Sweet Corn Variety Trial
Safford Agricultural Center, 1998

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Abstract

Eight sweet corn varieties were grown in a replicated small plot trial on the Safford Agricultural Center in 1998. Snow White had the highest yield per acre with several of the other varieties producing very acceptable yields. Yields seen in the small plots may not be obtainable in commercial fields, but yield relations between varieties should be the same for both situations.

Introduction

Sweet corn has been a small scale cash crop in Graham County for many years. As more area farmers are looking for crops to provide an alternative from the cotton monoculture, it was decided to look at different varieties of sweet corn to find which one would do best under our salty soil and arid growing conditions. This trial is one of many vegetable crop variety studies conducted at the Safford Agricultural Center in 1998.

Materials and Methods

This variety trial was performed on the Safford Agricultural Center at an elevation of 2954 feet above sea level. Corn seed for the eight varieties were planted in a replicated small plot study using a John Deere 7100 planter with cone-hoppers. Cultural practices and inputs are listed below in the crop history.

Crop History:

Soil type: Pima clay loam variant
Previous crop: Vegetables
Experimental design: Randomized complete block with 4 replications
Planting date: 3 April 1998
Fertilizer: 400 pounds/ac soil sulfur and 244 pounds/ac 16-20-0 applied 3/13, 100 pounds/ac urea applied 5/28
Irrigation: Watered up, furrow irrigated 9 times (ca. 36 inches of water)
Herbicide: None
Insecticide: Orthene to control ear worm applied 5/28
Harvests: 2 July, 8 July and 13 July
Heat units (50/86°F):

Harvests were done manually and different varieties were harvested as they came to maturity. Ears were counted and weighed from each plot and ears were inspected to determine the number of rows of grain per ear. Ear placement and plant height were measured at harvest time.

Results and Discussions

Table 1 contains the yield data from the study. Snow White sweet corn variety produced the highest number of ears per

acre as well as the highest total ear weight per acre. Several of the other varieties were not statistically different in yield from the leader. Ear weights of the top 5 varieties were all about the same and close to 0.4 pounds each. Ice Queen had smaller ears and the last two varieties had slightly larger ears. The last column in Table 1 shows the potential value of the crop using a value of $1.50 per dozen ears. The number of ears per acre reported in our study are somewhat higher than are typically found in commercial fields which is probably a result of our small plot practices. Even though the yields may be artificially high, the yield relation between the varieties should still remain the same.

Table 2 shows the earliness and other physiological characteristics of the varieties. The first data column in the table shows the first date at which mature ears were picked. Gold and Ice matured a week or two before the other varieties in the study. That could translate into a 50-cent premium per dozen, which would mean an extra $1400 per acre of revenue. This would bring its value per acre above that of Snow White, the highest yielding variety. Ear and plant heights are reported in the next two columns. No particular differences were noted between varieties. Rows of kernels per ear is, of course, genetically controlled and all varieties had 16 rows, except Snow White, which had 14 rows. Even with only 14 rows the ear weight of Snow White was equal to the average of the other varieties. This would indicate that this variety compensated by forming plumper kernels or produced longer ears.

The sweet corn tasted very good, even though no specific quality measurements were made on each variety. Maas (1) has shown that sweet corn is moderately susceptible to salt damage with a threshold value of 1.7 dS/m and a slope of 12. In spite of the root zone soil electro-conductivity measurement of 1.9, good yields were realized. Petrie (2) reports that a 10% yield reduction would be expected from corn at an electro-conductivity reading of 2.5 dS/m. The chlorosis ratings in Table 2 give an indication as to how varieties were affected by the salts present in the experimental plots. The low yield for Diablo variety could well be related to its struggle with the salty conditions.

References

1. Maas, E.V. and Hoffman, G.J. 1977. Crop salt tolerance - current assessment. J. Irrig. and Drainage Div., ASCE 103(IR2):115-134.

2. Petrie, S.E. 1999. Reclamation and management of saline and sodic soils. Unocal Agricultural Products Solution Sheet, January 1999, pp. 3-6.

Table 1. Yield and related agronomic data from sweet corn variety study grown on the Safford Agricultural Center, 1998.

Variety	Ears per acre	Total Ear Wt/acre	Ear weight	Plants per acre	Per acre value @$1.50/doz
Snow White	43,000 a[1]	17,513 a	0.42 bc	39,000 b	$5,375
Zenith	40,125 a	16,213 a	0.41 bc	47,000 b	$5,016
Candy Corner	38,500 a	14,675 a	0.39 bc	70,500 a	$4,813
Morning Star	36,125 a	13,737 a	0.39 bc	65,500 a	$4,516
Gold and Ice	34,125 ab	14,300 a	0.42 bc	45,000 b	$4,266
Ice Queen	32,500 ab	11,363 a	0.35 c	72,000 a	$4,063
Bandit	31,000 ab	14,138 a	0.46 b	52,500 ab	$3,875
Diablo	23,500 b	11,775 a	0.52 a	35,500 b	$2,938
Average	34,859	14,214	0.42	53,375	$4,357
LSD(05)	12,463	4,259.6	0.05	14,559	--
CV(%)	24.3	20.4	8.7	18.5	--

1. Numbers followed by the same letter, within a column, are not significantly different at the 95% level of confidence using Duncan:s Multiple Range test.

Table 2. Earliness and other physiological data from sweet corn variety study grown on the Safford Agricultural Center, 1998.

Variety	1st Pick Date	Ear Height (inches)	Plant Height (inches)	Rows per ear	Chlorosis Rating[2]
Snow White	7/13	11.0	50.0	14	2
Zenith	7/13	11.5	56.0	16	4
Candy Corner	7/8	11.5	49.0	16	4
Morning Star	7/13	11.0	50.0	16	2
Gold and Ice	7/2	10.0	48.0	16	3
Ice Queen	7/8	10.0	46.0	16	4
Bandit	7/8	12.5	53.0	16	4
Diablo	7/8	10.0	48.0	16	1
Average	--	10.9	50.0	15.8	3

2. Chlorosis ratings were from 1 to 4 with 1 = bad, 4 = none.