Report to the Oregon Processed Vegetable Commission
1988

1. Title: Relation of maturity to yield and quality in supersweet (sh_2) corn varieties

2. Project Leaders: J. R. Baggett, Horticulture
G. W. Varseveld, Food Science and Technology

3. Project Status: Terminating June 30, 1989

4. Project Funding by Commission for this Period:

Field trials (Baggett) $5,000.00
Processing (Varseveld) $3,000.00

5. Objectives:

A) To test supersweet (sh_2) corn varieties for production characteristics and processed quality.

B) To determine the relation of maturity stage, yield, and quality for selected varieties.

6. Justification:

Interest in supersweet corn is increasing rapidly among processors in the United States and it appears there will be a substantial market for processed supersweet corn in Japan. The availability of varieties of the supersweet type is severely limited at the present time, but commercial breeders are active in developing new hybrids. While most supersweet hybrids previously available have had tough pericarps which required harvest at moisture levels in the 78-80% range to avoid unacceptable toughness, two new varieties included in our 1987 trial were tender enough to permit harvests at lower moisture levels without a serious loss of quality. Harvest at moisture levels of 77% and lower will permit more acceptable yields and a more uniformly harvestable crop. Previous trials have shown that color and flavor improve with maturity over the range of 78 to 76% moisture. While tenderness of pericarp permits later harvest, it is generally associated with poor germination.

There is a need to continue evaluation of supersweet varieties in multiple harvest date trials to:

A) facilitate identification of promising varieties which have good germination potential and can be harvested sufficiently mature to attain uniformly usable crops, yields competitive with standard (Jubilee) type sweet corn, and optimum color and flavor.

B) generally learn more about the relationship between maturity, yield, kernel tenderness, ear size, kernel depth, and quality.

C) identify the optimum harvest maturity of specific varieties which are being tested and considered for commercial production.

7. Report of Progress:

Seven supersweet varieties with a range of characteristics were grown along with normal sweet corn Jubilee in a replicated trial at the Vegetable Research Farm at Corvallis, Oregon. The supersweet varieties were Sweet-treat (Ferry Morse Seed Company), XtraSweet 82 (Illinois Foundation Seed Company), Pinnacle (Harris Moran Seed Company), Crisp N' Sweet 710 (Crookham Seed Company), XPH 2606 (Asgrow Seed Company), Supersweet Jubilee (Rogers Brothers Seed Company), and Stylesweet (Ferry Morse Seed Company). All of these were previously grown in plot trials. Xtrasweet 82, Crisp N' Sweet 710, and Supersweet Jubilee have been grown in commercial quantities for processing in Oregon. The group is known to include a wide range of pericarp tenderness and differences in maturity time, kernel depth, color, and other quality factors.

Plots were planted May 25 in a sandy loam soil with a preplant band of 450 lbs/acre of 12-29-10 NPK fertilizer. The plots were substantially overplanted and the seedlings thinned after emergence to a spacing of approximately 10 inches. Rows were 36 inches apart. Irrigation was provided by overhead sprinkler with an application about every 10 days after the plants were well developed. Growth was vigorous and uniform.

The plots were arranged in a complete randomized block design with four replications. Each plot consisted of 3 adjacent rows 80 feet long. To prevent unfavorable cross pollination, the Jubilee plots were planted separately about 125 feet south of the supersweet variety plots in the same field where it received approximately the same irrigation and other cultural factors.

By using preharvest moisture determination, using a microwave oven for drying, an attempt was made to make the first harvest for each variety at 78-79% moisture. After the first picking, harvests were made on alternate days except that two days intervened if the scheduled day fell on Sunday. Varieties harvested on Saturday were harvested again on Tuesday so that all varieties received the same spread in harvest interval. Each variety was harvested eight times using 25 feet of row in each replication at each harvest date. Actual number of days from first harvest was used to plot the relation of change in various characteristics with time.

Measurements of ear length, ear diameter, and a single puncture test for estimate of tenderness were made on 20 ears per replication, carefully selected for uniformity and to represent the typical maturity for that harvest. The same 20 ears per replication were taken to the Food Science and Technology pilot plant for determination of moisture content, percent cut-off, and for canning and freezing for further quality evaluation. This report includes percent moisture and percent cut-off. All other processing quality data will be provided in a future supplementary report.

Figure 1 shows that the pattern of change in percent moisture was about the same for the seven supersweet varieties. A slower change in moisture content observed for Stylesweet in 1987 was not apparent in the 1988 trial. The drop in moisture for Jubilee was considerably more pronounced than that of the supersweet varieties.

The changes with harvest date of yield components, ear measurements, and field tenderness estimates are shown in Table 1 and Figures 2-9. These figures present the data as straight lines obtained by regression analysis, eliminating the harvest to harvest variations presumed to be caused by sampling error or environmental differences.

Yield, expessed as number and weight of good ears per acre, was increased over the entire harvest period as indicated by the graphs (Figures 2 and 3), but actual weights shown in Table 1 indicate a slight decrease in the final harvest in most of the supersweet varieties, except in Jubilee. Whether this small change was due to harvest procedures, chance, or the result of reduced moisture content is not known. Comparison of yields among varieties should be made at specific maturity levels as expressed by percent moisture. The mean yield value shown in Table 1 is biased by the component harvests; for example, the average yield of Crisp N' Sweet 710 is lowered disproportionately by the yield of 5.6 tons/acre obtained on the first harvest, which was at nearly 81% moisture. Number of ears/acre generally increased with harvest date, the result of a higher percentage of the ears being classified as good instead of being included in the culls. Overall variety differences in yield were major, with final values covering a range of 4 tons with Xtra Sweet 82 lowest and Jubilee highest. Of the supersweet varieties, Pinnacle was highest and Supersweet Jubilee next in yield.

Number and weight of culls (Table 1 only), which included immature ears harvested, was erratic because pickers made different decisions about leaving undeveloped ears in the field. Although the yield of culls was expected to decrease through the harvest period, this did not generally occur.

Ear weight (Figure 7) generally increased with harvest date until about the last two harvests, when it appeared to be leveling off (except in Jubilee). It is possible that supersweet varieties reach an equilibrium at about 73 or 74% moisture between storage of endosperm components and moisture loss. Further research would be required to determine if this actually happens.

There was little or no increase in ear length in some varieties (Figure 4) with date, and it appears that the cob, along with the main stem of the plant, has finished all elongation by processing maturity stage and slight decreases observed are probably sampling error. To better determine ear length changes, the number of ears measured was increased to 80 for four replicatons over the 20 measured in 1987. Also, more attention was given to selecting a sample of uniform maturity.

Ear diameter (Figure 5) increased steadily through the entire harvest period in most varieties, and relates to the increase of kernel width apparent in most varieties, to the detriment of the appearance of the processed product. Kernel depth (Figure 6) likewise increased over the harvest period as did percent cut-off (Figure 7). There appeared to be a slight tendency in some varieties for percent cut-off to start leveling off. Pinnacle showed a leveling off or reduction of both ear weight and percent cut-off in the last harvest at 73.8% moisture.

Measurement of pericarp tenderness (Figure 9) with a spring loaded puncture gauge is somewhat variable because it is affected by the operator and also by environmental factors, in part involved with time of day, such as temperature and water. The result is an uneven curve, but over time the trend is

usually clear. There were differences in the rate of change in tenderness and large differences in general level of the readings. While Pinnacle and Jubilee were lowest at the first harvests, sharper increases in toughness made Pinnacle equal to Sweettreat at the end of the harvests and Jubilee tougher than Supersweet Jubilee and Stylesweet. Direct comparison of Jubilee with the supersweet varieties is not feasible because of the completely different pattern of maturity changes in the two types of corn. Two supersweet varieties, Stylesweet and XPH 2606, showed essentially no change in toughness over the entire havest range, and Superwsweet Jubilee changed very slowly. Overall, of the supersweets, Supersweet Jubilee and Stylesweet were outstanding for tenderness with Pinnacle acceptable to mid-maturity. Xtrasweet 82 was clearly the toughest variety, with Crisp N' Sweet 710 second if the overall harvest season pattern and the mean value are considered. It should be noted that Pinnacle received higher toughness readings than Crisp N' Sweet 710 in 1987. It should also be noted that the pericarp evaluation presented here may not totally reflect sensory panel results because there may be other factors which affect texture as perceived by panelists. In 1987, panelists tended to rate the toughest varieties high for texture of canned samples, but not for frozen samples.

Observation Trial. Twenty-seven supersweet varieties were grown in observation plots. These were usually single plots about 30 feet long from which 20 foot samples of corn were harvested to obtain the data presented in Table 2. Larger amounts were planted to provide two replications of GSS 3548 and BSS 3378, and four replications of Natural Sweet 9000 and CSC Exp. 87. Replicated yields for these varieties were taken (Table 2) and samples from a single harvest date were processed for panel evaluation.

Of the 27 varieties shown in Table 2, a number are white or bicolor or other types not of processing type. However, white and bicolor supersweet corn may someday be processed since the eating quality of some is excellent.

Of the varieties in the observation trial, XPH 2659 was the most promising as a processing corn because of its very deep kernels, apparent good color, and long cylindrical ears. This variety should be tried for cobbette as well as cut corn. Another hybrid with long slender ears was XPH 2670, which was noted to be tender. GSS 3452 had tender, long, refined ears with slightly rough tips.

Of the varieties from this trial which were processed, BSS 3378 was essentially a bicolored Jubilee type with good ear refinement, flavor, and tenderness. It should be considered in any bicolor commercial trials. GSS 3548 was tougher by puncture test than BSS 3378 and was very difficult to husk. It was considered to have a chewy texture. CSC Exp. 87 was rated overall fair but we noticed spiral rows and considered the ears short and tapered. Natural Sweet 9000 was tough and somewhat rough looking with poor tips.

8. Summary:

There was an approximate linear relationship between days after first harvest and most measured characteristics of seven supersweet corn varieties and Jubilee sweet corn. Ear diameter, kernel depth, percent cut-off, toughness of pericarp, and yield expressed as no. ears/acre and tons/acre increased generally with days after first harvest. Yield of culls had no

apparent consistent pattern among varieties. Ear length essentially remained the same over the 16 day harvest. Highest yields were measured in Jubilee, Supersweet Jubilee, and Pinnacle while the lowest yields were produced by Xtrasweet 82. Jubilee, Supersweet Jubilee, Sweettreat, Stylesweet, and XPH 2606 were all distinctly more tender than Xtrasweet 82, Pinnacle, and Crisp N' Sweet 710.

Of 27 varieties planted for observation in a single plot trial, XPH 2659, XPH 2670, GSS 3452, GSS 3548, and bicolor BSS 3378 were considered promising or at least of interest for further processing trials.

9. Signatures:

Submitted by:

Redacted for Privacy

Project Leader _____ Date _____

Approved by:

Redacted for Privacy

Department Head _____ Date _____

Table 1. Relation of maturity to yield and quality in supersweet (sh_2) corn varieties, Corvallis, Oregon, 1988[1]

Variety	Harvest Date	Plants per 25 ft.	% Moisture	No.[2] Good Ears	T/A Good Ears	No.[2] Culls	T/A Culls	Lbs/ Ear	Ear Length (in.)	Ear Diameter (in.)	Kernel Depth (mm)	% Cutoff	Tender-ness[3]
Sweettreat	8-22	28	78.0	24.0	6.2	2.2	0.44	0.52	8.4	1.80	9.0	51.5	131
	8-24	29	77.4	22.4	6.6	4.5	0.82	0.60	8.2	1.80	10.0	57.8	123
	8-26	29	75.7	25.4	7.3	1.0	0.14	0.57	8.2	1.88	9.8	58.0	150
	8-29	27	74.3	28.0	8.4	1.5	0.33	0.60	8.3	1.90	11.0	60.4	161
	8-31	28	73.0	27.3	8.5	1.6	0.32	0.63	8.3	2.00	11.5	58.8	170
	9-2	28	72.7	28.0	8.8	1.9	0.32	0.63	8.3	2.00	12.2	62.8	164
	9-5	30	73.4	28.9	9.6	0.7	0.13	0.67	8.4	2.02	12.8	75.7	150
	9-7	29	73.0	27.0	9.0	0.6	0.14	0.67	8.4	2.05	12.5	76.9	175
	Mean	28		26.4	8.1	1.7	0.33	0.61	8.3	1.93	11.1	62.7	153
Xtrasweet 82	8-22	28	77.6	19.3	6.2	2.3	0.48	0.64	8.7	1.92	10.0	47.1	158
	8-24	30	75.8	18.0	6.3	5.4	1.03	0.70	8.6	2.02	9.8	53.7	150
	8-26	32	75.3	19.2	7.0	2.5	0.51	0.73	8.6	2.02	11.5	56.6	140
	8-29	31	73.5	19.9	7.3	2.9	0.61	0.74	8.6	2.05	12.0	60.1	184
	8-31	30	72.2	17.3	6.8	3.8	0.86	0.79	8.6	2.10	12.0	58.2	195
	9-2	30	72.2	19.3	7.5	2.5	0.46	0.78	8.5	2.18	13.0	60.8	188
	9-5	30	71.1	21.5	8.1	2.2	0.46	0.76	8.6	2.10	12.5	63.8	187
	9-7	30	70.9	19.1	7.4	2.2	0.49	0.77	8.5	2.12	12.8	58.2	183
	Mean	30		19.2	7.1	3.0	0.61	0.74	8.6	2.07	11.7	57.3	173
Pinnacle	8-23	30	79.9	27.6	7.1	3.9	0.71	0.51	8.6	1.78	9.0	45.7	109
	8-25	29	78.5	28.5	7.8	1.7	0.29	0.56	8.6	1.80	9.5	50.3	100
	8-27	29	77.3	29.9	8.9	2.6	0.47	0.60	8.6	1.88	10.0	56.0	133
	8-30	32	75.9	30.8	10.0	1.5	0.22	0.65	8.7	1.98	11.5	60.8	156
	9-1	31	74.9	31.5	10.7	1.5	0.27	0.68	8.5	2.00	11.2	61.9	144
	9-3	30	74.8	30.4	10.8	2.6	0.53	0.72	8.6	2.02	13.0	63.5	151
	9-6	30	75.0	29.1	11.4	1.7	0.36	0.79	8.6	2.02	12.0	66.8	144
	9-8	30	73.8	30.8	11.1	1.9	0.38	0.72	8.7	2.05	12.5	64.4	181
	Mean	30		29.8	9.7	2.2	0.40	0.65	8.6	1.94	11.1	58.7	139
Crisp 'N Sweet 710	8-26	30	80.7	18.9	5.6	3.3	0.67	0.60	8.6	1.90	8.5	53.5	131
	8-29	31	78.1	20.5	6.5	2.8	0.64	0.64	8.5	2.00	11.0	57.8	160
	8-31	32	77.9	20.8	7.0	1.9	0.41	0.68	8.5	2.00	12.0	58.9	168
	9-2	32	77.0	23.1	8.3	0.6	0.09	0.72	8.4	2.10	12.2	61.4	158
	9-5	30	75.6	21.2	8.0	2.2	0.38	0.76	8.5	2.12	11.5	62.8	159
	9-7	28	73.8	22.1	8.5	1.7	0.33	0.77	8.6	2.15	12.8	65.4	146
	9-9	31	75.1	22.7	8.7	1.3	0.29	0.77	8.7	2.15	13.0	63.4	152
	9-12	30	73.3	22.5	8.6	1.9	0.38	0.77	8.6	2.15	13.5	65.8	184
	Mean	30		21.5	7.7	2.0	0.40	0.71	8.5	2.08	11.8	61.1	157
Supersweet Jubilee	8-29	30	78.5	26.0	6.6	1.9	0.34	0.51	8.2	1.80	10.2	57.3	122
	8-31	32	77.7	26.6	7.5	0.7	0.14	0.56	8.2	1.90	11.8	59.9	128
	9-2	30	77.7	28.6	8.6	1.5	0.30	0.60	8.2	1.98	12.2	63.1	104
	9-5	32	75.3	31.5	10.2	0.7	0.14	0.65	8.2	2.00	11.8	64.3	140
	9-7	31	75.8	29.3	10.0	1.5	0.30	0.69	8.2	2.12	13.2	68.1	131
	9-9	30	75.0	28.5	10.1	2.2	0.41	0.71	8.2	2.10	13.8	68.2	122
	9-12	32	74.3	31.4	11.5	1.7	0.36	0.73	8.2	2.15	14.2	69.8	124
	9-14	30	73.8	30.2	11.3	2.0	0.39	0.75	8.2	2.12	14.8	70.1	134
	Mean	31	----	29.0	9.5	1.5	0.30	0.65	8.2	2.02	12.8	65.1	126

Table 1. Relation of maturity to yield and quality in supersweet (sh_2) corn varieties, Corvallis, Oregon, 1988[1] (cont.)

Variety	Harvest Date	Plants per 25 ft.	% Moisture	No.[2] Good Ears	T/A Good Ears	No.[2] Culls	T/A Culls	Lbs/ Ear	Ear Length (in.)	Ear Diameter (in.)	Kernel Depth (mm)	% Cutoff	Tender-ness[3]
XPH 2606	8-29	30	77.1	27.3	8.0	1.6	0.32	0.59	8.2	1.90	9.5	52.4	144
	8-31	30	77.1	24.0	7.5	1.6	0.33	0.63	8.1	1.98	11.2	59.3	157
	9-2	30	76.8	22.8	7.5	1.7	0.35	0.66	8.2	2.05	11.8	59.4	135
	9-5	31	75.7	28.9	9.8	0.9	0.17	0.68	8.2	2.10	12.0	63.2	148
	9-7	29	74.8	27.3	9.5	0.9	0.22	0.70	8.2	2.10	11.8	64.4	160
	9-9	32	74.5	29.5	10.1	1.6	0.33	0.69	8.2	2.12	12.2	64.7	149
	9-12	30	73.8	28.9	10.6	1.2	0.24	0.74	8.2	2.15	13.2	66.1	145
	9-14	33	73.9	27.0	9.9	1.7	0.45	0.74	8.1	2.15	13.2	62.1	147
	Mean	31	----	27.0	9.1	1.4	0.30	0.68	8.2	2.07	11.9	61.5	148
Stylesweet	9-1	28	80.3	17.4	5.8	1.9	0.53	0.67	9.4	1.90	10.9	56.4	143
	9-3	28	78.7	17.6	6.5	3.6	0.58	0.74	9.4	1.98	12.5	62.7	133
	9-6	29	77.5	19.8	7.9	1.9	0.40	0.81	9.5	2.08	12.8	63.0	114
	9-8	28	76.9	18.4	7.9	1.7	0.27	0.86	9.7	2.12	11.5	67.0	154
	9-10	30	76.4	22.7	9.4	2.2	0.58	0.84	9.6	2.12	14.0	66.0	127
	9-13	30	76.0	21.5	10.0	4.5	1.23	0.94	9.6	2.20	14.5	65.6	119
	9-15	28	75.5	21.6	10.2	3.6	0.92	0.95	9.6	2.20	13.8	65.8	139
	9-17	28	75.9	21.2	10.2	2.5	0.70	0.97	9.7	2.22	13.5	68.2	143
	Mean	29		20.0	8.5	2.7	0.65	0.85	9.6	2.10	12.8	64.3	134
Jubilee	8-30	36	77.8	27.5	7.4	0.6	0.11	0.54	8.2	1.85	11.0	58.7	113
	9-1	36	75.6	30.2	8.7	0.4	0.10	0.58	8.0	1.88	11.0	63.6	94
	9-3	40	73.0	32.4	9.6	3.2	0.59	0.59	8.1	1.95	11.5	65.4	109
	9-6	36	70.6	33.3	10.7	0.6	0.10	0.64	8.0	2.08	13.0	66.5	122
	9-8	39	69.0	30.9	10.5	2.2	0.43	0.68	8.1	2.10	12.5	68.9	126
	9-10	38	67.1	31.2	10.9	3.2	0.64	0.70	8.2	2.12	13.2	68.4	130
	9-13	40	66.4	31.4	11.0	5.8	1.30	0.70	7.9	2.10	12.8	68.6	145
	9-15	38	65.5	30.5	12.3	2.9	0.59	0.81	7.9	2.15	13.8	73.3	145
	Mean	38		30.9	10.1	2.4	0.48	0.66	8.0	2.03	12.3	66.7	123
LSD at 5%, varieties				1.3	0.4	0.7	0.15	0.02	0.1	0.03	0.3	0.8	3.5
LSD at 5%, var. x dates				NS	NS	2.0	0.42	0.05	NS	NS	0.8	2.3	10.0

[1]All values except % moisture are average of four replications; for ear length, ear diameter, and tenderness, the value used for each replication was the mean of 20 individual ear measurements.
[2]Number of ears/acre divided by 1,000.
[3]Comparative scale, determined by a Chantillion spring puncture gauge.

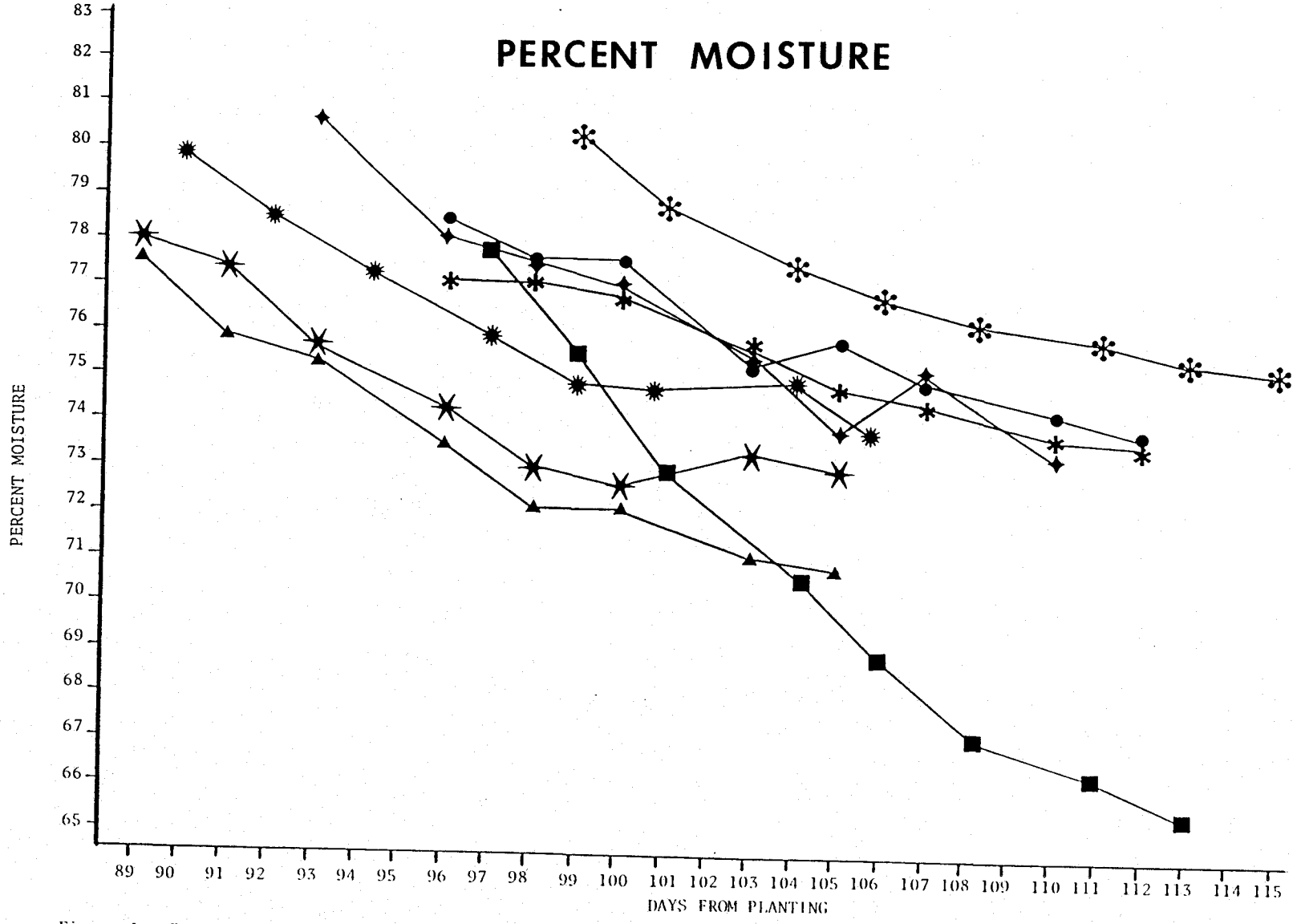

Figure 1. Percent moisture of supersweet corn varieties on eight harvest dates. ✻ - Stylesweet, ● - Supersweet Jubilee ✦ - Crisp N' Sweet 710, ✱ - XPH 2606, ✹ - Pinnacle, ★ - Sweettreat, ▲ - Xtra Sweet 82, ■ - Jubilee.

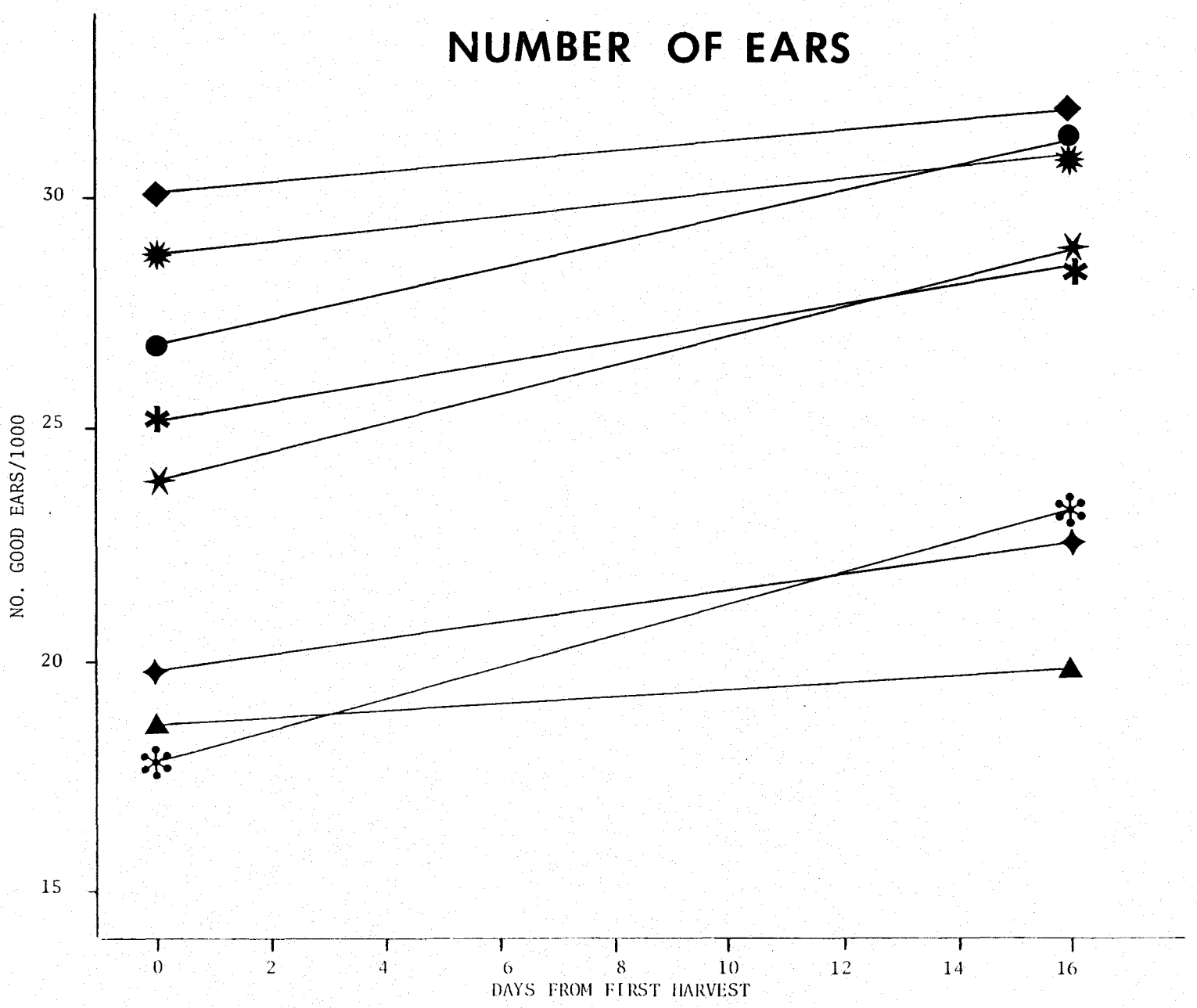

Figure 2. Number of ears/acre of supersweet corn varieties related to harvest day. ❊- Stylesweet, ●- Supersweet Jubilee, ✦- Crisp N' Sweet 710, ✱- XPH 2602, ✹- Pinnacle, ✶- Sweettreat, ▲- Xtra Sweet 82, ◆- Jubilee.

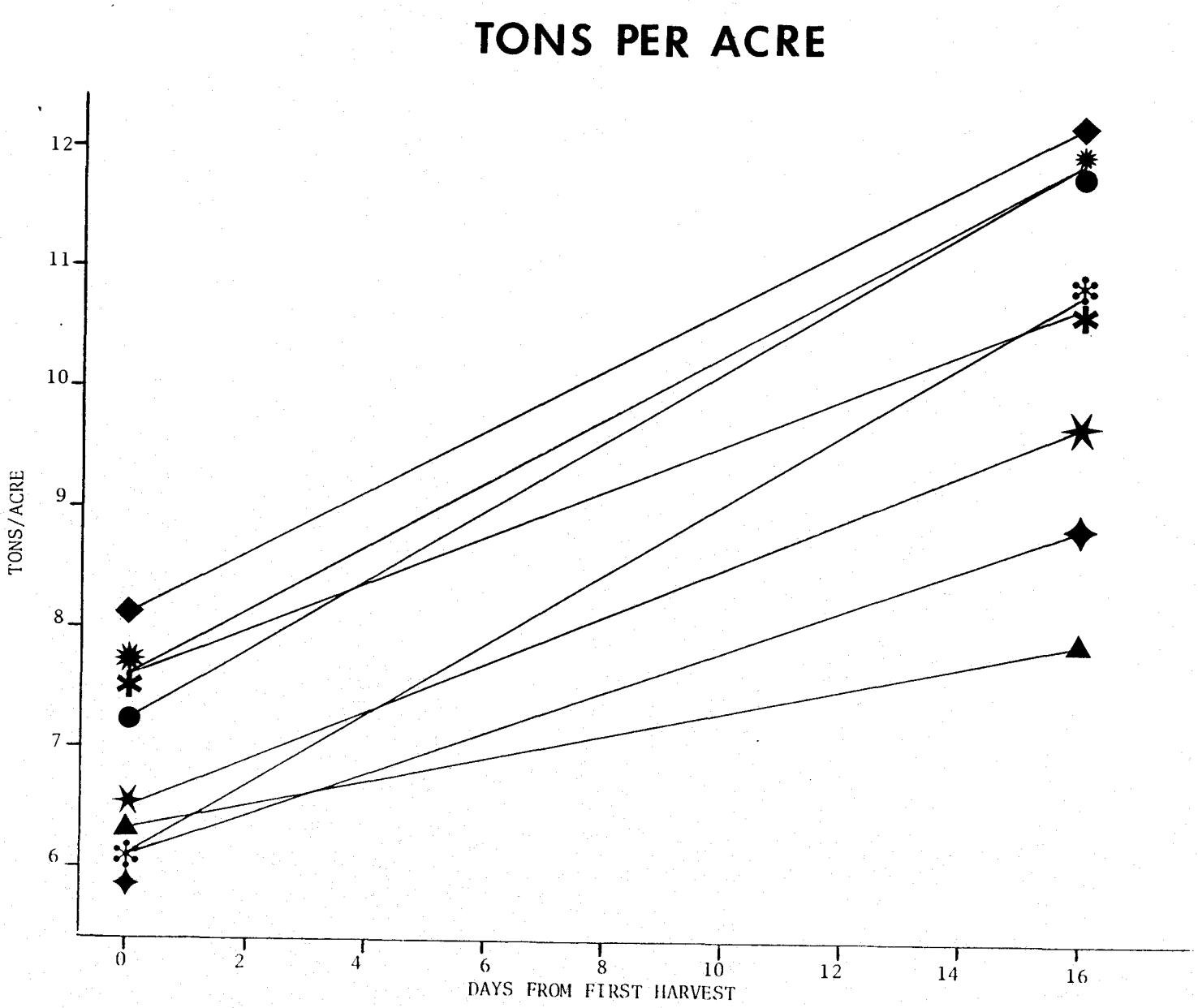

Figure 3. Yield of supersweet corn varieties related to harvest day. ✻- Stylesweet, ●- Supersweet Jubilee, ✦- Crisp N' Sweet 710, ✱- XPH 2602, ✹- [illegible]nacle, ✶- Sweettreat, ▲- Xtra Sweet 82, ◆- Jubilee.

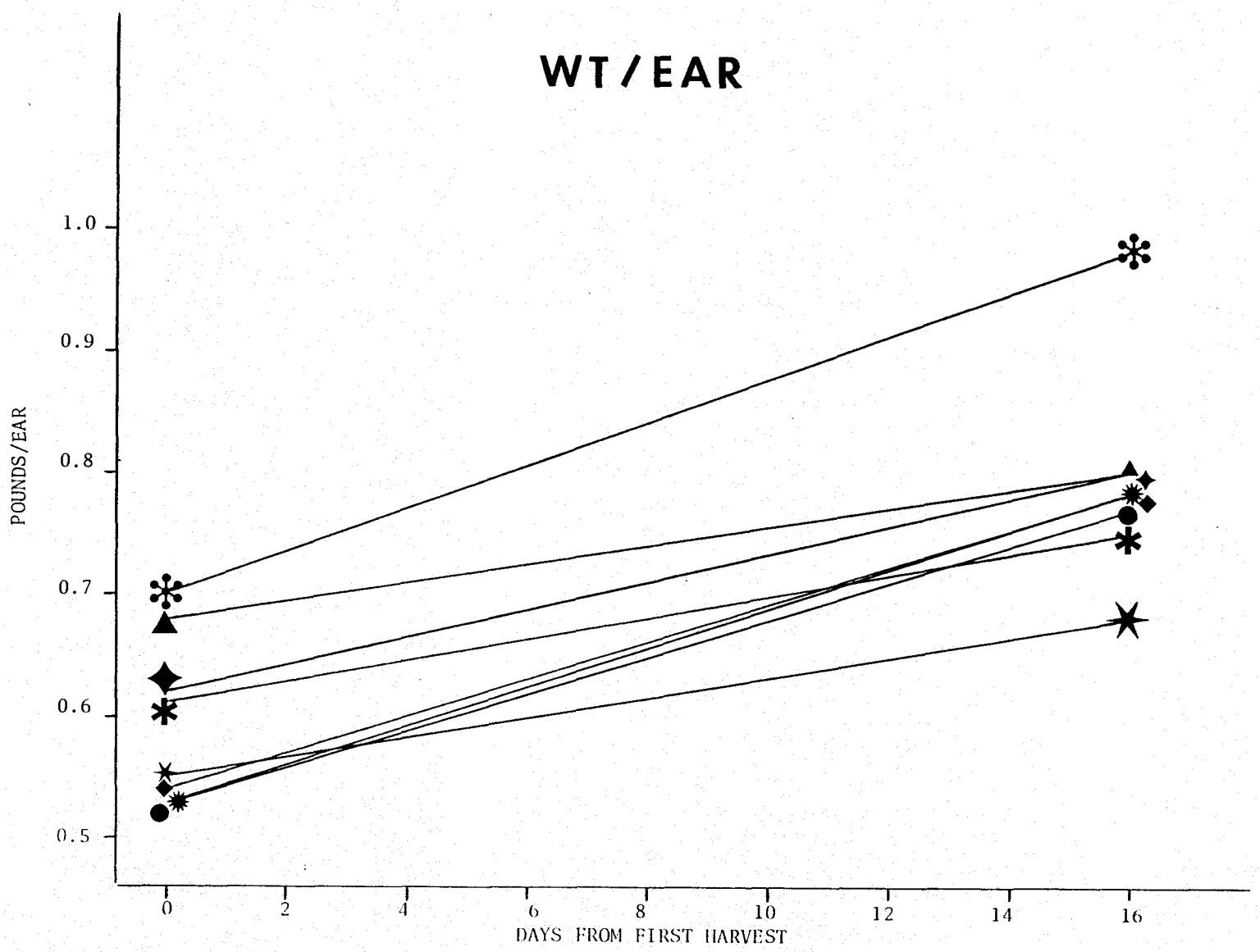

Figure 8. Weight per ear of supersweet corn vareities realted to harvest day. ❊- Stylesweet, ●- Supersweet Jubilee, ✦- Crisp N' Sweet 710, ✱- XPH 2602, ✹- Pinnacle, ✶- Sweettreat, ▲- Xtra Sweet 82, ◆- Jubilee.

EAR LENGTH

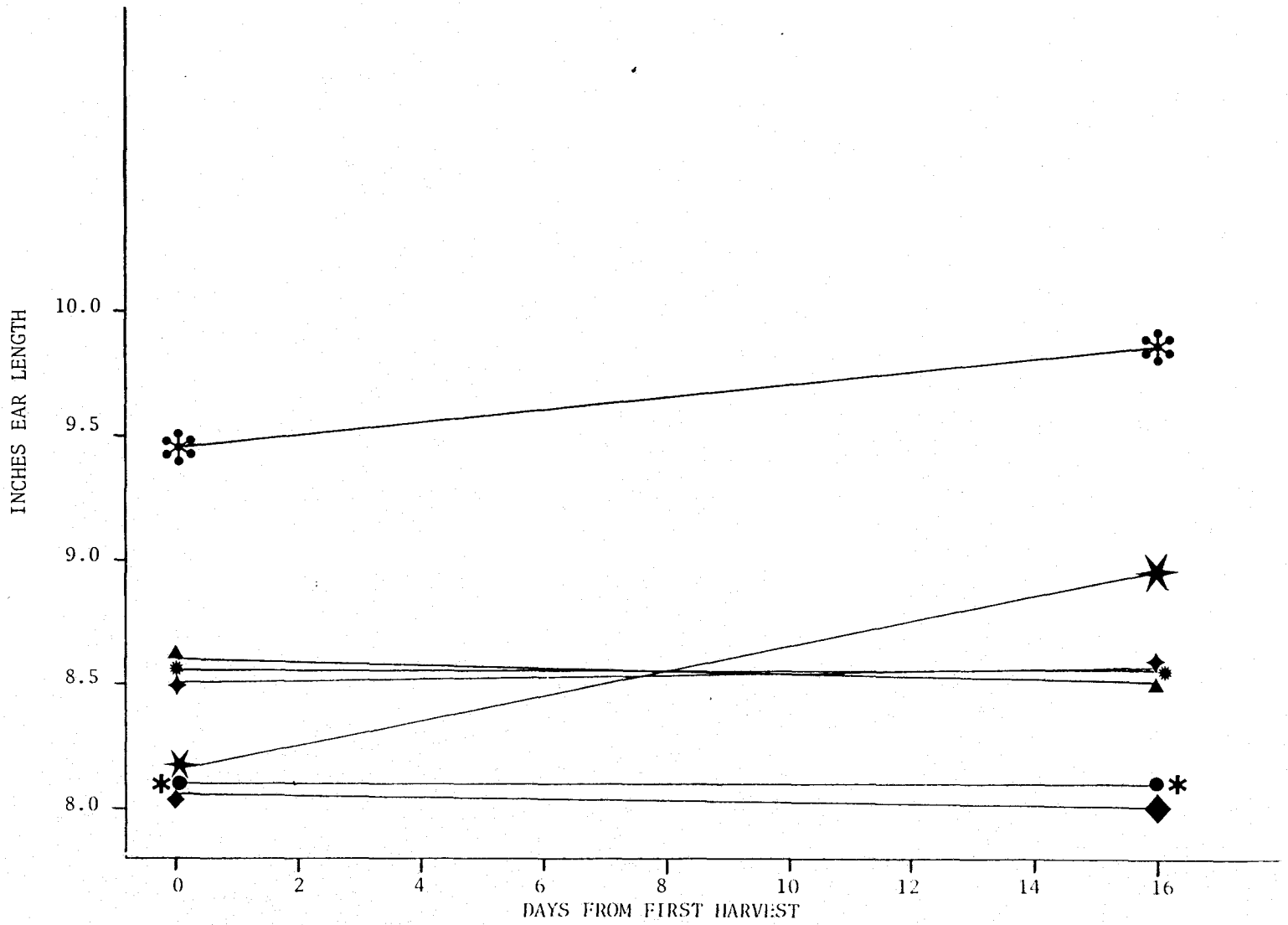

Figure 4. Ear length of supersweet corn varieties related to harvest day. ✻- Stylesweet, ●- Supersweet Jubilee, ✦- Crisp N' Sweet 710, [illegible]- XPH 2602, ✹- Pinnacle, ★- Sweettreat, ▲- Xtra Sweet 82, ◆- Jubilee

EAR DIAMETER

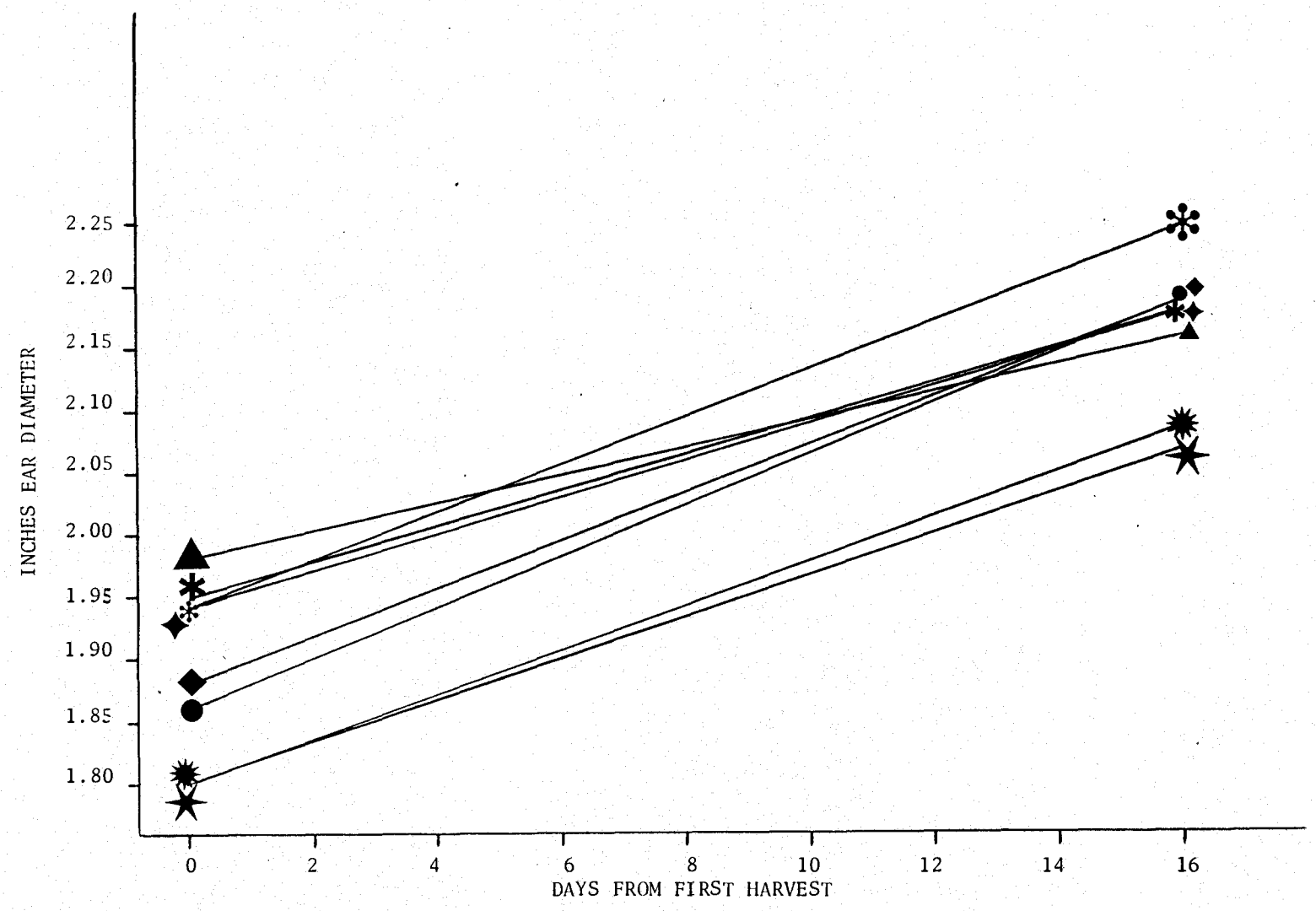

Figure 5. Ear diameter of supersweet corn varieties related to harvest day. ❊- Stylesweet, ●- Supersweet Jubilee, ✦- Crisp N' Sweet 710, ✱- XPH 2602, ✹- Pinnacle, ✶- Sweettreat, ▲- Xtra Sweet 82, ◆- Jubilee.

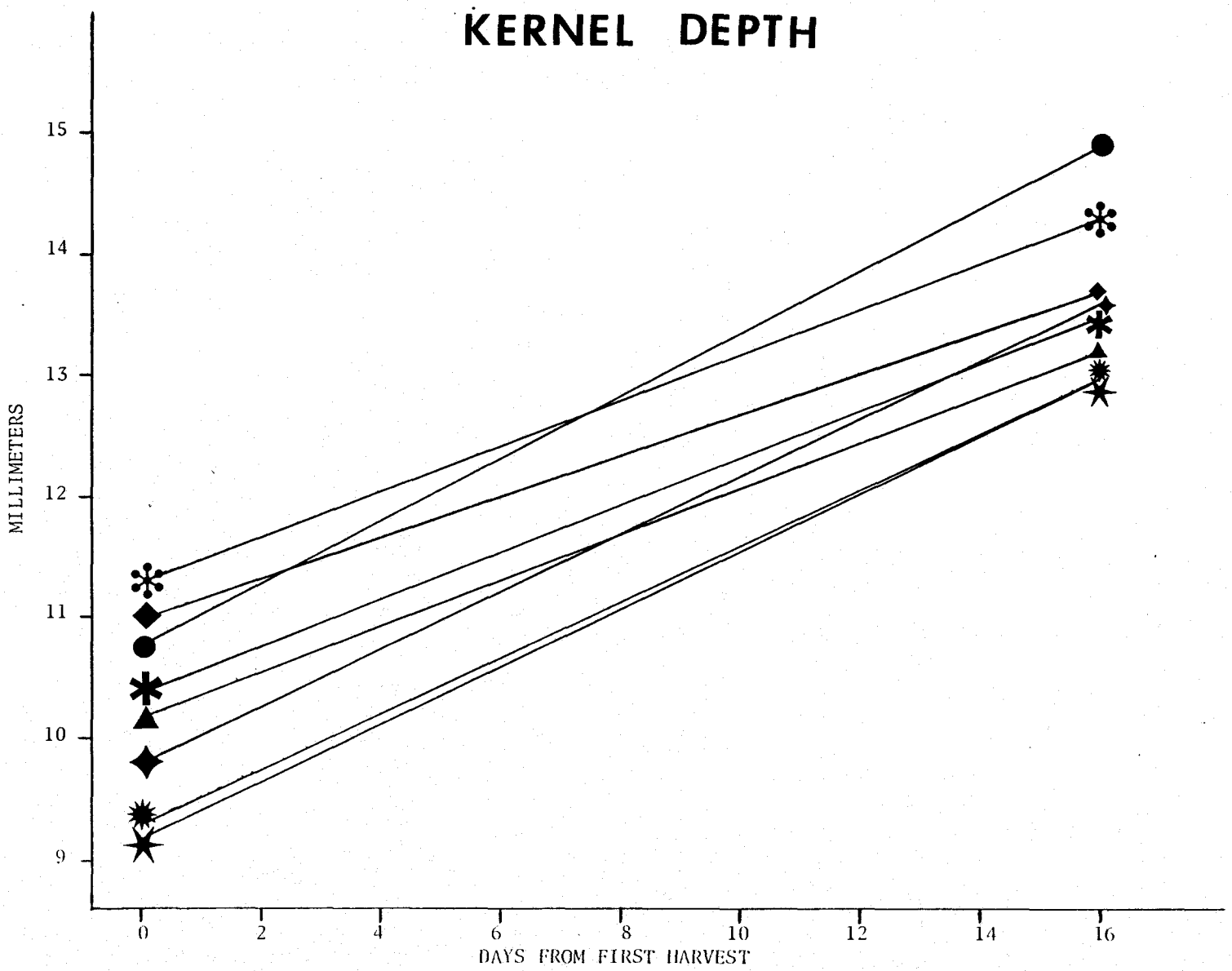

Figure 6. Kernel depth of supersweet corn varieties related to harvest day. ❄- Stylesweet, ●- Supersweet Jubilee, ✦- Crisp N' Sweet 710, ✱- XPH 2602, ✹- Pinnacle, ✶- Sweettreat, ▲- Xtra Sweet 82, ◆- Jubilee.

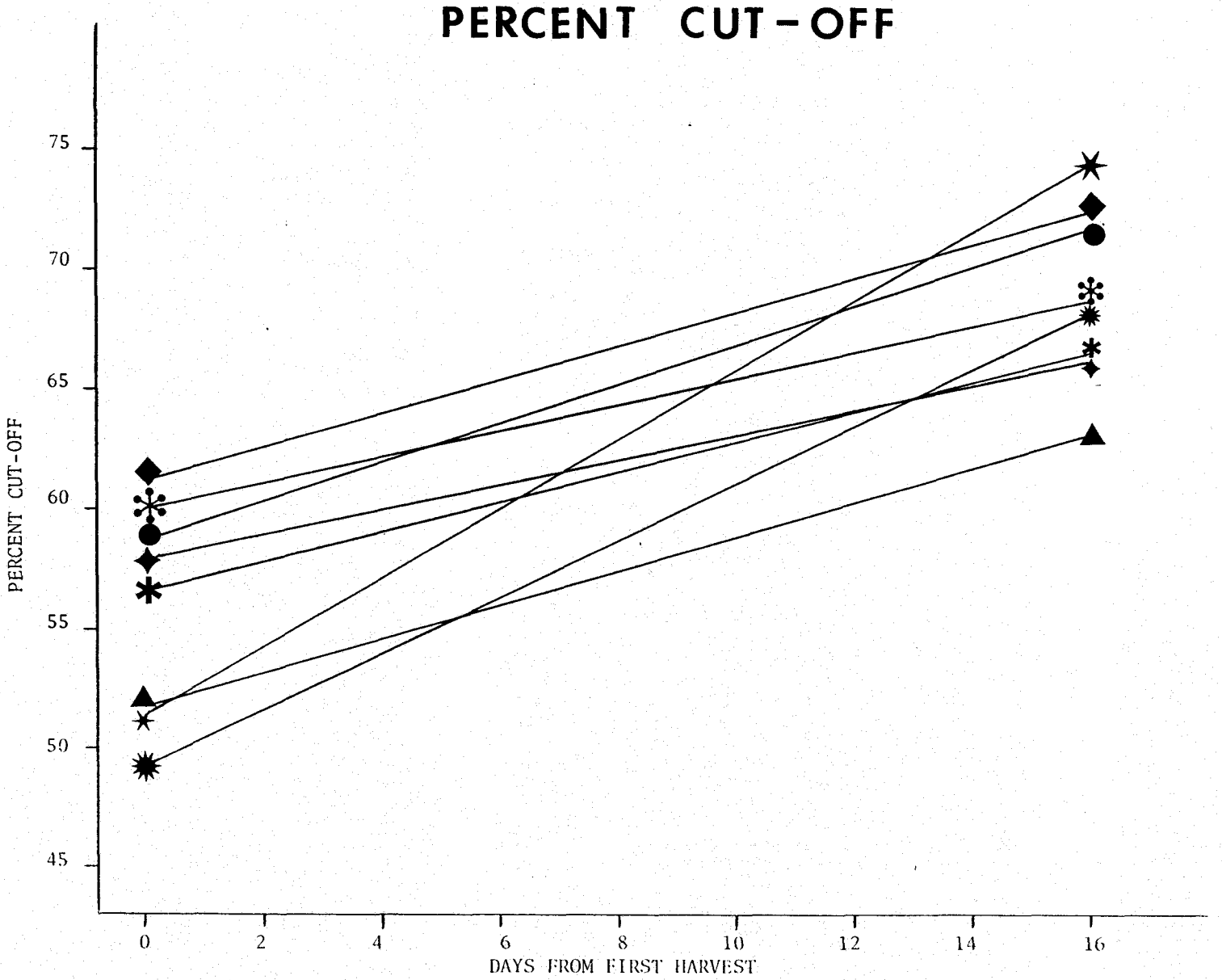

Figure 7. Percent cut-off of supersweet corn varieties related to harvest day. ❇- Stylesweet, ●- Supersweet Jubilee, ✦- Crisp N' Sweet 710, ✱- XPH 2602, ✹- Pinnacle, ✶- Sweettreat, ▲- Xtra Sweet 82, ◆- Jubilee.

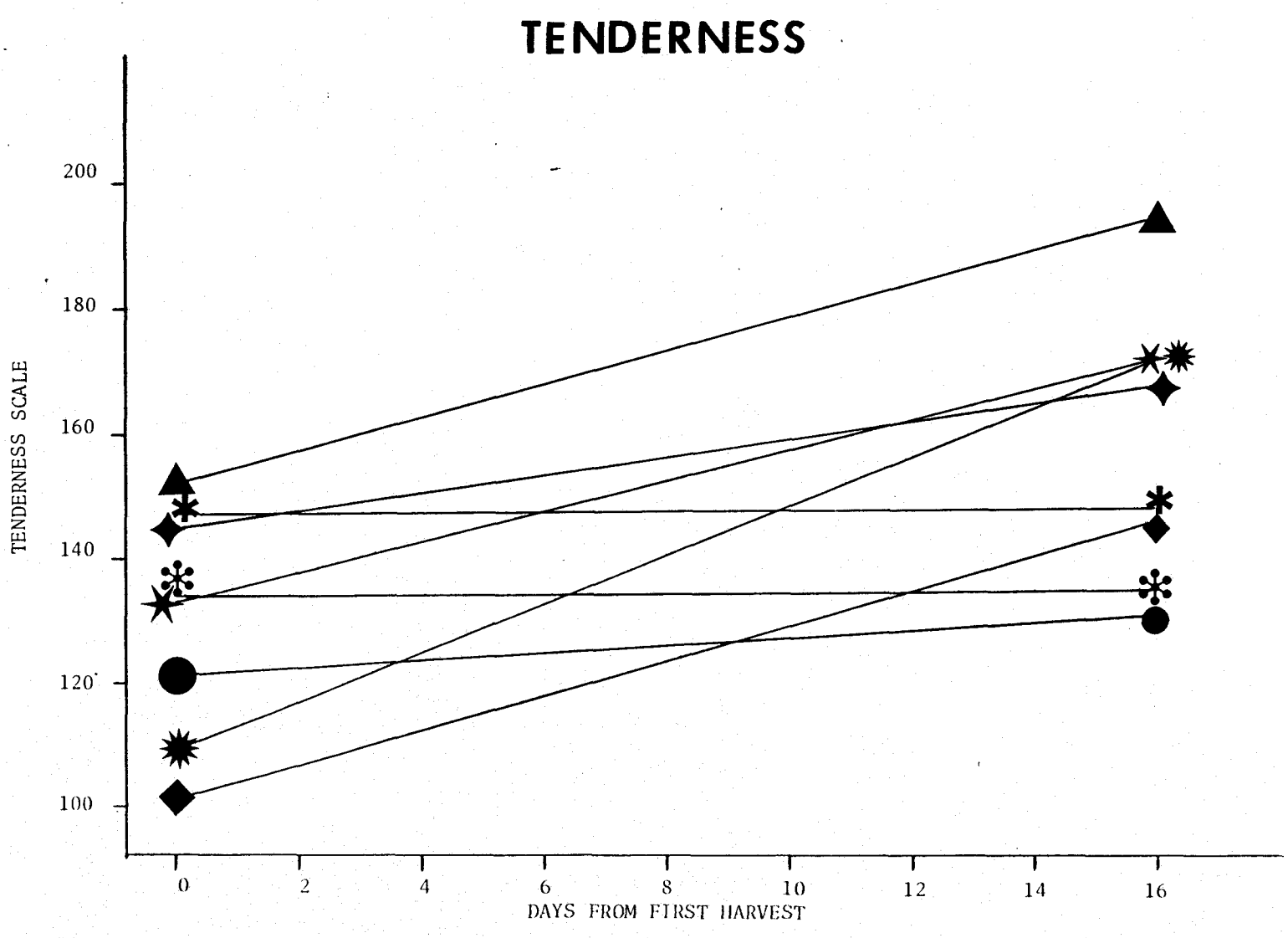

Figure 9. Tenderness of supersweet corn varieties related to harvest day. ✻- Stylesweet, ●- Supersweet Jubilee, ✦- Crisp N' Sweet 710, ✱- XPH 2602, ✹- Pinnacle, ✶- Sweettreat, ▲- Xtra Sweet 82, ◆- Jubilee.

Table 2. Ear Measurments, Supersweet, (SH2) Corn Variety Trial, Corvallis, Oregon, 1988[1].

Variety	Source[2]	Silk Date	Harvest Date	Stand	Thousands Good Ears/ Acre	Tons Good Ears/ Acre	Thousands Cull Ears/ Acre	Tons Cull Ears/ Acre	Avg. lbs/ Ear	Ear[3] Length (in)	Ear[3] Diam. (in)	Row No.	Kernel Depth (mm)
Paragon	1	7-27	8-22	36	24.0	6.6	1.5	0.3	0.55	8.1	2.0	14-18	9
GSS 3164	2	7-28	8-26	27	25.5	8.0	6.6	1.4	0.64	9.2	2.0	14-18	10
Honey 'N Pearl	4	7-31	8-30	29	26.3	8.5	0.7	0.1	0.65	8.6	2.0	14-16	12
Starstruck	3	7-31	8-30	27	27.0	7.6	4.4	1.0	0.57	8.3	1.9	16-18	11
Excel	2	8-1	8-30	28	25.6	7.1	0.7	0.1	0.56	7.9	1.8	16-18	11
Sweet Dreams	5	7-30	8-30	28	24.8	8.2	1.5	0.3	0.67	8.6	2.2	16-20	11
Sweetie 76	6	7-30	8-30	30	38.7	10.8	2.2	0.4	0.57	6.9	2.0	14-16	11
XPH 2671	7	8-2	9-2	28	30.7	7.6	1.5	0.4	0.50	7.4	2.0	16-18	12
Esca 100	8	8-2	9-2	33	24.8	6.9	2.2	0.4	0.56	8.1	2.0	16-18	12
Showcase	2	8-2	9-2	25	27.0	8.6	1.5	0.3	0.64	8.2	2.0	16-18	11
HMX 7373S	9	8-5	9-2	25	28.5	7.2	3.7	0.5	0.52	7.2	2.0	18	12
GSS 3321	2	8-5	9-2	27	28.5	7.9	3.7	0.7	0.56	8.2	2.0	16	12
Sunex 2626	6	8-3	9-2	28	24.1	7.8	4.4	0.8	0.65	8.2	2.0	16-18	11
XPH 2670	7	8-3	9-2	28	26.3	8.8	2.2	0.3	0.68	8.9	2.0	16-20	12
Sweet Season	6	8-4	9-2	30	22.6	6.7	3.7	0.7	0.60	7.7	1.9	18-20	12
Sunre 2630	6	8-4	9-2	30	32.9	8.9	7.3	1.2	0.55	8.4	2.0	16-18	11
GSS 3452	2	8-4	9-2	26	27.7	8.4	0	0	0.61	8.4	2.0	16-18	13
XPH 2674	7	8-4	9-2	23	20.4	7.1	5.1	0.9	0.70	8.2	2.0	16-18	13
HMX 5390S	9	8-5	9-6	30	33.6	9.9	0	0	0.76	7.7	2.0	18-20	13
Phenomenal	1	8-5	9-6	30	27.0	8.7	2.9	0.6	0.65	7.9	2.0	16	12
Sweet & Tender	10	8-5	9-6	24	35.0	7.0	2.9	0.4	0.40	8.0	1.9	16-20	11
How Sweet It Is	1	8-5	9-6	31	24.1	7.5	1.5	0.3	0.60	8.1	2.0	18	12
XPH 2659	7	8-8	9-8	27	27.0	9.5	8.8	1.8	0.71	9.6	1.9	16-18	14
GSS 3548[4]	2	8-22	9-20	23	24.2	6.6	8.7	1.6	0.55	7.7	1.8	16	11
BSS 3378[4]	2	8-22	9-20	28	31.7	8.9	7.5	1.5	0.57	8.3	1.8	16	10
CSC Exp. 87[5]	11	8-5	9-1	27	28.5	7.4	1.3	0.2	0.52	7.5	1.9	16-18	11
Natural Sweet 9000[5]	11	8-9	9-6	27	28.9	8.4	4.5	0.8	0.59	7.9	1.9	16	12

[1]Planted May 24, 3' between rows, thinned to about 8" apart. Yield data based on 20' plot.
[2]Sources: 1 = Crookham, 2 = Rogers, 3 = Johnnys, 4 = Illinois Foundation Seed, 5 = Stokes, 6 = Sun, 7 = Asgrow, 8 = Escagenetics, 9 = Harris-Moran, 10 = Burpee, 11 = Canners.
[3]Average of 10 ears.
[4]Yield data is average of 4 20' plots, not statistically arranged.
[5]Yield data is average of 4 replicated 20' plots.

Table 3.. Descriptive observations, supersweet (sh_2) corn varieties, Corvallis, Oregon, 1988[1]

Line	Source[2]	Kernel Refine.	Row Straight	Tip[3] Fill	Tip[3] Non-blanking	Cylind. Shape	Ear Unif.	Maturity Unif.	Kernel Unif.	Tender-ness[4]	Flavor	Overall Score	Notes
Paragon	1	4	4	2	5	3	3	3	4	160	4	3	Some curved ears; refined but shallow kernels; severe bird damage, appears to be due to poor husk cover; bicolor
GSS 3164	2	3	4	2	4	3	4	3	3	148	4	3	Hard to pick; some curved ears; worst fault is top fill and green tips
Honey 'n Pearl	4	4	4	2	3	3	3	4	4	118	4	4	Bicolor
Starstruck	3	4	2	3	3	4	4	4	3	115	5	4	Slightly pale color; some curved ears; generally refined, uniform; bicolor
Excel	2	5	3	3	4	2	4	3	4	116	4	4	Rough tips; too much taper, probably too small for processing; nice, even, refined kernels
Sweet Dreams	5	3	2	2	3	4	3	3	3	141	2	3	Var. for ear length, kernels; pale color; bland, sl. sweet flavor
Sweetie 76	6	3	3	1	4	2	2	3	2	153	1	1	Short fat ears, tough, not sweet
XPH 2671	7	4	3	2	2	4	3	3	4	143	3	3	Poor tips; good shape; generally refined
Esca 100	8	2	2	3	2	2	4	4	2	145	2	2	Rough looking, curved ears; light color
Showcase	2	3	4	4	4	3	2	3	4	128	4	3	Light color, some shape distortion, especially tips
HMX 7373S	9	4	3	5	4	4	4	4	4	169	3	3	Short, fat ears; refined; tough
GSS 3321	2	3	3	4	3	3	2	2	3	128	3	3	Generally refined but uneven ear shape and size, some curved ears
Sunex 2626	6	4	3	1	2	4	3	3	3	108	4	2	Bicolor; v. poor tip fill; tender; good flavor
XPH 2670	7	4	3	2	2	4	3	4	3	120	3	3	Good size and shape; somewhat rough; poor tip fill
Sweet Season	6	4	3	3	4	3	1	3	2	146	4	2	Variable ear shape and size and kernels; light color, too tapered
Sunre 2630	6	4	3	2	2	4	2	3	4	148	3	2	Variable ear shape and size; poor tip fill
GSS 3452	2	4	5	3	3	4	4	4	4	120	4	4	Long, fairly revined ears; tips slightly rough
XPH 2674	7	3	3	3	3	3	4	4	3	122	3	3	Good color; somewhat rough looking
HMX 53905	9	3	3	2	3	3	2	5	3	166	2	2	Short, fat ears; tough; poor flavor
Phenomenal	1	3	3	2	3	4	3	2	4	140	5	3	Bicolor; good flavor, good shape; somewhat variable for size and maturity
Sweet & Tender	10	2	1	3	3	3	2	2	2	150	4	2	Very rough looking; variable size and shape
How Sweet It Is	1	4	4	2	3	3	2	3	4	172	5	3	White; variable size, shape, and top fill
XPH 2659	7	4	4	4	4	4	4	4	4	156	4	4	Ears somewhat curved; good color; unusually deep kernels; late

Table 3. Descriptive observations, supersweet (sh_2) corn varieties, Corvallis, Oregon, 1988[1] (cont.)

Line	Source[2]	Kernel Refine.	Row Straight	Tip[3] Fill	Tip[3] Non-blanking	Cylind. Shape	Ear Unif.	Maturity Unif.	Kernel Unif.	Tender-ness[4]	Flavor	Overall Score	Notes
GSS 3548	2	3	3	2	2	3	4	3	3	112	3	3	V. difficult to husk; chewy texture
BSS 3378	2	3	4	2	2	3	3	3	3	98	4	3	Bicolor; good flavor, sweet and tender
CSC Exp. 87	11	4	3	3	4	2	4	4	4	161	4	3	Many spiral rows; short ears; tapered
Natural Sweet 9000	11	2	3	2	2	3	3	4	3	203	3	2	Very tough; somewhat rough looking; poor tips

[1]Planted May 24, 3' between rows, thinned to about 8" apart. Scores 1-5 scale, 5 = best. Overall score related to general characteristics of harvested ears.
[2]Sources: 1 = Crookham, 2 = Rogers, 3 = Johnnys, 4 = Illinois Foundation Seed, 5 = Stokes, 6 = Sun, 7 = Asgrow, 8 = Escagenetics, 9 = Harris-Moran, 10 = Burpee, 11 = Canners.
[3]Tip fill is uniformity of kernel development on ear tips; tip blanking is absence of kernels on ear tips.
[4]Comparative scale determined by a Chantillon spring gauge; average of 10 readings.