FIELD EXPERIMENT HISTORY

Title: **Plant Density and Hybrid Influence on Corn Grain and Silage Performance**

Experiment: 02PD **Trial ID:** 3054 **Year:** 2007

Personnel: J. G. Lauer, K. D. Kohn and T. H. Diallo

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

Supported By: HATCH

Site Information

Field: ARS 408 **Previous Crop:** Soybean **Soil Type:** Plano Silt Loam

Soil Test: **Date:** 10/5 /07 **pH** 7.0 **OM (%)** 3.3 **P (ppm)** 43 **K (ppm)** 137

Plot Management

Tillage Operations: Chisel Plow Field Cultivator Soil Finisher Cultivated 6/8/07

		Analysis:	Rate lbs/A:	Date:
Fertilizer:	**Preplant :**	46-0-0	325 lbs/A	4 /28/07
	Starter :	9-23-30	150 lbs/A	4 /30/07
	Post plant :	N/A	N/A	N/A
	Manure:	N/A	N/A	N/A

Herbicide: Harness 29 oz/A
Callisto 3 oz/ A

Insecticide: Force 3G 4.4 lb/A

Hybrid: See Factors

Irrigation: None

Planting Date: 4/30/07 **Planting Depth:** 1.5" **Row Width:** 30"

Target Plant Density: See Factors **Planting Method:** Kinze Plot Planter

Harvest Date: S: 9/14/07
G: 10/5/06

Harvest Method: S: New Holland 707
G: Massey Ferguson 8XP

Notes:

Experimental Design

Design: RCB **Replications:** 3

Plot Size Seeded: 20' x 25' **Experiment Size:** 0.92 Acre

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

Harvest Plant Density: N/A **plants per acre**

Factors/Treatments:

Target Plant Density: (plants/A)	Hybrid:
14000 20000 26000 32000 38000 44000 50000 56000	Dekalb DKC50-20 Renk 772Y

Results: Tables C-22.

Table C-22. Plant Density and Hybrid Influence on Corn Grain. Arlington, WI -2007.

		Grain																
Target		Grain		Test	Lodged			Grower	Harvest		Seeds	Plants	Silk	Grain Composition			Ethanol	
Density	Hybrid	Yield	Moisture	Weight	Total	Stalk	Root	Return	plants	ears	planted	emerged	Date	Oil	Starch	Protein	per bu	per A
plants/A		bu/A	%	lbs/bu	%	%	%	$/A	plants/A	ears/A	seeds/A	plants/A	doy	%	%	%	gallons	gallons
	Dekalb DKC50-20(RRYGCB)	224	14.8	58	17	10	7	773	33297	34848	47619	45796	162	3.5	60.2	7.7	2.89	649
	Renk 772YGPLRR	198	14.2	57	2	1	0	685	32769	32967	47619	43940	162	4.1	58.4	8.5	2.83	562
14000		169	14.9	58	1	1	0	582	15972	20724	19008	18018	160	3.8	59.1	8.4	2.85	480
20000		203	14.8	58	0	0	0	699	20064	21384	26928	26004	161	3.8	59.4	8.2	2.85	579
26000		221	14.4	58	1	1	0	761	26532	27060	35640	33594	161	3.9	59.4	8.0	2.86	632
32000		221	14.2	58	1	0	1	762	29172	29304	43560	39138	162	3.8	59.5	7.9	2.88	636
38000		224	14.1	58	9	3	6	773	34980	35244	51480	48807	163	3.8	59.5	7.9	2.87	644
44000		227	14.4	57	15	15	0	784	41976	41976	60192	57288	163	3.8	59.5	7.9	2.87	652
50000		216	14.7	57	17	10	7	745	46860	46860	68112	64449	163	3.8	59.1	8.1	2.86	619
56000		210	14.7	57	30	14	16	724	48708	48708	76032	71643	163	3.6	59.3	8.2	2.87	603
14000	Dekalb DKC50-20(RRYGCB)	180	15.3	59	0	0	0	620	15840	24816	19008	18150	159	3.5	59.7	8.2	2.87	516
14000	Renk 772YGPLRR	158	14.4	57	2	2	0	545	16104	16632	19008	17886	161	4.1	58.4	8.7	2.82	445
20000	Dekalb DKC50-20(RRYGCB)	213	15.2	58	0	0	0	735	20064	21912	26928	27324	160	3.4	60.2	7.9	2.88	614
20000	Renk 772YGPLRR	192	14.4	58	0	0	0	663	20064	20856	26928	24684	162	4.2	58.5	8.5	2.83	543
26000	Dekalb DKC50-20(RRYGCB)	231	15.0	59	2	2	0	798	26664	27456	35640	34914	161	3.5	60.3	7.6	2.90	670
26000	Renk 772YGPLRR	210	13.7	58	0	0	0	725	26400	26664	35640	32274	162	4.2	58.4	8.4	2.83	595
32000	Dekalb DKC50-20(RRYGCB)	239	14.5	59	3	1	2	825	30888	31152	43560	41844	162	3.5	60.6	7.4	2.91	696
32000	Renk 772YGPLRR	203	13.9	57	0	0	0	700	27456	27456	43560	36432	163	4.2	58.5	8.4	2.84	577
38000	Dekalb DKC50-20(RRYGCB)	238	14.6	58	18	6	12	822	35376	35904	51480	49500	162	3.5	60.4	7.5	2.90	692
38000	Renk 772YGPLRR	210	13.6	58	0	0	0	724	34584	34584	51480	48114	164	4.1	58.5	8.4	2.84	596
44000	Dekalb DKC50-20(RRYGCB)	241	14.4	58	27	27	1	831	41712	41712	60192	57420	163	3.5	60.5	7.5	2.90	698
44000	Renk 772YGPLRR	213	14.3	57	3	3	0	737	42240	42240	60192	57156	162	4.1	58.5	8.4	2.84	607
50000	Dekalb DKC50-20(RRYGCB)	230	14.5	58	31	17	14	795	46464	46464	68112	65208	163	3.5	60.1	7.7	2.90	667
50000	Renk 772YGPLRR	201	14.8	57	3	3	0	695	47256	47256	68112	63690	163	4.1	58.2	8.5	2.83	570
56000	Dekalb DKC50-20(RRYGCB)	220	14.5	57	54	24	30	759	49368	49368	76032	72006	163	3.4	60.1	7.7	2.90	639
56000	Renk 772YGPLRR	200	14.8	57	6	3	3	689	48048	48048	76032	71280	162	3.9	58.5	8.7	2.84	567
Mean		211	14.5	58	9	5	4	729	33033	33908	47619	44868	162	3.8	59.3	8.1	2.86	606
Probability(%)																		
Plant Density (D)		0.0	8.1	0.0	0.0	17.8	18.5	0.0	0.0	0.0	-	0.0	0.2	7.4	11.4	0.0	2.0	0.0
Hybrid (H)		1.4	3.7	1.2	5.8	0.7	34.4	1.4	55.6	15.6	-	0.8	6.3	0.0	0.0	0.0	0.0	0.8
D x H		93.4	5.1	0.1	5.6	44.3	36.8	93.3	93.8	23.6	-	0.7	32.1	27.6	50.3	17.6	91.8	89.7
LSD (0.10)																		
Plant Density (D)		12	0.3	0	11	NS	NS	40	2886	2915	-	1091	1	0.0	NS	0.2	0.00	33
Hybrid (H)		13	0.4	0	12	3	NS	45	NS	NS	-	818	1	0.0	0.2	0.1	0.00	38
D x H		NS	0.7	1	16	NS	NS	NS	NS	NS	-	1543	NS	NS	NS	NS	NS	NS
CV(%)		6	3	1	121	224	298	6	9	9	-	2	1	3	1	2	0	6

continued

Table C-22. Plant Density and Hybrid Influence on Silage Preformance.
(continued) **Arlington, WI -2007.**

		Whole Plant																
Target		Harvest		Dry Matter		Kernel	KMR	SMR	VMR	Crude			In Vitro			Milk per	
Density	Hybrid	plants	ears	Yield	Moist	milk	0-5	0-5	0-10	protein	ADF	NDF	Digest	NDFD	Starch	Ton	Acre
plants/A		plants/A	ears/A	T/A	%	%				%	%	%	%	%	%	lbs/T	lbs/A
	Dekalb DKC50-20(RRYGCB)	33396	35310	9.1	53.8	1	0.1	0.3	0.4	6.9	20.8	40.2	81.0	52.8	37.2	3230	29520
	Renk 772YGPLRR	33132	33726	8.7	52.1	1	0.0	0.3	0.4	7.1	21.9	41.3	80.1	51.8	35.5	3166	27579
14000		16632	22044	8.1	58.1	1	0.0	0.7	0.7	7.4	21.4	41.0	80.5	52.3	33.4	3191	25928
20000		20328	22836	8.8	55.2	3	0.2	0.8	1.0	7.3	20.3	39.0	81.5	52.5	37.9	3268	28847
26000		25740	26928	8.6	49.5	1	0.0	0.3	0.4	7.0	20.8	40.1	80.7	51.9	37.7	3212	27872
32000		30756	31152	9.5	52.4	1	0.0	0.2	0.3	6.9	20.4	39.9	81.5	53.6	38.3	3261	30884
38000		37224	37620	8.7	52.9	0	0.0	0.2	0.2	7.1	22.5	42.2	79.4	51.2	35.8	3122	27135
44000		41052	41052	9.2	53.5	0	0.0	0.2	0.2	6.7	21.7	41.3	80.3	52.3	35.6	3179	29326
50000		45804	45936	9.8	46.6	1	0.0	0.2	0.2	6.9	21.5	40.9	80.4	52.1	35.9	3191	31251
56000		48576	48576	8.6	55.2	1	0.0	0.2	0.2	6.8	22.1	41.7	80.0	52.2	35.9	3161	27157
14000	Dekalb DKC50-20(RRYGCB)	16368	23760	8.7	58.1	2	0.1	0.6	0.7	7.2	20.7	40.1	81.2	53.1	34.9	3239	28254
14000	Renk 772YGPLRR	16896	20328	7.5	58.2	0	0.0	0.7	0.7	7.6	22.1	41.8	79.8	51.6	31.9	3144	23602
20000	Dekalb DKC50-20(RRYGCB)	20856	25344	9.0	55.7	5	0.3	0.9	1.2	7.5	20.8	40.4	81.7	54.8	35.5	3267	29650
20000	Renk 772YGPLRR	19800	20328	8.6	54.8	2	0.1	0.7	0.8	7.1	19.9	37.6	81.2	50.2	40.3	3269	28044
26000	Dekalb DKC50-20(RRYGCB)	25872	27456	9.7	50.5	2	0.1	0.4	0.5	7.1	19.7	39.4	81.2	52.4	37.8	3251	31724
26000	Renk 772YGPLRR	25608	26400	7.5	48.6	0	0.0	0.3	0.3	6.9	22.0	40.8	80.1	51.4	37.6	3173	24019
32000	Dekalb DKC50-20(RRYGCB)	31944	32736	9.3	53.7	0	0.0	0.3	0.3	6.6	19.8	39.6	81.8	54.0	39.1	3283	30545
32000	Renk 772YGPLRR	29568	29568	9.7	51.1	2	0.1	0.2	0.3	7.1	21.0	40.3	81.2	53.3	37.4	3239	31224
38000	Dekalb DKC50-20(RRYGCB)	38544	39336	8.8	54.1	0	0.0	0.2	0.2	7.0	21.9	41.4	80.1	51.8	36.8	3165	27910
38000	Renk 772YGPLRR	35904	35904	8.6	51.8	0	0.0	0.2	0.2	7.2	23.1	43.0	78.8	50.6	34.7	3079	26361
44000	Dekalb DKC50-20(RRYGCB)	40392	40392	9.6	54.9	0	0.0	0.2	0.2	6.5	20.5	39.7	81.2	52.8	38.7	3248	30982
44000	Renk 772YGPLRR	41712	41712	8.9	52.1	0	0.0	0.2	0.2	6.9	23.0	42.8	79.3	51.7	32.5	3110	27669
50000	Dekalb DKC50-20(RRYGCB)	44880	45144	8.4	52.5	0	0.0	0.1	0.1	6.7	21.6	40.3	80.2	50.6	36.7	3182	26981
50000	Renk 772YGPLRR	46728	46728	9.0	50.7	2	0.1	0.3	0.4	7.0	21.5	41.4	80.7	53.5	35.1	3199	29401
56000	Dekalb DKC50-20(RRYGCB)	48312	48312	9.4	50.8	2	0.1	0.1	0.2	6.7	21.5	40.8	80.7	52.7	37.6	3208	30118
56000	Renk 772YGPLRR	48840	48840	7.8	59.6	0	0.0	0.2	0.2	7.0	22.8	42.7	79.4	51.7	34.2	3114	24196
Mean		33264	34518	8.8	53.6	1	0.0	0.3	0.4	7.0	21.4	40.7	80.5	52.3	36.3	3198	28141
Probability(%)																	
Plant Density (D)		0.0	0.0	81.2	60.2	8.1	8.1	0.0	0.0	43.4	70.2	67.9	73.8	93.9	55.5	70.9	76.4
Hybrid (H)		77.1	17.0	26.5	91.9	28.8	28.8	100.0	65.8	14.2	22.0	31.2	15.6	39.4	12.8	15.6	16.6
D x H		34.3	4.2	82.6	86.6	20.8	20.8	27.2	14.6	87.0	93.0	84.8	98.9	67.3	56.5	98.5	79.2
LSD (0.10)																	
Plant Density (D)		1819	1927	NS	NS	2	0.1	0.1	0.5	NS	NS	NS	NS	NS	NS	NS	NS
Hybrid (H)		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
D x H		NS	2726	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
CV(%)		6	6	17	13	189	189	40	43	8	11	8	3	6	12	5	18