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Trials Of SWEET CORN For Fresh Market

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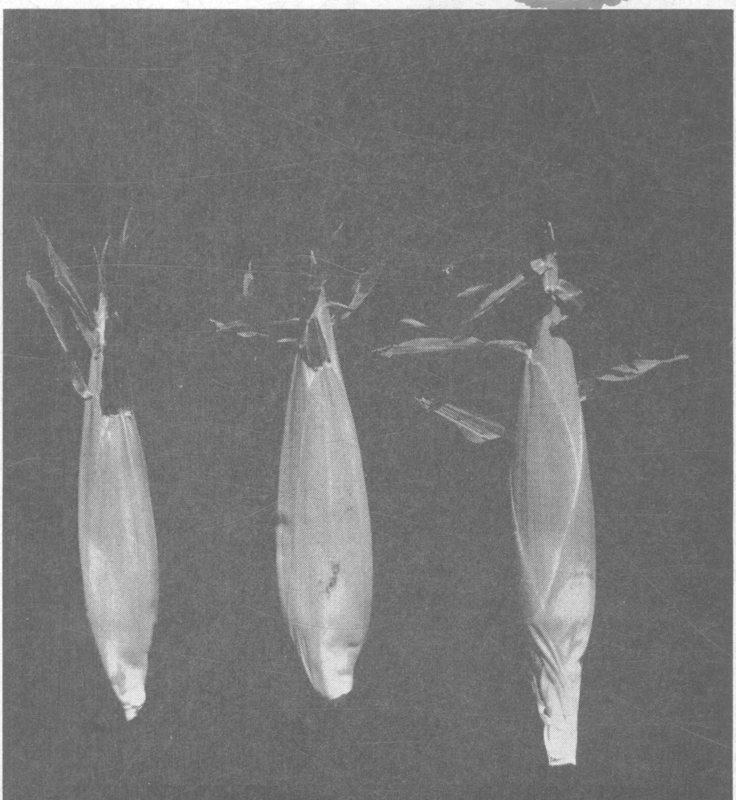

Ohio Agricultural
Experiment Station
Wooster, Ohio

On the Cover—

Shown in the cover illustration is the new hybrid variety, Flagship This and many of the new varieties had short ear leaves. Although this characteristic was not studied as part of the work on sweet corn varieties, it is an interesting feature of the newer corn. The absence of the typically long ear leaves made picking and packing for market much easier.

Field Trials of Hybrid Sweet Corn for Fresh Market, 1948 to 1950

F. E. JOHNSTONE, Jr.[1] and JOHN BUSHNELL

Approximately 16,000 acres of sweet corn are grown in Ohio for fresh market. Production tends to be localized near the consuming centers, but fairly distinct growing belts occur along Lake Erie from Ashtabula through Lucas County, along the Ohio River from Washington County to Lawrence County, and along the Miami River in Butler and Hamilton Counties.

In recent years more new excellent hybrid varieties have been introduced than the individual grower has been able to test. Trials reported here attempt to evaluate some 40 of these newer hybrids in comparison with a few well established ones such as Carmelcross and Golden Cross Bantam. Because interest in Ohio centers on yellow varieties, only those were included.

EXPERIMENTAL PROCEDURES

In 1948 two tests were conducted primarily to evaluate medium and late varieties for processing. One test, located at the Hamilton County Experiment Farm, was previously reported in a mimeograph;[2] another was conducted by E. K. Alban at the Ohio State University Experiment Farm in Franklin County. In 1949 the work was coordinated with attention focused on evaluating both early and late maturing hybrids for fresh market. At the same time it was expanded to include trials at the Washington County Truck Crops Experiment Farm.

About 20 varieties were the maximum that could be well handled in replicated tests. Since many more than this number were being offered by seedsmen, the procedure was adopted of discarding a few of the least promising each season and adding others. In several instances the number tested was increased by including some in single plots for preliminary observation. The regular plantings had four replications.

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[1]Now Head, Dept. of Horticulture, University of Georgia, Athens, Ga.
[2]Department of Horticulture Mimeograph 48-3, 1948.

Seed of most varieties was obtained gratis from prominent seed companies known to be actively engaged in sweet corn breeding. Also included were a few hybrids developed by J. B. Park of the Department of Agronomy of The Ohio State University and the Ohio Agricultural Experiment Station. The sources of seed and the letters used to designate them in the tables were:

"A"	Associated Seed Growers, Inc., New Haven 2, Conn
"C"	Corneli Seed Company, St. Louis 2, Missouri
"FM"	Ferry-Morse Seed Company, Detroit, Michigan
"H"	Joseph Harris Company, Inc., Rochester 11, New York
"ML"	Michael-Leonard Seed Company, Chicago 16, Illinois
"NK"	Northrup, King and Company, Minneapolis 13, Minn.
"OSU"	Dept. of Agronomy, Ohio State University
"R"	Robson Seed Farms, Hall, New York
"W"	F. H. Woodruff and Sons, Milford, Conn.

Soil of the plots in Hamilton County was Brookston loam; in Franklin County Brookston silt loam and in Washington County it ranged from Chenango sandy loam to fine sandy loam. Individual plots had 22 hills except that in 1949, those at Hamilton County had 13 hills and at Franklin County 18 hills. Dates of planting were as follows:

	1948	1949	1950
Hamilton County	May 22	May 13	May 5
Franklin County	June 5		May 9
Washington County		April 25	April 27

Planting was done with a hand jabber, hills being 36 or 42 inches apart. Soon after emergence, the plants were thinned to three per hill. Better than 80 percent stands were obtained quite regularly except in Hamilton County in 1950. In this planting stands of the well known older varieties were similar to that of most newer hybrids, and yields are therefore included.

Unless delayed by wet weather, the first picking of each variety was made when the earliest ears were judged to be in prime condition for market. Two to four days later a second picking was made. With most varieties the bulk of the crop was gathered at the first picking.

Yields were computed on the number of marketable ears in the two pickings, after discarding nubbins and ears with smut infection. At Washington County, where both corn ear worm and corn borer are often serious, no insecticides were applied. Instead, entomologists counted the amount of infestation to determine which varieties escaped with the minimum damage. For the yield records, however, it was assumed that insect infestation could have been controlled by suitable treatments, and infested ears were counted as marketable.

For measurement of the ears, five of average size were selected from each replication and their measurements averaged. Diameter of ears was measured 1.5 inches from the butt and from the tip. Height of ear on plants was measured from the ground to the base of lower ears, in five hills of each plot.

TABULATION OF DATA

Because relative earliness is of prime importance, Table 1 lists the number of days from planting to the principal picking in each test for 39 varieties. Although sequence in picking was not always the same at the three locations, varieties are ranked here in their approximate order of maturing.

Also included in Table 1 is the yield in dozen per acre of each variety in each test.[3]

From data of Table 1 the yield of one variety can be compared with another but it is difficult to compare several. To show approximate value of varieties the yield of each was compared with the well known Golden Cross Bantam in each test. Its relative yields, expressed in percent, were then averaged, and the averages given in Table 2.

The column in Table 2, listed as "relative yield compared to Golden Cross Bantam" bring to attention varieties which averaged better than others of similar time of harvest. To obtain reliable comparisons, however, it is necessary to return to Table 1. Thus, North Star in Table 2 is shown as having a relatively higher yield than Marcross but from Table 1 one may note that it yielded better in Washington County, but not in Hamilton County.

In measurements of ears and height of plant, there was relatively little variation from county to county or from year to year. The grand averages only are listed in Table 2.

In 1950 attempts were made to judge the quality by tasting raw corn shortly after picking. Without a basic standard of comparison, there was some lack of agreement in the appraisal at the three locations, so the results were not tabulated.

SOME NOTEWORTHY VARIETIES

All of the extra early varieties listed yielded better than Marcross at Washington County in 1950, but not at Hamilton County. None, however, judged by tasting raw, were rated superior to Marcross in quality.

The earliest variety with six-foot plants and ears well up from the ground was Golden Glory (NK). Ears were similar to those of Golden Cross Bantam in size, shape and in yield. Although tested only twice, it stood well above Carmelcross in yield, and consequently is a promising early variety for southern Ohio.

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[3]Three varieties yielded too poorly to be worthy of tabulation. Golden Rocket, an early variety, yielded less than 50 percent of Golden Cross Bantam. Golden Freezer in two locations succumbed to diseases, probably Stewart's disease. Coronia in a replicated test in Hamilton County (1948) matured at same time as Golden Cross Bantam but yielded only 84 percent as much.

TABLE 1. Days From Planting to Date of Picking and Yield of Marketable Ears in Each Planting

	Source of seed	Days to main picking							Yield in dozens per acre						
		Washington County		Hamilton County			Franklin County		Washington County		Hamilton County			Franklin County	
		1949	1950	1948	1949	1950	1948	1950	1949	1950	1948	1949	1950	1948	1950
Sun-up	H	—	74	—	—	73	—	—	—	1043*	—	—	754*	—	—
Seneca Dawn	R	—	76	—	—	74	—	—	—	1154	—	—	786*	—	—
North Star	H	—	77	—	—	75	—	—	—	1044	—	—	745	—	—
Marcross	†	75	80	—	68	75	—	—	623	733	—	368	868	—	—
Gold Rush	C	80	82	78	—	—	74	—	1054	1135*	762	—	—	1178	—
New Earligold	W	—	83	—	—	—	—	—	—	1049	—	—	—	—	—
Carmelcross	†	79	84	80	70	83	74	—	803	1394	649	793	997	1113	—
Golden Glory	NK	—	—	80	—	—	82	—	—	—	1019	—	—	1309	—
Improved Sencross	W	81	85	—	—	87	—	—	1206	1232	—	—	1176	—	—
Lincoln	W	87	89	—	—	87	—	—	1096	1318*	—	—	951*	—	—
Golden Supreme	W	—	91	—	—	87	—	—	—	1080*	—	—	1194*	—	—
PT 49	C	84	92	—	—	—	—	—	1408	1292	—	—	—	—	—
F-M Cross	FM	—	91	—	—	87	—	—	—	1519*	—	—	1163*	—	—
Seneca Chief	R	87	93	—	77	87	—	87	1668	1705	—	849	1525	—	1528
Golden Cross VT-20	NK	—	96	79	—	—	82	—	—	1411	1096	—	—	1271	—
Golden Crown	R	—	96	—	—	—	—	—	—	1548	—	—	—	—	—
Golden Cross Bantam	†	87	96	80	77	87	84	90	1192	1319	1089	882	1245	1309	1045
Iochief	C	—	—	—	77	87	—	90	—	—	—	798	1312*	—	1125
Seneca Market	R	—	96	—	—	87	—	—	—	1757*	—	—	1619*	—	—
Normandie	C	—	—	80	—	—	—	—	—	—	1009	—	—	—	—
Ioana	†	87	96	82	77	91	83	87	1215	1502	1071	999	1021	1061	1475
Golden Cross NC	NK	—	96	83	—	—	84	—	—	1479	1067	—	—	1603	—
Ioana B	W	87	—	83	—	—	—	—	1338	—	1088	—	—	—	—
Golden Bounty	NK	—	96	82	77	—	84	—	—	1301	1293	905	—	1359	—
Tendergood	ML	—	—	—	—	91	—	90	—	—	—	—	1084*	—	1271
Tendermost	ML	—	96	—	77	91	—	97	—	1190*	—	726	811	—	1174
Victory Golden	W	88	94	84	—	—	87	—	1366	1443	1138	—	—	1285	—
Illinois Golden #10	W	—	—	82	77	94	87	87	—	—	1138	653	1383*	1080	1507
Calumet	A	—	96	84	77	94	87	—	—	1629*	1463	1139	1524*	1258	—
Flagship	C	—	96	83	83	91	87	99	—	1424	1463	1022	1440	1402	1167
Golden Security	W	91	97	84	77	95	87	99	1531	1757*	1373	1146	1591	1661	1650
Pershing	OSU	94	—	86	—	94	—	—	1155	—	1242	—	1799*	1314	—
Oto	A	—	—	—	83	94	—	99	—	—	—	1245	1336*	—	1764
Ohiogold #1	OSU	95	—	87	—	94	—	—	981	—	1426	—	1069	—	—
Aristogold Bantam Evergreen	ML	—	—	—	83	91	—	102	—	—	—	932	1188	—	1327
Huron	A	—	—	88	83	95	88	99	—	—	1447	1106	1707	1279	1865
Aristogold Bantam #1	ML	—	—	—	—	94	—	99	—	—	—	—	464*	—	1101
Ohiogold #3	OSU	94	—	86	90	95	—	—	1384	—	1404	1096	1688	—	—
Brookhaven	OSU	96	—	87	—	97	90	—	1265	—	1231	—	1713*	1466	—
Least significant difference at 5% level:		—	—	—	—	—	—	—	217	236	282	142	285	—	160

*Yield of single plots. Least significant differences do not apply.
†Seed from more than one seedsman. In some tests several lots were included; in these instances the data are averages of all the lots.

TABLE 2. Plant Characteristics.

Determined from average of all tests. Varieties listed in same order as in Table 1

	Source of seed	Relative days earlier (or later) than Golden Cross Bantam	Relative yield compared to Golden Cross Bantam. Percent, doz.	Average weight per dozen lb.	Average height of ears in.	Average height of plants in.	Husked ear, measurements Length in.	Butt. in.	Tip in.	Length of shank in.	Suckers per hill No.	Number of tests
Sun-up	H	17	70*	5.7	14	45	5.9	1.7	1.30	4	6	2
Seneca Dawn	R	15	87	8.4	14	46	6.6	1.8	1.35	4	5	2
North Star	H	14	69	6.4	12	46	6.3	1.7	1.30	4	6	2
Marcross		11	55	6.2	14	53	7.0	1.8	1.40	3	6	4
Gold Rush	C	8	83	7.0	12	60	7.4	1.9	1.50	3	5	4
New Earligold	W	8	79*	7.3	12	56	7.1	1.9	1.50	3	4	1
Carmelcross		7	81	8.2	10	58	7.4	1.8	1.50	3	4	10
Golden Glory	NK	7	97	8.4	24	73	8.0	1.6	1.40	—	—	2
Improved Sencross	W	5	96	7.2	15	63	7.5	1.7	1.40	4	5	3
Lincoln	W	3	84	8.6	24	80	7.7	1.8	1.50	4	3	3
Golden Supreme	W	3	96*	9.7	22	72	8.8	1.9	1.60	4	3	2
PT 49	C	3	108	7.3	16	70	7.1	1.8	1.60	3	5	2
F-M Cross	FM	3	104*	8.4	—	75	7.2	1.8	1.50	4	3	2
Seneca Chief	R	2	127	6.6	18	70	7.9	1.5	1.40	6	6	5
Golden Cross VT-20	NK	1	101	8.0	18	72	8.0	1.6	1.30	5	6	3
Golden Crown	R	0	117*	8.1	20	70	8.2	1.7	1.50	4	—	1
Golden Cross Bantam		—	100	8.3	22	75	7.9	1.7	1.45	4	5	21
Iochief	C	0	101	9.6	24	77	7.9	1.9	1.60	5	2	3
Seneca Market	R	0	125*	8.8	—	82	7.9	1.8	1.60	5	4	2
Normandie	C	0	93*	7.7	26	73	8.2	1.8	1.40	6	—	1
Ioana		0	108	9.0	22	85	8.0	1.7	1.45	4	3	11
Golden Cross NC	NK	1†	111	7.4	20	70	8.4	1.8	1.40	3	7	3
Ioana B	W	1	106	7.9	23	85	8.2	1.7	1.40	—	3	2
Golden Bounty	NK	1	106	8.5	19	79	8.2	1.7	1.50	3	4	4
Tendergood	ML	2	105	8.2	20	72	7.9	1.8	1.55	7	3	2
Tendermost	ML	2	86	8.3	20	69	7.7	1.7	1.50	5	2	4
Victory Golden	W	2	107	8.4	26	84	8.0	1.7	1.50	3	4	4
Illinois Golden #10	W	2	101	8.6	26	84	7.3	1.7	1.40	6	3	5
Calumet	A	3	120	8.5	25	87	8.3	1.6	1.40	4	2	5
Flagship‡	C	4	116	8.8	28	89	7.7	1.8	1.50	4	2	6
Golden Security	W	4	133	8.0	25	89	7.5	1.7	1.45	4	3	7
Pershing	OSU	6	114	8.6	28	90	8.3	1.8	1.65	7	3	3
Oto	A	7	139	9.2	24	80	8.6	1.6	1.30	6	4	3
Ohiogold #1	OSU	7	99	7.0	23	81	7.3	1.7	1.40	7	4	3
Aristogold Bantam Evergreen	ML	7	109	9.7	24	84	8.6	1.9	1.45	5	2	3
Huron	A	7	134	8.8	28	90	8.8	1.8	1.45	6	3	5
Aristogold Bantam #1	ML	8	105	8.2	23	72	7.5	1.8	1.30	5	2	2
Ohiogold #3	OSU	8	127	7.2	27	79	8.0	1.6	1.40	6	6	4
Brookhaven	OSU	8	117	9.0	36	90	8.9	1.9	1.60	7	3	3

*Data from only one replicated test, or from unreplicated tests at two locations.
†Beginning here the figures are the number of days later than Golden Cross Bantam.
‡Hybrid 1734 (W), included in four tests, was judged to be identical with Flagship.

Improved Sencross (W), ready to pick a day or two later, likewise averaged above Carmelcross in yield. Judging from field tasting of the first pickings it had the same good quality as Carmelcross.

Seneca Chief (R), ready to pick a day or two earlier than Golden Cross Bantam, gave significantly higher yield in four tests, and also outyielded other varieties under adverse conditions in Franklin County in 1949. It had distinctive slender ears, and a corresponding low weight per dozen. To many, this slender ear makes it attractive on the table. Already favorably known in many localities in Ohio, the only shortcoming of Seneca Chief noted in these tests was more smut infection than found in most other varieties.

The well known Ioana, picked within a day or two of Golden Cross Bantam, had a heavier ear due at least in part to its heavier, longer husk which protected the tip and prevented damage from birds. In dozens per acre it did not surpass Golden Cross Bantam.

The newer varieties listed in Table 2 as maturing within a day or two of Golden Cross Bantam all likewise had good tip coverage, but none consistently outyielded it. Most of these had sturdier plants with fewer suckers and smaller ear leaves which made picking easier. Iochief (C) had distinctive, thick, and heavy ears. Also in this group was Seneca Market (R), which because it was unnamed in 1950 when seed was first received for trial, was grown in observational plots only. In two small tests it appeared to be more productive than others picked the same date.

Of the later varieties, Golden Security (W) was outstanding. It produced significantly higher yields than Golden Cross Bantam in every test at all three locations. Ears were slightly smaller and kernels small. The raw corn was rated as fair in flavor at cream stage at Washington County and excellent at the other two locations.

Oto (A) and Huron (A) were two other high yielding late varieties. Oto had attractive, long, slender ears, while Huron had long, tapering ones.

As a whole, late varieties were more productive than early ones. The difference was more pronounced on the heavier soils of Hamilton and Franklin Counties than on the sandy loam of Washington County.

In conclusion, it should be stated that it was found impossible to include all of the newer hybrids in these trials. They did include all those contributed by seedmen and considered most promising at the time for Ohio. It might be added that a few new hybrids were introduced each year of these tests, and more are foreseen in the future. It is hoped that the results reported here will aid Ohio growers in deciding which of the present listing are the ones to grow.

Further information will be forthcoming as results from continuing trials warrant publication.