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2016 Ohio Sweet Corn Evaluations

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Sweet Corn is an important crop in both the fresh market and shipping market in Huron and Sandusky Counties and throughout North Central Ohio, where a significant percentage of Ohio vegetables are grown. Many different varieties of sweet corn are grown by producers with fresh market roadside stands, and still others are grown for early, mid, and late season shipping and processing markets, meaning growers demand a diverse selection of sweet corn varieties and maturities. Growers have indicated this diversity should focus on SH2 varieties with different stages of maturity, and variance in other traits. Many new varieties are becoming available to meet these grower demands, and this study sought to determine which ones would perform acceptably in Northern Ohio, and which would have the desired traits growers are seeking. For this trial, 23 SH2 varieties were grown in 4 replicated plots at the Ohio State University's North Central Agricultural Research Station near Fremont, Ohio.

Materials and Methods

The purpose of this trial was to evaluate a significant number of newer varieties of sweet corn, helping seed companies determine which varieties would be suitable to continue breeding and developing for commercial seed sales, and helping growers determine which currently available varieties would be best suited for their specific market demands, including fresh market, shipping, and processing.

Growers and Seed Companies suggested varieties to be grown, with a strong preference for inclusion given to new and experimental varieties, for comparison alongside industry standard varieties. The evaluation used four replicated plots, grown under best management practices, to give growers a fair comparison of the different varieties grown on lake bed soils, within a normal Northern Ohio growing season. Plots were planted in 35 foot rows, with blocks of 4 rows per variety, replicated 4 times, with randomized variety location within each replication. After germination and stand counts, rows were trimmed to 30 feet and thinned to uniform population across varieties.

The SH2 trial was conducted on Colwood fine sandy loam soil on field CS at the North Central Agricultural Research Station. Best management practices were utilized prior to and during the trial. The field was deep ripped on October 7, 2015. On April 18, 2016, a dry fertilizer application of 100 lbs / acre of 11-52-0, 250 lbs / acre of 46-0-0, 400 lbs / acre of 0-0-60, and 10 lbs / acre of 10% granular Boron. Following application of dry fertilizer the field was plowed using a JD 2600 mold board plow. Secondary tillage including a disk harrow and a soil finisher was completed the following on April 19, 2016. The field was worked with a Danish tine field cultivator on May 18, 2016. The following day the field was fitted again with the Danish tine field cultivator with the addition of a soil firming packer. The plot area was also measured and flagged out on May 19, 2016. The plots were planted in 30 inch rows with an Almaco cone seeder atop John Deere 7000 planter on May 20, 2016 followed by application of 1.25 pts / acre of Dual Magnum and 6 oz. of Interlock. Stand counts were conducted on June 1. The trial was

cultivated on June 8, and 300 lbs / acre of 28% liquid nitrogen was side dressed into the plots also on June 8th. On June 13, the plots were thinned to a standard of approximately 8.5 inch plant spacing, and the rows trimmed to 25 feet, resulting in 35 plants per row, and a uniform simulated population of 24,400 plants per acre across all varieties and reps. The trial was hand weeded between plants on June 22. No fungicide applications were made to the trial. Five insecticide applications were made throughout the trial.

Insecticide applications were made as follows:

July 5	Artic 6.0 oz. / acre
July 12	Asana 9.6 oz. / acre
July 19	Coragen - 5 oz. / acre
July 26	Coragen 5.0 oz. / acre
August 1	Radiant 5.0 oz./ acre

The trial was threatened by drought from its inception so irrigation was implemented when soil moisture was insufficient for optimal plant growth. The following is a record of all irrigation and rainfall on the trial:

May	rainfall over crop	0.35 inches
June 20	irrigation	1.00 inch
June 29	irrigation	0.60 inch
June	rainfall, 5 events	2.40 inches
July 8	irrigation	1.10 inches
July	rainfall, 4 events	1.40 inches
July 20	irrigation	0.75 inch
Total rainfall plus irrigation from planting through harvest		7.60 inches.

Sweet corn plants were evaluated at harvest for the following characteristics, which are summarized in the tables: ease of harvesting ear (snap rating), ear height, stand population, harvested dozens per acres, and marketable dozens per acre. Immediately following harvest, 5 random marketable ears per variety were evaluated for flags, husk cover, tip fill, number of kernel rows/ear, kernel color, ear length, ear diameter, tenderness, sweetness, and overall flavor.

Results and Discussion

Results of the harvest and ear evaluation for each variety of sweet corn can be seen in the tables below, with total harvest data compiled and averaged from all 4 replicated plots. When interpreting yield data, it should be noted that with the thinning of the trial to a uniform population in early June, easy comparisons can be made on yield potential by analyzing harvest data. With a uniform 70 data plants present in each rep of each variety following thinning, and the resulting simulated population of 24,400 plants per acre, a “perfect” yield of one ear per plant would result in 84 plants per variety per rep, or 2033 dozen per acre.

In determining the ear evaluation scores, a team of 3 individuals, including the principal investigator and 2 members of the research station staff each made their individual rankings on the 5 ears for each characteristic, and the final reported value was the combined average from all 3 individual scores. This process held true for the tenderness, sweetness, and overall flavor scores as well, determined by raw taste testing of the 3 aforementioned individuals.

The growing conditions during this trial were nearly ideal except for the lack of rain. With irrigation, the trial flourished due to above average temperatures, low humidity and the absence of disease pressure. From planting to harvest, the trial was under minimal stress as demonstrated by the fact that many varieties were harvested at or before their predicted maturity dates. Four irrigation events totaling 3.45 inches were crucial to the vigor of the trial.

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M. Hofelich managed field operations. F. Thayer, R. Shaw and North Central Agricultural Research Station seasonal staff assisted with fieldwork and data collection. Ohio Agricultural Research & Development Center Department of Plant Pathology, conducted disease ratings and assisted with data analysis. K. Phillips assisted with data analysis.

Table 1. Variety characteristics, emergence, observed maturity, and individual ear yield. All varieties planted on April 20, 2016.

Variety #	Variety Name	Color	Listed Maturity	Harvest Date	Observed Maturity	Population data rows June 12	Harvested Ears	Marketable Ears
1	SV1446SD	Yellow	75	1-Aug	72	70	72	71
2	SV1580SC	White	80	3-Aug	74	70	77	74
3	EX08767143	Bi-color	81	3-Aug	74	70	75	73
4	08B2084	Bi-color	76	1-Aug	72	70	69	68
5	09B2437	Bi-color	76	1-Aug	72	70	69	68
6	Cumberland	Bi-color	77	29-July	69	70	73	72
7	HMX 4372	Bi-color	76	1-Aug	72	70	69	67
8	Cabo	Bi-color	78	1-Aug	72	70	72	70
9	BSS1075	Bi-color	N/A	3-Aug	74	70	61	60
10	CAPBF12-525	Bi-color	72	27-July	67	70	63	62
11	AP 426	Bi-color	79	3-Aug	74	70	74	70
12	Nirvana	Bi-color	75	27-July	67	70	70	67
13	CAPBF13-713i	Bi-color	78	29-July	69	70	70	66
14	CAPYF11-452	Yellow	74	27-July	67	70	66	63
15	Hero	Bi-color	70	27-July	67	70	65	63
16	Kickoff	Bi-color	70	27-July	67	70	58	56
17	Super Surprise	Bi-color	74	29-July	69	70	72	71
18	Xtra Tender 274A	Bi-color	74	27-July	67	70	61	60
19	Stellar XR	Bi-color	77	27-July	67	70	74	72
20	Honor XR	Bi-color	79	3-Aug	74	70	68	67
21	Prestige XR	Bi-color	77	29-July	69	70	73	72
22	Eden	White	76	27-July	67	70	63	61
23	Aces	Bi-color	79	3-Aug	74	70	65	64

Table 2. Harvest Data.

Variety #	Variety Name	Ear Height (in.)	Suckers	Snap	Harvested Dozen/ acre	Marketable Dozen/ acre
1	SV1446SD	25	5	2.5	2088	2059
2	SV1580SC	29	3	3.8	2233	2146
3	EX08767143	26	3	4.0	2175	2117
4	08B2084	28	5	4.3	2001	1972
5	09B2437	25.5	5	3.3	2001	1972
6	Cumberland	21.5	3	3.0	2117	2088
7	HMX 4372	24.5	5	3.5	2001	1943
8	Cabo	25	3	4.0	2088	2030
9	BSS1075	30	5	3.3	1769	1740
10	CAPBF12-525	18.5	5	3.3	1827	1798
11	AP 426	22	3	2.8	2146	2030
12	Nirvana	19	5	4.0	2030	1943
13	CAPBF13-713i	29	5	2.8	2030	1914
14	CAPYF11-452	19	5	2.5	1914	1827
15	Hero	22	5	2.9	1885	1827
16	Kickoff	23	5	3.7	1682	1624
17	Super Surprise	24	5	3.8	2088	2059
18	Xtra Tender 274A	20.5	5	4.0	1769	1740
19	Stellar XR	24	3	3.0	2146	2088
20	Honor XR	30	3	3.5	1972	1943
21	Prestige XR	25.5	5	3.1	2117	2088
22	Eden	17.5	5	3.8	1827	1769
23	Aces	26	1	4.2	1885	1856

Table 3. Ear Evaluation. All data is reported as the average rating of 5 ears from each variety.

Variety #	Variety Name	Husk Cover	Flags	Over-all Husk	Shank	Tip Fill	Rows	Rowing	Color	Length (in)	Diameter (in)
1	SV1446SD	2	2	3.5	3.25	5	17.5	4.75	4.25	8.5	1.8
2	SV1580SC	1.5	3	3.75	2.5	5	18	5	4.25	8.2	1.9
3	EX08767143	2	4.25	4	3.25	5	17	4.75	4.5	8.3	1.9
4	08B2084	3	4	3.75	3.25	5	18	4.75	4.25	7.5	1.9
5	09B2437	2.75	4	4	2.5	4.75	16.5	3	4.5	8.3	1.8
6	Cumberland	2.25	4	4.25	2.25	4.75	16	3.75	4.25	8.5	1.8
7	HMX 4372	1.5	4	4	3.5	4.75	18	3	3	8.3	2
8	Cabo	2	4	4	3.25	4.75	17	4.5	4.25	8.1	1.9
9	BSS1075	1.75	3	3.5	2.75	5	18	4	4.75	8.1	1.9
10	CAPBF12-525	3	3.5	4	3	5	15	5	4.5	7.8	1.9
11	AP426	2.75	4	4	4	5	16	4.5	3.75	8.4	2
12	Nirvana	2	2.75	3.75	2.5	5	17	4.75	3.75	8.1	1.8
13	CAPBF13-713i	1.25	2.5	3.25	1.5	5	18	3.75	3.25	7.9	1.7
14	CAPYF11-452	3	3.75	4	3	5	16	3.75	3.75	7.6	1.8
15	Hero	3.5	4.25	4	2	5	16.5	4.75	3.75	7.9	1.8
16	Kickoff	2	4	4	2	5	17.5	3.75	3.5	8.4	1.9
17	Super Surprise	3	4.75	4	4.5	4.75	17	3.75	4.25	8	1.9
18	Xtra Tender 274A	2	3.25	4	3	4.5	18	3.5	4	8.4	2
19	Stellar XR	2	2.75	3.5	2	5	16	4	3	7.9	1.8
20	Honor XR	1.75	2	3	1.5	5	17	5	5	8.2	1.8
21	Prestige XR	2	3.5	3.5	2.75	5	16.5	4.75	4.5	7.9	1.7
22	Eden	2.5	3	3.5	1.25	5	16	3.75	5	7.8	1.8
23	Aces	2	4	4	3	4.75	16	5	4.75	8.4	1.8

Rating Scale for Table 3.

Characteristic	Rating Scale		
	1	3	5
Husk Cover (at tip)	Exposed	2 fingers of cover	4 fingers of cover
Flags	None	Noticeable/attractive	Many, long, attractive
Overall Husk	Poor	Good	Outstanding
Shank	Short	Average	Long
Tip Fill	2 in. blank	1 in. blank	Complete
Rows	number of rows around entire cob, rounded to the nearest whole number		
Rowing	Scrambled	Mainly straight	All straight
Color	Dull/flat	Average	Bright/attractive
Length	measured from tip to base of shank with husk removed		
Diameter	measured at center of cob with husk removed		

Table 4. SH2 Ear Evaluation. Estimated Eating Experience of Fresh Corn (Uncooked). All scores are reported as the average of 5 ears from each variety.

Variety #	Variety Name	Tenderness	Sweetness	Flavor
1	SV1446SD	4.0	4.75	4.25
2	SV1580SC	3.5	4.75	3.75
3	EX08767143	3.75	4.5	4.5
4	08B2084	3.5	3.75	3.5
5	09B2437	2.25	4.0	3.5
6	Cumberland	4.5	5.0	4.5
7	HMX 4372	4.75	4.75	4.75
8	Cabo	4.25	4.75	4.25
9	BSS1075	3.0	4.5	3.25
10	CAPBF12-525	5.0	4.0	4.25
11	AP 426	3.5	4.25	4.0
12	Nirvana	4.5	5.0	4.0
13	CAPBF13-713i	5.0	5.0	5.0
14	CAPYF11-452	4.5	4.0	4.0
15	Hero	4.5	3.5	3.5
16	Kickoff	4.0	4.0	4.0
17	Super Surprise	3.5	4.5	4.25
18	Xtra Tender 274A	3.5	4.0	3.0
19	Stellar XR	3.75	4.0	4.0
20	Honor XR	4.5	4.75	4.5
21	Prestige XR	3.5	4.75	4.5
22	Eden	5.0	4.75	4.75
23	Aces	4.75	5.0	5.0

Rating Scale for Table 4.

Characteristic	Rating Scale		
	1	3	5
Sweetness	Starchy/bland	Average	Very sweet/sugary
Tenderness	Tough	Average	Very Tender
Flavor	Poor	Good	Outstanding
BRIX (sugar content)	Refractometer readings were inconsistent due to equipment failure. Brix will not be published for this trial.		