

FIELD EXPERIMENT HISTORY

Title: Plant Density, Planting Date, and Hybrid Influence on Corn Grain and Silage
Experiment: 04PDxDOP **Trial ID** 1550 **Year:** 2000
Personnel: J.G. Lauer, P. J. Flannery, K. D. Kohn, M. Kral
Location: Arlington, WI **County:** Columbia
Supported By: HATCH

Site Information

Field: 427 **Previous Crop:** Soybean **Soil Type:** Plano
Soil Test: **Date:** N/A **pH** 6.6 **OM (%)** 3.8 **P (ppm)** 30 **K (ppm)** 109

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	N/A
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
Hornet @ 2.4 oz/A
Banvel @ 2.0 oz/A

Insecticide: None
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: 9/19 & 10/10 **Harvest Method:** S:New Holland Plot Chopper
G: 10/13 & 11/3 G:Kincaid Plot Combine

Experimental Design

Design: RCB split plot **Replications:** 3
Plot Size Seeded: 23.2' x 20' **Experiment Size:** 0.4 A
Harvest Plot Size: S: 22' x 2.5'
G: 22' x 5' **Harvest Plant Density:** Varies

Factors/Treatments:

<u>Planting Dates:</u>	<u>Plant Densities: (plants/A)</u>	<u>Hybrids:</u>
April 28 and June 9	150000, 30000, and 45000	Pioneer 34G82 Pioneer 37J99

Results: Table E-17.

**Table E-17. Plant Density, Planting Date, and Hybrid Influence on Corn Silage Yield and Quality and Corn Grain
Arlington, WI - 2000**

Date of planting	Target plant density	Hybrid	Grain				Silk date	Seeds planted	Stand		Harvest ears
			Yield	Moisture	Test Wt	Lodging			Emerg	Harvest	
			bu/A	%	lbs/bu	%	DOY	seeds/A	seeds/A	plants/A	ears/A
		Pioneer 34G82	146	28.9	50	22	219	41712	37636	28384	29865
		Pioneer 37J99	162	21.5	53	20	214	41712	36284	28334	32263
	15000		135	24.7	52	3	215	23760	21157	15593	21991
	30000		165	25.5	52	19	217	41976	37263	28829	30235
	45000		162	25.4	51	41	218	59400	52461	40656	40966
	15000	Pioneer 34G82	131	28.2	51	3	217	23760	21748	15127	19166
	15000	Pioneer 37J99	138	21.3	54	3	214	23760	20565	16058	24816
	30000	Pioneer 34G82	163	29.3	50	16	219	41976	37499	29443	29845
	30000	Pioneer 37J99	167	21.7	53	21	214	41976	37026	28215	30624
	45000	Pioneer 34G82	143	29.1	50	45	221	59400	53661	40583	40583
	45000	Pioneer 37J99	181	21.6	52	37	215	59400	51262	40729	41349
April 28			178	25.4	54	31	209	41712	36426	27412	30426
June 9			130	25.0	50	11	225	41712	37494	29306	31702
April 28		Pioneer 34G82	174	28.8	53	34	211	41712	37205	28116	29964
April 28		Pioneer 37J99	182	22.0	55	28	206	41712	35648	26708	30888
June 9		Pioneer 34G82	117	29.0	48	10	227	41712	38068	28653	29766
June 9		Pioneer 37J99	143	21.0	51	13	222	41712	36921	29960	33638
April 28	15000		155	25.1	55	6	208	23760	20502	15576	21912
April 28	30000		187	25.8	54	33	209	41976	36553	28182	30558
April 28	45000		192	25.3	53	54	209	59400	52225	38478	38808
June 9	15000		114	24.3	50	0	223	23760	21812	15609	22070
June 9	30000		143	25.2	50	4	225	41976	37973	29476	29911
June 9	45000		132	25.4	49	29	226	59400	52698	42834	43124

continued

Table E-17. Plant Density, Planting Date, and Hybrid Influence on Corn Silage Yield and Quality and Corn Grain
 (continued) **Arlington, WI - 2000**

Date of planting	Target plant density	Hybrid	Grain				Silk date	Seeds planted	Stand		Harvest ears
			Yield	Moisture	Test Wt	Lodging			Emerg	Harvest	
			bu/A	%	lbs/bu	%	DOY	seeds/A	seeds/A	plants/A	ears/A
April 28	15000	Pioneer 34G82	156	28.8	53	7	209	23760	21307	15444	20328
April 28	15000	Pioneer 37J99	154	21.4	56	6	206	23760	19697	15708	23496
April 28	30000	Pioneer 34G82	195	29.1	52	29	212	41976	36805	29700	30360
April 28	30000	Pioneer 37J99	179	22.4	55	37	205	41976	36300	26664	30756
April 28	45000	Pioneer 34G82	172	28.5	52	66	213	59400	53503	39204	39204
April 28	45000	Pioneer 37J99	212	22.2	55	42	206	59400	50946	37752	38412
June 9	15000	Pioneer 34G82	105	27.5	48	0	225	23760	22190	14810	18005
June 9	15000	Pioneer 37J99	123	21.1	52	1	221	23760	21433	16408	26136
June 9	30000	Pioneer 34G82	132	29.5	49	4	227	41976	38194	29185	29330
June 9	30000	Pioneer 37J99	155	20.9	52	4	223	41976	37752	29766	30492
June 9	45000	Pioneer 34G82	114	29.8	48	25	228	59400	53819	41963	41963
June 9	45000	Pioneer 37J99	150	21.0	50	33	224	59400	51578	43705	44286
Mean			154	25.2	52	21	217	41712	36960	28359	31064
Probability(%)											
Date of Planting (D)			1.2	46.0	0.5	3.3	0.1	-	3.4	25.7	31.0
Plant Density (P)			0.0	1.2	0.7	0.0	3.8	-	0.0	0.0	0.0
D x P			31.1	22.1	11.6	7.1	55.9	-	76.3	4.6	12.2
Hybrid (H)			5.6	0.0	0.0	75.6	0.0	-	2.8	94.1	2.8
D x H			10.1	1.0	77.7	29.0	39.4	-	72.3	5.9	15.8
P x H			3.1	34.8	28.1	46.2	31.2	-	39.6	43.5	9.8
D x P x H			28.2	0.7	37.1	13.3	51.3	-	95.9	76.7	69.9
LSD(0.10)											
Date of Planting (D)			9	NS	0.5	6	1	-	349	NS	NS
Plant Density (P)			11	0.4	NS	9	1	-	1202	1426	2119
D x P			NS	NS	0.4	12	NS	-	NS	2017	NS
Hybrid (H)			9	0.4	0.4	NS	1	-	981	NS	1730
D x H			NS	0.5	NS	NS	NS	-	NS	1647	NS
P x H			16	NS	NS	NS	NS	-	NS	NS	2997
D x P x H			NS	0.9	NS	NS	NS	-	NS	NS	NS
CV(%)											
			10	3	1	58	1	-	5	7	27

continued

Table E-17. Plant Density, Planting Date, and Hybrid Influence on Corn Silage Yield and Quality and Corn Grain
(continued) **Arlington, WI - 2000**

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	7.0	64.2	46.7	26994	30232	7.1	24.4	48.1	74.0	45.9	28.2	2937	20441	
		Pioneer 37J99	7.3	54.6	28.9	30334	33352	6.5	22.2	46.1	74.2	44.0	33.9	2721	19927	
	15000		5.8	60.3	44.2	17398	22156	7.1	22.5	46.6	75.1	46.5	31.0	2934	16868	
	30000		7.5	59.8	37.1	29027	30327	6.7	23.0	46.5	74.2	44.6	31.8	2840	21392	
	45000		8.2	58.1	32.1	39567	42893	6.6	24.4	48.3	72.9	43.9	30.3	2714	22291	
	15000	Pioneer 34G82	5.7	64.0	53.3	15061	18612	7.3	22.8	46.4	76.3	48.8	30.1	3126	17617	
	15000	Pioneer 37J99	5.9	56.7	35.0	19734	25700	6.9	22.3	46.7	73.9	44.1	31.9	2742	16120	
	30000	Pioneer 34G82	7.3	65.0	40.0	29159	30281	6.9	24.8	48.2	73.0	44.1	28.5	2868	20904	
	30000	Pioneer 37J99	7.8	54.6	34.2	28895	30373	6.5	21.2	44.7	75.4	45.0	35.2	2811	21880	
	45000	Pioneer 34G82	8.1	63.6	46.7	36762	41804	7.0	25.7	49.8	72.6	44.9	26.1	2818	22802	
	45000	Pioneer 37J99	8.3	52.5	17.5	42372	43982	6.3	23.2	46.7	73.3	42.9	34.5	2610	21780	
April 28			7.6	61.4	35.8	28336	32076	6.5	23.0	46.3	74.2	44.4	31.9	2872	21666	
June 9			6.8	57.4	39.7	28992	31508	7.2	23.7	47.9	73.9	45.6	30.2	2786	18702	
April 28		Pioneer 34G82	7.5	66.5	50.6	28336	30360	6.7	23.8	46.9	74.3	45.1	29.2	2999	22316	
April 28		Pioneer 37J99	7.7	56.2	21.1	28336	33792	6.2	22.1	45.8	74.2	43.7	34.6	2745	21016	
June 9		Pioneer 34G82	6.5	61.9	42.8	25652	30105	7.5	25.1	49.4	73.7	46.8	27.3	2875	18566	
June 9		Pioneer 37J99	7.0	52.9	36.7	32331	32912	6.9	22.3	46.3	74.2	44.3	33.1	2698	18838	
April 28	15000		6.3	62.5	35.8	15048	22968	6.8	22.3	46.0	74.7	45.1	31.3	2940	18622	
April 28	30000		7.9	62.1	39.2	29304	30888	6.3	22.6	45.6	74.7	44.5	32.2	2924	22982	
April 28	45000		8.5	59.5	32.5	40656	42372	6.2	24.0	47.4	73.3	43.5	32.2	2752	23394	
June 9	15000		5.2	58.2	52.5	19747	21344	7.3	22.8	47.1	75.4	47.9	30.7	2928	15115	
June 9	30000		7.2	57.4	35.0	28750	29766	7.1	23.4	47.4	73.7	44.6	31.4	2755	19802	
June 9	45000		7.9	56.6	31.7	38478	43415	7.1	24.9	49.1	72.6	44.3	28.4	2675	21189	

continued

Table E-17. Plant Density, Planting Date, and Hybrid Influence on Corn Silage Yield and Quality and Corn Grain
(continued) **Arlington, WI - 2000**

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
April 28	15000	Pioneer 34G82	6.3	66.4	53.3	15312	19800	7.1	22.2	45.0	75.6	45.8	30.1	3103	19551
April 28	15000	Pioneer 37J99	6.4	58.5	18.3	14784	26136	6.5	22.3	47.0	73.8	44.4	32.6	2777	17693
April 28	30000	Pioneer 34G82	7.6	67.3	50.0	29568	30360	6.5	24.2	47.2	74.0	44.8	28.7	2996	22761
April 28	30000	Pioneer 37J99	8.2	56.9	28.3	29040	31416	6.2	21.0	43.9	75.5	44.2	35.8	2852	23204
April 28	45000	Pioneer 34G82	8.5	65.7	48.3	40128	40920	6.4	24.9	48.4	73.2	44.6	28.8	2900	24637
April 28	45000	Pioneer 37J99	8.4	53.3	16.7	41184	43824	6.0	23.2	46.5	73.3	42.5	35.6	2605	22151
June 9	15000	Pioneer 34G82	5.0	61.6	53.3	14810	17424	7.4	23.3	47.7	77.0	51.9	30.1	3149	15683
June 9	15000	Pioneer 37J99	5.4	54.9	51.7	24684	25265	7.3	22.3	46.4	73.9	43.8	31.3	2707	14547
June 9	30000	Pioneer 34G82	6.9	62.6	30.0	28750	30202	7.4	25.4	49.2	72.1	43.3	28.2	2740	19047
June 9	30000	Pioneer 37J99	7.4	52.3	40.0	28750	29330	6.8	21.4	45.5	75.4	45.9	34.6	2770	20556
June 9	45000	Pioneer 34G82	7.7	61.5	45.0	33396	42689	7.6	26.6	51.2	71.9	45.2	23.5	2735	20968
June 9	45000	Pioneer 37J99	8.2	51.6	18.3	43560	44141	6.6	23.2	47.0	73.3	43.3	33.4	2615	21410
Mean			7.2	59.4	37.8	28664	31792	6.8	23.3	47.1	74.1	45.0	31.0	2829	20184
Probability(%)															
Date of Planting (D)			20.6	0.9	60.6	38.1	42.4	1.5	1.0	0.1	54.4	29.5	3.8	19.5	12.7
Plant Density (P)			0.1	23.0	6.3	0.0	0.0	2.8	13.7	35.6	10.2	8.2	76.0	0.5	1.2
D x P			87.1	80.4	9.1	51.9	20.3	46.3	98.0	95.4	63.8	47.8	69.0	41.7	92.8
Hybrid (H)			52.0	0.0	0.0	20.0	0.0	0.1	1.1	7.9	76.3	5.0	0.3	0.0	72.2
D x H			76.3	56.4	0.8	20.0	62.1	64.5	45.5	38.3	69.9	55.8	91.2	42.7	58.7
P x H			95.5	33.7	7.5	60.1	0.1	46.2	27.7	32.9	5.9	6.4	26.1	3.7	75.6
D x P x H			96.1	90.6	27.8	69.0	48.7	25.3	96.9	86.4	68.7	11.0	84.0	37.8	94.4
LSD(0.10)															
Date of Planting (D)			NS	0.7	NS	NS	NS	0.2	0.3	0.1	NS	NS	0.6	NS	NS
Plant Density (P)			1.0	NS	8.3	5311	1310	0.3	NS	NS	NS	1.9	NS	101	2998
D x P			NS	NS	11.7	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Hybrid (H)			NS	1.9	6.8	NS	1069	0.2	1.3	1.9	NS	1.6	2.8	82	NS
D x H			NS	NS	9.6	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
P x H			NS	NS	11.7	NS	1852	NS	NS	NS	2.3	2.7	NS	142	NS
D x P x H			NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
CV(%)			20	6	31	26	6	6	10	7	3	6	16	5	21