

FIELD EXPERIMENT HISTORY

Title: Plant Density and Row Spacing Effects on Yield and Quality of Corn Silage
Experiment: 06PDxRS **Trial ID:** 6262 **Year:** 2018
Personnel: Joe Lauer, Kent Kohn, Thierno Diallo
Location: Arlington, WI **County:** Columbia
Supported By: HATCH

Site Information

Field: ARS411 **Previous Crop:** Alfalfa **Soil Type:** Plano Silt Loam
Soil Test: **Date:** 5 /1 /18 **pH** 6.2 **OM (%)** 3.5 **P (ppm)** 37 **K (ppm)** 106

Plot Management

Tillage Operations: Disk Chisel Field Cultivator

	<u>Analysis:</u>	<u>Rate lbs/A:</u>	<u>Date:</u>
Fertilizer:			
Preplant :	46-0-0	250 lbs/A	N/A
Starter :	N/A	N/A	N/A
Post plant :	N/A	N/A	N/A
Manure:	Dairy	13235 gal/A	N/A

Herbicide: Resicore 80.0 oz/A **Insecticide:** None
 Simazine 4L16.0 oz/A **Hybrid:** Jung 46SS427RIB
 None

Planting Date: 5/25/18 **Planting Depth:** 1.5" **Row Width:** See Factors

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

Harvest Date: S: 9/24/18 **Harvest Method:** S:USDA Kemper
 G:10/12/18 G:MF 8XP

Experimental Design

Design: RCB **Replications:** 3
Plot Size Seeded: 10' x 75' **Experiment Size:** 1.0 Acre
Harvest Plot Size: S:3.75' x 23' **Harvest Plant Density:** 33210
 G:5' x 47'

Factors/Treatments:

<u>Row Spacing:</u>	<u>Plant Density: (plants/A)</u>
1) 15 inch	1) 26000
2) 30 inch	2) 32000
	3) 38000
	4) 44000

Results: Table 1806-01.

**Table: 1806-01. Plant Density and Row Spacing Effects on Corn Silage Yield and Quality
Arlington, WI - 2018.**

Target Density	Row spacing	Grain							
		Harvest Density	Yield	Moisture	Test weight	Lodged			AGI \$3.40
						plants/A	bu/A	%	
	15	36404	229	23.5	53.9	6	3	3	690
	30	36715	224	24.2	53.2	6	6	1	673
26000		31114	223	24.3	53.4	2	1	1	666
32000		35470	230	23.7	53.6	2	1	2	691
38000		37752	231	23.4	53.6	9	5	4	695
44000		41901	225	24.0	53.6	12	12	0	674
26000	15	33189	226	23.9	53.6	3	1	1	678
32000	15	35678	230	23.5	53.8	4	1	3	693
38000	15	36922	227	22.9	54.2	16	9	8	686
44000	15	39826	235	23.8	54.0	3	2	1	705
26000	30	29040	219	24.8	53.2	1	0	1	655
32000	30	35263	230	23.9	53.3	1	0	1	689
38000	30	38582	234	23.8	53.0	2	2	0	704
44000	30	43975	215	24.2	53.2	21	21	0	643
Mean		36559	227	23.8	53.6	6	5	2	682
Probability(%)									
Row Spacing (S)		76.4	10.1	6.4	0.7	98.9	20.1	8.4	6.0
Density (D)		0.0	16.1	21.9	89.1	5.1	0.2	37.3	10.1
S x D		6.7	2.3	91.0	58.0	0.8	0.1	20.6	3.1
LSD (0.10)									
Row Spacing (S)		NS	NS	0.6	0	NS	NS	2	15
Density (D)		2531	NS	NS	NS	7	4	NS	NS
S x D		3580	10	NS	NS	10	6	NS	30

Continued

Table: 1806-01. Plant Density and Row Spacing Effects on Corn Silage Yield and Quality

(continued)

Arlington, WI - 2018.

Target Density plants/A	Row spacing inches	Whole Plant															
		Dry Matter		Harvest	Ear	Kernel	KMR	SMR	VMR	Crude			<i>In Vitro</i>		Milk per		
		yield	Moisture	Density	Density	milk	0-5	0-5	0-10	protein	ADF	NDF	Digest	NDFD	Starch	Ton	Acre
		tons/A	%	plants/A	Ear/A	%				%	%	%	%	%	%	lbs/T	lbs/A
	15	10.2	47.2	29924	31560	2.7	0.1	0.1	0.2	6.6	19.1	35.8	84.1	55.8	37.1	3108	31624
	30	10.0	46.9	29798	31052	2.5	0.1	0.1	0.3	6.4	18.8	35.5	84.4	56.0	37.6	3120	31221
26000		9.4	50.0	24852	25568	1.2	0.1	0.1	0.2	6.6	18.9	35.7	84.1	55.6	36.8	3104	29207
32000		10.1	47.7	28956	29897	2.5	0.1	0.1	0.2	6.6	19.1	35.7	84.2	56.0	37.4	3111	31582
38000		10.5	45.5	31860	32638	3.3	0.2	0.1	0.3	6.6	17.9	34.4	85.1	56.7	38.9	3166	33292
44000		10.3	45.0	33775	37120	3.3	0.2	0.1	0.3	6.3	19.9	36.7	83.5	55.2	36.3	3073	31608
26000	15	9.5	50.7	26094	26767	0.7	0.0	0.1	0.1	7.0	17.6	33.9	84.9	55.6	38.9	3166	29962
32000	15	10.5	46.5	30134	32323	0.0	0.0	0.1	0.1	6.5	19.3	36.2	83.9	55.7	36.6	3080	32413
38000	15	10.3	44.7	30639	32323	3.3	0.2	0.1	0.3	6.6	18.2	34.9	84.8	56.5	38.2	3155	32475
44000	15	10.4	46.7	32828	34828	6.7	0.3	0.1	0.4	6.3	21.1	38.0	82.9	55.3	34.7	3030	31646
26000	30	9.3	49.3	23611	24368	1.7	0.1	0.2	0.3	6.2	20.2	37.5	83.3	55.7	34.7	3043	28452
32000	30	9.8	48.8	27777	27471	5.0	0.3	0.1	0.4	6.6	18.8	35.3	84.6	56.3	38.2	3141	30751
38000	30	10.7	46.2	33080	32954	3.3	0.2	0.1	0.3	6.6	17.6	34.0	85.4	57.0	39.6	3178	34109
44000	30	10.1	43.3	34722	39412	0.0	0.0	0.1	0.1	6.2	18.7	35.3	84.2	55.1	37.9	3117	31571
Mean		10.1	47.0	29861	31306	2.6	0.1	0.1	0.2	6.5	18.9	35.6	84.2	55.9	37.3	3114	31422
Probability(%)																	
Row Spacing (S)		30.5	64.7	88.8	59.2	94.6	94.6	9.5	85.1	27.2	77.4	76.2	61.3	59.7	64.9	71.9	59.5
Density (D)		0.2	0.0	0.0	0.1	91.1	91.1	51.4	97.1	18.6	30.4	38.3	16.4	18.3	39.1	29.4	1.3
S x D		14.5	0.4	12.6	5.5	42.7	42.7	39.5	38.5	7.5	13.3	10.7	17.0	91.9	13.0	16.1	39.3
LSD (0.10)																	
Row Spacing (S)		NS	NS	NS	NS	NS	NS	0.0	NS	NS	NS	NS	NS	NS	NS	NS	NS
Density (D)		0.4	1.2	2200	2447	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
S x D		NS	1.7	NS	3453	NS	NS	NS	NS	0.4	NS	NS	NS	NS	NS	NS	NS