

SUPERSWEET CORN AND SWEET CORN VARIETY EVALUATIONS

Erik Feibert, Clint Shock, Greg Willison and Monty Saunders
Malheur Experiment Station
Oregon State University
Ontario, Oregon, 1996

Objectives

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

Procedures

Two trials were conducted on a Greenleaf silt loam following sugar beets. In the fall of 1995, 100 pounds of phosphate per acre and 20 lbs N per acre were plowed down. The 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 24, 1996. Eighteen supersweet corn (Sh₂) and 14 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 June 4 to avoid cross pollination between the two corn types. Seed was planted at a 2-inch depth using an Almaco cone seeder on a John Deere 77 Flexi Planter.

A soil sample taken from the top foot of soil on May 31, 1996 showed a pH of 7.2, 2.1 percent organic matter, 24 meq per 100 g of soil cation exchange capacity, 27 ppm nitrate-N, 6 ppm ammonium-N, 34 ppm phosphorus, 565 ppm potassium, 2529 ppm calcium, 432 ppm magnesium, 354 ppm sodium, 1.9 ppm zinc, 29 ppm iron, 13.4 ppm manganese, 1.8 ppm copper, 26 ppm sulfate-S, and 0.7 ppm boron.

The field was cultivated on June 3 and again on June 12 immediately after sidedressing with Urea at 140 lb N/ac. The crop was furrow irrigated as needed on alternate furrows starting on June 12.

Emergence counts were made on May 8, May 10, and May 20 for the supersweet corn and on June 17 for the sweet corn. All plots were thinned to 24,000 plants/ac (1 plant every 8.71 inches). The supersweet corn plots were thinned on June 10 and the sweet corn plots were thinned on July 21. Starting on July 5, the silk stage was evaluated for 20 plants in one of the middle two rows of each plot in the first replicate. Varieties were considered to be at the mid-silk stage when 40 to 60 percent 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 content for harvest was 78 percent for the supersweet corn varieties and 71 percent for the sweet corn 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. A composite subsample consisting of five ears from each replicate of each variety (20 ears total) 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. Degree days were measured and calculated by a biophenometer at the Malheur Experiment station. Data were analyzed by analysis of variance. Means separation was determined by the protected least significant difference test.

Results and Discussion

Emergence for the supersweet corn started on May 6. Varieties Punchline, Sheba, and Bandit were among the highest rated for stand on the first stand count (May 8, Table 1). Final stand counts on May 20 ranged from 58 to 89 percent. Sheba, GSS 6274 F1, and Punchline were among the highest rated for stand count on May 20. Yields of unhusked ears ranged from 6 to 11 t/ac (Table 2). Marvel, Mecca, Uprise, and Sheba were among the highest rated for yield. Maverick, Contender, and Trigger had ears with the least taper (most cylindrical ears). Recovery of cut corn ranged from 35 to 54 percent among varieties. Marvel, Contender, and GSS 6274 had the highest cut corn yield.

Emergence for the sweet corn varieties started on June 10 and ranged from 61 to 90 percent (Table 3). Varieties Chase and GH 1861 lodged heavily (stalks bent at base, and lying flat on ground), and Tracer lodged moderately (stalks bent at base and lying at a 45° angle), based on visual observations. Yields of unhusked ears ranged from 7 to 9 t/ac. GH 1861, HMX 5371, HMX 5372, GH 1887 F1, and Sequel were among the highest rated for yields. Excalibur, HMX 5372, and Tracer had ears with the least taper (most cylindrical ears). Recovery of cut corn ranged from 41 to 58 percent. Sequel and XPH 3125 were among the highest rated for cut corn yields.

Corn yields in the 1996 variety trials averaged lower than in the 1995 variety trials. Total yields for the supersweet corn were 11.3 t/ac in 1995 vs. 8.8 t/ac in 1996, and for the sweet corn total yields were 10.1 t/ac in 1995 vs. 8.3 t/ac in 1996. Higher average corn yields in 1995 compared to 1996 could be associated with hotter weather in 1996. There were 54 degree days in the sub-optimal range (86 to 104 °F) from June through August in 1996 and only 27 in 1995. Lower yields at the Malheur Experiment Station in 1996 were consistent with lower yields of corn grown in the Treasure Valley for canning by American Fine Foods.

Table 1. Supersweet corn stand counts. Corn was planted on April 26, 1996 and emergence started on May 6. Malheur Experiment Station, Oregon State University, Ontario, Oregon, 1996.

Variety	Seed source ¹	Stand count		
		May 8	May 10	May 20
		----- % -----		
Sheba	4	56.2	75.3	89.0
GSS 6274 F1	1	48.7	72.8	88.3
Punchline	4	79.3	53.0	88.2
Uprise	5	46.5	68.7	87.8
GSS 9298 F1	1	39.8	72.7	87.7
Mecca	4	38.2	70.8	86.7
Endeavor	4	46.2	67.8	86.7
Bandit	5	51.7	75.5	85.0
Shaker	4	24.5	58.7	83.2
Victor	2	17.8	52.2	82.5
710 Crisp N' Sweet	3	20.0	54.8	81.7
Trigger	3	37.8	59.2	79.7
Marvel	3	24.2	50.2	78.2
Contender	3	25.2	52.0	77.8
HMX 5375S	5	12.8	39.5	75.5
FMX 412	2	16.8	53.0	68.8
Missouri	3	2.7	11.8	60.0
Maverick	4	34.0	58.3	64.2
LSD (0.05)		11.9	15.2	14.6

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

Table 2. Plant development, yield, and ear characteristics of supersweet corn varieties in 1996. 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	Yield ⁴	Harvest date	Ear weight	Ear length	Max. ear diameter	Taper ⁵	Rows	Moisture	Recovery ⁶	Cut corn yield
					t/ac		lb	----- inches -----			#	----- % -----		t/ac
Marvel	3	63	95	1,550	11.0	August 9	0.61	8.1	2.2	0.63	17.2	78.1	54	5.9
Mecca	4	70	98	1,633	10.9	August 12	0.59	8.0	2.0	0.50	17.6	76.2	37	4.0
Uprise	5	61	93	1,508	10.5	August 7	0.65	7.5	2.1	0.50	17.3	77.2	42	4.4
Sheba	4	59	92	1,492	10.4	August 6	0.69	8.5	2.0	0.37	14.4	77.8	42	4.4
Shaker	4	68	95	1,550	10.0	August 9	0.64	8.3	1.9	0.34	17.5	76.1	35	3.5
GSS 6274 F1	1	70	98	1,633	10.0	August 12	0.59	7.8	2.1	0.38	18.8	77.6	45	4.5
Contender	3	61	92	1,492	9.9	August 6	0.74	7.8	2.1	0.23	16.0	78.2	49	4.9
HMX 5375S	5	70	99	1,660	9.8	August 13	0.69	7.9	2.0	0.38	18.1	77.6	39	3.8
FMX 412	2	67	98	1,633	9.7	August 12	0.71	7.7	2.1	0.38	19.7	77.7	42	4.1
GSS 9298 F1	1	61	92	1,492	9.4	August 6	0.68	7.1	2.0	0.32	18.4	78.5	41	3.9
Victor	2	71	99	1,660	8.3	August 13	0.50	8.0	2.1	0.60	18.0	na	na	na
710 Crisp N' Sweet	3	67	95	1,550	8.3	August 9	0.49	7.7	2.0	0.68	16.6	78.2	44	3.7
Missouri	3	67	95	1,550	8.2	August 9	0.49	8.7	2.1	0.41	16.6	78.8	42	3.4
Trigger	3	72	99	1,660	6.7	August 13	0.61	7.5	2.0	0.30	18.1	78.5	40	2.7
Punchline	4	68	95	1,550	6.6	August 9	0.62	7.0	2.0	0.35	16.8	77.2	40	2.6
Bandit	5	70	98	1,633	6.6	August 12	0.65	6.6	2.0	0.37	17.5	77.5	42	2.8
Endeavor	4	66	95	1,550	6.4	August 9	0.54	7.0	2.0	1.01	16.7	77.9	41	2.6
Maverick	4	70	99	1,660	5.9	August 13	0.62	7.2	1.9	0.28	17.8	76.6	39	2.3
Average		67	96	1,581	8.8		0.62	7.7	2.0	0.45	17.4	77.6	42	3.7
LSD (0.05)					1.1		0.05	0.4	0.1	0.12	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.

⁴yield of unhusked ears.

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

⁶% of unhusked ear weight recovered as cut corn.

Table 3. Plant development, yield, and ear characteristics of sweet corn varieties in 1996. 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	Stand June 17 %	Yield ⁴ t/ac	Harvest date	Ear weight lb	Ear length inches	Max. ear diameter	Taper ⁵	Rows #	Moisture %	Recovery ⁶ %	Cut corn yield t/ac
GH 1861	1	50	77	1,530	72.9	9.3	August 26	0.68	8.8	2.0	0.31	17.8	72.0	41	3.8
HMX 5371	4	56	85	1,658	81.2	9.2	September 3	0.66	7.9	2.1	0.26	18.9	71.1	47	4.3
HMX 5372	4	56	81	1,615	78.0	9.2	August 30	0.71	8.6	2.1	0.19	17.8	72.6	50	4.6
GH 1887 F1	1	50	80	1,593	79.2	9.1	August 29	0.74	8.3	2.0	0.32	19.2	70.6	50	4.6
Sequel	3	56	86	1,669	86.0	9.0	September 4	0.81	8.1	2.1	0.27	16.9	70.1	53	4.8
Excalibur	5	56	86	1,658	88.7	8.8	September 3	0.68	8.1	2.0	0.14	22.4	72.0	47	4.1
Chase	3	50	77	1,530	81.9	8.6	August 26	0.7	9.0	2.0	0.25	18.3	71.2	47	4.0
XPH 3125	3	56	81	1,615	79.7	8.2	August 30	0.75	8.5	2.1	0.31	16.7	71.8	58	4.8
Splendor	2	56	86	1,669	69.7	8.1	September 4	0.81	8.6	2.2	0.26	22.6	68.7	50	4.1
Regal	2	56	86	1,669	62.0	7.7	September 4	0.74	8.4	2.1	0.38	21.5	67.5	48	3.7
StylePak	5	56	86	1,669	90.9	7.5	September 4	0.7	8.1	1.9	0.32	20.5	69.3	43	3.2
GH 9056 F1	1	56	85	1,658	60.7	7.3	September 3	0.65	8.1	2.0	0.45	21.0	71.3	46	3.4
Tracer	3	58	86	1,669	88.4	7.1	September 4	0.64	9.0	2.1	0.22	17.7	72.4	49	3.5
HMX 5373	4	56	81	1,615	75.5	7.0	August 30	0.66	8.3	2.1	0.34	17.4	75.1	43	3.0
Average		55	83	1,630	78.2	8.3		0.7	8.4	2.1	0.3	19.2	71.1	48	4.0
LSD (0.05)					9.9	1.6		0.06	0.3	0.1	0.07	0.9			

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.

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

⁶ % of unhusked ear weight recovered as cut corn.