

SWEET CORN VARIETY EVALUATION FOR THE TREASURE VALLEY

Clint Shock, Erik Feibert, Greg Willison and Monty Saunders
Malheur Experiment Station
Oregon State University
Ontario, Oregon

Objectives

Sweet corn and supersweet corn varieties were evaluated for agronomic and processing performance.

Procedures

Two trials were conducted on a Owyhee silt loam following sugar beets. One hundred pounds per acre of phosphate and 10 lbs per acre of zinc were plowed down in the fall of 1994. The was field was then groundhogged twice and worked into 30-inch beds. Alachlor (Partner) at 3 lbs ai/ac was broadcast and incorporated with a bed harrow on April 10, 1995. Eighteen supersweet corn (SH₂) and 17 sweet corn (SU₁) varieties were planted in separate trials. Each trial had a randomized complete block design with five replicates. The seed had standard fungicide seed treatments applied by the suppliers. The supersweet varieties were planted on April 26 and the sweet varieties on May 12. Seed was planted at 2-inch depth using an Amalco cone seeder on a John Deere 77 Flexi Planter.

A soil sample taken on May 5 showed 84 lbs per acre of available N in the upper two feet of soil. Urea at 150 lb N/ac was sidedressed on June 8. The field was furrow irrigated as needed on alternate furrows starting on May 31.

All plots in the supersweet trial were evaluated for vigor on May 12. Vigor was a subjective evaluation based on stand, uniformity, overall growth, color and health. Following emergence counts on May 12, May 23, and May 30, (only May 30 for the sweet corn) all plots were thinned to 24000 plants/ac (1 plant every 8.71 inches) on June 10. Starting on July 5, the silk stage of 20 plants in one of the middle two rows of each plot in the first replicate was evaluated. Varieties were considered to be at the mid-silk stage when 40 to 60% of the plants were silking. About 16 days after the mid-silk stage, ear samples from the border rows were taken and analyzed for moisture content to determine the stage of maturity. The target ear moisture for harvest was 78% for the supersweet varieties and 71% for the sweet varieties.

At harvest all ears in the central 15 feet of the middle two rows in each plot were picked and weighed. A 10 ear subsample was weighed, shucked, weighed and evaluated for length, maximum diameter, diameter 6 inches from the base, and kernel row number. Ear taper was calculated by the difference between the maximum diameter and the diameter at 6 inches from

the base. Ear taper is a descriptive measure of ear shape; the higher the ear taper, the less cylindrical the shape of the ear. Another subsample was taken to the American Fine Foods processing lab and evaluated for moisture and processing recovery. The processing recovery was calculated as the percentage of the weight of the unhusked ears that was recovered as cut corn. Processing recovery data for each variety was based on a composite sample and was not replicated.

Results and Discussion

Emergence for the supersweet corn started on May 9. Varieties HMX 2384S, Zenith, XPH 3091, XPH 3121, Krispy King, GSS 6273, Endeavour, and C&S 710 had among the highest emergence on May 12 (Table 1). Supersweet Jubilee and Sweet Ear had among the lowest subjective estimates of vigor and GSS 6273, Challenger, and HMX2384S had high subjective estimates of vigor on May 12. Final emergence counts on May 30 ranged from 50 to 91%. GSS 6273 and HMX 2384S had among the highest emergence on May 30. Yield of Supersweet Jubilee (50% emergence) could have been compromised by low stand, despite the high seeding rate. Varieties GSS 6273 and Marvel lodged heavily. Yields of unhusked ears ranged from 8 to 13 t/ac (Table 2). Krispy King, Marvel, Shaker, and HM 701 had among the highest yield. Marvel, Shaker, Challenger, and HM701 had ears with among the least taper (most cylindrical ears). Recovery of cut corn ranged from 33.1 to 54.0 % among varieties.

Emergence for the sweet corn started on May 22 and ranged from 30 to 90% (Table 3). Soil conditions were less favorable for emergence of the sweet corn than for the supersweet varieties. Yield of variety DMC 2035 (30% emergence) could have been compromised by low stand, despite the high seeding rate. Yields of unhusked ears ranged from 8 to 11 t/ac. GS 1861, GS 9056, Splendor, Tracer, and DMC 20-38 had among the highest yields. Elite and GS9056 had ears with among the least taper (most cylindrical ears). Recovery of cut corn ranged from 32.9 to 54.8 %.

Acknowledgments

Support for this study was provided by the Oregon Processed Vegetable Commission, American Fine Foods Inc., and Rogers/Sandoz, Ferry Morse, Crookham, Asgrow, and Harris-Moran Seed Companies.

Table 1. Supersweet corn stand counts. Corn was planted on April 26, 1995 and emergence started on May 9. Malheur Experiment Station, Oregon State University,

Variety	Seed source ¹	Stand count		
		May 12	May 23	May 30
		----- % -----		
Krispy King	1	69.2	90.5	87.0
Supersw. Jubilee	1	6.7	53.7	50.3
GSS 6273	1	68.0	94.2	91.5
Sweet Ear	2	18.7	72.8	68.0
Victor	2	52.3	82.7	78.3
Marvel	3	42.2	73.0	69.0
Contender	3	31.7	67.7	65.3
C & S 710	3	68.2	85.7	84.2
Shaker	4	37.2	73.2	71.2
Challenger	4	60.7	91.2	83.3
Endevour	4	68.2	87.8	84.8
Sheba	4	57.8	85.0	83.3
XPH 3091	4	75.7	90.7	89.5
XPH 3121	4	70.0	89.7	83.8
HM 701	5	47.2	80.7	77.2
HMX 4399S	5	29.7	87.0	82.2
Zenith	5	69.7	85.7	82.7
HMX 2384S	5	70.5	91.3	90.8
Average		52.4	82.4	79.0
LSD (0.05)		13.3	7.5	5

¹Sources: 1= Rogers/Sandoz, 2= Ferry-Morse, 3= Crookham, 4= Asgrow, 5= Harris-Moran

Table 3. Yield and quality of sweet corn varieties in 1995. Malheur Experiment Station, Oregon State University, Ontario, Oregon.

Variety	Seed source ¹	Days to mid-silk ²	Days to harvest ²	Degree days to harvest ³	Emergence %	Yield ⁴ t/ac	Harvest date	Ear weight lb	Ear length inches	Max. ear diameter	Taper ⁵	Rows #	Moisture %	Recovery ⁶
GS 9056	1	63	92	1,351	78.3	11.2	August 21	0.35	9.2	1.9	0.15	19.3	68.9	51.7
GS 1861	1	52	80	1251	85.7	11.0	August 9	0.33	8.6	2.0	0.31	18.7	69.6	47.4
Elite	1	62	89	1319	86.3	9.5	August 18	0.33	8.4	1.9	0.17	19.5	72.5	43.8
FMX 333	2	52	80	1251	78.5	10.2	August 9	0.31	8.6	2.0	0.32	17.9	70.0	50.4
Excalibur	2	62	88	1314	91.0	10.2	August 17	0.31	8.5	2.0	0.32	20.5	71.2	45.1
StylePak	2	61	89	1319	89.8	9.9	August 18	0.33	8.7	1.9	0.23	20.7	72.0	44.9
FMX 293	2	61	87	1314	87.2	9.5	August 16	0.33	8.9	2.0	0.26	19.8	70.8	51.7
Splendor	3	61	87	1314	87.5	11.3	August 16	0.33	8.8	2.0	0.28	21.8	70.7	49.9
Bolero	3	56	85	1303	86.8	10.9	August 15	0.31	7.9	2.0	0.43	17.4	69.6	54.8
Bingo	3	54	80	1251	82.5	9.1	August 9	0.29	7.6	2.0	0.55	18.7	69.2	51.1
Tracer	4	62	88	1314	89.8	11.0	August 17	0.39	9.3	2.1	0.21	17.5	75.8	48.6
More	4	62	92	1351	89.3	10.0	August 21	0.30	8.1	2.0	0.39	19.4	66.6	44.2
DMC 20-38	5	61	88	1314	76.2	11.9	August 17	0.36	8.7	2.0	0.27	19.3	72.3	32.9
DMC 20-04	5	56	85	1303	84.0	9.8	August 15	0.26	8.2	1.9	0.44	16.6	65.8	46.9
DMC 20-10	5	54	85	1303	90.5	9.8	August 15	0.27	8.2	1.9	0.44	16.5	66.9	49.6
HMX 4397	5	61	88	1314	79.8	9.3	August 17	0.35	8.5	2.1	0.33	21.3	72.8	51.3
DMC 20-35	5	63	92	1351	27.0	8.1	August 21	0.30	8.5	2.0	0.42	16.3	69.7	40.7
Average		59	87	1308	81.8	10.1		0.32	8.5	2.0	0.33	18.9	70.3	47.4
LSD (0.05)					4.7	0.8		0.02	0.2	0.1	0.06	0.8		

¹Sources: 1= Rogers/Sandoz, 2= Ferry-Morse, 3= Crookham, 4= Asgrow, 5= Harris-Moran

²from emergence.

³Degree days (50 - 86 °F) from emergence

⁴yield of unhusked ears.

⁵max. diameter minus diameter 6" from the base.

⁶% of unhusked ear weight recovered as cut corn.

Table 2. Yield and quality of supersweet corn varieties in 1995. Malheur Experiment Station, Oregon State University, Ontario, Oregon.

Variety	Seed source ¹	Days to mid-silk ²	Days to harvest ²	Degree days to harvest ³	Vigor ⁴	Yield ⁵	Harvest date	Ear weight	Ear length	Max. ear diameter	Taper ⁶	Rows	Moisture	Recovery ⁷
					1-5	t/ac		lb	---- inches ----	#	----- % -----			
Krispy King	1	64	91	1315	4.8	13.5	August 8	0.36	8.0	19.0	0.25	19.0	76.9	48.8
Super Sw. Jubilee	1	70	93	1331	1.2	10.0	August 10	0.31	8.6	18.1	0.25	18.1	76.7	50.6
GSS 6273	1	70	93	1331	5.0	9.5	August 10	0.31	8.7	20.1	0.31	20.1	75.8	33.1
Sweet Ear	2	66	91	1315	2.4	12.5	August 8	0.40	9.0	18.1	0.24	18.1	76.0	54.0
Victor	2	66	91	1315	3.9	12.1	August 8	0.36	8.6	19.6	0.22	19.6	75.8	47.0
Marvel	3	66	90	1309	3.5	13.1	August 7	0.35	8.8	18.8	0.19	18.8	75.6	35.8
Contender	3	61	90	1309	3.0	11.2	August 7	0.34	8.5	16.7	0.20	16.7	75.8	51.1
C & S 710	3	62	91	1315	4.3	11.1	August 8	0.32	8.5	18.8	0.29	18.8	76.1	46.7
Shaker	4	66	90	1309	3.3	13.0	August 7	0.30	8.9	16.9	0.19	16.9	76.1	43.2
Challenger	4	66	90	1309	5.0	11.7	August 7	0.31	8.5	18.0	0.16	18.0	76.8	46.9
Endevour	4	64	91	1315	4.1	11.4	August 8	0.30	8.3	18.4	0.27	18.4	75.8	47.4
Sheba	4	59	84	1220	3.9	11.0	July 31	0.25	8.1	14.6	0.38	14.6	76.0	45.1
XPH 3091	4	70	93	1331	4.2	10.5	August 10	0.31	8.7	19.2	0.33	19.2	75.2	45.4
XPH 3121	4	70	92	1322	4.1	8.7	August 9	0.25	8.3	18.4	0.29	18.4	76.1	43.0
HM 701	5	65	90	1309	3.8	13.0	August 7	0.33	8.7	18.0	0.17	18.0	77.7	36.2
HMX 4399S	5	74	93	1331	4.0	10.9	August 10	0.33	9.2	19.8	0.40	19.8	76.5	36.9
Zenith	5	70	92	1322	4.7	10.0	August 9	0.26	7.8	18.1	0.37	18.1	75.5	40.9
HMX 2384S	5	70	93	1331	5.0	9.3	August 10	0.29	8.5	16.7	0.36	16.7	75.5	46.2
Average		67	91	1313	3.9	11.3		0.32	8.5	1.9	0.27	18.1	76.1	45.5
LSD (0.05)					0.6	1.3		0.02	0.01	0.1	0.05	0.7		

¹Seed sources: 1= Rogers/Sandoz, 2= Ferry-Morse, 3= Crookham, 4= Asgrow, 5= Harris-Moran

²from emergence.

³degree days (50 - 86 °F) from emergence.

⁴1= low, 5= high.

⁵yield of unhusked ears.

⁶ max. diameter minus diameter 6" from the base.

⁷ % of unhusked ear weight recovered as cut corn.