/A @ V4-5 & V6-7	5	53.6	55	7.9	19	36	88.1	66.4	38.5	3782	17160	66.6	32313	
25000		13 oz/A @ V6-7	5	53.2	41	7.6	19	35	88.6	67.7	38.5	3802	17554	65.1	32438	
25000		26 oz/A @ V6-7	4	52.7	43	7.6	19	35	88.4	66.9	38.8	3792	16716	63.5	32688	
25000		52 oz/A @ V6-7	4	55.2	44	7.9	19	36	88.7	68.9	36.4	3792	16672	64.3	32000	
25000		Alfalfa UTC	5	51.5	48	7.7	19	35	88.4	67.3	38.6	3797	19180	63.0	31688	
25000		Corn UTC (No Alfalfa)	5	53.8	51	7.6	18	34	88.9	67.1	40.2	3825	20201	63.8	32063	
25000		Corn UTC,52 oz/A	6	52.8	54	7.7	18	35	88.2	66.0	39.5	3774	21629	67.8	32313	
25000		Corn UTC, 26 oz/A @ V4-5 & V6-7	6	55.0	59	7.5	18	34	88.1	65.3	39.9	3788	22909	68.0	33938	

continued

Table C-62. Alfalfa established in corn harvested for silage
 continue **Arlington, WI - 2012.**

Corn density plants/A	Alfalfa density lbs/A	Apogee treatments	Dry Matter		Whole Plant								Plant height Inch	Harvest density plts/A		
			Yield tons/A	Moisture %	Crude Milk %	protein %	ADF %	NDF %	<i>In Vitro</i> Digest %	NDFD %	Starch %	Milk per				
													Ton lbs/T	Acre lbs/T		
35000		13 oz/A @ V4-5 & V6-7	5	50.0	37	7.3	18	34	88.8	67.3	40.7	3805	20776	62.4	44750	
35000		26 oz/A @ V4-5 & V6-7	5	53.0	53	7.7	18	34	89.0	68.1	40.2	3808	20381	59.0	43750	
35000		13 oz/A @ V6-7	5	54.0	54	7.5	19	36	88.4	67.9	38.5	3788	19430	63.5	43820	
35000		26 oz/A @ V6-7	5	49.9	42	7.4	18	34	89.2	68.1	41.3	3820	20738	60.9	44563	
35000		52 oz/A @ V6-7	5	53.4	51	7.6	19	35	88.8	68.4	38.9	3805	18881	55.6	42750	
35000		Alfalfa UTC	6	52.3	48	7.8	18	35	88.5	66.9	39.2	3795	21091	63.4	43875	
35000		Corn UTC (No Alfalfa)	6	50.1	33	7.5	17	33	89.0	66.8	41.5	3834	24271	63.0	45063	
35000		Corn UTC,52 oz/A	6	51.9	51	7.5	18	34	88.9	67.6	40.3	3822	23183	61.9	42375	
35000		Corn UTC, 26 oz/A @ V4-5 & V6-7	6	51.1	40	7.5	17	33	89.4	67.6	42.0	3832	24580	62.9	42528	
25000	16 lbs/A		5	53.4	50	7.8	19	35	88.3	66.8	38.3	3794	17510	64.8	32153	
25000	8 lbs/A		5	53.1	47	7.5	18	35	88.7	67.1	39.8	3797	20422	65.5	32722	
35000	16 lbs/A		5	52.0	45	7.6	18	35	88.6	67.4	39.4	3801	20145	61.3	43819	
35000	8 lbs/A		6	51.4	46	7.5	18	34	89.1	67.8	41.2	3823	22817	61.5	43619	
25000	16 lbs/A	13 oz/A @ V4-5 & V6-7	5	52.1	46	8.0	19	35	88.2	66.1	38.9	3795	17240	62.8	32000	
25000	16 lbs/A	26 oz/A @ V4-5 & V6-7	4	53.4	58	7.8	19	35	88.3	66.7	39.1	3805	16589	66.5	33125	
25000	16 lbs/A	13 oz/A @ V6-7	4	54.2	44	8.0	19	35	88.6	67.9	37.2	3805	15626	62.5	32500	
25000	16 lbs/A	26 oz/A @ V6-7	4	53.2	45	7.7	18	34	89.2	67.9	40.1	3828	16397	65.0	31875	
25000	16 lbs/A	52 oz/A @ V6-7	4	54.2	44	7.9	20	37	88.3	68.5	35.5	3778	14841	62.0	31875	
25000	16 lbs/A	Alfalfa UTC	5	51.2	53	7.8	19	36	88.0	66.7	37.0	3776	17584	65.8	31625	
25000	16 lbs/A	Corn UTC (No Alfalfa)	5	54.3	54	7.7	18	34	88.8	67.4	38.9	3833	17969	64.5	31125	
25000	16 lbs/A	Corn UTC,52 oz/A	5	52.6	51	7.8	19	35	87.7	65.3	38.8	3761	19918	70.5	31000	
25000	16 lbs/A	Corn UTC, 26 oz/A @ V4-5 & V6-7	6	55.6	60	7.7	19	35	87.6	64.7	39.1	3764	21423	63.3	34250	

continued

Table C-62. Alfalfa established in corn harvested for silage
 continue **Arlington, WI - 2012.**

Corn density plants/A	Alfalfa density lbs/A	Apogee treatments	Dry		Whole Plant								Plant height Inch	Harvest density plts/A		
			Matter Yield tons/A	Moisture %	Crude Milk %	protein %	ADF %	NDF %	<i>In Vitro</i> Digest %	NDFD %	Starch %	Milk per				
													Ton lbs/T	Acre lbs/T		
25000	8 lbs/A	13 oz/A @ V4-5 & V6-7	5	50.7	38	7.0	17	32	89.7	68.2	43.4	3822	20105	65.3	33000	
25000	8 lbs/A	26 oz/A @ V4-5 & V6-7	5	53.7	53	7.9	19	36	87.8	66.0	37.9	3758	17731	66.8	31500	
25000	8 lbs/A	13 oz/A @ V6-7	5	52.2	39	7.3	19	35	88.6	67.6	39.8	3799	19482	67.8	32375	
25000	8 lbs/A	26 oz/A @ V6-7	5	52.2	40	7.5	19	36	87.6	65.9	37.4	3756	17034	62.0	33500	
25000	8 lbs/A	52 oz/A @ V6-7	5	56.2	45	7.8	19	36	89.0	69.3	37.2	3806	18502	66.5	32125	
25000	8 lbs/A	Alfalfa UTC	5	51.8	44	7.6	18	34	88.9	67.8	40.1	3817	20776	60.3	31750	
25000	8 lbs/A	Corn UTC (No Alfalfa)	6	53.2	49	7.4	17	33	89.0	66.8	41.5	3818	22433	63.0	33000	
25000	8 lbs/A	Corn UTC,52 oz/A	6	53.0	56	7.5	18	34	88.6	66.7	40.2	3787	23341	65.0	33625	
25000	8 lbs/A	Corn UTC, 26 oz/A @ V4-5 & V6-7	6	54.5	57	7.4	17	33	88.6	66.0	40.7	3812	24395	72.8	33625	
35000	16 lbs/A	13 oz/A @ V4-5 & V6-7	5	51.5	40	7.4	19	36	88.3	67.2	38.3	3793	18785	61.8	44375	
35000	16 lbs/A	26 oz/A @ V4-5 & V6-7	5	53.8	54	7.7	18	34	89.1	68.4	40.5	3813	19988	58.8	42750	
35000	16 lbs/A	13 oz/A @ V6-7	5	55.6	58	7.6	20	38	87.7	67.5	35.9	3748	19089	62.0	44000	
35000	16 lbs/A	26 oz/A @ V6-7	5	49.4	36	7.2	18	34	88.9	67.7	41.2	3811	19642	58.8	45375	
35000	16 lbs/A	52 oz/A @ V6-7	5	53.5	56	7.7	19	36	88.6	68.2	38.2	3803	17630	62.8	43125	
35000	16 lbs/A	Alfalfa UTC	5	52.7	41	7.9	19	36	87.7	66.1	37.0	3761	18329	63.8	44375	
35000	16 lbs/A	Corn UTC (No Alfalfa)	6	50.0	29	7.7	17	32	89.4	67.2	42.3	3843	23919	60.0	44875	
35000	16 lbs/A	Corn UTC,52 oz/A	6	52.2	58	7.6	19	35	88.6	67.8	38.7	3807	21574	61.3	42750	
35000	16 lbs/A	Corn UTC, 26 oz/A @ V4-5 & V6-7	6	49.6	35	7.7	17	32	89.3	66.9	42.4	3830	22351	62.7	42750	

continued

Table C-62. Alfalfa established in corn harvested for silage
 continue **Arlington, WI - 2012.**

Corn density plants/A	Alfalfa density lbs/A	Apogee treatments	Dry		Whole Plant								Plant height Inch	Harvest density plts/A	
			Matter Yield tons/A	Moisture %	Crude Milk %	protein %	ADF %	NDF %	<i>In Vitro</i> Digest %	NDFD %	Starch %	Milk per			
												Ton lbs/T	Acre lbs/T		
35000	8 lbs/A	13 oz/A @ V4-5 & V6-7	6	48.5	34	7.3	17	33	89.2	67.4	43.0	3817	22767	63.0	45125
35000	8 lbs/A	26 oz/A @ V4-5 & V6-7	5	52.2	53	7.6	18	34	88.9	67.7	39.9	3803	20775	59.3	44750
35000	8 lbs/A	13 oz/A @ V6-7	5	52.3	51	7.5	18	35	89.1	68.3	41.1	3828	19771	65.0	43640
35000	8 lbs/A	26 oz/A @ V6-7	6	50.4	48	7.5	17	34	89.4	68.5	41.4	3830	21835	63.0	43750
35000	8 lbs/A	52 oz/A @ V6-7	5	53.3	46	7.6	18	35	88.9	68.5	39.7	3806	20132	48.5	42375
35000	8 lbs/A	Alfalfa UTC	6	51.9	55	7.7	18	33	89.2	67.6	41.3	3829	23854	63.0	43375
35000	8 lbs/A	Corn UTC (No Alfalfa)	6	50.1	36	7.4	18	34	88.7	66.3	40.7	3825	24623	66.0	45250
35000	8 lbs/A	Corn UTC,52 oz/A	6	51.7	45	7.5	17	33	89.2	67.5	41.8	3837	24793	62.5	42000
35000	8 lbs/A	Corn UTC, 26 oz/A @ V4-5 & V6-7	7	52.6	45	7.4	17	33	89.5	68.3	41.6	3834	26808	63.0	42307
Mean			5	52.5	47	7.6	18	35	88.7	67.3	39.7	3804	20224	63.2	38078
Probability(%)															
Corn Density (CD)			0.0	0.9	23.5	14.6	26.3	26.7	3.7	7.2	14.5	2.9	0.0	2.5	0.1
CD x AD			68.6	84.6	38.1	17.6	82.3	65.4	64.9	99.2	83.6	21.7	78.0	85.0	35.3
CD x AD x AR			67.4	92.4	66.3	60.3	47.9	45.8	34.6	78.1	77.7	41.2	70.2	5.7	37.0
CD x AR			75.6	41.1	10.5	95.5	72.0	79.2	31.3	23.0	82.7	51.6	77.6	40.7	10.1
Alfalfa Density (AD)			0.0	38.6	56.1	0.3	2.9	5.7	3.2	31.6	2.7	9.3	0.0	76.9	64.7
AD x AR			77.9	84.0	96.7	62.8	14.2	20.2	7.4	51.5	5.0	9.7	65.9	38.9	91.4
Apogee Rates (AT)			0.0	6.8	10.5	27.6	1.2	0.8	84.6	5.8	1.7	45.4	0.0	41.3	42.9
LSD(0.10)															
Corn Density (CD)			0	0.9	NS	NS	NS	NS	0.3	0.6	NS	12	711	2.6	2006
CD x AD			NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
CD x AD x AR			NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	7.7	NS
CD x AR			NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Alfalfa Density (AD)			0	NS	NS	0.1	0	1	0.3	NS	1.1	12	711	NS	NS
AD x AR			NS	NS	NS	NS	NS	NS	0.8	NS	2.5	37	NS	NS	NS
Apogee Rates (AT)			0	2.0	NS	NS	1	1	NS	1.1	1.7	NS	1507	NS	NS