

## Testing of Plant Growth Regulators for Effects on Growth Rate of Sugarbeet Seedlings

David A. Palzkill, Research Associate

University of Arizona

In areas where sugarbeets are planted early in the spring, their growth rate is often slow due to low temperatures. Several researchers have shown that treatments which increase the early growth rate of sugarbeets in these areas result in increased final yield. The purpose of this study was to test several plant growth regulators for their ability to increase seedling growth of sugarbeets.

Greenhouse-grown seedlings at the 3 to 4 leaf stage were treated with foliar applications of the different materials. For each material tested, several concentrations were used. Data on fresh and dry weight, number of leaves, and leaf area were recorded 3 to 4 weeks after treatment.

None of the materials tested to date appear very promising. In separate experiments, increases in fresh weight, dry weight or leaf area of 10 to 20% have been obtained with several different compounds. However, in no case was the increased value significantly different from the control value (at the 5% level). Typical data obtained with 3 of the materials are given in Table 1. Values given are the average of several experiments. Each value represents 15-25 separate plants.

Summary. Several plant growth regulators have been tested under greenhouse conditions for their effects on the growth rate of sugarbeet seedlings. None of the materials tested caused significant increases in growth.

Table 1. Fresh weight, leaf area, and number of leaves of sugarbeet seedlings treated with ethephon, Bay-meb 6447, and gibberellic acid. Data is expressed as % of the control\*.

<u>Treatment</u>	<u>Fresh weight</u>		<u>Leaf area</u>	<u>Number of leaves</u>
	shoot	root		
Control	100	100	100	100
Ethrel 500 ppm	71	69	80	108
100 "	96	93	97	105
50 "	105	103	94	106
10 "	103	98	101	103
5 "	79	79	85	98
Bay-meb 1000 ppm	92	88	77	100
100 "	83	81	82	97
50 "	108	87	104	110
10 "	102	99	101	104
5 "	103	94	103	105
GA <sub>3</sub> 1000 ppm	97	92	97	108
100 "	107	98	106	100
10 "	95	89	97	102
1 "	102	93	101	100

\* None of the values are significantly greater than the control at the 5% level.