FIELD EXPERIMENT HISTORY

Title: **Plant Density and Row Spacing Effects on Corn Grain and Silage**

Experiment: 06RSxPD **Trial ID** 1552 **Year:** 2000

Personnel: J.G. Lauer, K.D. Kohn, P.J. Flannery and M. Kral

Location: Arlington, WI **County:** Columbia

Supported By: Hatch

Site Information

Field: 373 **Previous Crop:** Soybean **Soil Type:** Plano

Soil Test: **Date:** 6 /1 /00 **pH** 6.4 **OM (%)** 3 **P (ppm)** 32 **K (ppm)** 148

Plot Management

Tillage Operations: Fall Chisel Plow Field Cultivator

		Analysis:	Rate lbs/A:	Date:
Fertilizer:	**Preplant :**	46-0-0	325	N/A
	Starter :	N/A	N/A	N/A
	Post plant :	N/A	N/A	N/A
	Manure:	None	None	

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

Insecticide: None
Hybrid: Pioneer 35R57

Irrigation: None

Planting Date: 5/2/00 **Planting Depth:** 1.5" **Row Width:** See Factor

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

Harvest Date: S: 9/27/00
G: 10/18/00

Harvest Method: S:New Holland Plot Chopper
G:Kincaid Plot Combine

Notes

Experimental Design

Design: RCB Factorial **Replications:** 4

Plot Size Seeded: 20' x 75' **Experiment Size:** 0.56 A

Harvest Plot Size: S: 2.5' x 22'
G: 5' x 22'

Harvest Plant Density: Varies

Factors/Treatments:

Row Spacing:	Plant Density: (plants/A)
15 inch	25000, 30000, 35000
30 inch	and 40000

Results: Table E-19.

Table E-19. Plant Density and Row Spacing Effects on Corn Grain and Silage Yield and Quality Arlington, WI - 2000

		Grain							
							Yield Components @ 15.5% moisture		
Row spacing	Density	Harvest pop	Broken stalks	Yield	Moisture	Test weight	Ear number	Kernels number	100 Kernel wt
inches	plants/A	plants/A	%	bu/A	%	lbs/bu	ears/A	#/ear	grams
	25000	23661	1	186	25.3	53	23760	593	33.8
	30000	27027	2	197	24.3	53	27324	570	32.4
	35000	31086	10	207	24.6	53	31086	567	30.3
	40000	37026	19	204	24.0	53	37125	496	28.6
15 inches		26780	3	196	24.4	53	26978	594	31.6
30 inches		32621	13	201	24.7	52	32670	520	30.9
15 inches	25000	22176	0	185	25.2	53	22374	614	34.3
15 inches	30000	24750	1	192	24.0	53	25146	596	32.8
15 inches	35000	27720	5	208	24.4	53	27720	620	30.8
15 inches	40000	32472	7	201	24.0	53	32670	544	28.7
30 inches	25000	25146	2	188	25.4	53	25146	573	33.3
30 inches	30000	29304	2	202	24.5	52	29502	544	32.0
30 inches	35000	34452	15	205	24.7	52	34452	515	29.7
30 inches	40000	41580	32	208	24.1	53	41580	447	28.6
Mean		29700	8	199	24.5	53	29824	557	31.3
Probability(%)									
Row Space (S)		0.9	6.7	7.7	23.2	2.7	1.0	5.5	13.4
Plant Density (D)		0.0	0.0	0.0	3.2	99.4	0.0	0.0	0.0
S x D		13.3	1.7	10.1	97.0	82.6	11.5	19.7	88.0
LSD(0.10)									
Row Space (S)		1693	6	3	NS	0.2	1680	42	NS
Plant Density (D)		2241	7	4	0.7	NS	2185	30	1.2
S x D		NS	9	NS	NS	NS	NS	NS	NS
CV(%)		9	95	3	3	1	9	6	5

continued

Table E-19. Plant Density and Row Spacing Effects on Corn Grain and Silage Yield and Quality
(continued) **Arlington, WI - 2000**

		Whole Plant												
Row spacing	Density	Harvest pop	Harvest ears	Yield	Moisture	Kernel milk	Crude protien	ADF	NDF	In Vitro Digest	Cell Wall Digest	Starch	Milk per Ton	Milk per Acre
inches	plants/A	plants/A	ears/A	tons/A	%	%	%	%	%	%	%	%	lbs/T	lbs/A
	25000	23463	23859	8.1	61.1	38	6.0	24.6	50.0	72.9	45.8	29.5	2628	21292
	30000	27621	27819	8.9	61.2	35	6.0	24.8	49.5	72.6	44.6	30.5	2587	23085
	35000	32274	32571	9.7	59.1	33	6.2	22.9	46.9	73.8	44.2	33.5	2644	25780
	40000	35838	35838	9.1	61.1	33	6.2	26.2	51.9	71.1	44.4	27.8	2498	22664
15 inches		27324	27720	8.2	61.4	35	6.1	24.9	49.9	72.3	44.4	29.8	2566	21170
30 inches		32274	32324	9.7	59.9	34	6.1	24.3	49.3	72.9	45.0	30.8	2612	25241
15 inches	25000	20196	20790	6.8	63.6	41	6.1	25.6	51.0	71.9	44.8	27.4	2559	17548
15 inches	30000	25740	26136	8.2	62.5	38	6.0	25.2	49.8	72.0	43.7	29.8	2537	20779
15 inches	35000	29898	30492	9.4	58.5	31	6.1	22.7	46.8	74.2	45.0	34.4	2678	25171
15 inches	40000	33462	33462	8.5	60.9	30	6.2	26.3	52.1	71.0	44.3	27.7	2490	21182
30 inches	25000	26730	26928	9.3	58.6	34	5.8	23.7	48.9	73.9	46.7	31.7	2696	25037
30 inches	30000	29502	29502	9.6	59.9	33	5.9	24.3	49.2	73.2	45.5	31.1	2636	25392
30 inches	35000	34650	34650	10.1	59.7	35	6.3	23.1	47.1	73.3	43.4	32.6	2610	26390
30 inches	40000	38214	38214	9.6	61.2	35	6.3	26.2	51.8	71.2	44.5	27.9	2506	24145
Mean		29799	30022	8.9	60.6	35	6.1	24.6	49.6	72.6	44.7	30.3	2589	23205
Probability(%)														
Row Space (S)		0.3	0.7	0.6	3.8	31.9	70.1	12.8	10.2	13.0	35.6	5.2	18.6	0.7
Plant Density (D)		0.0	0.0	3.8	52.2	28.1	36.7	13.9	16.7	16.7	17.1	15.1	16.2	10.6
S x D		67.9	64.9	42.2	23.2	7.9	50.9	83.6	95.0	59.1	10.2	65.2	44.2	34.2
LSD(0.10)														
Row Space (S)		969	1222	0.3	0.7	NS	NS	NS	NS	NS	NS	0.6	NS	1051
Plant Density (D)		1974	1914	0.9	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
S x D		NS	NS	NS	NS	7	NS	NS	NS	NS	NS	NS	NS	NS
CV(%)		8	7	11	5	16	7	11	9	3	3	15	5	14