

FIELD EXPERIMENT HISTORY

Title: Plant Density and Row Spacing Effects on Yield and Quality of Corn Silage
Experiment: 06RSxPD **Trial ID:** 3647 **Year:** 2012
Personnel: J.G. Lauer, K.D. Kohn and T.H. Diallo
Location: Arlington, WI **County:** Columbia
Supported By: HATCH

Site Information

Field: ARS406 **Previous Crop:** Soybean **Soil Type:** Plano Silt Loam
Soil Test: **Date:** 10/1 /12 **pH:** 6.5 **OM (%)** 4.1 **P (ppm)** 72 **K (ppm)** 219

Plot Management

Tillage Operations: Disk Ripper Field Cultivator Turbo-Till

	<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:	Dual II Mag 1.5 pt/A Hornet 4.0 oz/A Accernt Q 0.9 oz/A Callisto 3.0 oz/A	Insecticide: None Hybrid: See Factors	

Planting Date: 5/14/12 **Planting Depth:** 1.5" **Row Width:** See Factors
Target Plant Density: See Factors **Planting Method:** Kinze 2000 Interplant planter
Harvest Date: 9/18/12 **Harvest Method:** USDA Kemper Silage Harvester
Notes:

Experimental Design

Design: RCB split-plot **Replications:** 3
Plot Size Seeded: 10' x 50" **Experiment Size:** 1.7 A
Harvest Plot Size: 5' x 46' **Harvest Plant Density:** See Factors

Factors/Treatments:

<u>Row Spacing:</u>	<u>Plant Density: (plants/A)</u>	<u>Hybrids:</u>
15 inch	26000, 32000,	Mycogen F2F665(bmr)
30 inch	38000 and 44000	Pioneer 35F48AM1
		Pioneer P1376XR(bmr)

Results: Table C-25.

**Table C-25. Plant Density and Row Spacing Effects on Corn Silage Yield and Quality
Arlington, WI - 2012.**

Row spacing inches	Density plants/A	Hybrid	Whole Plant																
			Dry Matter		Kernel milk	Harvest density	Plant Silk	Plant height	KMR 0-5	SMR 0-5	VMR 0-10	Crude		In Vitro			Milk per		
			yield tons/A	Moisture %								protein %	ADF %	NDF %	Digest %	NDFD %	Starch %	Ton lbs/T	Acre lbs/A
		Mycogen F2F665	8.1	62.9	57	36861	208	100	2.9	2.6	5.5	8.4	24	43	86	67	35	3600	29043
		Pioneer 35F48AM1	9.1	57.2	39	37403	203	93	2.0	2.0	3.9	8.3	20	35	87	62	42	3695	33672
		Pioneer P1376XR	7.4	64.5	65	36278	208	100	3.3	2.6	5.9	8.8	23	41	86	67	34	3636	26862
	26000		8.2	62.1	49	29093	206	97	2.5	2.7	5.2	8.5	22	39	87	66	38	3667	29901
	32000		8.3	61.9	55	34704	206	98	2.7	2.4	5.2	8.5	22	40	87	66	37	3652	30402
	38000		8.0	60.2	56	38889	206	98	2.8	2.2	5.0	8.4	22	39	86	65	38	3649	29182
	44000		8.3	61.9	55	44704	207	99	2.8	2.3	5.1	8.5	23	41	86	65	36	3606	29950
	26000	Mycogen F2F665	8.5	63.1	48	29222	208	98	2.4	2.7	5.2	8.3	24	42	86	67	36	3611	30715
	26000	Pioneer 35F48AM1	8.5	57.4	35	30889	202	94	1.8	2.0	3.8	8.5	20	35	87	62	42	3695	31271
	26000	Pioneer P1376XR	7.5	65.7	65	27167	208	97	3.3	3.3	6.6	8.8	22	40	87	68	35	3695	27717
	32000	Mycogen F2F665	8.3	63.0	63	34333	208	100	3.2	2.8	6.0	8.4	24	43	86	67	36	3607	29920
	32000	Pioneer 35F48AM1	9.4	59.2	37	34056	203	93	1.9	2.1	4.0	8.5	20	35	87	63	41	3701	34672
	32000	Pioneer P1376XR	7.2	63.6	63	35722	208	100	3.2	2.4	5.5	8.7	23	41	87	67	35	3649	26614
	38000	Mycogen F2F665	7.5	62.5	63	39944	208	102	3.2	2.7	5.8	8.4	24	43	86	67	35	3593	27158
	38000	Pioneer 35F48AM1	9.2	55.7	46	39556	203	93	2.3	1.8	4.0	8.1	20	35	87	62	42	3690	33956
	38000	Pioneer P1376XR	7.2	62.5	60	37167	208	97	3.0	2.1	5.1	8.7	23	40	87	67	35	3665	26432
	44000	Mycogen F2F665	7.9	62.8	54	43944	209	101	2.7	2.3	5.0	8.6	25	44	86	68	34	3590	28380
	44000	Pioneer 35F48AM1	9.4	56.6	38	45111	204	91	1.9	2.0	3.9	8.0	19	34	87	61	43	3694	34788
	44000	Pioneer P1376XR	7.5	66.4	72	45056	208	106	3.6	2.6	6.2	8.8	25	44	85	66	31	3533	26683
15			8.3	61.9	54	36444	206	98	2.7	2.6	5.2	8.4	22	40	86	65	37	3634	30239
30			8.1	61.1	54	37250	207	97	2.7	2.2	4.9	8.5	22	40	87	66	37	3653	29479
15		Mycogen F2F665	8.1	63.1	57	38222	208	101	2.8	2.9	5.7	8.5	25	43	86	67	36	3588	29155
15		Pioneer 35F48AM1	9.0	58.3	36	36556	203	92	1.8	2.1	3.9	8.3	20	36	86	62	41	3675	33166
15		Pioneer P1376XR	7.8	64.5	68	34556	208	101	3.4	2.8	6.2	8.6	23	41	86	67	34	3640	28395
30		Mycogen F2F665	8.0	62.6	58	35500	209	100	2.9	2.4	5.3	8.4	24	43	86	68	35	3612	28931
30		Pioneer 35F48AM1	9.2	56.2	42	38250	203	94	2.1	1.9	4.0	8.2	19	34	87	62	43	3715	34177
30		Pioneer P1376XR	7.0	64.6	62	38000	208	99	3.1	2.4	5.5	9.0	23	42	86	68	34	3632	25329

continued

Table C-25. Plant Density and Row Spacing Effects on Corn Silage Yield and Quality(continued) **Arlington, WI - 2012.**

Row spacing inches	Density plants/A	Hybrid	Whole Plant																
			Dry Matter		Kernel	Harvest	Plant	KMR	SMR	VMR	Crude		In Vitro			Milk per			
			yield	Moisture	milk	density	Silk	height	0-5	0-5	0-10	protein	ADF	NDF	Digest	NDFD	Starch	Ton	Acre
			tons/A	%	%	plants/A	doy	inches				%	%	%	%	%	%	lbs/T	lbs/A
15	26000		8.2	62.7	50	30074	206	100	2.5	2.8	5.3	8.4	23	40	86	65	37	3625	29809
15	32000		8.3	62.1	51	34519	207	97	2.6	2.5	5.1	8.5	22	39	87	66	37	3661	30250
15	38000		8.6	60.6	59	38222	206	97	2.9	2.4	5.4	8.4	22	38	87	66	39	3680	31715
15	44000		8.1	62.3	54	42963	206	97	2.7	2.5	5.2	8.4	24	42	85	64	35	3571	29181
30	26000		8.1	61.4	49	28111	206	93	2.4	2.6	5.0	8.6	21	38	87	67	39	3709	29993
30	32000		8.3	61.7	58	34889	206	98	2.9	2.3	5.3	8.6	22	40	86	66	37	3643	30554
30	38000		7.4	59.8	54	39556	206	98	2.7	1.9	4.6	8.4	23	40	86	65	36	3619	26649
30	44000		8.4	61.6	56	46444	208	101	2.8	2.1	4.9	8.5	22	40	86	66	36	3640	30720
15	26000	Mycogen F2F665	8.4	64.4	53	31111	209	100	2.7	2.9	5.6	8.2	25	44	84	65	34	3500	29396
15	26000	Pioneer 35F48AM1	8.4	58.4	27	33778	201	98	1.3	2.1	3.4	8.5	20	36	86	62	42	3669	30808
15	26000	Pioneer P1376XR	7.9	65.4	70	25333	208	103	3.5	3.3	6.8	8.6	22	39	87	68	36	3707	29224
15	32000	Mycogen F2F665	8.6	62.7	63	36000	207	101	3.2	2.8	6.0	8.4	24	42	86	67	37	3626	31172
15	32000	Pioneer 35F48AM1	9.1	59.9	32	33778	204	93	1.6	2.1	3.7	8.6	20	36	87	63	40	3692	33670
15	32000	Pioneer P1376XR	7.1	63.7	58	33778	209	97	2.9	2.6	5.6	8.5	22	41	87	67	34	3666	25906
15	38000	Mycogen F2F665	7.8	61.9	58	40889	208	103	2.9	3.2	6.1	8.8	23	41	87	68	38	3665	28680
15	38000	Pioneer 35F48AM1	9.3	57.3	50	37778	203	90	2.5	1.8	4.3	8.0	20	36	86	62	42	3675	34145
15	38000	Pioneer P1376XR	8.7	62.6	68	36000	208	100	3.4	2.3	5.8	8.5	21	39	87	67	37	3699	32319
15	44000	Mycogen F2F665	7.7	63.2	52	44889	207	99	2.6	2.5	5.1	8.6	26	44	85	67	34	3562	27371
15	44000	Pioneer 35F48AM1	9.3	57.4	35	40889	204	88	1.8	2.3	4.0	8.0	20	35	86	61	42	3664	34042
15	44000	Pioneer P1376XR	7.4	66.3	77	43111	207	105	3.8	2.8	6.6	8.6	25	45	84	65	30	3487	26129
30	26000	Mycogen F2F665	8.6	61.7	43	27333	208	96	2.2	2.5	4.7	8.4	22	39	88	69	38	3723	32034
30	26000	Pioneer 35F48AM1	8.5	56.4	43	28000	203	91	2.2	1.9	4.1	8.5	19	34	87	62	43	3721	31734
30	26000	Pioneer P1376XR	7.1	66.0	60	29000	208	92	3.0	3.3	6.3	9.0	23	41	87	68	35	3684	26210
30	32000	Mycogen F2F665	8.0	63.2	63	32667	209	99	3.2	2.8	6.0	8.5	25	44	86	68	34	3587	28667
30	32000	Pioneer 35F48AM1	9.6	58.5	43	34333	202	93	2.2	2.1	4.3	8.4	20	35	87	63	42	3709	35673
30	32000	Pioneer P1376XR	7.4	63.4	68	37667	207	102	3.4	2.1	5.5	8.9	23	42	86	67	35	3633	27323
30	38000	Mycogen F2F665	7.3	63.1	68	39000	208	102	3.4	2.1	5.6	8.1	26	45	85	66	33	3520	25636
30	38000	Pioneer 35F48AM1	9.1	54.1	42	41333	203	97	2.1	1.7	3.8	8.2	19	35	87	62	43	3705	33767
30	38000	Pioneer P1376XR	5.7	62.4	52	38333	207	94	2.6	1.9	4.5	9.0	24	42	86	68	33	3632	20545
30	44000	Mycogen F2F665	8.1	62.5	57	43000	210	102	2.8	2.2	5.0	8.6	25	43	86	68	34	3619	29389
30	44000	Pioneer 35F48AM1	9.5	55.7	42	49333	205	95	2.1	1.8	3.9	7.9	19	34	87	61	43	3723	35533
30	44000	Pioneer P1376XR	7.6	66.5	68	47000	208	107	3.4	2.3	5.8	9.1	24	44	86	67	31	3578	27238
Mean			8.2	61.5	54	36847	206	98	2.7	2.4	5.1	8.5	22	40	86	65	37	3644	29859

continued

Table C-25. Plant Density and Row Spacing Effects on Corn Silage Yield and Quality(continued) **Arlington, WI - 2012.**

	Whole Plant																
	Dry Matter		Kernel milk	Harvest density	Silk doy	Plant height	KMR 0-5	SMR 0-5	VMR 0-10	Crude		In Vitro			Milk per		
	yield	Moisture								protein	ADF	NDF	Digest	NDFD	Starch	Ton	Acre
tons/A	%	%	plants/A	inches	%	%	%	%	%	%	lbs/T	lbs/A					
Probability(%)																	
Row Spacing (S)	32.2	42.7	83.6	23.1	62.8	69.0	83.6	7.9	18.2	41.9	74.2	83.3	30.8	48.6	94.0	37.2	48.2
Density (D)	67.4	26.4	22.8	0.0	66.0	57.4	22.8	1.9	83.5	83.6	24.4	21.7	13.0	30.0	12.0	9.6	76.1
S x D	8.0	96.6	36.3	1.2	27.9	7.8	36.3	54.1	20.9	86.6	8.5	10.2	3.4	33.5	13.7	2.4	5.8
Hybrid (H)	0.0	0.0	0.0	16.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0	0.0
S x H	14.1	15.3	9.8	0.0	20.9	55.9	9.8	59.1	9.6	1.3	24.6	22.0	59.7	75.9	27.9	44.9	13.0
D x H	15.1	3.2	6.2	2.4	65.6	18.0	6.2	0.9	0.1	4.3	46.1	21.3	7.2	31.1	20.3	7.4	20.5
R x D x H	32.5	69.2	13.2	0.4	43.8	50.7	13.2	47.1	73.5	38.3	26.2	32.3	2.3	24.4	30.8	3.5	29.7
LSD(0.10)																	
Row Spacing (S)	NS	NS	NS	NS	NS	NS	NS	0.3	NS	NS	NS	NS	NS	NS	NS	NS	NS
Density (D)	NS	NS	NS	1193	NS	NS	NS	0.2	NS	NS	NS	NS	NS	NS	NS	41	NS
S x D	0.7	NS	NS	1687	NS	5	NS	NS	NS	NS	1	NS	1	NS	NS	58	2810
Hybrid (H)	0.4	1.0	5	NS	1	3	0.2	0.2	0.3	0	1	1	0	1	1	32	1609
S x H	NS	NS	7	1384	NS	NS	0.3	NS	0.4	0	NS	NS	NS	NS	NS	NS	NS
D x H	NS	2.2	10	1958	NS	NS	0.5	0.4	0.6	0	NS	NS	1	NS	NS	65	NS
R x D x H	NS	NS	NS	2769	NS	NS	NS	NS	NS	NS	NS	NS	1	NS	NS	92	NS