Proc. Fla. State Hort. Soc. 114:329-331. 2001.

PERFORMANCE OF SWEET CORN VARIETIES ON MUCK SOIL

K. D. SHULER
University of Florida, IFAS
Palm Beach County Cooperative Service
West Palm Beach, FL 33415

Additional index words. Zea mays, variety trial, muck soil.

Abstract. **Ear characteristics and potential marketable yields were determined for 35 varieties of sh_2 sweet corn (*Zea mays* L.) grown on organic soils in a commercial field in South Bay, Fla. Seeds of yellow, bicolor, and white varieties were provided by five seed companies: Abbott & Cobb, Asgrow, Harris-Moran, Rogers, and Seedway. Corn was planted 11 Oct. 2000, and evaluated 2 and 3 Jan. 2001 (83 to 84 days after planting). Days to mid-silk ranged from 52 to 59 days. Information on ear weight, husk cover, husked ear length and width, length of unfilled tip, and plant stand or row count are presented.**

Sweet corn is a major crop in the Everglades Agricultural Area (EAA) of Florida. Types grown include yellow, white and bicolor cultivars. New cultivars are released periodically and growers are always looking for a better cultivar or one with some improvement in one or more characteristics. As a service to growers in the EAA, cultivar evaluation trials are conducted on a routine basis in cooperation with local growers on muck soil. This paper reports results of one such trial wherein the yield potential and ear characteristics of yellow, white and bicolor cultivars were compared during the winter of 2000.

This research was supported by the Florida Agricultural Experiment Station, and approved for publication as Journal Series No. N-02197. The author wishes to thank Sammy Rogers and David Hubbard, Billy Rogers Corp., for growing the sweet corn crop.

Materials and Methods

This variety trial was conducted in a commercial sweet corn field located 1.8 miles south of South Bay, Fla., and 0.3 miles west of U.S. 27 on land managed by Billy Rogers Corp. The soil type was a Pahokee muck. Seventeen yellow, twelve bicolor, and six white varieties were replicated in a complete block with five replications. The white varieties were located near the center of the trial area to reduce cross pollination. Plots were single rows spaced 30 in apart and 30 ft long with a 2.5 ft unplanted alley between replications. Within-row seed spacing was 9 in (40 plants per row or 23,232 plants per acre). Ears were harvested from three replications.

The experimental area had been treated with carbofuran (Furadan 4F) over the unplanted seed row and liquid fertilizer had been knifed in about 3 in to the side of the unplanted seed row. Using a jabber, two seeds were planted per hill on 11 Oct. and thinned to one plant on 30 Oct. Plant stand was counted on 7 Nov. Silks were counted on one replication (the most interior one) on 4, 6, and 8 Dec.

On 2 Jan. 2001, 19 varieties that had silked in 52 to 56 d after planting (27 to 31 d after silking) were harvested, and on 3 Jan., the remaining 16 varieties, which had silked in 57 to 59 d after planting (25 to 27 d after silking), were harvested. Ten ears from consecutive plants were harvested from one replication and six ears were harvested from consecutive plants for the other two replications (only primary ears were harvested). Six ears per plot were husked and examined for ear characteristics. The total number of marketable ears was determined by

Table 1. Yield of yellow sweet corn varieties grown on muck soil, Billy Rogers Corp., South Bay, Fla., fall/winter 2000-2001.

Variety	Seed source	Un-husked ear wt (lb)[z]	Husked ear wt (lb)[z]	Ear wt % of un-husked ear wt	% marketable ears[y]	Crates/acre (60 ears/ crate)[x]	Wt of 60 ears	Days to mid-silk
ACX 844	Abbott & Cobb	0.56	0.36	64	100	348	33.6	55
GSS-0966 VP[w]	Rogers	0.58	0.4	69	100	333	34.8	54
Prime Time	Rogers	0.51	0.34	67	97	323	30.6	52
Flagship II	Seedway	0.52	0.35	67	100	318	31.2	57
Bandit	Harris-Moran	0.67	0.47	70	97	315	40.2	53
GSS-5771 VP	Rogers	0.6	0.39	65	97	311	36	58
Prime Plus	Rogers	0.63	0.41	65	100	290	37.8	58
Ex 8415037	Asgrow	0.53	0.39	74	100	290	31.8	59
ACX 729	Abbott & Cobb	0.57	0.41	72	100	287	34.2	52
HMX 8392 S	Harris-Moran	0.59	0.38	64	97	278	35.4	58
Morning Star	Harris-Moran	0.54	0.38	70	87	250	32.4	58
96127Y	Seedway	0.65	0.42	65	93	248	39	55
ACX 845	Abbott & Cobb	0.55	0.39	71	91	247	33	55
ACX 725	Abbott & Cobb	0.55	0.4	73	89	245	33	52
Daystar	Harris-Moran	0.5	0.34	68	90	227	30	56
Ssweet 8100R	Abbott & Cobb	0.53	0.35	66	87	223	31.8	55
ACX 731	Abbott & Cobb	0.55	0.36	65	72	217	33	53

[z]Average of 10 ears from replication 1 and six ears each from replications 2 & 3: 22 total ears.
[y]Based on examination of 22 husked ears from all reps.
[x]Based on % marketable ears from examining unhusked first ears of all plants in one replication.
[w]Attribute (worm resistant).

Table 2. Ear characteristics of yellow sweet corn varieties grown on muck soil, Billy Rogers Corp., South Bay, Fla., fall/winter 2000-2001.

Variety	Seed source	Husk cover minimum (in)	Husk cover maximum (in)	Avg. husk cover (in)	Ear length minimum (in)	Ear length maximum (in)	Avg. ear length (in)	Avg. ear width (in)	Avg. unfilled tip (in)	Row count	Height to top of ear (in)	Comments and reason for cull ears
ACX 844	A & C	1.08	1.75	1.42	6.27	6.8	6.62	1.76	0.3	16,18	36	
GSS-0966 VP[z]	Rogers	1.17	2.167	1.67	6.61	7.2	6.93	1.75	0.23	18,16,20	33	nice
Prime Time	Rogers	0.92	1.917	1.42	6.68	7.6	7.07	1.65	0.43	14,16	31	short
Flagship II	Seedway	0.9	1.833	1.37	6.18	6.7	6.42	1.76	0.33	16	34	immature
Bandit	H-M	1.1	2.333	1.72	6.62	7.1	6.8	1.93	0.68	16,18	36	tip
GSS-5771 VP	Rogers	0.8	1.583	1.19	6.5	7.3	6.98	1.77	0.4	16,18	37	tip, immature, slightly curved
Prime Plus	Rogers	0.43	1.017	0.73	6.73	7.6	7.1	1.74	0.03	16,18	35	nice
Ex 8415037	Asgrow	0.43	1.083	0.76	6.78	7.2	7.07	1.79	1.03	16,20	38	
ACX 729	A & C	0.67	1.25	0.96	6.72	7.2	6.96	1.81	0.5	16,18	31	slightly curved, nice
HMX 8392 S	H-M	1.67	2.25	1.96	6.32	7.1	6.77	1.78	0.77	16	32	short, immature
Morning Star	H-M	0.82	1.5	1.16	6.3	6.8	6.55	1.78	0.43	16,18	35	short, slightly curved
96127Y	Seedway	1.5	2.083	1.79	6.82	7.2	7	1.85	0.37	18,16	33	immature, nice
ACX 845	A & C	0.43	1.333	0.82	6.71	7.1	6.83	1.78	0.7	18,20,16	33	immature, tip, slightly curved
ACX 725	A & C	1	1.75	1.38	6.6	7.3	6.92	1.83	0.8	14,16	29	tip
Daystar	H-M	2	2.667	2.33	6.07	6.6	6.27	1.75	0.63	16,18	36	short, slightly immature
Ssweet 8100R	A & C	0.92	1.917	1.42	6.92	7.5	7.15	1.66	0.87	14,16	32	immature, curved
ACX 731	A & C	1.17	1.833	1.5	6.08	7.1	6.7	1.75	0.88	16,14,20	31	tip and short

[z]Attribute (worm resistant).

examining all plants from the innermost replication. Height to the top of the top ear was measured on 3 Jan. (from the top of soil hilled up around the stalks by the layby cultivation).

Results and Discussion

Crop conditions. In some places it was difficult to distinguish the seed row from the fertilizer knife mark. Since there were a few rows (across more than one replication) that had weakened plants, seed may have been inadvertently planted in the fertilizer band such that growth was weakened by direct contact with fertilizer salts.

Weather. Weather was less than favorable for crop growth. Rainfall for the 83-d crop period was estimated at 0.75 in (based on the average daily rainfall totals for the three closest South Florida Water Management District rain gauge sites). Temperatures were generally colder than normal but were acceptable until frost and freeze occurred on the morning of 1 Jan. 2001. The following low temperatures were reported for the Everglades Research and Education Center in Belle Glade, FL (6 ft above ground level): 30 Dec.—43.5°F, 31 Dec.—32.5°F, and 1 Jan.—27.1°F. The grower reported 24°F in the field and flew helicopters to try to save the crop. Leaves were heavily frosted and began to dry out and die after the frost. Ear development probably stopped after 1 Jan.; so the period of effective growth after mid-silk would have been limited to 23-25 d for the youngest varieties harvested on 3 Jan. 2001.

Table 3. Yield of bicolor sweet corn varieties grown on muck soil, Billy Rogers Corp., South Bay, Fla., fall/winter 2000-2001.

Variety	Seed source	Un-husked ear wt (lb)[z]	Husked ear wt (lb)[z]	Ear wt % of un-husked ear wt	% marketable ears[y]	Crates/acre (60 ears/crate)[x]	Wt of 60 ears	Days to mid-silk
BSS-0977 VP[w]	Rogers	0.54	0.37	69	100	341	32.2	55
ACX 538	Abbott & Cobb	0.63	0.44	70	100	321	37.8	57
Ssweet 8102 RR	Abbott & Cobb	0.56	0.38	68	100	318	33.9	55
Ex 8414647	Asgrow	0.59	0.37	63	100	302	35.6	56
Big Time VP	Rogers	0.53	0.38	72	100	279	31.8	58
Twin Star	Harris-Moran	0.61	0.39	64	97	275	36.6	59
Saturn	Seedway	0.5	0.35	70	97	271	30	54
BSS-9686	Rogers	0.54	0.35	65	100	263	32.4	58
Starship II	Seedway	0.56	0.39	70	94	262	33.6	57
HMX 8343 BS	Harris-Moran	0.59	0.39	66	94	259	35.4	59
ACX 735	Abbott & Cobb	0.6	0.42	70	100	256	36.2	57
HMX 8344 BS	Harris-Moran	0.56	0.39	70	100	178	33.6	59

[z]Average of 10 ears from replication 1 and six ears each from replications 2 & 3: 22 total ears.
[y]Based on examination of 22 husked ears from all reps.
[x]Based on % marketable ears from examining unhusked first ears of all plants in one replication.
[w]Attribute (worm resistant).

Table 4. Ear characteristics of bicolor sweet corn varieties grown on muck soil, Billy Rogers Corp., South Bay, Fla., fall/winter 2000-2001.

Variety	Seed source	Husk cover minimum (in)	Husk cover maximum (in)	Avg. husk cover (in)	Ear length minimum (in)	Ear length maximum (in)	Avg. ear length (in)	Avg. ear width (in)	Avg. unfilled tip (in)	Row count	Height to top of ear (in)	Comments and reason for cull ears
BSS-0977 VP[z]	Rogers	1.5	2.167	1.83	6.5	7.1	6.85	1.69	0.17	16, 18	34	nice
ACX 538	A & C	0.6	1.333	0.97	6.53	7.4	7.05	1.85	0.85	14, 16	30	slightly immature, slightly curved
Ssweet 8102 RR	A & C	0.58	1.23	0.91	6.87	7.42	7.167	1.69	0.5	14, 16	32	slightly curved
Ex 8414647	Asgrow	1	1.417	1.21	6.47	7.4	6.9	1.69	0.38	16	35	nice
Big Time VP	Rogers	0.4	0.85	0.63	6.62	7.3	0.697	1.68	0.1	16, 12	32	nice, immature
Twin Star	H-M	1	1.583	1.29	6.32	7.3	6.85	1.73	0.13	16,14,18	34	short, immature
Saturn	Seedway	1	1.833	1.42	6.25	7	6.77	1.74	0.45	14, 16	29	tip
BSS-9686	Rogers	0.9	1.5	1.2	6.23	7	6.73	1.74	0.37	16, 18	34	immature, slightly curved
Starship II	Seedway	0.6	1.917	1.26	6.63	7.5	7.05	1.73	0.42	16, 14	32	short
HMX 8343 BS	H-M	0.82	1.417	1.12	6.43	7.3	6.88	1.73	0.43	16, 14	34	short, immature, slightly curved
ACX 735	A & C	0.83	1.417	1.13	6.27	7.1	6.82	1.86	0.2	18, 20	30	immature
HMX 8344 BS	H-M	0.85	1.75	1.3	6.53	7.3	6.8	1.76	0.32	16, 18	36	immature, slightly curved

[z]Attribute (worm resistant).

Yield. The percentage of the ears that were marketable was 90% or greater for most yellow cultivars, except 'Morning-Star', 'Summer Sweet (Ssweet) 8100R', 'ACX 725', and 'ACX 731' (Table 1). The highest production was obtained with 'ACX 844' and the lowest occurred with 'ACX 731'. Ear length was in excess of 6 in with all yellow cultivars (Table 2). Among the bicolor cultivars, 94% or greater of the ears were marketable with many cultivars producing all marketable ears (Table 3). 'BSS-0977 VP' produced the most crates per acre among the bicolor cultivars and the ears were well shaped, while 'HMX 8344 BS' produced the fewest crates and had slightly curved, immature ears (Table 4). Of the six cultivars of white sweet corn evaluated, three produced less than 90% marketable ears (Table 5). One hundred percent of the ears produced on 'Ssweet 8101R', 'Boreal VP', and 'WSS-1921' were marketable and plants yielded 314 or more crates per acre. 'Ssweet 8101R' produced slightly curved ears under the conditions of this experiment, while 'Boreal VP' bore very nicely shaped ears. 'Sugar Bowl' and 'Vail' produced short ears and had the lowest yields of the white cultivars.

Table 5. Yield of white sweet corn varieties grown on muck soil, Billy Rogers Corp., South Bay, Fla., fall/winter 2000-2001.

Variety	Seed source	Un-husked ear wt (lb)[z]	Husked ear wt (lb)[z]	Ear wt % of un-husked ear wt	% marketable ears[y]	Crates/acre (60 ears/ crate)[x]	Wt of 60 ears	Days to mid-silk
Ssweet 8101 R	Abbott & Cobb	0.58	0.41	71	100	352	34.8	57
Boreal VP	Rogers	0.57	0.4	70	100	321	34.2	56
WSS-1921	Rogers	0.56	0.35	62	100	314	33.6	56
White Saturn	Seedway	0.5	0.36	72	88	290	30	52
Sugar Bowl	Asgrow	0.56	0.38	68	89	272	33.6	57
Vail	Rogers	0.56	0.39	70	80	251	33.6	55

[z]Average of 10 ears from replication 1 and six ears each from replications 2 & 3: 22 total ears.
[y]Based on examination of 22 husked ears from all reps.
[x]Based on % marketable ears from examining unhusked first ears of all plants in one replication.

Table 6. Ear characteristics of white sweet corn varieties grown on muck soil, Billy Rogers Corp., South Bay, Fla., fall/winter 2000-2001.

Variety	Seed source	Husk cover minimum (in)	Husk cover maximum (in)	Avg. husk cover (in)	Ear length minimum (in)	Ear length maximum (in)	Avg. ear length (in)	Avg. ear width (in)	Avg. unfilled tip (in)	Row count	Height to top of ear (in)	Comments and reason for cull ears
Ssweet 8101 R	A & C	0.77	1.583	1.18	6.78	7.3	7.07	1.75	0.18	16,18	34	slightly curved
Boreal VP	Rogers	1.08	1.917	1.5	6.68	7.2	6.92	1.71	0.17	14,16,12	30	nice
WSS-1921	Rogers	1	1.767	1.38	6.23	7.2	6.83	1.67	0.3	14,16	33	
White Saturn	Seedway	0.68	1.333	1.01	6.43	6.9	6.63	1.72	0.5	14,12	31	tip
Sugar Bowl	Asgrow	1.17	2.417	1.79	5.83	7.1	6.52	1.77	0.13	16,18	37	short, nice
Vail	Rogers	1.33	2.2	175	5.93	7	6.43	1.77	0.2	1420	34	short