

FIELD EXPERIMENT HISTORY

Title: Plant Density, Planting Date, and Hybrid Influence on Corn Grain and Silage
Experiment: 04 Planting Date x Plant Density **Trial ID:** 2238 **Year:** 2001
Personnel: J. G. Lauer, K.D. Kohn, P.J. Flannery
Location: Arlington, WI **County:** Columbia
Supported By: HATCH

Site Information

Field: ARS408 **Previous Crop:** Soybean **Soil Type:** Plano Silt Loam
Soil Test: **Date:** 11/1 /01 **pH** 6.7 **OM (%)** 2.4 **P (ppm)** 79 **K (ppm)** 184

Plot Management

Tillage Operations: Fall Chisel Plow Soil Finisher

	<u>Analysis:</u>	<u>Rate lbs/A:</u>	<u>Date:</u>
Fertilizer:			
Preplant :	46-0-0	325	4 /23/01
Starter :	6-24-24	150	Each DOP
Post plant :	N/A	N/A	N/A
Manure:	N/A	None	

Herbicide: Harness 1.5 pt/A **Insecticide:** None
Permit 0.66 oz/A **Hybrid:** See Factors

Irrigation: none

Planting Date: See Factors **Planting Depth:** 1.5" **Row Width:** 30"

Target Plant Density: See Factors **Planting Method:** Kinze Plot Planter

Harvest Date: S: 9/18, 10/1 **Harvest Method:** S:New Holland Plot Chopper
G: 10/25 G:Kincaid Plot Combine

Experimental Design

Design: RCB split plot **Replications:** 3
Plot Size Seeded: 22' x 20' **Experiment Size:** 0.4 A
Harvest Plot Size: S: 22' x 2.5' **Harvest Plant Density:** Varies

Factors/Treatments:

<u>Planting Dates:</u>	<u>Plant Densities: (plants/A)</u>	<u>Hybrids:</u>
May 1 and June 1	15000, 30000, and 45000	Pioneer 34G82 Pioneer 37H26

Results: Table C-27.

**Table C-27. Plant Density, Planting Date, and Hybrid Influence on Corn Silage Yield and Quality and Corn Grain
Arlington, WI - 2001**

Date of planting	Target plant density	Hybrid	Grain				Grower return	50% Silk date	Seeds planted	Stand		Harvest ears	Flag Leaf height
			Yield	Moisture	Test Wt	Lodging				Emerg	Harvest		
			bu/A	%	lbs/bu	%	\$/A	DOY	seeds/A	seeds/A	plants/A	ears/A	inches
		Pioneer 34G82	199	26.5	53	2	395	210	42240	40684	29260	32472	100
		Pioneer 37H26	203	22.4	56	3	414	206	42240	40783	29524	34012	94
	15000		179	24.4	55	1	359	207	23760	23232	15444	25674	94
	30000		213	24.4	55	2	428	208	43560	42149	29502	30492	98
	45000		212	24.5	54	5	426	208	59400	56818	43230	43560	100
	15000	Pioneer 34G82	179	26.3	52	0	355	210	23760	23199	15576	24156	96
	15000	Pioneer 37H26	178	22.5	57	2	363	205	23760	23265	15312	27192	92
	30000	Pioneer 34G82	212	26.5	53	2	421	210	43560	41943	29832	30756	101
	30000	Pioneer 37H26	214	22.2	56	3	436	206	43560	42356	29172	30228	95
	45000	Pioneer 34G82	205	26.6	53	5	409	210	59400	56909	42372	42504	103
	45000	Pioneer 37H26	218	22.4	56	5	444	207	59400	56727	44088	44616	96
May 1			224	21.5	56	2	460	201	42240	40937	29392	33792	92
June 1			178	27.4	53	3	349	215	42240	40530	29392	32692	102
May 1		Pioneer 34G82	235	21.5	54	2	481	203	42240	40821	29392	33264	97
May 1		Pioneer 37H26	214	21.4	57	3	438	200	42240	41052	29392	34320	88
June 1		Pioneer 34G82	162	31.4	52	3	309	217	42240	40546	29128	31680	104
June 1		Pioneer 37H26	193	23.3	55	4	390	212	42240	40513	29656	33704	100
May 1	15000		188	21.5	56	0	385	201	23760	23034	15444	27060	90
May 1	30000		238	21.4	56	2	489	201	43560	42356	29568	31020	93
May 1	45000		247	21.5	55	5	505	202	59400	57420	43164	43296	94
June 1	15000		169	27.3	53	2	333	214	23760	23430	15444	24288	98
June 1	30000		187	27.3	53	3	368	215	43560	41943	29436	29964	103
June 1	45000		177	27.5	53	5	347	215	59400	56216	43296	43824	105

continued

Table C-27. Plant Density, Planting Date, and Hybrid Influence on Corn Silage Yield and Quality and Corn Grain
 (continued) **Arlington, WI - 2001**

Date of planting	Target plant density	Hybrid	Grain				Grower return	50% Silk date	Seeds planted	Stand		Harvest ears	Flag Leaf height
			Yield	Moisture	Test Wt	Lodging				Emerged	Harvest		
			bu/A	%	lbs/bu	%	\$/A	DOY	seeds/A	seeds/A	plants/A	ears/A	inches
May 1	15000	Pioneer 34G82	203	21.7	53	0	416	202	23760	23067	15576	25344	93
May 1	15000	Pioneer 37H26	172	21.3	58	0	353	199	23760	23001	15312	28776	87
May 1	30000	Pioneer 34G82	248	21.5	54	1	509	203	43560	42273	30096	31944	98
May 1	30000	Pioneer 37H26	228	21.3	57	3	468	200	43560	42438	29040	30096	88
May 1	45000	Pioneer 34G82	253	21.4	54	4	519	203	59400	57123	42504	42504	99
May 1	45000	Pioneer 37H26	240	21.6	56	5	492	200	59400	57717	43824	44088	90
June 1	15000	Pioneer 34G82	154	31.0	52	0	294	217	23760	23331	15576	22968	99
June 1	15000	Pioneer 37H26	184	23.7	55	3	372	211	23760	23529	15312	25608	96
June 1	30000	Pioneer 34G82	175	31.5	52	3	333	218	43560	41613	29568	29568	105
June 1	30000	Pioneer 37H26	199	23.1	55	3	403	212	43560	42273	29304	30360	102
June 1	45000	Pioneer 34G82	158	31.8	52	5	299	217	59400	56694	42240	42504	108
June 1	45000	Pioneer 37H26	195	23.2	55	5	395	213	59400	55737	44352	45144	102
Mean			201	24.4	54	3	405	208	42240	40733	29392	33242	97
Probability(%)													
Date of Planting (D)			1.3	0.2	0.6	30.8	1.0	0.0	-	63.8	100	12.6	2.1
Plant Density (P)			0.0	72.0	71.2	1.6	0.0	0.1	-	0.0	0.0	0.0	0.1
D x P			0.0	89.5	50.4	90.6	0.0	100	-	1.0	94.7	3.9	53.2
Hybrid (H)			25.5	0.0	0.0	34.2	2.5	0.0	-	61.0	42.7	0.5	0.0
D x H			0.0	0.0	93.3	83.6	0.0	0.0	-	49.7	42.7	33.3	8.4
P x H			37.6	38.5	18.9	89.1	35.6	23.9	-	45.7	1.6	2.0	54.7
D x P x H			64.7	6.9	7.1	59.4	72.0	23.9	-	8.0	85.0	37.4	80.9
LSD(0.10)													
Date of Planting (D)			9	0.5	0.3	NS	19	0.2	-	NS	NS	NS	2
Plant Density (P)			8	NS	NS	2	17	0.4	-	403	688	1030	2
D x P			12	NS	NS	NS	23	NS	-	570	NS	1457	NS
Hybrid (H)			NS	0.3	0.4	NS	14	0.3	-	NS	NS	841	2
D x H			10	0.4	NS	NS	23	0.4	-	NS	NS	NS	3
P x H			NS	NS	NS	NS	NS	NS	-	NS	973	1189	NS
D x P x H			NS	0.7	1.0	NS	NS	NS	-	806	NS	NS	NS
CV(%)													
			6	2	1	119	6	0	-	1	3	4	3

continued

Table C-27. Plant Density, Planting Date, and Hybrid Influence on Corn Silage Yield and Quality and Corn Grain
Arlington, WI - 2001

(continued)

Date of planting	Density	Hybrid	Whole Plant													
			Dry Matter		Kernel milk		Harvest		Crude		<i>In Vitro</i>		Cell Wall		Milk per	
			yield	Moisture	stage	plants	ears	protien	ADF	NDF	Digest	Digest	Starch	Ton	Acre	
			tons/A	%	%	plants/A	ears/A	%	%	%	%	%	%	lbs/T	lbs/A	
		Pioneer 34G82	8.6	67.3	46.4	28996	32648	7.7	21.7	43.2	76.8	46.3	29.5	2930	25351	
		Pioneer 37H26	8.5	60.8	31.4	30184	33396	7.7	19.6	41.7	77.1	45.1	36.0	2917	24746	
	15000		7.1	64.6	37.1	15246	23826	7.8	19.5	41.0	78.3	47.2	33.4	3038	21781	
	30000		9.3	63.9	41.3	30492	31878	7.7	20.8	42.6	76.9	45.8	32.5	2913	27053	
	45000		9.3	63.6	38.3	43032	43362	7.6	21.6	43.6	75.6	44.1	32.3	2821	26310	
	15000	Pioneer 34G82	7.5	67.1	41.7	15576	25212	7.6	20.2	41.3	78.4	47.7	31.5	3061	22939	
	15000	Pioneer 37H26	6.8	62.1	32.5	14916	22440	7.9	18.8	40.8	78.2	46.7	35.4	3015	20624	
	30000	Pioneer 34G82	9.4	67.7	48.3	30492	31416	7.7	22.1	44.1	76.4	46.4	28.1	2887	27242	
	30000	Pioneer 37H26	9.1	60.1	34.2	30492	32340	7.6	19.4	41.2	77.4	45.2	36.8	2939	26864	
	45000	Pioneer 34G82	9.1	67.1	49.2	40920	41316	7.6	22.6	44.1	75.7	44.9	28.8	2843	25871	
	45000	Pioneer 37H26	9.6	60.1	27.5	45144	45408	7.7	20.7	43.1	75.6	43.4	35.8	2798	26749	
May 1			9.1	63.5	30.8	30008	33264	7.7	19.9	41.5	77.6	45.9	33.7	2974	26926	
June 1			8.1	64.5	46.9	29172	32780	7.7	21.3	43.4	76.3	45.5	31.8	2874	23170	
May 1		Pioneer 34G82	9.1	66.7	36.1	29744	33440	7.7	20.8	42.2	77.4	46.3	31.7	2975	27165	
May 1		Pioneer 37H26	9.0	60.4	25.6	30272	33088	7.7	19.1	40.8	77.8	45.5	35.6	2972	26687	
June 1		Pioneer 34G82	8.2	67.9	56.7	28248	31856	7.7	22.5	44.2	76.2	46.3	27.2	2886	23536	
June 1		Pioneer 37H26	8.0	61.1	37.2	30096	33704	7.8	20.2	42.6	76.4	44.7	36.4	2863	22804	
May 1	15000		7.5	64.2	26.7	14784	23100	7.9	19.3	40.8	78.4	47.0	33.4	3042	22717	
May 1	30000		10.0	63.8	35.8	31152	32604	7.7	19.7	41.0	77.6	45.4	34.3	2971	29820	
May 1	45000		9.7	62.6	30.0	44088	44088	7.5	20.8	42.6	76.7	45.2	33.5	2908	28241	
June 1	15000		6.8	65.0	47.5	15708	24552	7.7	19.7	41.3	78.2	47.4	33.5	3035	20846	
June 1	30000		8.5	64.0	46.7	29832	31152	7.6	21.8	44.3	76.1	46.2	30.7	2855	24286	
June 1	45000		8.9	64.6	46.7	41976	42636	7.8	22.5	44.6	74.6	43.0	31.1	2734	24379	

continued

Table C-27. Plant Density, Planting Date, and Hybrid Influence on Corn Silage Yield and Quality and Corn Grain
 (continued) **Arlington, WI - 2001**

Date of planting	Density	Hybrid	Whole Plant														
			Dry Matter		Kernel milk		Harvest		Crude			In Vitro		Cell Wall		Milk per	
			yield	Moisture	stage	plants	ears	protien	ADF	NDF	Digest	Digest	Starch	Ton	Acre		
	tons/A	%	%	plants/A	ears/A	%	%	%	%	%	%	%	lbs/T	lbs/A			
May 1	15000	Pioneer 34G82	7.6	67.7	28.3	15312	25344	7.7	20.5	42.2	77.8	47.4	30.6	3026	22985		
May 1	15000	Pioneer 37H26	7.3	60.7	25.0	14256	20856	8.0	18.0	39.5	78.9	46.6	36.2	3058	22449		
May 1	30000	Pioneer 34G82	10.1	66.8	40.0	30360	31416	7.9	20.3	41.3	77.6	45.7	33.0	2976	30014		
May 1	30000	Pioneer 37H26	10.0	60.8	31.7	31944	33792	7.5	19.2	40.7	77.7	45.2	35.5	2966	29626		
May 1	45000	Pioneer 34G82	9.7	65.5	40.0	43560	43560	7.4	21.5	43.0	76.6	45.7	31.7	2921	28497		
May 1	45000	Pioneer 37H26	9.7	59.7	20.0	44616	44616	7.5	20.1	42.1	76.7	44.7	35.2	2894	27986		
June 1	15000	Pioneer 34G82	7.4	66.5	55.0	15840	25080	7.6	19.9	40.4	79.0	47.9	32.5	3097	22893		
June 1	15000	Pioneer 37H26	6.3	63.5	40.0	15576	24024	7.8	19.5	42.1	77.5	46.8	34.6	2973	18799		
June 1	30000	Pioneer 34G82	8.7	68.6	56.7	30624	31416	7.6	24.0	46.9	75.1	47.0	23.2	2797	24469		
June 1	30000	Pioneer 37H26	8.3	59.4	36.7	29040	30888	7.7	19.7	41.8	77.2	45.3	38.1	2913	24102		
June 1	45000	Pioneer 34G82	8.4	68.7	58.3	38280	39072	7.8	23.7	45.3	74.7	44.0	25.9	2765	23246		
June 1	45000	Pioneer 37H26	9.4	60.4	35.0	45672	46200	7.8	21.3	44.0	74.5	42.0	36.4	2702	25513		
			8.6	64.0	38.9	29590	33022	7.7	20.6	42.4	76.9	45.7	32.7	2924	25048		
Probability(%)																	
Date of Planting (D)			11.5	45.8	1.4	27.5	83.5	81.9	22.7	24.2	31.8	67.4	41.3	31.4	9.0		
Plant Density (P)			0.0	50.1	39.3	0.0	0.0	47.0	1.6	6.2	0.4	0.0	63.9	0.1	0.2		
D x P			44.4	59.1	28.2	14.7	49.8	11.9	46.7	37.9	37.4	3.5	35.9	23.9	43.3		
Hybrid (H)			61.9	0.0	0.0	7.2	51.9	53.5	0.1	9.6	63.6	1.9	0.0	74.6	59.9		
D x H			95.7	69.5	9.0	30.4	34.6	75.8	55.9	93.4	79.9	40.1	2.2	78.9	91.2		
P x H			31.1	29.4	14.7	0.9	7.1	24.9	63.7	51.1	62.3	88.4	19.0	51.1	52.2		
D x P x H			41.8	9.7	73.7	1.9	27.7	22.7	16.0	11.5	30.9	91.0	2.0	35.6	53.0		
LSD(0.10)																	
Date of Planting (D)			NS	NS	3.4	NS	NS	NS	NS	NS	NS	NS	NS	NS	1954		
Plant Density (P)			0.7	NS	NS	1321	2405	NS	1.6	1.8	1.2	1.0	NS	83	2393		
D x P			NS	NS	NS	NS	NS	NS	NS	NS	NS	1.4	NS	NS	NS		
Hybrid (H)			NS	1.2	4.3	1079	NS	NS	0.9	1.4	NS	0.8	1.8	NS	NS		
D x H			NS	NS	6.1	NS	NS	NS	NS	NS	NS	NS	2.6	NS	NS		
P x H			NS	NS	NS	1868	3401	NS	NS	NS	NS	NS	NS	NS	NS		
D x P x H			NS	3	NS	2642	NS	NS	NS	NS	NS	NS	4.5	NS	NS		
CV(%)			11	3	19	6	10	4	8	6	2	3	10	4	14		