

## FIELD EXPERIMENT HISTORY

**Title:** Plant Density and Row Spacing Effects on Corn Grain and Silage  
**Experiment:** 06 Row Spacing x Plant Density      **Trial ID:** 2241      **Year:** 2001  
**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:** ARS 372      **Previous Crop:** Soybean      **Soil Type:** Plano Silt Loam  
**Soil Test:**      **Date:** 11/1 /01      **pH** 6.5      **OM (%)** 3.0      **P (ppm)** 23      **K (ppm)** 131

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### Plot Management

**Tillage Operations:** Fall Chisel Plow      Field Cultivator

	<u>Analysis:</u>	<u>Rate lbs/A:</u>	<u>Date:</u>
<b>Fertilizer:</b>			
<b>Preplant :</b>	46-0-0	325	N/A
<b>Starter :</b>	N/A	N/A	N/A
<b>Post plant :</b>	N/A	N/A	N/A
<b>Manure:</b>	None	None	
<b>Herbicide:</b>	Harness 1.5 pt/A Permit 0.66 oz/A	<b>Insecticide:</b> None	
<b>Irrigation:</b>	None	<b>Hybrid:</b> Pioneer 35R57	
<b>Planting Date:</b>	5/6/01	<b>Planting Depth:</b> 1.5"	<b>Row Width:</b> See Factor
<b>Target Plant Density:</b>	See Factors	<b>Planting Method:</b>	Kinze Inter-Row Planter
<b>Harvest Date:</b>	S: 9/25/01 G: 10/26/01	<b>Harvest Method:</b>	S:New Holland Plot Chopper G:Kincaid Plot Combine

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### Experimental Design

**Design:** RCB Factorial      **Replications:** 3  
**Plot Size Seeded:** 20' x 125'      **Experiment Size:** 0.7 A  
**Harvest Plot Size:** S: 5' x 8.75'  
G: 5' x 116.25'      **Harvest Plant Density:** Varies

### **Factors/Treatments:**

#### Row Spacing:

15 inch  
30 inch

#### Plant Density: (plants/A)

25000, 30000, 35000  
and 40000

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**Results: Table C-29.**

**Table C-29. Plant Density and Row Spacing Effects on Corn Grain and Silage Yield and Quality  
Arlington, WI - 2001**

Row spacing inches	Grain									
	Density plants/A	Harvest pop plants/A	Broken stalks %	Yield bu/A	Moisture %	Test weight lbs/bu	Grower return \$/A	Yield Components @ 15.5% moisture		
								Ear number ears/A	Kernels number no./ear	100 Kernel wt grams
	25000	28000	3	219	22.2	51.8	443	28000	615	32.8
	30000	30333	1	216	22.2	51.6	436	30333	575	31.8
	35000	35833	2	218	21.8	51.5	440	35833	511	30.4
	40000	38833	5	202	22.0	50.9	408	38833	466	28.9
15 inches		31167	4	213	22.1	51.5	431	31167	568	31.4
30 inches		35333	2	215	22.0	51.4	433	35333	515	30.5
15 inches	25000	25333	4	217	22.3	51.9	438	25333	664	32.9
15 inches	30000	27333	2	211	22.3	51.6	425	27333	593	33.1
15 inches	35000	34333	3	219	21.8	51.7	442	34333	521	31.1
15 inches	40000	37667	6	206	21.9	50.8	417	37667	495	28.7
30 inches	25000	30667	3	222	22.0	51.7	448	30667	566	32.7
30 inches	30000	33333	0	222	22.1	51.6	448	33333	557	30.4
30 inches	35000	37333	2	217	21.8	51.3	439	37333	500	29.6
30 inches	40000	40000	4	198	22.0	51.0	399	40000	437	29.1
Mean		33250	3	214	22.0	51.4	432	33250	542	30.9
<b>Probability(%)</b>										
Row Space (S)		10.2	61.1	78.4	52.9	67.7	77.2	10.2	9.6	5.3
Plant Density (D)		0.0	41.9	1.6	20.0	15.2	1.9	0.0	0.1	0.0
S x D		73.8	97.2	28.7	54.6	88.5	27.9	73.8	58.4	13.2
<b>LSD(0.10)</b>										
Row Space (S)		NS	NS	NS	NS	NS	NS	NS	32	0.4
Plant Density (D)		3424	NS	9	NS	NS	18	3424	51	1.2
S x D		NS	NS	NS	NS	NS	NS	NS	NS	NS
<b>CV(%)</b>										
		10	128	4	1	1	4	10	9	4

continued

**Table C-29. Plant Density and Row Spacing Effects on Corn Grain and Silage Yield and Quality**  
(continued) **Arlington, WI - 2001**

Row spacing inches	Density plants/A	Whole Plant											Milk per	
		Harvest pop plants/A	Harvest ears ears/A	Yield tons/A	Moisture %	Kernel milk %	Crude protien %	ADF %	NDF %	In Vitro Digest %	Cell Wall Digest %	Starch %	Ton lbs/T	Acre lbs/A
	25000	24333	24333	7.2	61.5	39	6.4	21.2	43.6	75.3	43.5	36.3	2805	20382
	30000	29667	29667	8.3	57.4	38	6.2	18.5	39.4	77.8	43.6	42.8	2937	24542
	35000	34833	34833	8.3	56.6	38	6.0	20.3	42.0	76.0	42.9	41.1	2821	23428
	40000	37500	37500	7.7	58.7	36	5.8	22.3	45.0	74.3	43.0	38.2	2720	21125
15 inches		30250	30250	8.0	58.9	39	6.0	20.7	42.7	75.6	42.9	39.8	2801	22452
30 inches		32917	32917	7.8	58.2	37	6.2	20.4	42.3	76.1	43.5	39.4	2840	22287
15 inches	25000	24000	24000	7.3	64.4	43	6.3	23.3	46.7	73.3	43.0	32.5	2680	19732
15 inches	30000	27667	27667	7.9	57.2	35	6.1	18.2	38.5	77.9	42.7	44.4	2928	23278
15 inches	35000	35667	35667	8.7	55.7	37	6.0	19.3	40.5	76.7	42.5	44.0	2846	24753
15 inches	40000	33667	33667	7.9	58.1	40	5.7	22.1	44.8	74.7	43.6	38.3	2751	22045
30 inches	25000	24667	24667	7.2	58.6	35	6.5	19.1	40.4	77.4	44.0	40.1	2930	21033
30 inches	30000	31667	31667	8.7	57.6	42	6.4	18.8	40.3	77.6	44.5	41.2	2945	25806
30 inches	35000	34000	34000	7.9	57.5	38	6.0	21.2	43.5	75.4	43.3	38.2	2796	22103
30 inches	40000	41333	41333	7.5	59.3	32	5.9	22.6	45.2	73.9	42.4	38.1	2688	20205
Mean		31583	31583	7.9	58.6	38	6.1	20.6	42.5	75.9	43.2	39.6	2821	22369
<b>Probability(%)</b>														
Row Space (S)		27.5	27.5	80.6	76.2	61.8	30.5	79.9	86.1	74.9	58.0	84.6	68.1	93.9
Plant Density (D)		0.0	0.0	2.1	0.2	92.7	6.9	10.1	11.4	17.4	90.8	4.4	23.7	7.4
S x D		20.6	20.6	15.9	1.2	40.7	92.3	20.6	19.4	28.2	57.8	4.5	39.7	35.0
<b>LSD(0.10)</b>														
Row Space (S)		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Plant Density (D)		3848	3848	0.6	1.9	NS	0.4	NS	NS	NS	NS	3.8	NS	2841
S x D		NS	NS	NS	2.6	NS	NS	NS	NS	NS	NS	5.4	NS	NS
<b>CV(%)</b>														
		12	12	7	3	24	6	12	9	3	5	9	6	12