

Our objectives in 1981 are as follows:

1. To identify high risk fields scheduled for late harvest.
2. To establish the relationship between the level of field infestation, soil temperatures, and disease prevalence. At least 20 commercial fields will be assayed for fungus populations, as previously described, and assigned a risk factor. Soil temperature in both low and high risk fields will be regulated by altering the duration and/or frequency of irrigation. Disease prevalence will be correlated with soil temperatures and soil populations of the fungus.

## Effect of Preharvest Applications of 'Pix' on Yield and Sucrose Concentration of Sugarbeets

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### Summary

The growth regulator Pix was tested to determine its value as a means of suppressing top growth of sugarbeets prior to and during the early harvest season. Preharvest applications of Pix had no effect on top growth, yield or sucrose percentages of early harvested beets.

### Introduction

One of the potential uses for growth regulators in sugarbeet production in Arizona would be to regulate top growth prior to the harvest season. Maximum sucrose concentrations are achieved in most growing areas when top and root growth have been restricted prior to harvest by low night temperatures and nitrogen deficiency.

In central Arizona, temperatures prior to and during the early part of the harvest season are generally favorable for vegetative growth. When excessive soil nitrogen is present during this period, rapid root and top growth can occur. Consequently, although root yields may be relatively high, sucrose concentrations are generally low for early harvested beets. Growth inhibiting chemicals have been tested as a means of suppressing sugarbeet top growth prior to harvest, but so far none have proved effective. Recently, an experimental chemical labeled Pix (1, 1-dimethyl piperidinium chloride) has been shown to be useful for control of vegetative growth in cotton (1). Laboratory studies indicated that Pix can reduce vegetative growth while promoting root growth.

In the 1979-80 season a test was conducted at the Mesa Farm to determine the effect of preharvest foliar sprays of Pix on sugarbeet growth and sucrose concentration. The growth regulator was applied at rates of 0, 15, 30, 60 and 120 g ai/A approximately nine weeks before harvest.

### Results

Root yields, sugar yields, sucrose concentration and top yields of beets are shown in Table 1. Preharvest applications of Pix had no significant effect on root yields, sugar yields or sucrose concentration of sugarbeets for early harvest. Excessive nitrogen was available during April and May, resulting in rapid top growth prior to and during early harvest. Pix treatments had no visible or measurable effect on top growth.

### Literature Cited

- (1) Urwiler, M. J. and J. T. Cothren. 1979. Cotton responses to 'Pix' -- field and laboratory studies. Proc. Plant Growth Regulator Working Group, Aug. 20-24, 1979. p 110-115.

Table 1. Effect of Pix on yield and sucrose concentration of sugarbeets for early harvest.

Treatment	Yield			Sucrose
	Sugar (T/A)	Roots (T/A)	Tops (T/A)	
Control <sup>1/</sup>	5.10 a <sup>2/</sup>	36.2 a	27.0 a	14.05 a
Pix-15 g/A	4.74 a	34.0 a	25.5 a	13.93 a
Pix-30 g/A	5.02 a	35.8 a	28.2 a	14.03 a
Pix-60 g/A	5.29 a	37.4 a	31.8 a	14.15 a
Pix-120 g/A	5.03 a	36.5 a	30.5 a	13.78 a

<sup>1/</sup>Control - foliage was sprayed with water.

<sup>2/</sup>Means in columns followed by the same letter are not significantly different at the 5% level.

CROP HISTORY: Planting Date: Sept. 20, 1979. Row and Plant Spacing: 30-inch, single row beds, plants thinned to 9 inches apart. Fertilizer: 200 lbs/A of 11-48-0 preplant and 60 lbs N/A on Mar. 2, 1980. Harvest Date: May 27, 1980. Plot Size: Single row plots 20 feet long replicated 4 times.