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Supersweet and Augmented Sweet Corn Cultivar Evaluation for Northern Indiana, 2004

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Nineteen sweet corn cultivars including sh2 and augmented sh2 genetics were evaluated at the Pinney-Purdue Ag Center, Wanatah, IN.

Materials and Methods. The trials were conducted on a Tracy Sandy Loam, fertilized in fall 2003 with 300 lb./A 8-32-16 and before planting in spring 2004 with 320 lb./A 19-19-19. In mid-June an additional 40 lb./A N was applied by injecting nitrogen solution between rows. The trial was arranged as a randomized complete block design with three replications. Cultivars were assigned to individual plots 1 row (36 in.) wide by 25 ft. long. Seventy seed per plot were seeded May 28, 2004. Force 3G was applied at planting to control corn rootworm larvae. On June 15-16 emergence was recorded and then plots were thinned to achieve a population of 35 plants per 25 ft of row (20,328 plants/A). Weeds were controlled with a preplant 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 caterpillars Pounce 3.2EC was applied on July 23 and 31. Each plot was harvested when corn reached marketable stage and the number and weight of marketable ears were determined. Three ears from each plot were used to evaluate degree of husk cover, degree of tip fill, overall attractiveness, and average ear diameter and length after husking. On Aug. 12 plants were rated for height, ear height, tillering, and plant vigor. Quantitative data were analyzed using ANOVA followed by mean separation using Fisher's protected least significant difference at $P \leq .05$. To obtain equal variances, two cultivars with poor emergence, ACX 816 and 277A, were omitted from analysis of dozens and cwt per acre, and the cultivar GS 377A (the lone white cultivar) was omitted in analysis of dozens per acre because there was not variation in its yield among replications. Emergence data were transformed prior to analysis to stabilize variances. The relationships between yield components, ear and plant characteristics, and average days to harvest were analyzed using regression analysis. For other data means are presented.

Results and Discussion. Table 1 shows results. Emergence of sweet corn ranged from 93% to 21%, with a quarter of the cultivars exhibiting over 88% emergence and three-quarters over 63% emergence. Entries with emergence significantly less than 90% included Gourmet Sweet 377A, Optimum, Holiday, Fantastic, ACX 1102 BC, 277A Xtra Tender, Tantalizing Too, and AAX 816.

Yield of sweet corn ranged from 52 to 165 cwt per acre and 516 to 1662 dozen ears per acre. Among those analyzed, one quarter of the entries produced at least 150 cwt per acre and one quarter produced more than 1645 dozen ears per acre. Indiana average sweet corn yield was 73 cwt per acre in 2003 (Indiana Agricultural Statistics 2002-2003). Higher reported yield in the experimental plots is probably due to several factors. Unplanted headlands or roadways are not included in the conversion of plot yield to per acre yield, so the conversion gives an overestimate of yield compared to cases when

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those areas are included. Also, experimental plots are over-planted and then thinned to the desired stand, so most plots have 100% of the desired stand.

The number of ears produced per acre was correlated with days to maturity. Later maturing varieties generally produced fewer ears per acre.

The three yellow cultivars did not differ significantly in number of ears produced per acre, but Winstar produced greater yield (cwt) than the earlier varieties GSS 1303 and Gourmet Sweet 173A, and was also the highest yielding variety of any color in the trial.

Seven out of 15 bicolor cultivars did not differ significantly from the top-producing SS 905 BC in number of ears produced per acre: Obsession, Gourmet Sweet (GS) 274A, GS 278A, BSS 6562, Double-Up, ACX 725 BC, and Gourmet Sweet Fantastic. Obsession and SS 950 BC produced more ears than would be expected based on maturity date. Three bicolor cultivars did not differ significantly from the highest-yielding bicolor Obsession in yield (cwt) per acre: Double-Up, GS 278A, and GS 274A. The four lowest-yielding bicolors were also the four with the lowest emergence: AAX 816, Tantalizing too, 277A Xtra Tender and ACX 1102BC.

Ear size, measured as lb. per ear, was correlated with days to maturity. Later maturing varieties tended to produce heavier ears.

The earliest yellow variety, GS 173A was the smallest in terms of weight, length and diameter. The latest yellow variety, Winstar, was the largest in terms of weight and length, but was similar in diameter to GSS 1303.

Among the bicolor entries, Tantalizing Too, AAX 816 and Double-Up produced the heaviest and longest ears. Tantalizing Too produced the widest ears, averaging almost 2 in. across, followed by GS 278A which was not significantly narrower. In addition to those varieties, Obsession was in the top 25 percent for weight, length and diameter. Optimum, SS 950BC, and ACX 725BC produced ears in the lowest 25 percent for average weight and diameter; SS 950BC was also in the lowest 25 percent for average length and weighed less than expected based on its maturity date. The white cultivar GS 377A weighed less than expected based on its maturity date, and was in the lowest 25 percent for ear weight and length.

Husk cover was rated excellent on about half the varieties, and acceptable on all. Varieties with the lowest ratings were GSS 1303 (yellow), ACS 725BC and 277A XT. About 1/4 of the varieties had excellent tip fill, including: BSS 6562, 277A XT, Fantastic, GS 173A (yellow), GS 377A, and GS Fantastic. ACX 1102 was rated as having less than acceptable tip fill. Holiday, AAX 816, and Tantalizing Too were among the bottom 25% for tip fill.

Overall quality rankings are very subjective. The appearance and uniformity of the unhusked and husked ears weighed heavily in the ratings reported here. Among the yellow cultivars, GS 178A looked the best. Among the bicolors, SS 950BC, GS 274A,

and GS Fantastic received the highest ratings. Varieties ranked on the lower end for overall appearance included GS 278A, AAX 816, Obsession, ACX 1002, ACX 725BC, and GSS 1303.

Varieties that stood out in terms of yield, ear size, husk cover, tip fill, emergence, and overall appearance were the bicolors GS Fantastic (for appearance), Double-Up (for yield and ear size), Obsession (for yield and ear diameter), GS 274A, and the yellow Winstar. Varieties that look promising but a little smaller than others included the yellow GS 173A, and bicolor SS 950 BC.

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Table 1. Yield, ear size and quality, and plant characteristics of sh2 and augmented sh2 sweet corn in Northern Indiana, 2004.

Cultivar	Co.*	Color	Days to Harvest	GDD to Harvest***	Yield of Marketable Ears		Average Ear Weight	Ear Length	Ear Diameter	Husk Cover	Tip Fill	Overall	Emer-gence	Plant Ht.	Ear Ht.	Tillers	Vigor
			(DAP)**		(doz/A)	(cwt/A)	(lb)	(in)	(in)	(1-9)#	(1-9)#	(1-9)#	(%)	(1-3)#	(1-6)#	(1-5)#	(1-9)#
ACX 725BC	AC	BI	75	1325	1581	123	0.65	7.5	1.71	6.0	8.6	4.3	86	2.0	2.3	1.7	6.0
Gourmet Sweet 274A	ST	BI	75	1325	1646	150	0.76	7.9	1.85	9.0	8.6	7.7	87	2.0	2.0	2.0	5.0
Fantastic	SW	BI	78	1348	1436	130	0.76	7.3	1.79	8.9	8.9	6.0	63	2.7	3.3	1.0	5.7
Optimum	CR	BI	79	1359	1436	120	0.70	7.5	1.75	9.0	8.6	5.0	66	3.0	3.0	1.7	6.0
Gourmet Sweet Fanta	ST	BI	79	1359	1581	144	0.76	7.4	1.88	8.3	9.0	7.3	93	2.3	3.0	2.0	5.7
277A Xtra Tender	SW	BI	80	1371	1226	105	0.71	7.2	1.88	6.9	9.0	6.0	56	2.7	3.0	3.7	6.0
Double-Up (BSS 1690)	SY	BI	81	1385	1581	158	0.83	8.2	1.85	8.1	7.7	6.0	84	3.0	3.0	1.0	7.0
Gourmet Sweet 278A	ST	BI	81	1385	1629	151	0.77	8.0	1.90	8.1	6.0	4.7	92	3.0	3.0	1.0	5.7
BSS 6562	SY	BI	81	1385	1581	143	0.75	7.5	1.82	8.9	9.0	5.7	88	3.0	3.3	1.0	6.0
SS 950BC	AC	BI	82	1404	1662	132	0.66	6.9	1.67	8.3	8.4	7.0	90	2.0	3.0	1.3	6.3
Obsession (PS9364169)	RU	BI	85	1445	1646	157	0.79	7.8	1.88	7.1	7.2	4.7	90	3.0	4.0	2.7	6.3
Tantalizing Too	RU	BI	85	1445	968	100	0.86	8.4	1.97	8.1	6.2	5.0	46	2.3	3.0	3.3	4.7
AAX 816	RU	BI	86	1457	516	52	0.84	8.5	1.86	7.9	5.8	4.7	21	2.0	2.3	5.0	4.7
Holiday	CR	BI	87	1472	1339	125	0.78	7.9	1.89	9.0	6.7	4.7	66	3.0	4.0	2.0	5.7
ACX 1102BC	AC	BI	89	1517	1049	98	0.79	7.5	1.83	9.0	4.8	3.3	58	3.0	2.3	2.3	5.3
Gourmet Sweet 377A	ST	W	80	1371	1646	133	0.67	7.1	1.83	8.7	8.9	6.3	77	3.0	3.0	2.0	6.0
Gourmet Sweet 173A	ST	Y	75	1325	1646	129	0.65	7.0	1.78	8.9	8.8	7.3	86	2.0	2.7	2.0	5.3
GSS 1303	SY	Y	79	1359	1549	133	0.72	7.8	1.89	6.7	8.2	4.7	86	3.0	3.0	2.3	6.0
Winstar	SY	Y	85	1445	1581	165	0.87	8.0	1.86	9.0	7.7	6.7	82	3.0	3.3	1.0	6.3
Grand mean			81	1394	1437	129	0.75	7.7	1.84	8.2	7.8	5.6	75	2.6	3.0	2.1	5.8
LSD .05†			–	–	177	17	0.05	0.4	0.07	–	–	–	*P* <.0001	–	–	–	–
r^2 for regression vs DAP††					0.34	NS	0.41	NS	NS	NS	0.58	0.27	–	NS	NS	NS	NS

*Seed Source: AC=Abbott & Cobb, CR=Crookham, RU=Rupp Seeds, ST=Stokes, SW=Seedway, SY=Syngenta.

**DAP: days after planting.

***GDD: corn growing degree days.

#Husk cover, tip fill, overall, plant vigor: 1 to 9 scale; 2=poor (weak), 5=acceptable, 8=good (vigorous). Height: 1= <5 ft., 2=5-6 ft.; 3= > 6 ft.. Ear Ht. 1= < 12 in. to 6= >36 in.; Tillers: 1=no tillers to 5=many large tillers.

†Means differing by more than this amount are significantly different at P≤.05. – AOV not performed. For emergence, P value for cultivar effect presented.

††r^2 is the proportion of variability explained by harvest date. NS=regression not significant at P<.05.