Sugary-enhanced and shrunken 2 Sweet Corn Cultivar Evaluation for Southeast Michigan 2005

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Thirty-two bi-color sweet corn cultivars including homozygous se and mixed se and sh2 genetics were evaluated at the George Van Houtte Farm in Macomb County Michigan. The trials were supported in part by the Michigan Vegetable Council and by the generous contribution of George Van Houtte and his employees whose culture and care of the crop was invaluable to the success of the trials.

Materials and Methods. The trials were conducted on a Dryden coarse loamy sand, fertilized with 15 gal/A of 9-36-18 and 15 gal/A 28-0-0 at seeding with an additional application of 15 gal/A of 28-0-0 as a sidedress application in mid June. The se cultivars were planted on May 11 into soils that reached 58.7^{o} F. on that day while the sh2's were planted on May 18 into soils that measured 65.7 ^{o} F. The trial was arranged as a randomized complete block design with three replications and a fourth staggered planting for a field day on August 17. Cultivars were assigned to individual 3 row plots at 30 inch spacing by 25 ft. in length. The plots were seeded with a hand planter and thinned after emergence to a spacing of 8-12 inches. Weeds were controlled with a pre-plant application of Atrazine and Dual II Magnum, followed by a single cultivation and hand weeding. Irrigation was applied through overhead sprinklers as needed. To control European corn borer Mustang was applied on mid-season. A 17'5" row length of each plot was harvested when corn reached marketable stage and the ease of picking as well as the height of the lowest ear from the ground was noted. The number and weight of marketable ears were determined. Five randomly selected ears from each plot were used to evaluate degree of husk cover, degree of tip fill, shank and flag leaf length and average ear diameter and length after husking.. Quantitative data were analyzed followed by mean separation using Fisher's protected least significant difference at P≤. 05. The fourth replication was harvested the morning of the field day and a panel of 20 tasters including growers, seed dealers and consumers rated cooked quality. All ratings are reported and those that were over-mature at harvest were noted

Results and Discussion. Both consumer and grower oriented traits are quantified in Tables 1 and 2. Sweet corn cultivars in trials conducted in previous years at the same location have matured 7-10 days later than the predicted days while this year the sh2's in particular matured only slightly later than predicted but earlier than expected. Some replications were unfortunately harvested several days past their prime.

Yields: The yields ranged from 1362 to 2028 dozen ears per acre for the sh2 cultivars and from 1111 to 1917 for the sugar enhanced varieties. These numbers are higher than one would typically see in commercial plantings as these plots are over-planted and thinned to the desired stand. In addition, per acre yields do not account for the presence of headlands or other non-productive areas. Yield did not always correlate well with days to maturity or, for that matter, with tonnage. For example, Bon Jour, one of the earliest of the se varieties significantly out-yielded eight later maturing varieties in terms of ear numbers but the tonnage was significantly lower than four other se's. Similarly the variety 270A, the earliest sh2 in the trials, out yielded

five later maturing cultivars. The large and heavy ears of Providence placed it in the top four SE's for tonnage but, at 1500 dozen ears/acre, four varieties yield significantly more.

Ear length and width: There were significant differences among the cultivars with respect to ear size. Ear length ranged from 6.9 to 8.5 inches with the earliest variety, Frisky, being significantly shorter that the other se's. Providence, BC 0805, Brocade and Montauk had significantly longer ears than 10 of the 15 se cultivars with Providence out-measuring 11 of the se's. Of these four, Brocade and Montauk also had significantly higher ear diameter. Montauk was also one of the top yielders in terms of ear number and weight. The sh2 cultivars as a whole yielded more and heavier ears of equivalent length but somewhat larger ear diameter. Optimum was significantly shorter than the rest of the sh2 varieties while Mirai 327 BC at 8.4 inches out-measured 13 sh2's.

Vegetative characteristics: The sh2 varieties were taller than the se's with the ears averaging 27" vs. 23 " from the ground. Lodging was noted in ACR 4033 and Mirai 301 BC and while BSS 3495 had many productive tillers it was bushy and difficult to harvest with very leafy ears. Renaissance also had long flag leaves. The tops of Optimum tended to tip over and somewhat obstruct harvest. Tip fill was close to perfect in all varieties and tip cover ranged from the ear being slightly exposed in 726 BC to 2.6 inches of cover in Mirai 336 BC. Shank length was measured from where the ear broke at picking to the butt of the ear. It ranged from 2-5.6" and was similar between the two genotypes.

Eating Quality: The eating quality of the sh2 cultivars were, on average, preferred. Of these, Fantastic, Optimum, 726 BC, 274A and 278 A were highly rated. Mirai 327 was also evaluated highly, in spite of the fact that it was overmature. The top five se's were Polka, Providence, Revelation, BC 0805 and Renaissance.

Conclusion: Growers must meet the challenge of selecting varieties that satisfy both their needs and customer wants. Most characteristics measured in these trials are important for both retailing and shipping while such qualities as shank length may be more significant in shipping. A superior tasting variety is highly desired but early corn is typically better tasting to retail customers hungry for the first corn of the season. In these trials Revelation and Polka were two of the best early se's while Mirai 308 BC, Mirai 334 BC and Mirai 327 BC had a combination of potential earliness, good yields and eating qualities and other positive characteristics. There were many mid-season and late varieties that performed well in terms of yield, ear size, ease of harvest and flavor. The late season se's Providence and BC0805 are high yielding varieties but not the best husk appearance. On the other hand a beautiful husk and ear does not translate into a high quality in other respects. Growers should to be testing the synergistic se's and augmented sh2 genotypes with an eye to how they fit into individual sweet corn programs.

TABLE 1

Yield, ear size, quality and plant characteristics of sh2 and augmented sh2 sweet corn in Macomb County, Southeast Michigan, 2005

sh2 Cultivar	Co.[1]	Color	Predicted Maturity	Days to Maturity [2]	Degree Days to Harvest [3]	Yield of Marketable Ears		Ear Length	Ear Diameter	Tip Cover	Tip Fill	Shank Length	Ave. Length of Flag lvs.	Ht. From Ground to Lowest Ear	Harvest Ease [5]	Eating Quality Cooked [6]
						(Doz/A)	(Tons/A)	(in)	(in)	(in)	(1-5) [4]	(in)	(in)	(in)		
270A	SI	BI	70	72	1361	1889	8.1	8.1	1.8	0.8	4	3.0	7.2	25	E-H	2.8
274A	SI	BI	74	76	1497	1444	7.2	8.4	2.0	1.7	5	4.2	6.0	23	E	1.9
Mirai 308 BC	C	BI	71	76	1497	1917	7.0	7.6	1.8	1.1	5	4.2	5.8	31	E-H	2.0
Mirai 334 BC	C	BI	73	76	1497	1750	8.1	8.0	2.0	1.9	4	3.6	8.8	26	E	2.1
Fantastic	SI	BI	73	79	1575	1861	8.6	7.7	1.9	1.3	5	3.4	7.4	29	E	1.6
726 BC	AC	BI	74	79	1575	1417	6.0	7.2	1.9	0.2	5	3.2	7.8	26	E-M	1.8
Triumph	RI	BI	75	79	1575	1361	6.1	7.6	1.8	1.2	4	5.6	6.8	27	E-M	2.0
Double Up	SY	BI	73	79	1575	1667	7.1	8.1	1.8	0.9	5	4.8	4.8	23	E-M	2.7*
BSS 3495	SY	BI	82	79	1575	2028	9.3	7.7	1.8	1.5	5	4.6	11.4	25	E-M	3.1*
ACR 4033	AC	BI	77	79	1575	1611	6.0	7.7	1.7	1.2	5	4.2	8.6	30	H	3.5
Optimum	CR	BI	78	82	1642	1806	7.1	7.2	1.8	2.1	4	2.6	6.2	21	E	1.8
278A	SI	BI	78	82	1642	1528	7.5	7.8	1.9	1.8	4	4.2	3.6	30	E-M	1.9
Mirai 327 BC	C	BI	73	82	1642	1528	6.8	8.4	1.8	1.5	5	3.0	4.0	27	E	2.1*
Mirai 301 BC	C	BI	77	82	1642	1472	7.5	7.9	2.0	2.3	5	4.4	5.2	32	M-H	2.4
Mirai 336 BC	C	BI	73	82	1642	1583	8.5	8.3	1.9	2.6	5	3.8	5.5	26	E-M	2.9
ACR 4034	AC	BI	77	82	1642	1417	6.2	7.6	1.8	1.6	5	5.2	5.8	28	M	3.1
Obsession	SI	BI	79	84	1764	1639	8.3	8.0	2.0	1.0	5	3.6	3.4	29	E	2.2
Grand Average			75.1	79.4	1583.4	1642.2	7.4	7.8	1.9	1.5	4.7	4.0	6.4	27.0		2.3
LSD .05 (Means differing by more than this amount are significantly different)						386	1.9	0.3	0.1	0.5	-	-	-	-		-

[1] Seed Source: AC=Abbott & Cobb, CR=Crookham, C=Centest, HM=Harris Moran, MM=Mesa Maize, RI-Rispen, SI=Siegers, SY=Syngenta.

[2] Days after planting.

[3] GDD: corn growing degree days.

[4] 5=Completely filled to tip; 4=filled nearly to tip (<.5');

[5] E=easy, M=medium, H=hard

[6] 1=Excellent; 2=Good; 3=Fair; 4=Poor (Panel of 20 tasters)

*Significantly overmature

TABLE 2

Yield, ear size, quality and plant characteristics of se sweet corn in Macomb County, Southeast Michigan, 2005

se Cultivar	Co.[1]	Color	Predicted Maturity	Days to Maturity [2]	Degree Days to Harvest [3]	Yield of Marketable Ears (doz/A)	(Tons/A)	Ear Length (in)	Ear Diameter (in)	Tip Cover (in)	Tip Fill (1-5) [4]	Shank Length (in)	Ave. Length of Flag lvs. (in)	Harvest Ease [5]	Ht. From Ground to Lowest Ear (in)	Eating Quality Cooked [6]
Frisky	RI	BI	65	72	1281	1111	3.2	6.9	1.6	1.4	5	3.8	9	M-E	14	3.4*
Polka	CR	BI	70	77	1403	1694	6.0	7.6	1.8	1.2	4	3.4	3	M	19	1.6
Revelation	HM	BI	66	77	1403	1639	6.2	7.6	1.8	1.7	5	2.0	4	E	18	2.1
Renaissance	RI	BI	70	77	1403	1583	6.6	7.9	1.8	2.3	5	2.6	10	H	23	2.6
Bon Jour	MM	BI	70	79	1436	1917	7.5	7.8	1.7	1.4	5	2.4	4	E	24	3.0
Kristine	CR	BI	80	85	1581	1444	6.3	7.7	1.8	1.7	4	4.2	4	E	19	2.9*
Montauk	MM	BI	80	85	1581	1778	8.8	8.2	1.9	1.5	4	4.8	7	M	23	3.2
Brocade	MM	BI	83	85	1581	1639	8.2	8.4	2.0	1.5	4	4.6	4	H	26	3.4
BC 1136	SY	BI	75	85	1581	1750	7.7	8.1	1.7	2.0	4	4.1	5	E	25	3.4
Buccaneer	MM	BI	76	85	1581	1806	8.4	7.4	1.8	1.5	5	5.1	6	H-VH	26	3.5*
Accord	MM	BI	78	85	1581	1417	6.5	7.5	1.8	1.3	5	4.2	7	E	25	3.7
BC 0805 (Attribute)	SY	BI	82	86	1604	1611	7.8	8.4	1.8	2.6	5	3.6	2	E	29	2.1
Charmed	RI	BI	86	87	1625	1500	7.3	7.5	1.9	2.1	5	2.2	3	E	22	2.8*
Providence	SY	BI	82	90	1698	1500	7.9	8.5	1.8	2.1	5	4.2	1	M	25	2.1
Cameo	RI	BI	84	90	1698	1611	7.8	7.9	1.9	0.7	5	4.8	4	M-H	27	3.0
Grand Mean			76.5	83.0	1535.8	1600.0	7.1	7.8	1.8	1.7	4.7	3.7	4.9		23.0	2.7
LSD .05 (Means differing by more than this amount are significantly different)						223	1.3	0.3	0.1	0.5	-	-	-		-	-

[1] Seed Source: AC=Abbott & Cobb, CR=Crookham, C=Centest, HM=Harris Moran, MM=Mesa Maize, RI-Rispen, SI=Siegers, SY=Syngenta.
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[4] 5=Completely filled to tip; 4=filled nearly to tip (<.5')
[5] E=easy, M=medium, H=hard
[6] 1=Excellent; 2=Good; 3=Fair; 4=Poor (Panel of 20 tasters)
*Significantly overmature