1999 Sweet Corn Spacing and Nitrogen Trials

Background and Objectives

Cool soil temperatures and growing conditions in early plantings of sweet corn can cause poor germination, especially when using supersweet varieties. Some growers may compensate by increasing the populations of early plantings. Ear physical quality could be affected by the decreased growing space per plant, and some buyers in NYS have complained about variability in appearance of early corn. Research has shown varietal differences in response to decreasing in row spacing and between row spacing with processing corn. Processing sweet corn ear size and tip fill were more variable at higher populations (studies from 1950-1980). While higher populations increased yield, both ear weight and marketable ears decreased. With increased plant population, plant to plant competition for soil nutrients increased.

The following experiment was conducted to explore interactions between fresh market sweet corn cultivar, in-row spacing and two rates of nitrogen fertilization on ear quality. This is the second year of this trial. In 1998, two trials explored spacing on fresh market sweet corn. Ear physical traits were evaluated including cob length, width, yield, and appearance. Flavor was not assessed.

Trial design

Cultivars:	Sweet Symphony (Harris SweetBreed) and Temptation (se)
Seeding date:	May 11, 1999, Freeville NY
Spacings:	7" (29,870 plants/A), 8" (26,136 plants/A) and 9" (23,232 plants/A)
Plot size:	Two rows 40' in length and 2.5' between row spacing
Harvest area:	One row 30' in length and 2.5' between row spacing
Experimental plot:	Split Split Block with 4 replications
Harvest:	August 2-3, 1999
Fertilizer:	Preplant 41 lbs. of N, P_20_5 and K_2O
	Sidedress 60 lbs. N/A (High N treatment)
	Sidedress 20 lbs. N/A (Low N treatment)

Results *(See Upstate Tables 4 and 5)*

Results thus far indicate that nitrogen sidedress rate, variety and in row spacing can influence ear quality and variability. In 1998, no difference in ear length due to spacing was found. It is suspected that the warm spring in 1998, coupled with adequate moisture, reduced plant stress during early growth. This may partially explain the lack of a spacing effect at both locations. The higher sidedress nitrogen treatment as well the cultivar Sweet Symphony had higher ear weights, higher percent marketable ears and larger diameter ears. 'Temptation' ears were the smallest of the three cultivars tested. However, ear length was unaffected. The effect of nitrogen fertility

observed between the sidedress treatments suggested a potential benefit of higher N rates for early season corn.

Results from the 1999 trial in Central NY showed definite negative effects on ear length, quality and yield at the closest in-row spacing tested (7 inches). Marketable yield in both tonnage and dozens/acre were higher at closer in-row spacings. There was no significant difference in marketable yield per acre by decreasing in row spacing from 8 to 7 inches. However, at a 9 inch spacing, individual ears had the highest weight, ear length and width, for both varieties tested. Sweet Symphony yielded about .8 ton/ac more than Temptation. In-row spacing was found to be the most important factor affect ear physical characteristics. Research will continue on different soil types and irrigation systems this coming season.

Upstate NY Table 4. In-row spacing effects on Sweet Corn ear length, yield and quality grown at Freeville-1998.

	Marketable				
Treatment[1]	Unhusked Avg. Ear wt. (lbs)	Husked Avg. Ear wt. (lbs)	Avg. Ear Length (in.)	Avg. Ear Diameter (in.)	% Mkt.
Nitrogen					
High	0.79 b[2]	0.49 b	7.27	1.84 b	75.9 b
Low	0.76 a	0.47 a	7.08	1.74 a	67.0 a
Spacing					
6.5"	0.77	0.49 b	7.18	1.80	70.8
7.5"	0.78	0.49 b	7.25	1.79	69.8
8.5"	0.78	0.45 a	7.09	1.76	73.9
Cultivar					
Candy Corner	0.83 c	0.51 b	7.27 ab	1.77 a	76.6 b
Sweet Symphony	0.80 b	0.50 b	7.33 b	1.83 b	67.2 a
Temptation	0.69 a	0.42 a	6.92 a	1.76 a	70.7 ab

[1] Seed was sown by hand on 5/21/98, fertilizer rate: 98 lbs of N, P_2O_5 and K_2O preplant and 60 lbs. N/A sidedressed on High Nitrogen plots on 7/2/98.

[2] Numbers followed by the same letter (in a group) are not significantly different at 5% level.

Upstate NY Table 5. In-row spacing effects on Sweet Corn ear length, yield and quality grown at Freeville-1999.

	Marketable				
Treatment[1]	Unhusked Avg. Ear wt. (lbs)	Husked Avg. Ear wt. (lbs)	Avg. Ear Length (in.)	Avg. Ear Diameter (in.)	% Mkt.
Nitrogen					
High	0.66 b[2]	0.45	7.20 b	1.67 b	89 b
Low	0.63 a	0.43	7.10 a	1.64 a	78 a
Spacing					
7"	0.62 a	0.43	6.90 a	1.61 a	81 a
8"	0.63 a	0.45	7.20 b	1.65 a	86 b
9"	0.69 b	0.45	7.40 c	1.72 b	82 ab
Cultivar					
Sweet Symphony	0.66	0.43	7.20	1.63 a	85
Temptation	0.63	0.45	7.10	1.69 b	81

[1] Seed was sown on 5/11/99, fertilizer rate: 41 lbs of N, P2O5 and K2O preplant. An additional 60 lbs. N/A was added to High Nitrogen plots on 6/24/99.An additional 20 lbs. N/A was added to Low Nitrogen plots on 6/24/99.

[2] Numbers followed by the same letter (in a group) are not significantly different at 5% level.