

**Report to the Oregon Processed Vegetable Commission
1993-1994**

1. Title: Sweet Corn Variety Evaluation
2. Project Leaders: J. R. Baggett, Horticulture
Brian Yorgey, Food Science and Technology
3. Project Status: Terminating June 30, 1994
4. Project Funding: \$2,500 field trials
\$1,575 supplemental technical support (field trials)
\$3,714 processing
\$7,789

Funds were used for research farm expenses and labor for harvesting, processing, and evaluation of corn samples.

5. Objectives: To determine the production and processing potential of new introductions of sweet corn.
6. Report of Progress:

- A. Replicated plot trials of standard sweet (su) and SE (sugary enhanced) corn varieties were planted on June 14, and supersweet (sh) varieties were planted in a separate field on June 15. In each case, there were four replications, each 30 feet long in rows three feet apart. Replications were arranged in randomized blocks. In the June 14 planting, the SE varieties were separated from the su varieties by a block of SE rows to minimize the effect of the su on SE varieties. Yellow and bi-color varieties were grown together. Additional varieties of each type of corn were planted in non-replicated plots for observation and yield estimates.

In each planting, plots were overseeded and thinned to stand about 9" apart, or a population of 19,000 per acre. Harvests were made at about 71-72% moisture for su and SE varieties and about 76% for supersweet varieties, as determined by subjective evaluation. Factors observed are shown in the tables. Except for descriptive observations (Tables 3 and 6), and for the observation plots, all data were obtained separately for each replication.

Varieties which appeared to have promise for processing were canned and frozen at the Food Science and Technology pilot plant. Objective data and panel evaluations of processed corn samples will be reported at a later date.

- B. Varieties which were noted to have sufficient merit to justify further trial are listed below. Varieties marked * were processed.

SE Varieties:

*GH 2419 - large ears, very tender, good yield (7.4 T/A), refined, fair flavor, good overall score

- *GH 2684 - good ear length, tender, good flavor, good overall score, fair yield (6.4 T/A), resembles GH 2419
- *XPH 3013R - fair yield (6.0 T/A), fairly tender, fair flavor, fair overall score, ears large but not as long as Jubilee
- *GH 1791 - good yield (7.2 T/A), very deep kernels, tender, sweet, large ears but not as long as Jubilee
- *GH 2759 - very good yield (8.3 T/A), large ears, deep kernels, refined, fair flavor, fair overall score

Sweet (su) Varieties:

- *GH 1703 - poor yield (5.5 T/A), poor ear size, but included because considered a standard variety
- *GH 1861 - good yield (7.4 T/A), good ear size, very good tip fill, fair flavor, fair overall score
- *Cardinal - good yield (7.3 T/A), good ear size, tender, refined, good flavor, good overall score
- *HMX 9373 - fair to good yield (6.7 T/A), long narrow ears, refined, tender, good overall score
- *More - fair to good yield (6.8 T/A), fair to good ear size, tender, refined, good flavor, good overall score
- *Eliminator - very good yield (9.1 T/A) and ear size, refined, good overall score
- *HMX 9372 - good yield (7.4 T/A), good ear size, refined, good flavor, good overall score
- GH 1685 - good yield (7.3 T/A), tender, refined, good overall score

Supersweet (sh₂) Varieties:

- Crisp 'n Sweet 710 - good yield (7.7 T/A), good ear size, tough, fair flavor, fair overall, many curved ears
- *Crisp 'n Sweet 710A - similar to Crisp 'n Sweet 710 (yield 7.0 T/A) but more refined and uniform
- *GSS 3492 - fair to good yield (6.8 T/A), very good flavor, fair overall scores, hard to pick and too tough
- *FMX 324 - good yield (7.1 T/A), large ears, tender, good flavor, good overall score

- *Zenith - good yield (7.3 T/A), small ear size, fairly tender, good flavor, possible whole ear pack
- *XPH 3080 - fair yield (6.1 T/A), long narrow ears, refined, good flavor
- *Supersweet Jubilee - good yield (7.8 T/A), good ear size, uniform, good overall and flavor scores
- GSS 4606 - good yield (7.8 T/A), refined, uniform, fair flavor, tough
- *GSS 3451 - very good yield (9.4 T/A), good ear size, good flavor, tender, slightly rough, uneven kernels

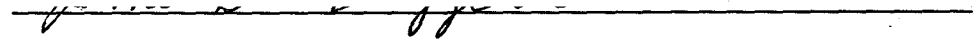
7. Summary:

Twenty-four SE and sweet (su) varieties, and 17 supersweet varieties, of corn were tested in replicated or observation plots. Five SE, eight sweet, and nine supersweet varieties were considered to be of interest and candidates for further testing. Twenty-six varieties were canned and frozen for objective evaluations and industry panel evaluations.


8. Signatures:

Redacted for Privacy

Project Leader:


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Project Leader:



Department Head:

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Table 1. Yield and ear measurements, sugary enhancer (se) and sweet (su,) corn replicated trial, Corvallis, 1993.^z

Variety	Source ^y	Type ^x	Silk Date	Days to Harvest	Stand	Good Ears			Culls		Lbs/ Ear	Ear Length (in.)	Ear Diam. (in.)	Kernel Depth (mm)	Pericarp Toughness ^v
						1000/A	T/A	No/Plant	1000/A	T/A					
GH 1703	1	Y su	8/12	91	27	19.6	5.5	1.0	3.4	0.6	0.56	7.1	2.0	12.0	147
GH 1861	1	Y su	8/11	94	26	21.6	7.4	1.1	2.9	0.4	0.69	8.0	2.1	12.2	139
HMX 0379	2	Y su	8/16	95	24	20.1	5.9	1.1	2.0	0.3	0.59	8.5	2.0	12.0	105
Jubilee	1	Y su	8/20	96	27	24.9	6.7	1.3	1.8	0.3	0.55	8.1	1.9	11.0	92
Cardinal	3	Y su	8/20	98	26	21.2	7.3	1.1	3.8	0.8	0.70	8.1	2.1	12.0	92
HMX 9373	2	Y su	8/20	100	28	24.5	6.7	1.2	5.8	0.7	0.56	8.1	1.9	11.8	107
More	4	Y su	8/21	102	28	22.9	6.8	1.1	2.9	0.5	0.60	7.8	2.0	11.8	98
Eliminator	3	Y su	8/23	102	28	26.5	9.1	1.3	2.9	0.5	0.70	8.5	2.0	11.3	122
HMX 9372	2	Y su	8/23	105	27	24.1	7.4	1.2	2.5	0.4	0.62	8.7	2.0	11.0	113
GH 2684	1	Y se	8/17	95	28	22.7	6.4	1.1	2.2	0.4	0.56	8.6	1.9	10.8	81
GH 1791	1	Y se	8/14	94	28	20.7	7.2	1.0	2.7	0.5	0.70	7.6	2.1	12.5	108
XPH 3013R	4	Y se	8/18	95	25	19.6	6.0	1.1	2.0	0.4	0.62	7.7	2.0	10.8	90
Delectable	3	B se	8/19	95	28	20.5	7.1	1.0	2.0	0.4	0.70	8.1	2.0	11.5	116
GH 2419	1	Y se	8/19	98	28	23.1	7.4	1.1	2.7	0.5	0.65	8.6	2.0	12.0	88
GH 2759	1	Y se	8/22	102	28	25.2	8.3	1.2	5.3	1.0	0.67	8.5	2.0	12.0	79
LSD at 5%						2.6	0.8	0.2	2.1	0.4	0.04	0.2	0.1	1.0	15

^zPlanted June 14 in rows 36" apart, thinned to 9" between plants. All values shown are means of 4 replications, arranged in randomized complete blocks. All data except cull no. and T/A were obtained from typical husked good ears. For ear length, ear diameter, and tenderness, the value used for each replication was the average for 5 individual ear measurements.

^ySources: 1 = Rogers NK, 2 = Harris-Moran, 3 = Crookham, 4 = Asgrow.

^xEndosperm type: Y = yellow, B = bicolor, su = sweet, se = sugary enhancer.

^vTenderness determined by a spring-operated puncture gauge; lower numbers indicate more tender pericarp.

Table 2. Yield and ear measurements, sugary enhancer (se) and sweet (su₁) corn observation trial, Corvallis, 1993.^z

Variety	Source ^y	Type ^x	Silk Date	Days to Harvest	Stand	Good Ears			Culls		Lbs/ Ear	Ear Length (in.)	Ear Diam. (in.)	Kernel Depth (mm)	Pericarp Toughness ^y
						1000/A	T/A	No/Plant	1000/A	T/A					
GH 1685	1	Y su	8/20	98	27	27.6	7.3	1.4	5.8	1.0	0.54	8.0	1.9	11	88
GH 1698	1	Y su	8/22	100	25	25.4	6.7	1.4	0.7	0.1	0.53	8.4	1.8	11	100
Excellency	2	Y su	8/21	100	25	19.6	5.9	1.1	2.9	0.5	0.61	8.0	2.0	10	119
NY 669	3	Y se	8/20	98	23	22.5	7.8	1.3	8.7	2.1	0.70	8.7	2.1	12	79
NY 887	3	Y se	8/20	98	23	26.9	6.9	1.6	5.1	0.6	0.52	7.5	1.8	12	120
NY 1023	3	Y se	8/21	102	25	18.9	7.8	1.0	0.7	0.1	0.84	9.3	2.0	10	100
NY 155	3	Y se	8/23	102	22	28.3	9.4	1.8	5.1	1.1	0.67	9.1	2.0	12	79
NY 1554	3	Y se	8/22	102	20	16.0	5.7	1.1	2.2	0.4	0.72	8.6	2.0	12	124
NY 1020	3	Y se	8/24	105	25	34.8	8.9	1.9	10.2	1.5	0.51	7.3	2.0	12	110

^zPlanted June 14 in rows 36" apart, thinned to 9" between plants. Yield estimates are from a single 20' plot. All data except cull no. and T/A were obtained from typical husked good ears. For ear length, ear diameter, and tenderness, the value shown is the average of 5 individual ear measurements.

^ySources: 1 = Rogers NK, 2 = Ferry-Morse, 3 = New Ya'ar Research Center.

^xEndosperm type: Y = yellow, se = sugary enhancer, su = sweet.

^yComparative scale determined by a spring-operated puncture gauge; lower numbers indicate more tender pericarp.

Table 3. Descriptive observations, sugary enhancer (se) and sweet (su₁) corn variety trial, Corvallis, 1993.²

Variety	Source ^y	Kernel Refinement	Row Straightness	Tip Fill	Cylind. Shape	Ear Unif.	Mat. Unif.	Kernel Unif.	Flavor	Overall Score	Row #	Notes
GH 1703	1	3	4	2	1-3	2	4	4	4	3	16-20	very short, mostly pointed ears; variable shape, some barrel shaped
GH 1861	1	3	3	5	4	2	4	3	3	3	16-20	pale color, many short ears, a few curved, good flavor but not sweet
HMX 0379	2	4	2	3	4	3	3	3	1	2.5	18	no sweetness at all
Jubilee	1	4	5	4	4	4	4	4	3	4	18	
Cardinal	3	5	4	2.5	4	3	3	4	3	3.5	20	pale color, very refined ears, some sweetness, good flavor
HMX 9373	2	4	4	4	4	3	4	5		4	18	
More	4	4	4	5	4	3	2	4	3	3.5	16-18	variable size and maturity, some curved ears, good corn flavor
Eliminator	3	3	4	4	3	3	4	4	2	3.5	18-20	very nice looking ears, good yield
HMX 9372	2	4	4	3	4	3	4	4		4	16-20	long, refined ears, good corn flavor
GH 2684	1	4	4	2	4	3	4	4	4	3.5	16-18	very refined ears, poor tip fill and pale color are worst faults
GH 1791	1	4	1-3	3-4	4	2	3	1-4	3	3	18	pale color, a few very rough ears, sweet but lacking corn flavor
XPH 3013R	4	4	2	4	3	4	2	2	3	2.5	20	sweet but not much flavor
Delectable	3	4	4	4	2	3	4	4	3.5	3.5	20-24	very pointed ears, pale color
GH 2419	1	4	4	3	4	4	4	4	3	4	18-20	
GH 2759	1	4.5	3	2.5	4	3	3	3	3	3	18-20	pale color, uneven tips, not very sweet

Table 3. Descriptive observations, sugary enhancer (se) and sweet (su₁) corn variety trial, Corvallis, 1993 (cont.).²

Variety	Source ¹	Kernel Refinement	Row Straightness	Tip Fill	Cylind. Shape	Ear Unif.	Mat. Unif.	Kernel Unif.	Flavor	Overall Score	Row #	Notes
GH 1685	1	4	4	4	4	3	4	4		4	18	
GH 1698	1	3	2-5	2	2-4	2	4	2		2-5	14-16	hard to pick and husk, some very narrow ears
Excellency	5	2-5	4	3	3	2	2	2		3	16-22	
NY 669	6	5	2	4	2.5	3	3	2		2.5	22	brushy plant, poor husk cover, slightly pale color, lots of culls from suckers
NY 887	6	4	4	4	4	4	4	5		4	16	very hard to pick and husk, tough
NY 1023	6	3	3	2	1	2	3	3		2	16-22	very hard to husk, shanks very hard to break, very pointed ears
NY 155	6	3	3	2.5	3	4	4	3		3	16-18	good yield, curved ears, very long thin ears
NY 1554	6	3	3	1-4	3	1	3	3		2	16-20	very long shank
NY 1020	6	4	4	1-4	2	2	3	4	2	2	18-20	short, fat, pointed ears, hard to pick and husk

¹Planted June 14. Scores 1-5 scale, 5 = best. Overall score related to general characteristics of harvested ears.

²Sources: 1 = Rogers NK, 2 = Harris-Moran, 3 = Crookham, 4 = Asgrow, 5 = Ferry-Morse, 6 = New Ya'ar Research Center.

Table 4. Yield and ear measurements, supersweet (sh₂) corn replicated trial, Corvallis, 1993.^z

Variety	Source ^y	Color ^x	Silk Date	Days to Harvest	Stand	Good Ears		Culls		Lbs/ Ear	Ear Length (in.)	Ear Diam. (in.)	Kernel Depth (mm)	Pericarp Toughness ^v
						1000/A	T/A	No/Plant	1000/A	T/A				
Festival	1	B	8/15	87	28	21.2	5.2	1.0	4.4	0.7	8.0	1.8	11.3	149
Sweetear	2	Y	8/15	87	28	17.4	5.6	0.9	2.5	0.6	8.1	2.2	10.0	138
Crisp 'n Sweet 710	3	Y	8/15	94	28	22.3	7.7	1.1	1.3	0.2	8.7	2.1	12.8	146
Crisp 'n Sweet 710A	3	Y	8/16	94	30	20.0	7.0	1.0	2.7	0.5	8.4	2.1	12.3	145
GSS 3492	4	Y	8/17	94	28	20.9	6.8	1.0	1.3	0.2	7.4	2.1	12.5	146
FMX 324	2	Y	8/18	95	28	18.3	7.1	0.9	4.7	1.0	8.1	2.2	11.3	111
FMX 329	2	Y	8/19	96	28	24.0	8.7	1.2	2.7	0.5	8.1	2.2	11.0	143
FMX 330	2	Y	8/18	96	27	19.2	7.0	1.0	5.8	1.1	7.6	2.1	11.3	138
Competitor	3	Y	8/17	96	30	21.6	6.0	1.0	0.5	0.1	7.4	1.8	11.0	122
Cabaret	1	B	8/20	96	28	20.1	5.8	1.0	4.2	0.8	7.5	2.0	11.8	126
Zenith	5	Y	8/21	97	27	30.3	7.3	1.6	4.0	0.6	7.0	1.9	10.8	126
XPH 3080	1	Y	8/19	98	28	22.9	6.1	1.1	5.3	0.8	8.3	1.9	11.8	132
Supersweet Jubilee	4	Y	8/20	98	26	27.8	7.8	1.5	2.5	0.3	7.9	2.0	11.3	130
GSS 4606	4	Y	8/23	99	25	30.3	7.8	1.7	1.3	0.2	7.8	1.9	11.8	146
GSS 3451	4	Y	8/24	103	28	32.7	9.4	1.6	5.8	0.9	8.2	1.9	11.3	106
LSD at 5%						3.3	0.9	0.2	2.7	0.5	0.2	0.2	1.3	19
Paksweet ^u	2	Y	8/20	96	29	22.5	7.4	1.1	2.2	0.4	8.9	1.9	10.0	109
GSS 4644 ^a	4	Y	8/22	100	28	19.6	5.9	1.0	7.3	1.3	8.1	1.9	11.0	129

^zPlanted June 15 in rows 36" apart, thinned to 9" between plants. All values shown are means of 4 replications arranged in randomized complete blocks. All data except cull no. and T/A were obtained from typical husked good ears. For ear length, ear diameter, and tenderness, the value used for each replication was the average of 5 individual ear measurements.

^ySources: 1 = Asgrow, 2 = Ferry Morse, 3 = Crookham, 4 = Rogers NK, 5 = Harris-Moran.

^xColor: Y = yellow, W = white, B = bi-color.

^vComparative scale, determined by a spring-operated puncture gauge; lower numbers indicate more tender pericarp.

^uThese varieties were not replicated and were not included in the analysis of variance. Yield estimates are from a single 20' plot.

Table 5. Descriptive observations, supersweet (sh₂) corn trial, Corvallis, 1993.²

Variety	Source ^y	Kernel Refinement	Row Straightness	Tip Fill	Cylind. Shape	Ear Unif.	Mat. Unif.	Kernel Unif.	Flavor	Overall Score	Row #	Notes
Festival	1	4	3	3	4	3	3	3	4	3	16-18	slender, refined ears, good flavor, sweet, possibly good home garden variety
Sweetear	2	3	3	3	2-3	2	2	3	3	2	18-20	variable shape, sweet
Crisp 'n Sweet 710	3	2	3	3	3	3	4	3	3	3	18-20	some curved ears, some short ears, slightly tough
Crisp 'n Sweet 710A	3	3.5	3	4	3	4	4.5	4	3	4	18	some curved ears, more refined and uniform than 710
GSS 3492	4	3	3	3	4	3	4	3	4.5	3	16-20	short, fat ears, very sweet
FMX 324	2	3	2	5	4	4	4	3	4	3.5	20	fat ears, good flavor
FMX 329	2	2	2	4	4	4	4	2	3	2.5	18-20	large, coarse ears, some curved, tough
FMX 330	2	2	2	4	3	2	3	2	3	2	18-22	brushy plant, highly variable, some very fat ears approaching spades, curved ears
Competitor	3	3	3	3	3	4	4	3	4	3	18	very small neat ears
Cabaret	1	4	3	2	3	2	2	3	3	2.5	16-20	short, fat, variable, some curved
Zenith	5	3	2.5	4.5	3	5	5	3	4	3.5	16-18	pale color; very uniform, even second ears; small, possible whole ear pack; sweet
XPH 3080	1	4	4	1-3	3	2	2	3	4.5	3	16-18	good color, sweet
Supersweet Jubilee	4	4	4	3	4	3	5	4	4.5	4	16-18	very good flavor

Table 5. Descriptive observations, supersweet (sh₂) corn trial, Corvallis, 1993 (cont.).^z

Variety	Source ^y	Kernel Refinement	Row Straightness	Tip Fill	Cylind. Shape	Ear Unif.	Mat. Unif.	Kernel Unif.	Flavor	Overall Score	Row #	Notes
GSS 4606	4	4	3	4.5	4	4	4	3	3	3.5	18-20	very uniform ear size and shape, even second ears, slightly sweet, tough
GSS 3451	4	3	3	3	3	3	4	2	4	3	16	slightly rough, uneven kernels, curved ears, very sweet
Paksweet	2	2	1-3	3	2	2	3	2	4	2	14-18	rough, coarse, variable, long slender ears, shallow kernels, sweet and tender
GSS 4644	4	4	4	4	4	4	4	4	4	4	16-20	slightly curved ears, less than one good ear/plant

^zPlanted June 15. Scores 1-5 scale, 5 = best; overall score related to general characteristics of harvested ears.

^ySources: 1 = Asgrow, 2 = Ferry Morse, 3 = Crookham, 4 = Rogers NK, 5 = Harris-Moran.

Table 6. Germination scores, supersweet (sh₂) corn trial, Corvallis, 1993.^z

Variety	Scores				AV
	Rep 1	Rep 2	Rep 3	Rep 4	
Zenith	2	3	3	3	2.75
FMX 324	2	2	2	2	2.0
Sweetear	2	1	2	3	2.0
FMX 329	3	3	3	3	3.0
FMX 330	2	1	2	1	1.5
GSS 3492	2	3	2	3	2.5
GSS 3451	3	1	2	2	2.0
Supersweet Jubilee	1	1	1	2	1.25
Competitor	2	2	1	2	1.75
Crisp 'n Sweet 710	2	2	2	2	2.0
Crisp 'n Sweet 710A	3	2	3	3	2.75
XPH 3080	1	1	1	1	1.0
Cabaret	2	2	2	2	2.0
Festival	3	3	3	3	3.0
GSS 4644	2				
Paksweet	1				

^zScores 1-3 scale, 3 = most vigorous.