

# Red River Valley Experience in Mechanizing Sugar Beet Growing and Harvesting Operations, 1947 Season

O. A. HOLKESVIG<sup>1</sup>

**G**ROWERS IN THE RED RIVER VALLEY started cross-cultivation of beets in 1930, which resulted in such an increase in labor efficiency in thinning that it became the universal practice.

With the introduction of segmented seed and equipment for more precise placement of drilling seed, some 450 acres of beets were not thinned in 1946 with such satisfactory results that, had there been a harvester available to top beets in blocks containing multiples, a large acreage would have been handled in this way in 1947.

Fortunately, the Sterling Machine Company of Minneapolis, asked us to cooperate with them in final field testing with their Harvall Beet Combine which lifts, tops and loads two rows in one operation. Tests which we ran with this machine in 1946, had demonstrated its ability to properly top multiple beets in non-thinned fields.

In preparation for a field test in 1947, 30.5 acres were planted on company land. This field was planted to sweetclover with barley as a nurse crop, in 1945. In 1946, when the sweetclover reached a growth of 2 feet, it was plowed under, then disced and tilled with a field cultivator at regular intervals for the balance of the season. The land was leveled with an Eversman land leveler twice, before final ridging with a field cultivator, to prevent winter wind erosion just before the ground froze in the fall of 1946. The field was planted May 21 with a John Deere No. 66 twelve-row planter, at the rate of 5 pounds of segmented seed per acre at a 2-mile per hour drill speed.

One-hundred-inch stand-counts showed 19.86 inches containing singles; 7.26 inches containing doubles, and 1.13 inches containing 3 or more plants per inch, or a total of 28.25 beet-containing inches. Rows were spaced on 18-inch centers and for the cross-pattern, the cultivator was set to space three 16-inch rows, and five 14-inch rows, leaving 1½-inch blocks at right angles to the drill rows. This pattern provided 23,626 blocks per acre. After crossing, 600 block counts were made as follows:

233 blocks were blank; 191 contained singles; 133 contained doubles; and 43 contained 3 or more, or a total of 14,452 beet-containing blocks per acre—a population of 23,078 plants per acre. This field was cultivated three times down the row with a pencil weeder attached to the rear bar of

<sup>1</sup>Manager, Red River Valley area, American Crystal Sugar Co.

the cultivator for one cultivation and was cross-cultivated three times with the pencil weeder attached to the rear bar of the cultivator for one cultivation.

Labor which performed the hoeing, kept their own time and were paid 75 cents per hour. It took them 94 hours to hoe, at a cost of \$2.31 per acre.

This field yielded 10.07 tons per acre, which was approximately 1 ton more per acre than the average yield of the hand-thinned acreage for the area this year.

I am sure you are interested in knowing the total man hours required to produce this non-thinned crop from seedbed preparation to loading into truck:

	Man hours per acre
Seedbed preparation.....	.75
Planting with 12-row planter.....	.28
Cultivation, six times.....	2.29
	3.32
Pulling weeds.....	3.07
Harvall harvesting.....	2.00
	5.39
<b>Total.....</b>	<b>8.39</b>

The field was harvested with a Harvall harvester at a cost of:

30.5 hours for 2 men @ \$1.00 per hour for each man.....	\$ 61.00
Fuel and oil, \$1.00 per acre, 30.5 acres.....	30.50
Cost of vine beater per acre, 30.5 acres @ \$3.00.....	91.50
	183.00
Actual cost of operating, only.....	\$183.00
<b>Cost of hoeing:</b>	
30.5 acres @ \$2.31 per acre.....	70.45
	\$253.45

Cost if old method had been employed:

	Per acre	Total cost
Thinning and hoeing cross-cultivated.....	\$ 16.50	\$ 503.25
Labor procurement.....	3.00	91.50
Pulling beets, floating and trimming windrow.....	3.21	97.91
Hand harvest, 10.07 tons @ \$1.75.....	17.62	537.41
Loading beets.....	3.50	106.75
Return transportation for labor.....	3.00	91.50
	\$ 46.83	\$1,428.32

#### Cost Comparisons

	30.5 acres, total cost	307.25 tons, cost per acre	Average yield—10.07 tons, cost per ton
Old method.....	\$1,428.32	\$46.85	\$4.65
Mechanized method.....	253.45	8.31	.83
Savings made.....	\$1,174.87	\$38.54	\$3.82

The above figures do not include costs for depreciation, maintenance, and interest on investment of any machinery used.