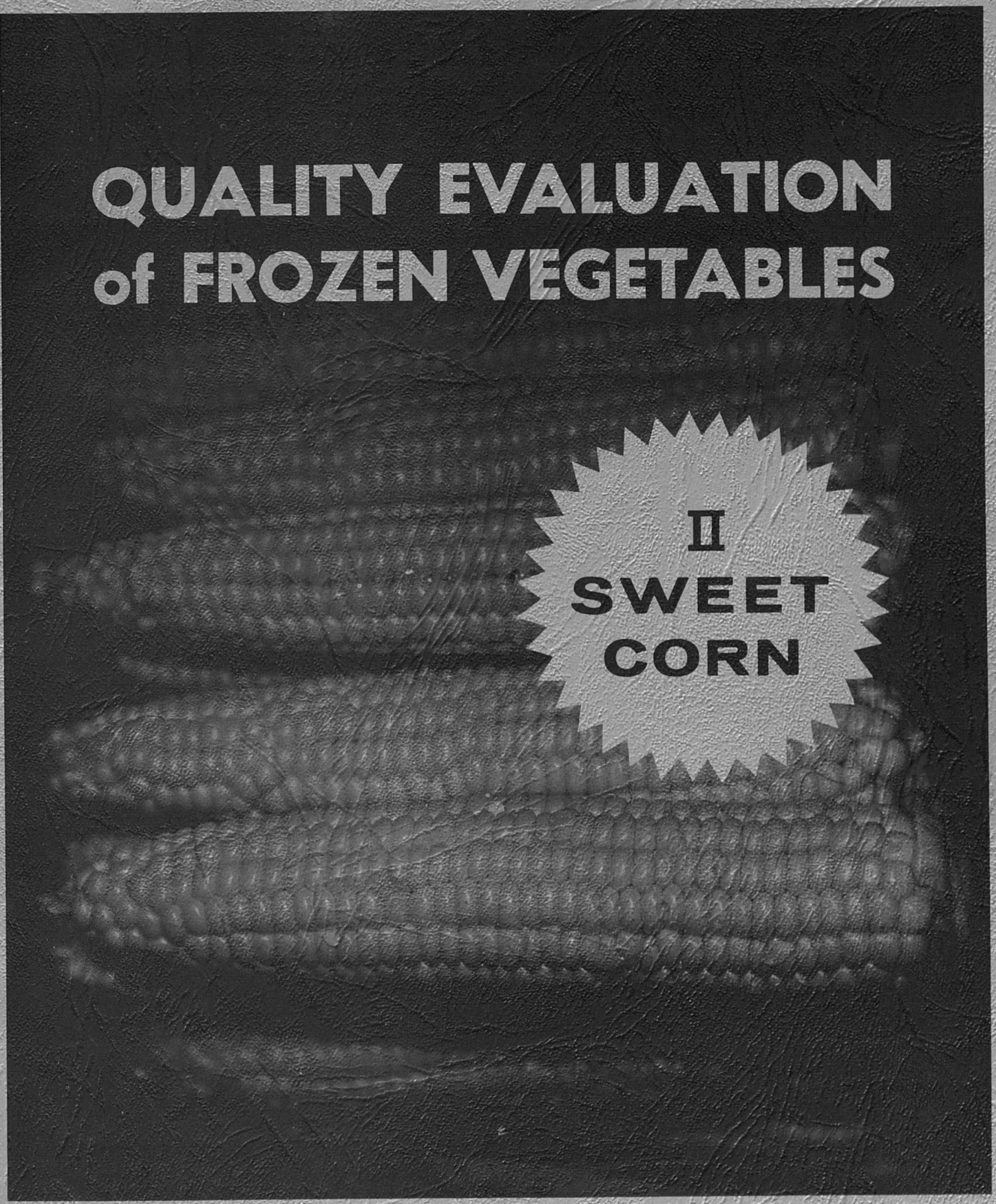
QUALITY EVALUATION of FROZEN VEGETABLES



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155

QUALITY EVALUATION OF FROZEN VEGETABLES

II. Sweet Corn

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Sweet corn, a favorite vegetable of Kentuckians, is extensively grown in home gardens and for sale on local fresh markets. When harvested at optimum maturity and properly processed, sweet corn is an excellent frozen vegetable.

These studies were designed to evaluate freezing quality in sweet corn selections and varieties grown on the Kentucky Agricultural Experiment Station Farm near Lexington.

EXPERIMENTAL METHODS

Results of experiments conducted during two years are summarized in this report. Varieties included in the 1959 series of trials were Aristogold Bantam Evergreen, 25778, Sure crop, 25776, Florigold - 107, 27802, R-8, NK-1304, Golden Security, Victory Golden, Carmelcross, North Star, Sixty pak, and Asgrow Golden-22. The varieties studied in 1960 were Golden Security, 25776, 27802, Iochief, Evertender-C, Staygold, Valleygold, and Gold Cup.[1] The corn was husked and cleaned, blanched for $4\frac{1}{2}$ minutes in boiling water, and cooled for an equivalent time in ice water. Kernels were cut from the ears and packed in $\frac{1}{2}$-pint polyethylene-lined bags which were heat-sealed. All samples were quick-frozen at -35° F and then transferred to 0° F storage.

The sweet corn varieties were evaluated immediately after processing and also 3, 6, and 9 months later by a trained 12-member student taste panel. Samples were cooked for 10 minutes in $\frac{1}{2}$ cup boiling water and served hot. Panelists evaluated the first series of samples for flavor, color, odor, and texture. Samples in the second series were evaluated only for flavor, color, and texture because odor scores were found to be very similar for all samples tested in the first series.

A Bausch and Lomb Spectronic 20 colorimeter with reflectance attachment was used to measure color of the corn. Duplicate readings were taken on uncooked corn in the first series and on both cooked and uncooked corn in the second series. Dominant wavelength, purity, and brightness were calculated from the readings. Dominant wavelength is essentially a hue measurement. With respect to sweet corn, higher dominant wavelengths indicate hues approaching yellow-orange from the yellow area of the spectrum. Purity represents the amount of the dominant hue present in the sample. Brightness is a measure of the amount of white light reflected by the sample--higher brightness values indicate lighter yellow.

Pericarp was determined by an adaptation of the Showalter[2] method. A 50-gram sample was blended for 3 minutes and then washed through a 30-mesh monel metal screen. Material retained on the screen was dried, weighed, and calculated as percent pericarp. Shear press measurements were made on the second set of sweet corn varieties studied. Eighty grams of thawed, uncooked corn was placed in the standard cell of the L. E. E.-Kramer Shear Press, and the pounds of force required to shear through this sample were recorded.

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[1] For production performance and seed sources of these varieties, see Kentucky Agricultural Experiment Station Progress Report 117, "Performance of Vegetable Varieties in Kentucky 1959-1961," by D. E. Knavel.

[2] Robert K. Showalter, "Measuring the Pericarp Content of Sweet Corn." Proceedings of the Association of Southern Agricultural Workers. Vol. 57, 1960.

Percent moisture was obtained by drying duplicate 25-gram samples in a 90° C oven overnight. Sugar analyses were made using the Shaffer-Somogyi method[3] as modified by R. K. Showalter, University of Florida.

RESULTS AND DISCUSSION

Sensory qualities: Tables 1 and 2 show results of taste panel evaluation of sweet corn. Asgrow Golden-22 was outstanding for flavor among the first group of varieties tested (Table 1), followed by Golden Security, Sure crop, 27802, and Sixty pak. However, analysis of variance revealed more flavor difference due to time periods than to varieties, indicating that the varietal differences were too small to be consistently observed by the panelists. Color of all the varieties was acceptable, as shown by color scores ranging from 8.0 to 9.0, and the panelists were uniformly agreed on the varieties having the best color. Analysis of variance on the color scores revealed very highly significant differences for varieties but no significant differences for time periods. Sixty pak and 27802 were judged as having the best color of the varieties included in the trials. Odor scores were very similar for all varieties, ranging from 8.0 to 8.6 on the 10-point scale. Asgrow Golden-22 had a significantly higher texture score than the other varieties.

When flavor, color, odor, and texture ratings for all time periods were combined and compared, Sixty pak, 27802, and Asgrow Golden-22 were considered most desirable in sensory aspects.

The second set of experiments included eight varieties (Table 2) and panelists were asked to rate only flavor, color, and texture, omitting odor. There were no significant flavor differences among the varieties, but Evertender-C and Gold Cup had significantly higher color scores than the others.

Combined averages for flavor, color, and texture scores for all time periods revealed that seven of the eight varieties were within a range of 0.2 on the 10-point scale. Only Staygold was below the range of the others, owing to its low color score.

Color: Dominant wavelength, purity, and brightness for all the varieties tested are shown in Tables 3, 4, and 5. With storage periods combined, dominant wavelengths of all varieties included in both experiments were between 573.1 and 575.1 mμ. Although this is numerically a very short range, the color differences were readily distinguished by the panel. There was no difference in the range of dominant wavelength for cooked and uncooked sweet corn.

Values for percent purity were between 39.8 and 48.8 for cooked and uncooked samples in both experiments. In general, there was a tendency for samples of higher purity to be assigned higher color scores. Brightness values were between 42.4% and 49.5% and were significantly different for varieties, both cooked and uncooked.

Of the three color dimensions measured in the experiments--dominant wavelength, percent purity, and brightness--dominant wavelength appeared to be most closely related to color scores assigned by the panel. Dominant wavelengths

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[3] P. A. Shaffer and M. Somogyi, "Copper-iodometric Reagents for Sugar Determination." Journal Biol. Chem. 100: 695-713. 1933.

TABLE 1. — RESULTS OF TASTE PANEL EVALUATION OF SWEET CORN

Variety	PERIOD OF FROZEN STORAGE																			
	3 Months					6 Months					9 Months					Time Periods Combined				
	Flavor	Color	Odor	Texture	WMS*	Flavor	Color	Odor	Texture	WMS*	Flavor	Color	Odor	Texture	WMS*	Flavor	Color	Odor	Texture	WMS
Aristogold Bantam Evergreen	7.8	8.9	8.6	8.1	8.4	7.3	8.0	8.1	7.6	7.7	7.2	8.0	8.1	7.8	7.7	7.4	8.3	8.3	7.8	7.9
25778	8.2	8.0	8.6	7.9	8.1	7.7	8.4	8.2	7.7	8.0	7.7	8.7	8.5	7.6	8.2	7.9	8.3	8.4	7.8	8.1
Sure crop	8.8	8.6	8.8	8.5	8.7	7.8	8.2	8.2	8.0	8.1	7.3	8.2	8.2	7.7	7.8	8.0	8.3	8.4	8.1	8.2
25776	8.4	8.7	8.6	8.4	8.5	7.7	8.3	8.3	7.8	8.0	7.4	8.2	8.2	7.6	7.8	7.9	8.4	8.4	7.9	8.1
Florigold-107	7.8	8.1	8.5	7.8	8.0	6.6	8.1	7.7	7.2	7.4	6.8	8.3	8.2	7.2	7.6	7.1	8.2	8.1	7.4	7.7
27802	8.5	9.2	8.9	8.3	8.7	7.8	8.9	8.4	7.9	8.3	7.8	9.0	8.5	7.6	8.3	8.0	9.0	8.6	7.9	8.4
R-8	7.5	8.4	8.5	8.0	8.1	6.9	8.0	7.7	7.2	7.4	6.1	8.5	8.0	7.5	7.4	6.8	8.3	8.0	7.6	7.6
NK-1304	8.1	9.2	8.8	8.5	8.7	7.4	8.4	8.1	7.9	7.9	7.5	8.9	8.1	7.8	8.1	7.7	8.8	8.4	8.1	8.2
Golden Security	8.8	8.0	8.8	8.5	8.5	7.7	7.8	7.9	7.9	7.8	7.8	8.2	8.2	7.9	8.0	8.1	8.0	8.3	8.1	8.1
Victory Golden	7.6	8.1	8.6	7.9	8.0	7.8	8.4	8.1	7.9	8.1	7.9	8.5	8.5	7.8	8.2	7.8	8.3	8.4	7.9	8.1
Carmelcross	8.2	9.1	8.7	8.2	8.6	7.2	8.4	8.0	7.6	7.8	7.4	8.5	7.9	7.5	7.9	7.6	8.7	8.2	7.8	8.1
North Star	7.7	8.8	8.6	7.5	8.2	7.4	8.4	8.1	7.4	7.8	7.4	8.2	8.4	7.6	7.9	7.5	8.5	8.4	7.5	8.0
Sixty Pak	8.3	8.8	8.6	8.4	8.5	8.1	9.0	8.2	8.1	8.5	7.6	9.2	8.5	7.7	8.3	8.0	9.0	8.5	8.1	8.4
Asgrow Golden-22	9.0	8.3	8.7	8.8	8.7	8.5	8.0	8.3	8.4	8.3	8.4	7.7	8.3	8.4	8.1	8.6	8.0	8.4	8.5	8.4

*WMS (weighted mean score) is an overall judgment of the variety, giving the following values to the four factors: Flavor (35%), Color (35%), Odor (15%), and Texture (15%).

TABLE 2. — RESULTS OF TASTE PANEL EVALUATION OF SWEET CORN

Variety	PERIOD OF FROZEN STORAGE											
	0 Months				3 Months				6 Months			
	Flavor	Color	Texture	Mean	Flavor	Color	Texture	Mean	Flavor	Color	Texture	Mean
Golden Security	8.5	8.3	8.5	8.4	8.4	8.0	7.9	8.1	8.1	8.3	7.9	8.1
25776	8.9	8.9	8.5	8.8	7.9	7.9	7.5	7.8	8.3	8.8	8.0	8.4
27802	8.8	9.1	8.3	8.8	8.3	8.7	7.8	8.3	8.1	8.7	8.0	8.3
Iochief	9.0	8.7	8.7	8.8	8.1	8.2	8.2	8.2	7.8	8.2	7.9	8.0
Evertender-C	8.3	9.2	8.0	8.5	8.0	9.1	7.6	8.2	8.0	8.9	7.7	8.2
Staygold	8.3	7.5	8.4	8.1	8.1	7.1	8.0	7.7	8.0	7.6	7.9	7.8
Valleygold	8.7	7.3	8.8	8.2	8.2	7.2	8.1	7.9	8.9	8.2	8.5	8.5
Gold Cup	8.5	9.2	8.1	8.6	8.3	9.2	7.8	8.4	8.0	9.1	7.5	8.2
	9 Months				Time Periods Combined							
Golden Security	8.1	8.6	8.2	8.3	8.3	8.3	8.1	8.2				
25776	7.9	7.9	8.1	8.0	8.2	8.4	8.0	8.2				
27802	7.9	8.3	8.1	8.1	8.3	8.7	8.0	8.3				
Iochief	7.8	8.1	7.7	7.9	8.2	8.3	8.1	8.2				
Evertender-C	7.9	8.9	8.0	8.3	8.0	9.0	7.8	8.3				
Staygold	7.6	6.8	7.8	7.4	8.0	7.3	8.0	7.8				
Valleygold	8.1	7.9	8.5	8.1	8.5	7.7	8.5	8.2				
Gold Cup	8.1	8.9	7.9	8.3	8.2	9.1	7.8	8.4				

TABLE 3. — DOMINANT WAVELENGTH, PERCENT PURITY, AND BRIGHTNESS OF UNCOOKED SWEET CORN

Variety	AFTER 3 MONTHS' FROZEN STORAGE			AFTER 9 MONTHS' FROZEN STORAGE			TIME PERIODS COMBINED		
	Dominant Wavelength	Percent Purity	Brightness (Y) in %	Dominant Wavelength	Percent Purity	Brightness (Y) in %	Dominant Wavelength	Percent Purity	Brightness (Y) in %
Aristogold Bantam Evergreen	573. 6	44. 7	42. 6	574. 2	42. 5	44. 8	573. 9	43. 6	43. 7
25778	573. 0	40. 2	39. 8	574. 4	40. 2	45. 0	573. 7	40. 2	42. 4
Sure crop	574. 2	43. 4	42. 6	574. 1	38. 1	44. 0	574. 1	40. 7	43. 3
25776	573. 8	44. 4	43. 4	574. 4	39. 4	46. 4	574. 1	41. 9	44. 9
Florigold-107	574. 4	44. 1	40. 9	574. 2	41. 3	45. 2	574. 3	42. 7	43. 0
27802	574. 8	50. 3	42. 8	574. 0	44. 2	46. 5	574. 4	47. 3	44. 6
R-8	573. 5	40. 2	43. 6	574. 2	43. 6	48. 9	573. 9	41. 9	46. 3
NK-1304	574. 6	43. 2	47. 2	574. 6	39. 2	50. 3	574. 6	41. 2	48. 8
Golden Security	574. 1	44. 9	42. 5	573. 8	40. 2	45. 1	573. 9	42. 5	43. 8
Victory Golden	573. 2	43. 0	42. 1	574. 2	43. 7	47. 0	573. 7	43. 3	44. 6
Carmelcross	574. 4	47. 6	47. 1	574. 5	40. 9	47. 0	574. 4	44. 3	47. 0
North Star	574. 6	46. 6	43. 0	573. 8	39. 1	48. 3	574. 2	42. 8	45. 7
Sixty pak	574. 4	44. 8	44. 5	574. 4	40. 8	45. 6	574. 4	42. 8	45. 0
Asgrow Golden-22	573. 4	40. 9	41. 4	573. 4	40. 1	45. 0	573. 4	40. 5	43. 2

TABLE 4. — DOMINANT WAVELENGTH, PERCENT PURITY, AND BRIGHTNESS OF UNCOOKED SWEET CORN

Variety	IMMEDIATELY AFTER PROCESSING			AFTER 3 MONTHS' FROZEN STORAGE			AFTER 6 MONTHS' FROZEN STORAGE		
	Dominant Wavelength	Percent Purity	Brightness (Y) in %	Dominant Wavelength	Percent Purity	Brightness (Y) in %	Dominant Wavelength	Percent Purity	Brightness (Y) in %
Golden Security	573. 9	44. 5	45. 3	573. 8	44. 8	47. 4	573. 7	46. 9	47. 2
25776	573. 7	47. 4	43. 6	574. 0	45. 8	45. 9	573. 8	48. 5	46. 3
27802	574. 5	44. 6	44. 3	574. 5	47. 2	46. 6	574. 7	49. 4	45. 9
Iochief	574. 4	45. 9	43. 5	573. 4	52. 0	50. 7	574. 2	47. 3	48. 0
Evertender-C	574. 9	46. 4	46. 3	574. 2	44. 8	50. 2	575. 2	46. 1	48. 1
Staygold	572. 2	40. 3	44. 0	573. 8	43. 8	45. 9	572. 8	39. 6	44. 9
Valleygold	573. 7	47. 8	39. 4	574. 1	43. 2	42. 9	574. 3	45. 8	42. 6
Gold Cup	574. 8	47. 3	44. 8	574. 6	45. 7	50. 4	574. 8	52. 4	48. 3

Variety	AFTER 9 MONTHS' FROZEN STORAGE			TIME PERIODS COMBINED		
Golden Security	574. 3	44. 3	50. 3	573. 9	45. 2	47. 6
25776	574. 9	40. 5	46. 4	574. 1	45. 6	45. 6
27802	574. 1	45. 0	48. 8	574. 5	46. 5	46. 4
Iochief	573. 9	47. 8	49. 1	574. 0	48. 3	47. 8
Evertender-C	574. 5	46. 2	50. 7	574. 7	45. 8	48. 8
Staygold	573. 5	41. 4	47. 4	573. 1	41. 3	45. 5
Valleygold	573. 9	41. 9	45. 4	574. 0	44. 7	42. 6
Gold Cup	574. 4	45. 4	49. 1	574. 6	47. 7	48. 2

TABLE 5. — DOMINANT WAVELENGTH, PERCENT PURITY, AND BRIGHTNESS OF COOKED SWEET CORN

Variety	AFTER 3 MONTHS' FROZEN STORAGE				AFTER 6 MONTHS' FROZEN STORAGE			
	Dominant Wavelength	Percent Purity	Brightness (Y) in %	Taste Panel Color Score	Dominant Wavelength	Percent Purity	Brightness (Y) in %	Taste Panel Color Score
Golden Security	577. 4	44. 2	45. 6	8. 0	573. 9	42. 9	46. 7	8. 3
25776	574. 1	45. 8	45. 6	7. 9	573. 5	52. 4	46. 0	8. 8
27802	574. 5	48. 6	46. 8	8. 7	573. 6	47. 4	47. 6	8. 7
Iochief	573. 5	41. 3	47. 6	8. 2	573. 5	46. 0	49. 1	8. 2
Evertender-C	574. 1	48. 6	50. 1	9. 1	574. 5	45. 2	49. 1	8. 9
Staygold	573. 6	40. 0	46. 0	7. 1	572. 4	38. 2	46. 9	7. 6
Valleygold	573. 5	39. 5	42. 3	7. 2	574. 0	43. 0	42. 4	8. 2
Gold Cup	574. 5	44. 6	47. 4	9. 2	574. 2	49. 5	48. 2	9. 1
	AFTER 9 MONTHS' FROZEN STORAGE				TIME PERIODS COMBINED			
Golden Security	573. 9	43. 2	48. 2	8. 6	575. 1	43. 4	46. 9	8. 3
25776	573. 8	48. 1	46. 4	7. 9	573. 8	48. 8	46. 0	8. 4
27802	577. 2	44. 7	44. 7	8. 3	575. 1	46. 9	46. 4	8. 7
Iochief	573. 5	45. 7	49. 0	8. 1	573. 5	44. 3	48. 6	8. 3
Evertender-C	574. 2	44. 0	49. 4	8. 9	574. 3	45. 9	49. 5	9. 0
Staygold	572. 8	41. 1	47. 0	6. 8	572. 9	39. 8	46. 6	7. 3
Valleygold	573. 7	46. 6	45. 6	7. 9	573. 7	43. 0	43. 4	7. 7
Gold Cup	573. 8	45. 4	48. 1	8. 9	574. 2	46. 5	47. 9	9. 1

of the uncooked sweet corn were significantly and positively correlated with color scores for both sets of corn samples (Figs. 1 and 2). The three varieties included in both experiments--Golden Security, 25776, and 27802--had nearly identical dominant wavelengths, indicating a high degree of color uniformity between crops. Among these three varieties, 27802 had the highest dominant wavelength and the highest panel color score in both experiments.

Percent purity of cooked and uncooked corn was significantly correlated with color scores for the second series of experiments (r=.787 and .777). Brightness of cooked sweet corn was negatively related to flavor and texture scores.

Pericarp: Analysis of variance revealed significant differences in pericarp content among the eight sweet corn varieties included in the second experiment. Gold Cup and Evertender-C were highest in pericarp (Table 6) and had the lowest overall texture score of the samples tested. Also—these two varieties received the highest color scores of the eight. There was a significant positive correlation (r = .802) between pericarp content and color score. The bright yellow color desired by the panelists as well as increased pericarp developed with advancing maturity. The more mature samples, however, were well within acceptable limits for pericarp content. Staygold had significantly less pericarp than the other varieties and also the lowest color score of the eight. It was noted at the time of processing that Staygold was slightly undermature.

Shear: Results of shear press determinations on the second set of sweet corn varieties are shown in Table 7. Valleygold, the variety with the highest texture score, had the lowest shear value. The correlation between texture and shear was significant and negative (r = -.705).

Moisture: The second set of sweet corn samples, with storage periods combined, ranged from 74.9 to 82.8 percent moisture (Table 8). Staygold was significantly higher in moisture content than the other varieties. No significant variation due to length of storage was found.

Sugar Content: The eight varieties in the second set of samples were analyzed for total sugar and reducing sugars after one month of frozen storage and again after $7\frac{1}{2}$ months (Table 9). There were highly significant differences for total sugar content among the varieties tested; with Staygold having the highest total sugar (4.02 percent) and Evertender-C the lowest (2.67 percent). Differences between the two storage periods were not significant. Reducing sugar content generally followed the total sugar pattern. In all varieties the reducing sugars amounted to 20-28 percent of the total sugar.

Alcohol Insoluble Solids: Table 9 also shows the alcohol-insoluble solids (AIS) in sweet corn after $7\frac{1}{2}$ months' frozen storage. The values ranged from 11.3 percent of the fresh weight (Staygold) to 18.8 per cent (Gold Cup). The percent AIS was positively correlated with pericarp measurements (r = .854) and negatively correlated with moisture (r = -.857) and reducing sugar content (r = -.785). Increased pericarp and AIS, together with lower moisture content, are to be expected with advancing maturity of sweet corn. However, the AIS content was positively correlated (r = .831) with total taste panel score, indicating that none of the varieties were overmature.

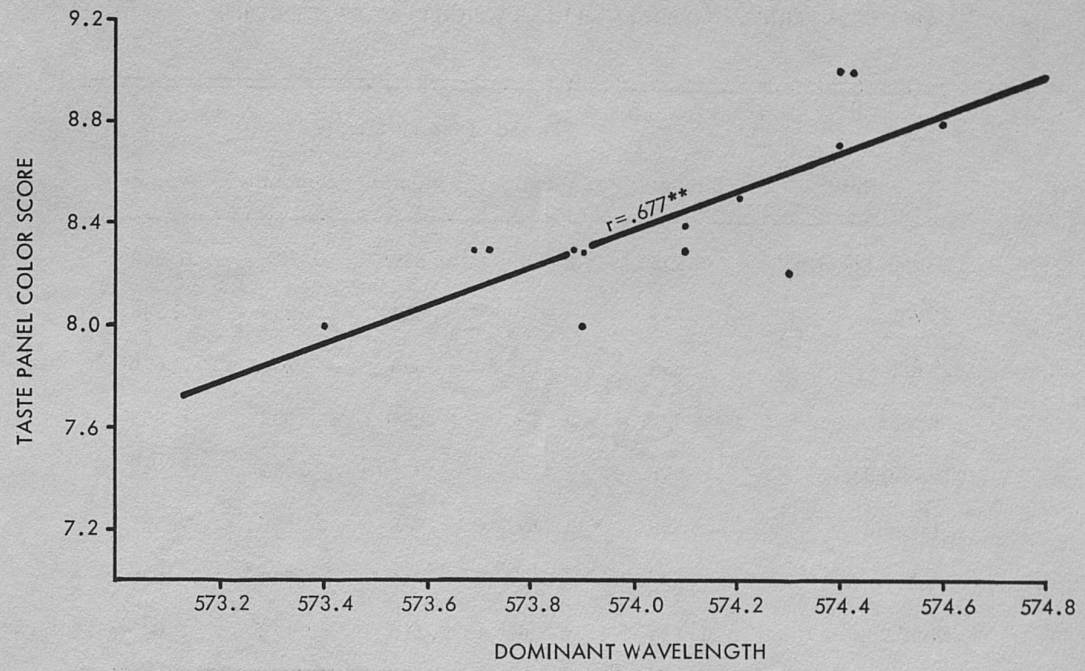

Fig. 1.—Correlation between dominant wavelength and taste panel color scores for 14 varieties of sweet corn.

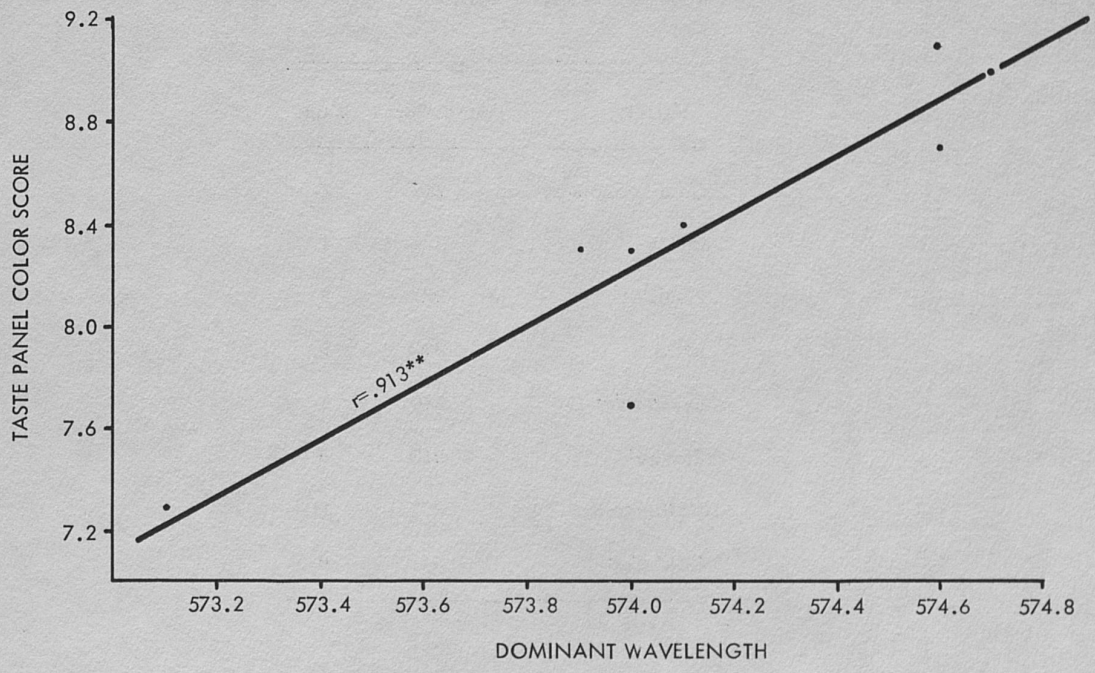

Fig. 2.—Correlation between dominant wavelength and taste panel color scores for eight varieties of sweet corn.

TABLE 6. — PERICARP (PERCENT FRESH WEIGHT) OF SWEET CORN

Variety	Period of Frozen Storage				
	0 months	3 months	6 months	9 months	Average
Golden Security	0. 595	0. 628	0. 639	0. 787	0. 662
25776	. 744	. 963	. 884	. 959	. 888
27802	. 655	. 745	. 653	. 731	. 696
Iochief	. 827	. 847	. 834	. 902	. 853
Evertender-C	. 911	. 938	. 931	. 985	. 942
Staygold	. 559	. 560	. 548	. 639	. 577
Valleygold	. 577	. 648	. 716	. 740	. 670
Gold Cup	1. 134	. 756	1. 116	1. 172	1. 045

TABLE 7. — SHEAR PRESS MEASUREMENTS ON SWEET CORN

Variety	Pounds Force	Rank
Golden Security	367	7
25776	322	4
27802	283	2
Iochief	332	5
Evertender-C	380	8
Staygold	310	3
Valleygold	257	1
Gold Cup	347	6

TABLE 8. — PERCENT MOISTURE OF SWEET CORN

Variety	Period of Frozen Storage			
	3 months	6 months	9 months	Average
Golden Security	80.5	80.7	77.1	79.4
25776	76.1	76.6	76.6	76.4
27802	77.7	77.1	77.1	77.3
Iochief	80.4	80.1	80.1	80.2
Evertender-C	78.9	78.6	77.8	78.4
Staygold	83.5	82.8	82.1	82.8
Valleygold	78.2	76.3	75.9	76.8
Gold Cup	75.5	74.7	74.4	74.9

TABLE 9. — SUGAR CONTENT, PERCENT ALCOHOL-INSOLUBLE SOLIDS, AND PERCENT MOISTURE OF SWEET CORN

Variety	AFTER 1 MONTH FROZEN STORAGE		AFTER $7\frac{1}{2}$ MONTHS FROZEN STORAGE				AVERAGE OF 2 VALUES	
	Total Sugar	Reducing Sugars	Total Sugar	Reducing Sugars	Percent Alcohol Insoluble Solids	Percent Moisture	Total Sugar	Reducing Sugars
Golden Security	3.08	0.84	3.37	0.90	13.7	79.7	3.22	0.87
25776	3.51	.87	3.38	.84	16.9	76.2	3.44	.86
27802	3.33	.87	3.47	.87	16.3	76.4	3.40	.87
Iochief	3.44	.88	3.45	.96	14.1	79.1	3.44	.92
Evertender-C	2.66	.71	2.68	.75	16.8	77.2	2.67	.73
Staygold	3.95	1.04	4.09	1.11	11.3	82.2	4.02	1.08
Valleygold	3.64	.72	3.78	.77	13.9	79.2	3.71	.74
Gold Cup	3.18	.63	3.25	.69	18.8	74.2	3.22	.66

SUMMARY

Tables 10 and 11 show overall rankings for all varieties, according to factors measured. Sixty pak, 27802, and Asgrow Golden-22 were best-liked by the taste panel among the first series of varieties tested (Table 10). Carmelcross, 27802, and NK-1304 were ranked highest by objective color measurements. All were acceptable, however.

The varieties in the second series (Table 11) were very closely ranked by the taste panel, with only minor differences among them. Evertender-C, Gold Cup, and 27802 were outstanding in desirable color attributes while Valleygold, Staygold, and 27802 had the best objective texture ratings. The importance of harvesting sweet corn at an optimum stage of maturity, allowing sufficient time for the development of desirable bright yellow color without the formation of an undesirable amount of pericarp, was underscored. In general, varieties having the best objective texture rating were also those with the highest sugar content.

All varieties tested during the two years' work were found suitable for freezing when harvested at optimum stages of maturity and processed according to recommended procedures.

TABLE 10. — VARIETIES AND SELECTIONS RANKED, IN DESCENDING ORDER, ACCORDING TO FACTORS MEASURED

Table Panel Scores[1]	Objective Color Measurements[2]
Sixty pak	Carmelcross
27802	27802
Asgrow Golden-22	NK-1304
Sure crop	North Star
NK-1304	Sixty pak
25776	Aristogold Bantam Evergreen
25778	25776
Golden Security	R-8
Victory Golden	Florigold-107
Carmelcross	Victory Golden
North Star	Golden Security
Aristogold Bantam Evergreen	Sure crop
R-8	Asgrow Golden-22
Florigold-107	25778

[1]Taste panel scores include flavor, color, odor and texture. Times of evaluation were combined to obtain all rankings in this table.

[2]Color measurements include dominant wavelength, purity, and brightness of uncooked sweet corn.

TABLE 11. — VARIETIES AND SELECTIONS RANKED, IN DESCENDING ORDER, ACCORDING TO FACTORS MEASURED

Taste Panel Scores[1]	Objective Color Measurements[2]	Objective Texture Measurements[3]	Total Sugar Content
Valleygold	Evertender-C	Valleygold	Staygold
27802	Gold Cup	Staygold	Valleygold
Golden Security	27802	27802	25776
25776	Iochief	Golden Security	Iochief
Gold Cup	25776	25776	27802
Iochief	Golden Security	Iochief	Gold Cup
Evertender-C	Valleygold	Gold Cup	Golden Security
Staygold	Staygold	Evertender-C	Evertender-C

[1]Taste panel scores include flavor, color and texture. Times of evaluation were combined to obtain all rankings in this table.

[2]Color measurements include dominant wavelength, purity, and brightness of both cooked and uncooked sweet corn.

[3]Texture measurements include mechanical separation of pericarp and shear press readings.