

Effect of Planting Date, Variety and Preharvest
Dryup on Late Season Sugarbeet Production

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Summary

Several cultural factors were studied to determine their effect on late season sugarbeet production. September planted beets gave higher yields than those planted in October or November when harvest was in August. Age of the planting did not appear to have an effect on late season stand losses. The varieties tested produced similar yields, but SS-EI had fewer stand losses. Preharvest dryup intervals of 16 and 28 days resulted in similar yields and stand losses.

Introduction

In order to maintain continuous operation of the processing facility for the longest possible time, beets must be harvested during the month of July in central Arizona. However, quite often the yield and quality of the crop decline when harvest is in July or later. Environmental conditions associated with the summer season, such as high temperatures and rainfall, undoubtedly contribute to the poor performance of beets late in the season. Needed is information on the proper management of cultural factors for maximum late season production.

Results of a preliminary study to determine the effect of variety and planting date on production of sugarbeets for early August harvest were reported in the January 1980 Sugarbeet Report (Series P-48). In the 1979-80 season, planting dates and varieties were again studied. In addition, the effect of preharvest dryup interval on late season production was investigated.

The sugarbeet cultivars US H9B and SS-EI were planted at the Mesa Farm on September 7, October 6 and November 13, 1979. Preharvest dryup intervals of 16 and 28 days were compared for an August harvest. Plots were sampled on July 10 and August 8 to determine yield and sucrose percentages. Information was also obtained on late season stand losses.

Results

Results of the test are shown in Tables 1 and 2. Late season root and sugar yields were highest when beets were planted in September. For example, when harvest was in August, the September planting produced 5 and 17 tons more roots per acre than October and November plantings, respectively. It has generally been assumed that late fall plantings or younger beets would perform best late in the harvest season. Data presented here show that beets planted in November did not produce appreciable growth during the period July 10 to August 8 and suffered late season stand losses similar to those of earlier plantings. There were no significant differences among planting dates in sucrose percentages at either harvest date.

The two varieties compared gave similar yields and sucrose percentages when harvest was in August. There were no differences between dryup intervals in root or sugar yields (data not shown). The 28 day dryup tended to result in a reduction in top yields in the September planting, but not in later plantings.

Leaf losses late in the season were small as indicated by top yields; however, much leaf loss had already occurred before the July 10 harvest. Top yields for the September planting in July were about one half to two thirds of the maximum top yield normally produced in April or May. High temperatures that occurred in June slowed leaf growth and hastened senescence.

Stand losses late in the season were relatively low and apparently were not affected by planting date. The only factor tested that appeared to influence stand losses was the variety. In this and the previous year's test, SS-EI plants survived the summer season better than those of US H9. The stand losses that occurred in this study could not be attributed to any particular cause. Only a few plants were observed to have root rots. It is likely that the severe leaf loss that occurs late in the season is a major factor in stand losses.

Table 1. Effect of planting date and variety on yields, sucrose percentages and stand losses of sugarbeets harvested July 10, 1980.

Planting Date	Variety ^{1/}	Yield			Sucrose (%)	Stand Losses (%)
		Sugar (T/A)	Roots (T/A)	Tops (T/A)		
Sept. 7	US H9	5.60	43.3	22.0	13.1	1.1
	SS-E1	5.94	43.0	21.1	13.9	0.5
	Ave.	5.77 a ^{2/}	43.2 a	21.6 a	13.5 a	0.8
Oct. 6	US H9	4.52	34.8	19.4	13.0	0.0
	SS-E1	4.84	36.2	20.4	13.4	0.5
	Ave.	4.68 b	35.5 b	19.9 ab	13.2 a	0.3
Nov. 13	US H9	2.92	23.5	14.6	12.4	0.5
	SS-E1	3.19	24.8	15.1	12.9	0.0
	Ave.	3.06 c	24.2 c	14.9 b	12.7 a	0.3

^{1/}The average sucrose percentage of SS-E1 for all planting dates (13.4%) was significantly higher than that of US H9 (12.8%).

^{2/}Planting date means in columns followed by the same letter are not significantly different at the 5% level according to the Student-Newman-Keul test.

CROP HISTORY: Previous Crop: Small grain. Row and Plant Spacing: 30-inch, single row beds, 9 inch plant spacing in row. Fertilizer: 200 lbs/A of 11-48-0 preplant and 60 lbs N/A on March 2, 1980. Harvest Date: July 10, 1980. Plot Size: Planting date plots 70 feet by 10 rows - replicated 4 times.

Table 2. Effect of planting date and variety on yields, sucrose percentages and stand losses of sugarbeets harvested August 8, 1980.

Planting Date	Variety	Yield			Sucrose (%)	Stand Losses (%)
		Sugar (T/A)	Roots (T/A)	Tops (T/A)		
Sept. 7	US H9	5.36	41.0	19.9	13.1	6.9
	SS-E1	5.83	43.0	20.1	13.5	1.3
	Ave.	5.60 a	42.0 a	20.0 a	13.3 a	4.1 a
Oct. 6	US H9	4.89	37.2	19.3	13.1	5.0
	SS-E1	5.08	37.2	18.4	13.6	1.3
	Ave.	4.99 b	37.2 b	18.9 a	13.4 a	3.2 a
Nov. 13	US H9	3.14	25.3	13.1	12.4	6.3
	SS-E1	3.22	25.0	11.7	12.9	0.6
	Ave.	3.18 c	25.2 c	12.4 b	12.7 a	3.5 a

^{1/}Planting date means in columns followed by the same letter are not significantly different at the 5% level according to the Student-Newman-Keul test.