

FIELD EXPERIMENT HISTORY

Title: Plant Density, Planting Date, and Hybrid Influence on Corn Grain and Silage
Experiment: 04PDxDOP **Trial ID** 1420 **Year:** 1999
Personnel: J. G. Lauer, K.D. Kohn, P.J. Flannery
Location: Arlington, WI **County:** Columbia
Supported By: HATCH

Site Information

Field: 410 E **Previous Crop:** Soybean **Soil Type:** Plano
Soil Test: **Date:** N/A **pH** 6.2 **OM (%)** 3.9 **P (ppm)** 50 **K (ppm)** 190

Plot Management

Tillage Operations: Fall Chisel Plow Soil Finisher 1 Cultivatio

	<u>Analysis:</u>	<u>Rate lbs/A:</u>	<u>Date:</u>
Fertilizer:			
Preplant :	46-0-0	325	4 /23/99
Starter :	6-24-24	150	4/29/99 & 5/20/99
Post plant :	N/A	N/A	N/A
Manure:		none	

Herbicide: Frontier @ 1.5 pt/a
Bladex @ 2.2 lb/A
Buctril @ 1.5 pt/A

Insecticide: none
Hybrid: See Factors

Irrigation: none

Planting Date: 4/29/99 & 5/20/99 **Planting Depth:** 1.5" **Row Width:** 30"

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

Harvest Date: S: 9/13/99 & 9/22/99; G:10/6/99 **Harvest Method:** New Holland Plot Chopper,
Kincaid Plot Combine

Experimental Design

Design: RCB split **Replications:** 3
Plot Size Seeded: 22'x20' **Experiment Size:** 0.4 A
Harvest Plot Size: S: 2.5' x 22', G: 5'x22' **Harvest Plant Density:** varies

Factors/Treatments:

<u>Planting Dates:</u>	<u>Plant Densities:</u>	<u>Hybrids:</u>
May 1 and May 20	20000,30000 & 40000 plants/A	Pioneer 3563 Pioneer 35N05

Results: Table E-44.

**Table E-44. Plant Density, Planting Date, and Hybrid Influence on Corn Silage Yield and Quality and Corn Grain
Arlington, WI - 1999**

Date of planting	Target plant density	Hybrid	Grain				Silk date day of year	Seeds planted seeds/A	Stand		Harvest ears ears/A
			Yield bu/A	Moisture %	Test Wt lbs/bu	Lodging %			Emerg'd seeds/A	Harvest plants/A	
May 1			215	22.1	60.0	7.1	198	38808	35789	29304	29304
May 20			181	32.9	56.9	4.4	207	38808	35195	29392	29414
	20000		182	27.6	58.0	0.5	202	26136	24395	19668	19800
	30000		206	27.0	58.6	6.4	203	38808	35467	29370	29370
	40000		207	27.9	58.8	10.3	203	51480	46613	39006	38907
May 1	20000		195	22.1	59.5	0.0	198	26136	24882	19602	19734
May 1	30000		227	21.5	60.3	6.7	199	38808	35591	29700	29700
May 1	40000		223	22.6	60.2	14.6	199	51480	46893	38610	38478
May 20	20000		168	33.0	56.5	1.0	207	26136	23909	19734	19866
May 20	30000		185	32.5	56.9	6.0	207	38808	35343	29040	29040
May 20	40000		191	33.1	57.3	6.1	207	51480	46332	39402	39336
	20000	Pioneer 3563	179	26.9	58.0	0.3	203	26136	23892	19536	19800
	30000	Pioneer 3563	201	26.4	59.1	5.7	203	38808	34865	29370	29370
	40000	Pioneer 3563	206	27.4	59.3	5.9	203	51480	44864	39204	39204
	20000	Pioneer 35N05	184	28.2	58.0	0.6	202	26136	24899	19800	19800
	30000	Pioneer 35N05	211	27.6	58.2	7.0	202	38808	36069	29370	29370
	40000	Pioneer 35N05	207	28.3	58.3	14.8	203	51480	48362	38808	38610
		Pioneer 3563	195	26.9	58.8	4.0	203	38808	34540	29370	29458
		Pioneer 35N05	201	28.0	58.2	7.5	202	38808	36443	29326	29260
May 1		Pioneer 3563	216	21.6	60.3	5.4	198	38808	34738	29348	29436
May 1		Pioneer 35N05	214	22.5	59.7	8.8	198	38808	36839	29260	29172
May 20		Pioneer 3563	174	32.2	57.3	2.5	207	38808	34342	29392	29480
May 20		Pioneer 35N05	188	33.5	56.6	6.2	206	38808	36047	29392	29348

continued

**Table E-44. Plant Density, Planting Date, and Hybrid Influence on Corn Silage Yield and Quality and Corn Grain
Arlington, WI - 1999**

Date of planting	Target plant density	Hybrid	Grain				Silk date DOY	Seeds planted seeds/A	Stand		Harvest ears ears/A
			Yield bu/A	Moisture %	Test Wt lbs/bu	Lodging %			Emerg seeds/A	Harvest plants/A	
May 1	20000	Pioneer 3563	193	21.8	59.4	0.0	198	26136	23727	19668	19932
May 1	30000	Pioneer 3563	227	20.9	60.8	6.2	199	38808	35277	29832	29832
May 1	40000	Pioneer 3563	228	22.0	60.7	10.1	198	51480	45210	38544	38544
May 1	20000	Pioneer 35N05	197	22.3	59.6	0.0	197	26136	26037	19536	19536
May 1	30000	Pioneer 35N05	227	22.0	59.9	7.2	198	38808	35904	29568	29568
May 1	40000	Pioneer 35N05	218	23.3	59.7	19.1	199	51480	48576	38676	38412
May 20	20000	Pioneer 3563	164	31.9	56.6	0.7	207	26136	24057	19404	19668
May 20	30000	Pioneer 3563	174	31.8	57.4	5.2	207	38808	34452	28908	28908
May 20	40000	Pioneer 3563	185	32.9	57.8	1.7	207	51480	44517	39864	39864
May 20	20000	Pioneer 35N05	171	34.1	56.4	1.3	206	26136	23760	20064	20064
May 20	30000	Pioneer 35N05	195	33.1	56.4	6.9	206	38808	36234	29172	29172
May 20	40000	Pioneer 35N05	196	33.3	56.9	10.5	206	51480	48147	38940	38808
Mean			198	27.5	58.5	5.7	202	38808	35492	29348	29359
Probability(%)											
Date of Planting (DOP)			7.1	2.2	1.0	23.8	0.1	0.0	49.1	97.3	68.3
Hybrid (H)			33.3	4.9	5.9	9.5	19.0	0.0	0.0	90.3	58.8
Plant Density (PD)			0.2	40.1	15.5	0.3	16.8	0.0	0.0	0.0	0.0
H x PD			78.0	93.1	37.5	18.7	36.8	0.0	6.2	75.3	74.2
DOP x H			17.9	70.9	85.3	93.1	19.0	0.0	66.3	90.3	85.6
DOP x PD			56.6	90.6	71.7	14.9	28.1	0.0	80.4	27.5	25.0
DOP x H x PD			73.6	64.2	93.5	99.5	16.8	0.0	22.4	53.2	58.5
LSD(0.10)											
Date of Planting (DOP)			28	4.8	0.9	NS	1	0.0	NS	NS	NS
Hybrid (H)			NS	0.9	0.5	3.7	NS	0.0	771	NS	NS
Plant Density (PD)			12	NS	NS	4.5	NS	0.0	944	755	759
H x PD			NS	NS	NS	NS	NS	0.0	2168	NS	NS
DOP x H			NS	NS	NS	NS	NS	0.0	NS	NS	NS
DOP x PD			NS	NS	NS	NS	NS	0.0	NS	NS	NS
DOP x H x PD			NS	NS	NS	NS	NS	0.0	NS	NS	NS
CV(%)			8	6	2	106	4	0	4	4	4

continued

**Table E-44. Plant Density, Planting Date, and Hybrid Influence on Corn Silage Yield and Quality and Corn Grain
Arlington, WI - 1999**

Date of planting	Density	Hybrid	Whole Plant											
			Dry Matter		Kernel milk stage	Harvest		Crude			<i>In Vitro</i> Digest	Cell Wall Digest	Milk per	
			yield tons/A	Moisture %		plants plants/A	ears ears/A	protien %	ADF %	NDF %			Ton lbs/T	Acre lbs/A
May 1			9.7	54.8	37	28688	28380	6.4	22.4	45.5	74.8	44.6	1855	17912
May 20			9.4	55.2	48	29876	29788	6.5	23.4	47.3	74.1	45.3	1740	16270
	20000		8.5	56.8	48	20295	19800	6.7	21.6	44.7	75.7	45.6	1941	16490
	30000		9.7	54.7	43	29931	29898	6.4	23.4	47.0	74.0	44.6	1739	16991
	40000		10.4	53.4	37	37620	37554	6.2	23.8	47.4	73.8	44.7	1712	17791
May 1	20000		8.5	56.9	45	20724	19932	6.6	21.4	44.2	75.8	45.2	1966	16830
May 1	30000		9.8	53.9	39	29238	29172	6.2	22.1	45.2	74.9	44.6	1874	18505
May 1	40000		10.7	53.6	26	36102	36036	6.3	23.7	47.0	73.7	44.0	1724	18401
May 20	20000		8.4	56.7	51	19866	19668	6.8	21.8	45.1	75.6	45.9	1916	16150
May 20	30000		9.6	55.6	47	30624	30624	6.6	24.6	48.8	73.0	44.6	1604	15477
May 20	40000		10.1	53.3	48	39138	39072	6.1	23.9	47.8	73.9	45.3	1701	17182
	20000	Pioneer 3563	8.4	56.9	48	19998	19932	6.7	22.3	45.6	75.1	45.2	1866	15654
	30000	Pioneer 3563	9.6	54.4	42	29964	29964	6.4	24.0	48.0	73.3	44.3	1656	15906
	40000	Pioneer 3563	10.1	53.5	38	35970	35904	6.0	24.1	47.9	73.6	45.0	1682	16992
	20000	Pioneer 35N05	8.6	56.8	48	20592	19668	6.8	21.0	43.8	76.3	45.9	2016	17326
	30000	Pioneer 35N05	9.9	55.0	44	29898	29832	6.5	22.8	46.0	74.6	44.9	1823	18075
	40000	Pioneer 35N05	10.7	53.4	36	39270	39204	6.4	23.5	46.9	73.9	44.4	1742	18591
		Pioneer 3563	9.4	54.9	42	28644	28600	6.4	23.4	47.2	74.0	44.9	1735	16184
		Pioneer 35N05	9.7	55.1	43	29920	29568	6.6	22.4	45.6	75.0	45.1	1860	17998
May 1		Pioneer 3563	9.7	55.1	37	27676	27632	6.4	22.8	46.1	74.2	44.1	1795	17344
May 1		Pioneer 35N05	9.7	54.4	37	29700	29128	6.4	22.0	44.9	75.4	45.1	1915	18480
May 20		Pioneer 3563	9.0	54.7	48	29612	29568	6.3	24.1	48.2	73.8	45.6	1675	15024
May 20		Pioneer 35N05	9.7	55.7	49	30140	30008	6.7	22.8	46.3	74.5	45.0	1806	17516

continued

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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	Ton	Acre
tons/A	%	%	plants/A	ears/A	%	%	%	%	%	lbs/T	lbs/A			
May 1	20000	Pioneer 3563	8.6	57.1	43.3	20064	20064	6.6	21.9	44.7	75.2	44.5	1910	16552
May 1	30000	Pioneer 3563	9.8	54.3	36.7	29304	29304	6.4	22.3	45.3	74.5	43.7	1846	18144
May 1	40000	Pioneer 3563	10.6	54.1	30.0	33660	33528	6.3	24.3	48.3	73.0	44.2	1630	17335
May 1	20000	Pioneer 35N05	8.4	56.7	46.7	21384	19800	6.7	20.9	43.7	76.4	46.0	2023	17107
May 1	30000	Pioneer 35N05	9.8	53.5	41.7	29172	29040	6.1	22.0	45.2	75.4	45.6	1903	18865
May 1	40000	Pioneer 35N05	10.7	53.1	21.7	38544	38544	6.4	23.1	45.7	74.3	43.9	1818	19467
May 20	20000	Pioneer 3563	8.1	56.7	51.7	19932	19800	6.7	22.6	46.4	75.0	46.0	1823	14755
May 20	30000	Pioneer 3563	9.3	54.6	46.7	30624	30624	6.5	25.7	50.8	72.1	44.9	1466	13668
May 20	40000	Pioneer 3563	9.6	52.8	45.0	38280	38280	5.8	23.9	47.5	74.2	45.8	1735	16649
May 20	20000	Pioneer 35N05	8.7	56.8	50.0	19800	19536	6.9	21.0	43.8	76.2	45.8	2009	17546
May 20	30000	Pioneer 35N05	9.9	56.6	46.7	30624	30624	6.8	23.5	46.8	73.9	44.2	1742	17286
May 20	40000	Pioneer 35N05	10.6	53.8	50.0	39996	39864	6.5	23.9	48.1	73.5	44.9	1666	17715
Mean			9.5	55.0	42.5	29282	29084	6.5	22.9	46.4	74.5	45.0	1798	17091
Probability(%)														
Date of Planting (DOP)			34.7	88.2	0.7	15.7	0.2	20.4	5.0	1.6	22.2	36.2	6.7	6.0
Hybrid (H)			15.2	90.9	80.6	16.2	7.4	6.2	2.4	1.7	1.5	63.9	1.2	2.4
Plant Density (PD)			0.0	16.7	0.2	0.0	0.0	0.1	0.1	0.3	0.1	17.4	0.1	37.4
H x PD			82.2	97.4	74.9	6.9	12.4	38.2	77.5	77.8	41.6	43.2	59.2	94.4
DOP x H			12.6	54.0	80.6	43.8	28.2	4.3	60.8	56.3	63.6	8.4	90.0	37.4
DOP x PD			75.9	81.1	1.7	15.6	8.6	6.9	9.1	13.8	5.1	47.8	7.5	41.9
DOP x H x PD			94.9	94.3	18.1	46.5	61.6	58.2	33.4	7.9	26.2	61.3	11.7	52.0
LSD(0.10)														
Date of Planting (DOP)			NS	NS	2.8	1853	2060	NS	0.7	0.7	NS	NS	91	1232
Hybrid (H)			NS	NS	NS	NS	1163	0.2	0.7	1.1	0.6	NS	78	1286
Plant Density (PD)			0.5	NS	4.7	1409	1424	0.2	0.9	1.3	0.8	NS	96	NS
H x PD			NS	NS	NS	241	NS	NS	NS	NS	NS	NS	NS	NS
DOP x H			NS	NS	NS	NS	NS	0.3	NS	NS	NS	1.7	NS	NS
DOP x PD			NS	NS	6.0	2384	2200	0.3	1.2	NS	1.4	NS	116	NS
DOP x H x PD			NS	NS	NS	NS	NS	NS	NS	2.6	NS	NS	NS	NS
CV(%)			8	8	16	7	7	4	6	4	2	3	8	13