

FIELD EXPERIMENT HISTORY

Title: Plant Density and Row Spacing Effects on Corn Grain and Silage
Experiment: 06 RS x PD **Trial ID:** 2597 **Year:** 2004
Personnel: J.G. Lauer, P.J. Flannery and K.D. Kohn
Location: Arlington, WI **County:** Columbia
Supported By: HATCH

Site Information

Field: ARS 358 **Previous Crop:** Soybean **Soil Type:** Plano Silt Loam
Soil Test: **Date:** 11/01/04 **pH** 6.6 **OM (%)** 3.0 **P (ppm)** 38 **K (ppm)** 311

Plot Management

Tillage Operations: Fall Chisel Plow Field Cultivator Soil Finisher

	<u>Analysis:</u>	<u>Rate lbs/A:</u>	<u>Date:</u>
Fertilizer: Preplant :	46-0-0	325	N/A
Starter :	N/A	N/A	N/A
Post plant :	N/A	N/A	N/A
Manure:	N/A	N/A	N/A

Herbicide: Harness 2.5 pt/A **Insecticide:** None
 Hornet 4.0 oz/A **Hybrid:** Dekalb DKC5334
Irrigation: None

Planting Date: 5/4/04 **Planting Depth:** 1.5" **Row Width:** See Factors
Target Plant Density: See Factors **Planting Method:** Kinze Inter-Row Planter
Harvest Date: S: 9/27/04 **Harvest Method:** S:New Holland Plot Chopper
 G: 10/21/04 G:Kincaid Plot Combine

Experimental Design

Design: See Factors **Replications:** 3
Plot Size Seeded: 10' x 70' **Experiment Size:** 0.6 Acre
Harvest Plot Size: S: 5' x 8.75' **Harvest Plant Density:** See Factors
 G: 5' x 61.25'
Factors/Treatments:

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

Results: Table C-58.

**Table C-58. Plant Density and Row Spacing Effects on Corn Grain and Silage Yield and Quality
Arlington, WI - 2004**

Row spacing inches	Grain										
	Density plants/A	Harvest population plants/A	Broken stalks %	Yield bu/A	Moisture %	Test weight lbs/bu	Grower return \$/A	Silk doy	Yield Components @ 0% moisture		
									Ear number ears/A	Kernels number no./ear	100 Kernel wt grams
	25000	29206	2	203	22.4	53	350	176	29538	463	28.1
	30000	34018	1	207	21.8	53	360	177	35014	413	27.1
	35000	39494	6	202	20.9	53	355	177	39992	372	25.6
	40000	42481	14	184	21.3	54	321	177	43643	347	23.1
15 inches		36010	7	195	21.7	54	338	176	37171	395	25.8
30 inches		36590	5	204	21.4	53	355	177	36922	403	26.1
15 inches	25000	27878	4	201	22.6	53	344	176	28210	481	27.9
15 inches	30000	33189	2	204	22.0	53	353	176	34848	411	27.1
15 inches	35000	39826	6	197	20.5	54	347	177	40158	368	25.1
15 inches	40000	43145	15	178	21.7	55	308	176	45468	319	23.2
30 inches	25000	30533	0	206	22.1	53	356	176	30865	445	28.3
30 inches	30000	34848	0	211	21.5	53	367	177	35180	416	27.1
30 inches	35000	39163	5	207	21.2	52	362	177	39826	375	26.1
30 inches	40000	41818	14	190	20.9	54	333	177	41818	375	22.9
Mean		36300	6	199	21.6	53	346	177	37047	399	26.0
Probability(%)											
Row Space (S)		57.7	98.3	17.5	24.2	6.5	13.5	0.4	84.3	65.3	36.6
Plant Density (D)		0.0	2.3	7.3	0.5	3.2	7.8	23.8	0.0	0.2	0.0
S x D		48.5	98.3	98.0	21.0	11.6	97.0	7.1	37.4	37.1	51.4
LSD(0.10)											
Row Space (S)		NS	NS	NS	NS	1	NS	0	NS	NS	NS
Plant Density (D)		2532	7.3	15	0.6	1	26	NS	3062	44	0.8
S x D		NS	NS	NS	NS	NS	NS	1	8	NS	NS
CV(%)											
		7	126	8	3	1	7	0	8	11	3

continued

Table C-58. Plant Density and Row Spacing Effects on Corn Grain and Silage Yield and Quality
 (continued) **Arlington, WI - 2004**

Row spacing inches	Whole Plant												
	Density plants/A	Harvest population plants/A	Yield tons/A	Moisture %	Kernel milk %	Crude protien %	ADF %	NDF %	In Vitro Digest %	NDFD %	Starch %	Milk per	
												Ton lbs/T	Acre lbs/A
	25000	29167	9.3	52.4	34	6.9	20.1	43.3	83.4	61.5	38.9	3384	31528
	30000	33167	10.0	49.7	33	6.7	19.8	43.2	83.6	62.0	39.4	3396	34017
	35000	38167	9.5	45.6	23	6.6	19.7	43.3	83.5	61.9	39.9	3371	32220
	40000	43167	9.9	47.1	27	6.6	19.9	43.0	83.0	60.7	40.1	3325	33104
15 inches		34417	9.6	48.9	27	6.6	20.5	44.2	83.0	61.6	38.5	3349	32334
30 inches		37417	9.8	48.5	32	6.8	19.3	42.2	83.7	61.5	40.6	3389	33100
15 inches	25000	27333	8.8	51.7	30	7.0	19.6	42.7	83.7	61.7	39.0	3397	29909
15 inches	30000	33333	10.9	49.0	30	6.6	19.4	42.9	84.1	63.0	39.6	3442	37629
15 inches	35000	36000	9.2	46.4	17	6.3	21.2	45.9	82.6	62.0	37.4	3324	30579
15 inches	40000	41000	9.7	48.6	30	6.3	21.6	45.4	81.7	59.6	37.9	3234	31217
30 inches	25000	31000	9.8	53.1	38	6.9	20.5	43.9	83.0	61.3	38.8	3372	33147
30 inches	30000	33000	9.1	50.5	37	6.7	20.2	43.5	83.1	61.0	39.2	3350	30405
30 inches	35000	40333	9.9	44.8	28	6.9	18.2	40.6	84.4	61.7	42.4	3417	33860
30 inches	40000	45333	10.2	45.5	23	6.9	18.3	40.6	84.4	61.7	42.2	3416	34990
Mean		35917	9.7	48.7	29	6.7	19.9	43.2	83.4	61.5	39.6	3369	32717
Probability(%)													
Row Space (S)		1.5	69.3	74.8	7.0	16.2	30.6	24.0	29.7	75.5	26.7	28.7	46.7
Plant Density (D)		0.0	25.1	2.9	1.7	61.5	99.6	99.9	94.6	12.8	97.1	53.5	37.9
S x D		39.0	0.8	63.4	10.2	54.6	35.4	40.7	17.7	2.5	64.3	6.8	0.5
LSD(0.10)													
Row Space (S)		1903	NS	NS	4.5	NS	NS	NS	NS	NS	NS	NS	NS
Plant Density (D)		2691	NS	3.7	6.3	NS	NS	NS	NS	NS	NS	NS	NS
S x D		NS	0.9	NS	NS	NS	NS	NS	NS	1.4	NS	125	3613
CV(%)													
		7	7	7	21	7	13	10	2	2	12	3	8

FIELD EXPERIMENT HISTORY

Title: Twin Row Corn Strip Trial
Experiment: 06 RS x PD **Trial ID:** 04C53 **Year:** 2004
Personnel: M.G. Bertram
Location: Marshfield, WI **County:** Wood
Supported by: Marshfield Ag. Research Station

Site Information

Field: 4 **Soil Type:** Withee silt loam
Soil Test : **Date:** 10/25/02 **pH** 6.1 **SOM (%)** 3.7 **P (ppm)** 64 **K (ppm)** 107

Plot Management

Tillage Operations: Chisel Plow Field Cultivator

Fertilizer:	<u>Analysis</u>	<u>Rate</u>	<u>Date</u>
Preplant	none	N/A	N/A
Starter	9-11-31	200	5/3/2004
Post plant	none	N/A	N/A
Manure	Manure	9,200 gal	10/3/2003

Herbicide: Lumax 2.25 qt/A **Insecticide:** None

Irrigation: None **Hybrid:** Pioneer 38K06
Planting Date: 5/3/2004 **Planting Depth:** 1.5" **Row Width:** Varies
Target Plant Density: Varies plants per acre **Planting Method:** John Deere 1750 planter
Harvest Date: 11/15/2004 **Harvest Method:** John Deere combine

Notes:

Experimental Design

Design: RCB **Replications:** 3
Plot Size Seeded: 590' x 15' **Experiment Size:** 3.79 A
Harvest Plot size: 590' x 15'

Factors/Treatments:

<u>Row Spacing</u>	<u>Target Population</u>
Single 30"	30000
Twin 6" on 30" centers	45000
	60000

Results: Table C-59.

**Table C-59. Twin Row Corn Strip Trial
Marshfield, WI**

Row Spacing	Target population K ppa	Grain population ppa	Broken Stalks %	Test Weight lb/bu	Grain	
					Moisture %	Yield bu/A
Single		44683	8	52	22.7	156
Twin		44760	9	53	22.4	158
	30	31015	4	53	21.2	152
	45	44489	8	53	22.4	165
	60	58661	14	51	24.0	154
Single	30	30434	5	53	21.3	151
Single	45	44605	8	53	22.5	162
Single	60	59010	11	51	24.4	155
Twin	30	31595	3	53	21.1	153
Twin	45	44373	8	53	22.3	169
Twin	60	58312	17	52	23.7	154
Mean		44722	9	52	22.5	157
<u>Probability (%)</u>						
Row Spacing (S)		>50	34.4	>50	25.7	>50
Population (P)		<0.1	1.5	<0.1	0.1	6.4
S x P		22.4	27.0	32.2	>50	>50
<u>LSD 10%</u>						
Row Spacing (S)		NS	NS	NS	NS	NS
Population (P)		944	5	0	0.9	9
S x P		NS	NS	NS	NS	NS
<u>C.V. (%)</u>						
		2	53	1	4	6