RESULTS OF MECHANICAL THINNING TESTS IN THE EASTERN AREA - 1946

Clare Irvin, Agriculturist
Lake Shore Sugar Company - St. Louis Plant

During 1946 there were three tests of mechanical thinning carried on in this eastern area in cooperation with the Beet Sugar Development Foundation. One was at Deshler, Ohio, conducted by Fred Gettel and M. J. Buschlen of the Great Lakes Sugar Company. Another was near Saginaw, Michigan, conducted by Grant Nichol of the Farmers and Manufacturers Beet Sugar Association. The other one was carried on by the Lake Shore Sugar Company at St. Louis, Michigan under my direction and assisted by our chief chemist, Marion Peacock.

Basically these tests were all carried out in the same way, so we will discuss briefly the one at St. Louis. The field was seeded with segmented seed, using a Cobbley Unit on a John Deere #55 planter and spacing the seeds about 2 inches apart in the row; just over 2½ lbs. of seed was used per acre. The plots were laid out 60 rows wide and 16 ft. down the row for ease in cross-blocking. The average pre-thinning stand over the entire plot area was only 14.5 beet containing inches per 100 inches. This stand would ordinarily be considered too poor for machine blocking. It was a beautiful stand, however, for long handled hoe thinning with no finger thinning at all necessary.

The different treatments used on these plots were as follows:

#1. Hand blocked and thinned in the usual way.
#2. Blocked with a long handled hoe only--no finger thinning.
#3. Dixie Beet Thinner--no trimming with a hoe.
#4. Cross blocked--no trimming with a hoe.
#5. Cross blocked--trimmed with a long handled hoe.
#6. Cross blocked and cross cultivated--trimmed with a long handled hoe.
#7. Weeder or cultivator with very narrow teeth used across the rows--no trimming with a hoe.

Each treatment was replicated six times. At St. Louis we used the Dixie Thinner set to cut out only 50% of the row. Due to the relatively low stand count, it was decided that we could not cut out more than 50% of the row and still leave a satisfactory stand of beets. So the setting was made to cut 4 inches and leave 4 inches. Likewise the knives on the cross blocking cultivator were set to cut out 4 inches and leave 4 inches. The cross cultivating in treatment #6 was done with a weeder on a Ford tractor following one day after the cross blocking operation. Then on treatment #7, only the weeder was used. The beets were a little too large for this weeder treatment and even several times over those plots failed to knock out as many plants as we had hoped. The result was a very thick stand of relatively small beets at harvest time. This treatment, however, looks as though it had considerable promise if one could get into the field when the beets were small. If once over failed to knock out enough plants, then a second and even a third weeding might get the desired results. Each time over would be eliminating more weeds as well as thinning out the beets.

Results of Tests

In looking over the results of these tests, one can see there is practically no difference in the sugar percents on the various treatments. Therefore the sugar produced per acre is, to a great extent, a reflection of the tonnage per acre. The data in the tables below are all based on marketable beets. The early and late tests at St. Louis are two separate groups of plots with respect to thinning dates. However, due to weather conditions there was only a week's difference between the early and the late thinning.

Tons Per Acre

	#1	#2	#3	#4	#5	#6	#7
Deshler, Ohio	10.37	10.03	9.44	10.18	9.05	10.66	8.90
Saginaw, Mich.	10.53	10.54	8.74	8.56	10.64	7.38	6.86
St. Louis (early)	12.94	13.33	10.84	10.82	11.93	11.86	10.98
(late)	12.85	12.04	10.62	10.86	11.20	10.84	11.06
Averages	11.67	11.49	9.91	10.11	10.71	10.19	9.45

Sucrose Per Cent

Deshler, Ohio	20.43	20.56	19.89	19.84	19.71	20.58	20.06
Saginaw, Mich.	18.40	18.18	17.77	17.98	18.27	17.78	17.88
St. Louis (early)	20.40	20.10	20.00	19.60	20.10	19.80	21.00
(late)	20.30	20.50	20.00	20.10	20.00	20.20	20.80
Averages	19.88	19.84	19.42	19.38	19.52	19.59	19.94

Sugar Per Acre

Deshler, Ohio	3773	3757	3326	3580	3130	3963	3232
Saginaw, Mich.	3396	3357	2761	2723	3376	2299	2166
St. Louis (early)	4756	4757	3848	3785	4317	4156	4128
(late)	4651	4432	3813	3914	3963	3939	4143
Averages	4144	4076	3437	3501	3697	3589	3417

Number of Beets Per Acre

Deshler, Ohio	26393	25978	21839	22156	19800	24671	21641
Saginaw, Mich.	19602	18496	17977	17562	17044	15611	16352
St. Louis (early)	18059	20383	19185	17642	17279	16626	26136
(late)	17932	19856	19493	19584	17261	16898	28169
Averages	20497	21178	19624	19236	17846	18452	23075

Conclusions

1. Weed control in the row is of primary importance to one who is considering mechanical thinning. The hand labor who worked in the plots spent nearly as much time hoeing the machine blocked plots as they did blocking, thinning, and hoeing the hand thinned plots.

2. The machine will never wholly replace hand labor if we are to maintain our present tonnage and sugar production per acre. However,

it may well be used to materially reduce the hand labor, if one has a method other than the hoe, to control the weeds in the row.

3. In my opinion, cross-blocking is just as good as mechanical down-the-row blocking and it is nearly twice as fast. An eight foot cross blocker will cover nearly twice the acreage that a two row down-the-row machine will. The data on tonnage and sugar production per acre from these tests bear out my statement that cross blocking gives just as good results as down-the-row blocking.

4. One thing with considerable promise is the wider spacing of seeds in the row as a means of reducing hand labor. This is especially true now with the new drills which are coming out; more precision planting is the thing for which we are striving. The hand laborer then, with long handled hoe, will practically block and hoe the beets in one simple, fast operation.