

EVALUATION OF SUPERSWEET AND SUGARY-ENHANCED

SWEET CORN AT ONTARIO

C.C. Shock, D. Burnett, C. Burnett, and J. Zalewski
Malheur Experiment Station, O.S.U., Ontario, Oregon

Summary

Supersweet and sugary-enhanced sweet corn were grown in comparison with Golden Jubilee sweet corn. Supersweet corn varieties averaged 9.5 tons per acre while Jubilee average 11.3 tons per acre. The lower yields were thought to be caused by poor plant stands that could be traced to problems of seedling emergence. Sugary-enhanced sweet corn yields (11.7 tons/acre) were more comparable with Golden Jubilee. The sugary-enhanced varieties had marginally higher sucrose levels than Golden Jubilee (3.7 % vs 3.1 %) while the supersweet varieties had much higher sucrose levels (7.9 %). A large number of factors are considered in selecting successful processing varieties.

Materials and Methods

Sweet corn varieties were planted May 6, 1986 in a Greenleaf silt loam soil on the Malheur Experiment Station. The soil received 100 pounds of phosphate in the fall and an additional 100 pounds of phosphate, 40 pounds of nitrogen, 20 pounds of sulfur, and 5 pounds of zinc per acre April 17. On June 12, the field was sidedressed with 120 pounds of nitrogen per acre in the form of ammonium nitrate.

Varieties were planted in 4 row plots in 30 inch rows. Plot lengths were 25 feet. The seeding rate was 41,800 per acre while the final desired plant stand was 28,000 plants per acre. Each variety was planted in 4 row plots and replicated 4 times except in the cases of 4 supersweet varieties where two row plots and 3 replications were necessary because of a shortage of seed.

Plant heights and stands were counted May 30. The stands were thinned to one plant per 6 inches on June 4, wherever stands were excessive.

Observations during the growing season included bird damage, days to mid-silking and days to maturity. Each variety was harvested from the inside 15 feet and inside 2 rows of the 4 row plots. Only the primary ear of each variety was harvested. Yields in tons per acre were calculated with and without husks. Plant heights were recorded at harvest, both the height to the base of the top ear and the total height.

Ears were measured for length, maximum diameter, diameter at 6 inches, and the number of rows of kernels. The taper in each ear is the difference between the maximum ear diameter and the diameter at 6 inches. Kernel dextrose and sucrose levels were determined for most varieties.

Results

Data on supersweet corn performance are listed in Tables 1-3. Data from the sugary-enhanced sweet corn varieties are presented in Tables 4-6. Golden Jubilee was planted only with the sugary-enhanced lines, but it is listed in both sets of tables for purposes of comparison.

The corn trials grew very well in 1986 and produced high yields (Tables 1 and 4). Sugary-enhanced varieties, Golden Jubilee, and supersweet lines averaged 11.7, 11.3 and 9.5 tons per acre respectively based on only the top ear on each stalk. Plant stands were low in the supersweet corn trial.

Some of the supersweet varieties had 0.4 inches or more of taper, missing kernels, irregular rows, or curled ends of ears (Table 2). These characteristics would make these varieties less desirable for processing. Final 1986 variety evaluations will be completed when the frozen corn is removed from storage in January or February.

Acknowledgements

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TABLE 1. Yield and height of supersweet corn varieties in 1986. Malheur Experiment Station, O.S.U., Ontario, Oregon

<u>Supersweet Corn Variety</u>	<u>Ears per 30 ft</u>	<u>Yield with husk</u>	<u>Yield w/o husk</u>	<u>Shucking Percentage</u>	<u>Plant Stand establishment</u>	<u>Height to base of ear</u>	<u>Plant height</u>
		t/ac	t/ac	%	%	cm	cm
FMX-85 ¹	31	8.8	6.1	69.4	43	90	255
Sugar Crunch ²	38	8.0	5.7	71.0	67	93	290
Cr sh ₂ 840 ^{2 3}	35	7.6	5.3	69.3	56	74	240
C'N'S 690 ³	50	12.0	8.9	74.7	74	72	210
C'N'S 700 ³	46	10.3	7.2	69.7	76	72	220
C'N'S 710 ³	41	9.9	7.2	72.9	67	70	230
C'N'S 720 ³	42	8.5	6.1	71.6	73	90	255
XPH 2606 sh ₂ ⁴	50	11.1	7.6	68.1	80	74	246
Sweetie ²	47	10.8	7.6	70.4	78	85	270
SS(R) Brand 7700 ⁵	46	10.2	6.9	67.1	80	90	255
C'N'S 710 coated ³	36	9.0	6.3	69.8	57	70	220
C'N'S 720 coated ³	44	8.6	6.0	70.1	65	95	257
Sweet Belle ⁵	41	9.5	6.6	69.3	64	87	245
SS(R) Brand 7200 ⁵	39	9.5	6.9	72.9	66	70	230
SS(R) Brand 7900 ⁵	39	7.8	5.6	71.3	71	85	225
AVG.	42	9.5	6.7	70.5	68	81	243
LSD. (.05)	--	1.0	0.8	3.0	10	--	---
Check; Golden Jubilee	48	11.3	8.7	75.9	86	86	257

¹Ferry Morse

²Sun Seeds

³Crookham

⁴Asgrow

⁵Abbot and Cobb

TABLE 2. Ear characteristics of supersweet corn varieties in 1986. Malheur Experiment Station, O.S.U., Ontario, Oregon

Supersweet Corn Variety	Ear length	Maximum diameter	Ear diameter at 6"	Taper	Avg Number of rows	Kernel dextrose	Kernel sucrose	Bird Damage
	in	in	in	in		%	%	%
FMX-85 ¹	9.1	1.9	1.7	0.2	18.1	.88	9.10	2
Sugar Crunch ²	8.2	1.8	1.6	0.1	14.1 ^a	---	---	1
Cr sh ² 840 ²	8.3	1.9	1.5	0.4	18.4	.58	9.35	0
C'N'S 690 ³	8.4	1.9	1.6	0.3	15.5 ^b	.56	7.17	25
C'N'S 700 ³	8.3	1.8	1.6	0.2	16.6	---	---	15
C'N'S 710 ³	8.8	2.0	1.8	0.2	16.3 ^c	.56	7.89	1
C'N'S 720 ³	7.9	1.8	1.4	0.4	19.2	.58	9.03	0
XPH 2606 sh ² 4	8.8	1.7	1.5	0.2	16.8 ^c	.71	9.49	0
Sweetie ²	7.6	1.9	1.5	0.5	16.7 ^d	.77	9.75	0
SS(R) Brand 7700 ⁵	8.1	1.8	1.4	0.4	19.0	.59	8.87	0
C'N'S 710 coated ³	8.6	1.8	1.6	0.2	16.8 ^c	---	---	3
C'N'S 720 coated ³	8.0	1.8	1.4	0.4	18.6	---	---	0
Sweet Belle ⁴	8.0	1.9	1.5	0.4	18.6 ^c	---	---	0
SS(R) Brand 7200 ⁵	8.8	2.1	1.9	0.2	16.5 ^d	.57	7.61	0
SS(R) Brand 7900 ⁵	7.9	1.8	1.3	0.4	19.1	---	---	0
AVG.	8.3	1.9	1.5	0.3	17.4	.64	7.83	3
LSD. (.05)	0.3	0.1	0.16	0.08	0.6	---	---	-
Check; Golden Jubilee	8.3	1.90	1.60	0.3	17.0	0.90	3.07	11

Notes a. kernels large
 b. end of ears curled
 c. some missing kernels
 d. some irregular rows

¹Ferry Morse
²Sun Seeds
³Crookham
⁴Asgrow
⁵Abbot and Cobb

TABLE 3. Maturation of supersweet corn varieties in 1986. Malheur Experiment Station, O.S.U., Ontario, Oregon

Supersweet Corn <u>Variety</u>	<u>Silking</u> days	<u>Harvest</u> days	<u>Maturity index</u> <u>at Harvest</u> 0-4
FMX-85 ¹	78	100	2.8
Sugar Crunch ²	75	99	2.9
Cr sh ₂ 840 ³	74	98	3.0
C'N'S 690 ³	65	92	2.9
C'N'S 700 ³	69	93	2.7
C'N'S 710 ³	69	94	2.8
C'N'S 720 ³	76	99	2.8
XPH 2606 sh ₂ ⁴	72	97	2.8
Sweetie ²	73	97	2.9
SS(R) Brand 7700 ⁵	77	100	2.8
C'N'S 710 coated ³	69	94	2.7
C'N'S 720 coated ³	76	99	2.8
Sweet Belle ⁴	75	98	2.9
SS(R) Brand 7200 ⁵	70	94	2.8
SS(R) Brand 7900 ⁵	74	98	2.8
AVG.	73	97	2.8
Check; Golden Jubilee	71	97	2.9

- ¹Ferry Morse
- ²Sun Seeds
- ³Crookham
- ⁴Asgrow
- ⁵Abbot and Cobb

TABLE 4. Yield and height of sugary-enhanced sweet corn varieties in 1986. Malheur Experiment Station, O.S.U., Ontario, Oregon

<u>Sugary-enhanced Corn Variety</u>	<u>Ears per 30 ft</u>	<u>Yield with husk</u>	<u>Yield w/o husk</u>	<u>Shucking Percentage</u>	<u>Plant Stand establishment</u>	<u>Height to base of ear</u>	<u>Plant height</u>
		tons/ac	tons/ac	%	%	cm	cm
Roger Brothers 83-1703	47	12.6	9.0	71.3	81	84	240
Roger Brothers 83-1815	56	11.3	7.8	68.8	92	83	256
Roger Brothers 84-2429	50	12.3	8.4	68.4	95	100	284
Musser 84-1209	44	10.5	8.0	76.3	80	62	255
Musser 83-435	45	10.7	7.7	71.8	79	80	263
Musser 82-251	54	12.3	9.2	74.4	91	68	235
AVG.	49	11.7	8.4	71.8	86	79	256
Check (Golden Jubilee)	48	11.3	8.7	75.9	86	86	257
LSD (.05)	--	.97	.86	4.2	6	--	---

TABLE 5. Ear characteristics of sugary-enhanced corn varieties in 1986. Malheur Experiment Station, O.S.U., Ontario, Oregon

<u>Sugary-enhanced Corn Variety</u>	<u>Ear length</u>	<u>Maximum diameter</u>	<u>Ear diameter at 6"</u>	<u>Taper</u>	<u>Avg Number of rows</u>	<u>Kernel dextrose</u>	<u>Kernel sucrose</u>	<u>Bird Damage</u>
	in	in	in	in		%	%	%
Roger Brothers 83-1703	8.0	2.03	1.63	0.4	16.7	na	na	0
Roger Brothers 83-1815	7.5	1.78	1.33	0.5	15.5	0.46	2.82	13
Roger Brothers 84-2429	7.8	2.05	1.83	0.2	18.3	0.58	3.12	3
Musser 84-1209	9.0	1.83	1.68	0.2	16.6	0.50	3.36	11
Musser 83-435	8.7	1.90	1.58	0.3	19.3	0.59	4.62	2
Musser 82-251	8.1	1.85	1.67	0.2	20.3	0.80	4.61	7
AVG.	8.2	1.90	1.61	0.3	17.8	0.59	3.71	6
Check (Golden Jubilee)	8.3	1.90	1.61	0.3	17.0	0.90	3.07	11
LSD (.05)	.3	.08	.16	0.07	.68	----	----	--

TABLE 6. Maturation of sugary-enhanced sweet corn varieties in 1986. Malheur Experiment Station, O.S.U., Ontario, Oregon

Supersweet Corn <u>Variety</u>	<u>Silking</u> days	<u>Harvest</u> days	<u>Maturity index</u> <u>at Harvest</u> 0-4
Roger Brothers 83-1703	65	91	2.9
Roger Brothers 83-1815	68	92	3.2
Roger Brothers 84-2429	70	94	2.9
Musser 84-1209	70	94	2.9
Musser 83-435	75	98	2.8
Musser 82-251	72	97	2.9
AVG.	70	94	2.9
Check (Golden Jubilee)	71	97	2.9