

## FIELD EXPERIMENT HISTORY

**Title:** Plant Density and Hybrid Influence on Corn Grain and Silage Performance  
**Experiment:** 02PD **Trial ID** 1414 **Year:** 1999  
**Personnel:** J.G. Lauer, P. J. Flannery and K. D. Kohn  
**Location:** Arlington, WI **County:** Columbia  
**Supported By:** HATCH

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### Site Information

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

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### Plot Management

**Tillage Operations:** Fall Chisel Plow Soil Finisher 1 Cultivation  
**Analysis:** **Rate lbs/A:** **Date:**  
**Fertilizer:** **Preplant :** 46-0-0 325 4 /23/99  
**Starter :** 6-24-24 150 4 /29/99  
**Post plant :** N/A N/A N/A  
**Manure:** none  
**Herbicide:** Frontier @ 1.5 pt/A **Insecticide:** none  
Bladex @ 2.2 lb/A **Hybrid:** See Factors  
Buctril @ 1.5 pt/A  
**Irrigation:** none  
**Planting Date:** 4/26/99 **Planting Depth:** 1.5" **Row Width:** 30"  
**Target Plant Density:** See Factors **Planting Method:** Kinze Plot Planter  
**Harvest Date:** S:9/13/99, **Harvest Method:** New Holland Plot Chopper  
G:10/6/99 Kincaid Plot Combine  
**Notes:**

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### Experimental Design

**Design:** RCB **Replications:** 3  
**Plot Size Seeded:** 22'x20' **Experiment Size:** 0.5 A  
**Harvest Plot Size:** S: 2.5' x 22', **Harvest Plant Density:** N/A plants per acre  
G: 5' x 22'

### **Factors/Treatments:**

#### Plant Density

15000, 20000,  
25000, 30000  
35000, 40000, &  
45000

#### Hybrids

Dekalb 493  
Dekalb 493BT

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**Results: Tables E-28.**

**Table E-28. Plant Density and Hybrid Influence on Corn Grain and Silage Performance.  
Arlington, WI - 1999.**

Density	Hybrid	Grain				Harvest		Silk Date	Plants emerged
		Yield	Moisture	Test Wt	Lodged	plants	ears		
		bu/A	%	lbs/bu	%	plants/A	ears/A		
15000		152	19.6	56.0	0.4	16038	19140	195.3	18513
20000		171	18.8	57.4	1.0	19800	20064	195.5	25014
25000		198	18.8	57.2	0.8	25014	25278	195.0	30756
30000		219	18.7	58.2	1.1	29964	29964	195.5	35838
35000		206	18.3	58.0	1.3	34650	34650	195.7	42983
40000		208	18.4	58.2	1.0	39138	39006	195.7	48659
45000		215	19.4	57.4	7.7	45210	44682	195.7	54335
	Dekalb DK493	195	18.9	57.3	1.9	30209	30417	195.5	35928
	Dekalb DK493BT	194	18.7	57.6	1.9	29738	30379	195.5	37243
15000	Dekalb DK493	153	20.0	55.7	0.8	16632	18612	195.3	18018
20000	Dekalb DK493	166	18.7	57.1	0.6	19536	19668	195.7	24717
25000	Dekalb DK493	195	18.6	57.4	1.6	24816	24816	195.0	30558
30000	Dekalb DK493	218	18.9	58.0	1.8	29568	29568	195.3	34848
35000	Dekalb DK493	219	18.7	57.9	2.3	35640	35640	196.0	41844
40000	Dekalb DK493	206	18.5	57.7	1.0	39336	39336	195.3	47784
45000	Dekalb DK493	214	19.3	57.4	5.4	45936	45276	195.7	53724
15000	Dekalb DK493BT	151	19.2	56.2	0.0	15444	19668	195.3	19008
20000	Dekalb DK493BT	175	18.8	57.7	1.3	20064	20460	195.3	25311
25000	Dekalb DK493BT	201	18.9	57.1	0.0	25212	25740	195.0	30954
30000	Dekalb DK493BT	221	18.5	58.5	0.4	30360	30360	195.7	36828
35000	Dekalb DK493BT	193	17.9	58.1	0.4	33660	33660	195.3	44121
40000	Dekalb DK493BT	210	18.3	58.7	1.1	38940	38676	196.0	49533
45000	Dekalb DK493BT	217	19.5	57.4	10.0	44484	44088	195.7	54945
Mean		195	18.8	57.5	1.9	29973	30398	195.5	36585
<b>Probability(%)</b>									
	Plant Density (D)	0.0	4.4	0.0	7.7	0.0	0.0	16.5	0.0
	Hybrid (H)	84.7	45.5	42.8	96.0	1.1	92.6	100	1.5
	D x H	31.3	72.9	64.6	86.1	21.9	29.8	28.6	78.0
<b>LSD (0.10)</b>									
	Plant Density (D)	12	0.7	0.6	4.2	1076	1307	NS	1186
	Hybrid (H)	NS	NS	NS	NS	146	NS	NS	479
	D x H	NS	NS	NS	NS	NS	NS	NS	NS
<b>CV(%)</b>									
		6	4	1	222	4	4	3	3

continued

**Table E-28. Plant Density and Hybrid Influence on Corn Grain and Silage Performance.**  
**Arlington, WI - 1999.**

Density	Hybrid	Whole Plant											
		Dry Matter		Kernel milk	Harvest		Crude			<i>In Vitro</i> Cell Wal		Milk per	
		yield tons/A	Moisture %		plants/A	ears/A	protien %	ADF %	NDF %	Digest %	Digest %	Ton lbs/T	Acre lbs/A
15000		7.5	59.5	26.7	17160	19470	7.5	20.9	44.1	76.3	46.3	2005	15117
20000		8.2	60.2	24.2	19800	20988	7.4	21.5	44.6	75.7	45.5	1945	16034
25000		9.1	58.3	26.7	26664	26994	6.6	21.4	44.2	76.1	45.8	1984	18926
30000		9.1	55.6	24.2	31416	31548	6.5	21.8	44.8	75.5	45.3	1922	17638
35000		9.5	55.0	19.2	35376	35442	6.1	22.4	45.4	74.9	44.7	1865	17793
40000		9.6	56.7	21.7	40920	41052	6.4	23.0	46.6	74.5	45.2	1789	17305
45000		9.7	54.8	30.0	43428	43560	6.2	22.3	45.2	74.8	44.2	1868	18172
	Dekalb DK493	9.1	57.2	24.0	30435	31020	6.8	21.8	45.0	75.5	45.5	1913	17624
	Dekalb DK493BT	8.8	57.2	25.0	30926	31567	6.6	22.0	44.9	75.3	45.0	1910	16860
15000	Dekalb DK493	8.1	58.7	25.0	16632	19008	7.7	19.9	42.9	77.1	46.6	2103	16966
20000	Dekalb DK493	8.6	59.1	21.7	19536	20856	7.5	21.4	44.8	75.7	45.7	1939	16795
25000	Dekalb DK493	9.6	57.9	26.7	26664	26664	6.8	21.2	44.5	76.3	46.6	1985	20949
30000	Dekalb DK493	9.6	56.6	26.7	31944	31944	6.3	21.7	44.6	75.8	45.8	1955	18809
35000	Dekalb DK493	9.1	58.3	25.0	34848	34980	6.1	22.8	46.1	74.6	44.9	1816	16580
40000	Dekalb DK493	9.7	56.1	18.3	39864	39996	6.5	22.3	45.2	75.0	44.8	1879	18187
45000	Dekalb DK493	9.4	53.4	25.0	43560	43692	6.4	23.6	47.3	73.7	44.3	1711	16190
15000	Dekalb DK493BT	7.0	60.3	28.3	17688	19932	7.4	21.9	45.3	75.6	46.0	1906	13267
20000	Dekalb DK493BT	7.8	61.4	26.7	20064	21120	7.3	21.6	44.4	75.7	45.2	1950	15273
25000	Dekalb DK493BT	8.9	58.6	26.7	26664	27324	6.3	21.6	43.9	75.8	45.0	1983	17578
30000	Dekalb DK493BT	8.6	54.6	21.7	30888	31152	6.7	21.9	45.1	75.1	44.8	1890	16466
35000	Dekalb DK493BT	9.9	51.6	13.3	35904	35904	6.1	22.0	44.7	75.2	44.5	1914	19006
40000	Dekalb DK493BT	9.4	57.4	25.0	41976	42108	6.3	23.8	47.9	74.0	45.7	1700	15981
45000	Dekalb DK493BT	10.0	56.2	33.3	43296	43428	5.9	21.0	43.1	75.9	44.2	2025	20155
Mean		8.9	57.2	24.5	30681	31293	6.7	21.9	45.0	75.4	45.3	1911	17242
<b>Probability(%)</b>													
Plant Density (D)		0.0	0.3	31.1	0.0	0.0	0.0	41.3	79.0	28.3	1.6	59.5	26.8
Hybrid (H)		61.1	97.8	81.7	50.4	46.7	5.0	3.7	83.9	3.2	49.2	90.9	34.9
D x H		19.3	3.7	23.8	89.1	92.3	27.8	38.1	45.3	36.9	43.9	41.9	19.0
<b>LSD (0.10)</b>													
Plant Density (D)		0.7	2.5	NS	2073	2028	0.3	NS	NS	NS	0.9	NS	NS
Hybrid (H)		NS	NS	NS	NS	NS	0.1	NS	NS	0.1	NS	NS	NS
D x H		NS	3.6	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
<b>CV(%)</b>		8	4	29	7	7	5	8	7	2	2	11	16