

## FIELD EXPERIMENT HISTORY

**Title:** Plant Density and Row Spacing Effects on Grain and Silage Yield and Quality  
**Experiment:** 06RSxPD **Trial ID** 1292 **Year:** 1998  
**Personnel:** J.G. Lauer, K.D. Kohn, P.J. Flannery and H.M. Darby  
**Location:** Arlington, WI **County:** Columbia  
**Supported By:** Hatch

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### Site Information

**Field:** Field 375 South **Previous Crop:** Soybean **Soil Type:** Plano  
**Soil Test:** **Date:** 10/1 /98 **pH** 7.1 **OM (%)** 3 **P (ppm)** 55 **K (ppm)** 225

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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>			
Preplant :	46-0-0	325	5 /1 /98
Starter :	N/A	N/A	N/A
Post plant :	N/A	N/A	N/A
Manure:			
<b>Herbicide:</b>	Lasso 2qts/A; Bladex 90DF 2.2 lb/A	<b>Insecticide:</b> None	
<b>Irrigation:</b>	None	<b>Hybrid:</b> Pioneer 3751	
<b>Planting Date:</b>	5/6/98	<b>Planting Depth:</b> 1.5"	<b>Row Width:</b> Varies
<b>Target Plant Density:</b>	See Factors	<b>Planting Method:</b>	Kinze Inter-Row Planter
<b>Harvest Date:</b>	G:10/19/98 S: 9/22/98	<b>Harvest Method:</b>	G: Kincaid Plot Combine S: NH 707 Chopper

**Notes** N/A

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### Experimental Design

**Design:** RCB Factorial **Replications:** 4  
**Plot Size Seeded:** 10' x 75' **Experiment Size:** 10' x 75'  
**Harvest Plot Size:** 5' x 75' **Harvest Plant Density:** Varies

**Factors/Treatments:**

Row spacing: 15" and 30"	Plant density: 25,000; 30,000; 35,000; 40,000 plants/A
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**Results:** Table E-30.

**Table E-30. Plant Density and Row Spacing Effects on Corn Grain And Silage Yield and Quality  
Arlington, WI - 1998**

Row spacing inches	Density plants/A	Grain					Silage										
		Harvest pop plants/A	Broken stalks %	Yield bu/A	Moist %	Test weight lbs/bu	Harvest pop plants/A	Yield tons/A	Moist %	Kernel milk %	Crude protien %	ADF %	NDF %	<i>In Vitro</i> Digest %	Cell Wall Digest %	Milk per Ton    Acre	
	25000	21875	0.0	181	20.1	53	23500	10.6	51.7	5.6	6.6	16.0	34.6	82.6	50.0	2779	29768
	30000	26625	0.4	190	20.0	52	26875	10.6	54.3	4.4	6.2	18.2	36.9	80.6	47.7	2563	27912
	35000	30500	1.6	199	20.4	53	32250	10.4	56.9	4.4	5.6	20.7	39.4	78.6	46.4	2337	25207
	40000	35125	1.0	205	20.7	53	36125	10.6	55.1	3.8	5.9	19.4	38.2	79.7	47.2	2455	26328
15		25938	0.8	192	20.1	52	28500	10.5	55.2	5.3	6.1	18.7	37.4	80.2	47.4	2518	26939
30		31125	0.8	195	20.6	53	30875	10.6	53.8	3.8	6.0	18.4	37.2	80.6	48.2	2548	27668
15	25000	19000	0.0	177	20.3	53	23000	10.6	52.8	5.0	6.6	16.1	34.6	82.4	49.6	2765	29948
15	30000	23500	0.0	191	19.3	52	25250	10.3	54.0	6.3	6.3	18.3	37.3	80.8	48.6	2559	26712
15	35000	29000	1.6	201	20.0	52	31250	10.7	57.0	6.3	5.9	20.6	39.3	78.7	46.3	2346	25767
15	40000	32250	1.4	200	20.6	53	34500	10.3	56.9	3.8	5.7	19.9	38.3	78.9	45.1	2402	25329
30	25000	24750	0.0	185	19.9	52	24000	10.6	50.6	6.3	6.6	15.9	34.6	82.9	50.4	2793	29588
30	30000	29750	0.8	189	20.7	53	28500	10.9	54.6	2.5	6.1	18.1	36.4	80.3	46.7	2566	29113
30	35000	32000	1.6	196	20.8	53	33250	10.2	56.8	2.5	5.4	20.7	39.6	78.5	46.5	2327	24646
30	40000	38000	0.7	210	20.8	53	37750	10.8	53.3	3.8	6.0	18.9	38.1	80.6	49.2	2508	27327
Mean		28531	0.8	194	20.3	53	29688	10.5	54.5	4.5	6.1	18.6	37.3	80.4	47.8	2533	27304
<b>Probability(%)</b>																	
	Plant Density (D)	0.0	9.6	0.0	47.2	1.1	0.0	99.7	55.2	8.1	2.0	37.8	40.1	36.5	36.4	37.9	79.0
	Row Space (S)	0.0	96.8	30.3	17.8	8.3	1.5	84.0	59.5	26.8	55.0	87.0	92.3	81.6	58.7	86.7	83.0
	D x S	66.9	70.2	13.8	32.4	5.3	77.8	94.0	93.3	46.7	58.7	99.7	99.8	96.4	55.2	99.5	97.7
<b>LSD(0.10)</b>																	
	Plant Density (D)	2478	1.1	6.4	NS	0.4	2193	NS	NS	3.3	0.5	NS	NS	NS	NS	NS	NS
	Row Space (S)	1752	NS	NS	NS	0.3	1550	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	D x S	NS	NS	NS	NS	0.4	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
<b>CV(%)</b>																	
		10	170	4	5	1	9	18	13	86	10	29	16	6	9	20	35

## FIELD EXPERIMENT HISTORY

**Title:** Plant Density and Row Spacing Effects on Grain and Silage Yield and Quality  
**Experiment:** 06RSxPD **Trial ID** 1294 **Year:** 1998  
**Personnel:** J.G. Lauer, M. Rankin, K.D. Kohn, and P.J. Flannery  
**Location:** Fond du Lac, WI **County:** Fond du lac  
**Supported By:** Hatch

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### Site Information

**Field:** Boelke Farm **Previous Crop:** Soybean **Soil Type:** Virgil  
**Soil Test:** **Date:** 11/00/97 **pH** 6.7 **OM (%)** 5 **P (ppm)** 38 **K (ppm)** 100

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### Plot Management

**Tillage Operations:** Spring Field Cultivator

	<u>Analysis:</u>	<u>Rate lbs/A:</u>	<u>Date:</u>
<b>Fertilizer:</b>			
<b>Preplant :</b>	82-0-0	195	N/A
<b>Starter :</b>	N/A	N/A	N/A
<b>Post plant :</b>	N/A	N/A	N/A
<b>Manure:</b>			
<b>Herbicide:</b>	Accent Gold 2.9 oz/A	<b>Insecticide:</b> None	
<b>Irrigation:</b>	None	<b>Hybrid:</b> Pioneer 3751	
<b>Planting Date:</b>	5/14/98	<b>Planting Depth:</b> 1.5"	<b>Row Width:</b> Varies
<b>Target Plant Density:</b>	See Factors	<b>Planting Method:</b>	Kinze Inter-Row Planter
<b>Harvest Date:</b>	G:10/16/98 S: 9/21/98	<b>Harvest Method:</b>	G: Kincaid Plot Combine S: NH 707 Chopper

**Notes** 2nd of 15" rows did not plant

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### Experimental Design

**Design:** RCB Factorial **Replications:** 4  
**Plot Size Seeded:** 10' x 100' **Experiment Size:** 10' x 100'  
**Harvest Plot Size:** 5' x 100' **Harvest Plant Density:** Varies

**Factors/Treatments:**

Row spacing: 15" and 30"	Plant density: 25,000; 30,000; 35,000; 40,000 plants/A
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**Results:** Table E-31.

**Table E-31. Plant Density and Row Spacing Effects on Corn Grain And Silage Yield and Quality  
Fond du Lac, WI - 1998**

Row spacing inches	Density plants/A	Grain					Silage										
		Harvest pop plants/A	Broken stalks %	Yield bu/A	Moist %	Test weight lbs/bu	Harvest pop plants/A	Yield tons/A	Moist %	Kernel milk %	Crude protien %	ADF %	NDF %	<i>In Vitro</i> Digest %	Cell Wall Digest %	Milk per	
																lbs/T	lbs/A
	25000	27125	0.0	204	19.8	53	26750	9.9	53.0	15.0	6.6	18.6	37.7	81.5	51.0	2577	25828
	30000	32000	1.6	216	19.7	54	31500	10.1	52.1	15.0	6.3	19.1	38.7	81.0	50.8	2505	25322
	35000	37250	1.4	222	19.7	54	36125	9.9	48.8	17.5	6.1	19.6	39.1	79.7	48.4	2413	24081
	40000	42375	2.1	221	19.8	54	40125	10.0	50.2	7.5	6.3	19.9	39.2	79.9	48.8	2420	24352
15		33563	1.4	231	19.4	54	33938	10.6	51.3	11.3	6.4	19.4	38.9	80.3	49.5	2453	26160
30		35813	1.1	200	20.1	54	33313	9.4	50.7	16.3	6.2	19.1	38.4	80.8	50.0	2504	23631
15	25000	26000	0.0	214	19.4	53	27750	11.0	52.6	20.0	6.7	18.4	37.6	81.6	51.3	2587	28977
15	30000	30500	1.6	229	19.4	54	32250	11.1	52.5	10.0	6.5	18.7	38.4	81.2	51.2	2533	28398
15	35000	36250	2.1	235	19.5	54	36500	10.1	50.2	10.0	6.2	20.3	39.5	78.9	46.8	2356	23687
15	40000	41500	1.8	246	19.3	54	39250	10.0	49.9	5.0	6.3	20.4	40.3	79.3	48.6	2338	23580
30	25000	28250	0.0	194	20.1	53	25750	8.8	53.4	10.0	6.4	18.8	37.8	81.4	50.7	2568	22680
30	30000	33500	1.5	202	20.1	54	30750	9.0	51.6	20.0	6.1	19.4	38.9	80.7	50.4	2478	22247
30	35000	38250	0.6	209	19.9	54	35750	9.7	47.3	25.0	6.1	18.9	38.8	80.4	49.9	2470	24474
30	40000	43250	2.3	196	20.2	54	41000	10.0	50.6	10.0	6.2	19.4	38.2	80.5	49.0	2501	25124
		34688	1.3	216	19.7	54	33625	10.0	51.0	13.8	6.3	19.3	38.7	80.5	49.7	2479	24896
<b>Probability(%)</b>																	
	Plant Density (D)	0.0	5.6	0.0	99.7	0.1	0.0	99.5	6.0		5.7	87.5	86.0	48.8	7.3	70.0	92.7
	Row Space (S)	0.8	59.7	0.0	0.0	61.0	64.3	3.0	62.9		4.8	80.0	71.6	60.1	53.9	65.7	24.1
	D x S	94.6	59.1	1.0	78.3	14.5	76.0	33.8	61.1		81.9	91.0	91.0	82.5	32.2	88.6	39.5
<b>LSD(0.10)</b>																	
	Plant Density (D)	1876	1.3	7.2	NS	0.4	3234	NS	2.7		0.3	NS	NS	NS	2.0	NS	NS
	Row Space(S)	1329	NS	5.1	0.3	NS	NS	0.9	NS		0.2	NS	NS	NS	NS	NS	NS
	D x S	NS	NS	7.8	NS	NS	NS	NS	NS		NS	NS	NS	NS	NS	NS	NS
<b>CV(%)</b>																	
		6	116	4	2	1	11	15	6		5	18	10	3	5	13	24

## FIELD EXPERIMENT HISTORY

**Title:** Plant Density and Row Spacing Effects on Grain and Silage Yield and Quality  
**Experiment:** 06RSxPD **Trial ID** 1293 **Year:** 1998  
**Personnel:** J.G. Lauer, D Nehring and B. Jaynes  
**Location:** Janesville, WI **County:** Rock  
**Supported By:** Hatch

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### Site Information

**Field:** R-5C **Previous Crop:** Soybean **Soil Type:** Plano  
**Soil Test:** **Date:** 11/20/97 **pH** 6.5 **OM (%)** 3 **P (ppm)** 55 **K (ppm)** 197

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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>			
Preplant :	28-0-0	570	N/A
Starter :	N/A	N/A	N/A
Post plant :	N/A	N/A	N/A
Manure:			
<b>Herbicide:</b>	Harness 2.75 pt/A; Hornet 4.5 oz/A	<b>Insecticide:</b> None	
<b>Irrigation:</b>	None	<b>Hybrid:</b> Pioneer 3751	
<b>Planting Date:</b>	5/12/98	<b>Planting Depth:</b> 1.5"	<b>Row Width:</b> Varies
<b>Target Plant Density:</b>	See Factors	<b>Planting Method:</b>	Kinze Inter-Row Planter
<b>Harvest Date:</b>	10/19/98	<b>Harvest Method:</b>	Kincaid Plot Combine

**Notes** N/A

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### Experimental Design

**Design:** RCB Factorial **Replications:** 4  
**Plot Size Seeded:** 20' x 200' **Experiment Size:** 20' x 200'  
**Harvest Plot Size:** 15' x 200' **Harvest Plant Density:** Varies

**Factors/Treatments:**

Row spacing: 15" and 30"	Plant density: 25,000; 30,000; 35,000; 40,000 plants/A
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**Results:** Table E-32.

**Table E-32. Plant Density and Row Spacing Effects on Corn Grain And Silage Yield and Quality  
Janesville, WI - 1998**

Row spacing inches	Density plants/A	Harvest population plants/A	Broken stalks %	Yield bu/A	Moisture %
	25000	24430	1.3	202	16.6
	30000	28624	1.3	209	17.6
	35000	34628	1.3	216	16.9
	40000	38393	2.4	206	17.9
15		30179	1.0	210	17.5
30		32858	2.2	206	17.0
15	25000	22774	0.8	201	17.3
15	30000	27255	1.1	208	17.9
15	35000	33726	0.5	220	17.1
15	40000	36962	1.5	212	17.8
30	25000	26085	1.9	202	16.0
30	30000	29992	1.5	210	17.3
30	35000	35530	2.1	212	16.8
30	40000	39824	3.3	199	18.1
		31519	1.6	208	17.3
<b>Probability(%)</b>					
		0.0	14.1	0.6	4.3
		0.0	0.5	11.3	17.1
		77.3	54.1	12.9	39.8
<b>LSD(0.10)</b>					
		1259	NS	6.4	0.8
		890	0.7	NS	NS
		NS	NS	NS	NS
<b>CV(%)</b>					
		5	68	4	5

## FIELD EXPERIMENT HISTORY

**Title:** Plant Density and Row Spacing Effects on Grain and Silage Yield and Quality  
**Experiment:** 06RSxPD **Trial ID** 1295 **Year:** 1998  
**Personnel:** J.G. Lauer, S. Hendrickson, T. Maney, K.D. Kohn, and P.J. Flannery  
**Location:** Valders, WI **County:** Manitowoc  
**Supported By:** Hatch

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### Site Information

**Field:** **Previous Crop:** Wheat **Soil Type:** Kewaunee clay loam  
**Soil Test:** **Date:** 10/1 /98 **pH** 7.2 **OM (%)** 3 **P (ppm)** 49 **K (ppm)** 115

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### Plot Management

**Tillage Operations:** Moldboard Field Cultivator

	<u>Analysis:</u>	<u>Rate lbs/A:</u>	<u>Date:</u>
<b>Fertilizer:</b>			
Preplant :	46-0-0	300	
Starter :	N/A	N/A	N/A
Post plant :	N/A	N/A	N/A
Manure:			

**Herbicide:** Accent @ 0.33 oz/A; Beacon @ 0.38 oz/A; Banvel 2 oz/A **Insecticide:** None  
**Hybrid:** Pioneer 3751

**Irrigation:** None

**Planting Date:** 5/14/98 **Planting Depth:** 1.5" **Row Width:** Varies

**Target Plant Density:** See Factors **Planting Method:** Kinze Inter-Row Planter

**Harvest Date:** G:10/13/98 **Harvest Method:** G: Kincaid Plot Combine  
S: 9/9/98 S: NH 707 Chopper

**Notes** N/A

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### Experimental Design

**Design:** RCB Factorial **Replications:** 4  
**Plot Size Seeded:** 10' x 100' **Experiment Size:** 10' x 100'  
**Harvest Plot Size:** 5' x 100' **Harvest Plant Density:** Varies

**Factors/Treatments:**

Row spacing: 15" and 30"	Plant density: 25,000; 30,000; 35,000; 40,000 plants/A
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**Results:** Table E-33.

**Table E-33. Plant Density and Row Spacing Effects on Corn Grain And Silage Yield and Quality  
Valders, WI - 1998**

Row spacing inches	Density plants/A	Grain					Silage										
		Harvest pop plants/A	Broken stalks %	Yield bu/A	Moist %	Test weight lbs/bu	Harvest pop plants/A	Yield tons/A	Moist %	Kernel milk %	Crude protien %	ADF %	NDF %	<i>In Vitro</i> Digest %	Cell Wall Digest %	Milk per	
																lbs/T	lbs/A
	25000	28250	1.8	181	26.8	51	28250	8.1	67.1	69.4	7.6	21.2	43.0	80.4	54.3	2285	18649
	30000	32125	0.8	187	26.1	51	31500	8.2	65.7	70.6	7.4	20.7	42.9	81.2	56.3	2337	19234
	35000	39000	1.9	203	25.2	52	40000	8.6	64.8	65.6	7.1	20.4	41.4	80.8	53.8	2378	20610
	40000	41000	0.6	200	26.2	51	42250	8.9	64.6	70.0	7.4	19.4	40.1	81.7	54.5	2488	22072
15		33500	1.3	184	26.5	51	34000	8.7	65.7	67.5	7.5	20.5	42.0	81.1	55.0	2370	20647
30		36688	1.2	201	25.7	51	37000	8.3	65.4	70.3	7.2	20.4	41.7	81.0	54.4	2374	19635
15	25000	26750	2.7	169	27.2	50	28500	8.4	67.5	70.0	7.7	22.1	44.5	79.8	54.6	2186	18483
15	30000	31000	0.0	174	26.9	51	29500	8.2	67.1	67.5	7.5	21.2	43.5	81.1	56.6	2306	19002
15	35000	38250	1.9	200	25.5	52	40000	9.0	64.3	65.0	7.3	19.6	40.3	81.4	53.7	2457	22100
15	40000	38000	0.7	194	26.5	51	38000	9.1	63.8	67.5	7.4	18.9	39.6	82.1	55.1	2531	23004
30	25000	29750	0.8	193	26.5	51	28000	7.9	66.7	68.8	7.5	20.3	41.4	80.9	54.0	2384	18815
30	30000	33250	1.5	200	25.3	51	33500	8.2	64.2	73.8	7.2	20.2	42.3	81.3	55.9	2369	19465
30	35000	39750	1.8	206	25.0	52	40000	8.3	65.2	66.3	7.0	21.2	42.5	80.3	53.8	2300	19121
30	40000	44000	0.6	205	25.9	51	46500	8.7	65.4	72.5	7.3	19.8	40.5	81.3	53.9	2444	21140
		35094	1.3	192	26.1	51	35500	8.5	65.5	68.9	7.4	20.4	41.8	81.0	54.7	2372	20141
<b>Probability(%)</b>																	
	Plant Density (D)	0.0	49.8	0.1	0.1	0.0	0.0	4.9	32.6	32.1	3.2	56.5	24.6	64.0	16.1	46.4	9.7
	Row Space (S)	0.0	85.6	0.0	0.2	1.9	0.2	5.5	77.6	17.8	2.1	92.5	79.9	84.6	43.7	96.5	31.6
	D x S	17.9	44.3	20.6	41.6	3.5	0.4	67.6	44.7	54.8	77.6	53.5	39.2	72.4	94.8	53.5	54.3
<b>LSD(0.10)</b>																	
	Plant Density (D)	1790	NS	9.2	0.6	0.3	2065	0.5	NS	NS	0.2	NS	NS	NS	NS	NS	2400
	Row Space (S)	1266	NS	6.5	0.4	0.2	1460	0.3	NS	NS	0.2	NS	NS	NS	NS	NS	NS
	D x S	NS	NS	NS	NS	0.4	2246	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
<b>CV(%)</b>																	
		6	164	6	3	1	7	7	4	8	4	13	8	3	4	11	14