

## Five Years' Experience in Complete Mechanical Thinning of Sugar Beets

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The shortage of satisfactory field labor during the years preceding 1949, and the mounting costs of recruiting and supplying it, forced our company to realize that it was imperative that some system be devised for the production of sugar beets without the large amount of hand labor which had been considered necessary for the thinning of the crop.

The late D. J. Roach, executive vice president of our company at that time, therefore appointed certain of our people to develop a machine which would reduce the amount of hand labor required to produce the crop. The result of this order was the G. W. thinner.



Figure 1.—The G. W. Thinner with eight-blade head.

This machine was used at first to precede hand thinning and proved excellent for reducing the time required to hand-thin beets. It was then discovered that the machine could be used to do a complete thinning job, eliminating hand thinning entirely. The Windsor system of complete mechanical thinning is a method of obtaining a satisfactory final stand of thinned beets by mechanical means. Our next job then was to acquaint our agricultural force with the program and educate those people with its operation. Our agricultural organization was made familiar with the program first in general meetings. Later field demonstrations were held to instruct our agricultural men in the operation of the machines and the general appearance of the fields after machine thinning. Results of mechanically thinned fields were compiled and figures showing comparative stands, comparative yields, and labor costs were made available for study.

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Smaller group meetings were held to acquaint various factory districts with more detailed information regarding specific conditions, stands, and knife combinations to use on any given stand. Stand charts of various kinds were developed. Results of field operations in the various districts under varying conditions were assembled and made available to all factory groups in an effort to develop a satisfactory program for all field conditions.

As the program progressed, a grower education campaign had to be organized. Many growers had become acquainted with the G. W. thinner as an aid to labor. They also were cognizant of the fact that the labor supply was dwindling each year and they therefore realized the need for a mechanical thinning program. Groups representing all G. W. growers, including beet growers association directors, were taken to our Windsor farm to view the fields of beets which had been mechanically thinned. Special thinning demonstrations were held at that time on special late planted beets.



**Figure 2.**—The four rows to the right of center once over; four rows to the left of center completely machine thinned.

Special field plots were planted late in the summer in each factory district for local field demonstrations of the machine. These demonstrations were well attended and much grower interest was developed.

Educational grower meetings were held throughout the various factory districts the following winter where films of actual mechanical thinning were shown. Results of mechanical thinning experiments and commercial fields which were mechanically thinned were given and discussed.

Following these general grower meetings, a series of small meetings limited to those growers who had expressed a genuine desire to thin mechanically were held. These meetings were for the purpose of instructing the grower in the proper methods to use in preparing his soil for mechanical thinning, and the actual counting of the stand and selection of the proper knives to produce the stand desired. Much time was devoted to the discussion of the necessity for and methods of weed control.

The results of our intensive program for the development of a successful practical program for thinning beets mechanically can best be observed by studying the report in Tables 1, 2 and 3 completed after the delivery of the 1952 crop.

Table 1.—Report of Mechanical Thinning in Great Western Districts

Acres completely machine thinned to eliminate all hand thinning

Year	Acres
1950	294
1951	2,123
1952	10,859

Table 2.—1952 Results of Machine Thinning with Windsor System (Results for 330 Growers and 7,495.66 Acres).

1952 Average Yield	15.797 Tons Per Acre
Same Farms, Average Last 5 Years (1947-1951)	13.669 Tons Per Acre
Gain in Yield over 5-Year Period	2.13 Tons Per Acre
Average Labor Cost for Summer Work	\$13.45 Per Acre
Average of all Great Western Districts	
1952 Average Yield	16.51 Tons Per Acre
Average 5 Years (1947-1951)	14.51 Tons Per Acre
Gain in Yield over 5-Year Period	2.00 Tons Per Acre

Table 3.—Results on 74 Farms Where There Were Comparative Figures for Hand Work and Windsor System of Machine Thinning.

	Windsor Thinned	Hand Worked
Total Acres of Beets	879.53 Acres	1416.58 Acres
Average Yield in 1952	16.95 Tons Per Acre	17.03 Tons Per Acre
Average Yield, 5 Years	14.78 Tons Per Acre	14.78 Tons Per Acre
Average Harvested Stand	77.48 Percent	69.00 Percent
Summer Season Labor Cost	\$12.78 Per Acre	\$20.66 Per Acre
Saving in Labor Cost for Windsor System	\$7.88 Per Acre (38%)	

In 1953 Great Western growers completely mechanically thinned 27,585 acres of sugar beets for which yield comparisons with hand thinned beets are not available at this time.

Growers who have mechanically thinned successfully in the past two years have confidence in the system and do not fear yield losses because of it. These satisfied growers help sell the program to their neighbors, and more growers each year are mechanically thinning their beets. This is resulting in less need for hand labor. Beet workers who have hoed mechanically thinned beets prefer hoeing them to regular hand thinning of beets. Growers are producing beets at a lower labor cost per acre.



Figure 3.—Ten feet of row of machine-thinned beets in the ground at harvest time.

During the past five years, the performance of our recruited field labor has increased steadily. The reason for this increase in worker performance is attributable to at least two things. One is the recruitment of a better class of workers and the elimination of the known "no good" from our shipping lists. The second, and probably most important factor, is the use of the G. W. thinner. An examination of the figures will show that during the years from 1948 to 1950 there was a gradual increase in worker performance. In 1951 and thereafter the use of the machine for complete thinning was inaugurated and expanded, and it is in these years that our worker performance has increased greatly.

Table 4 shows the correlation between G. W. thinner use and increase in acres thinned per worker.

Table 4.—Acres Mechanically Thinned.

Year	Acres Thinned As Aid to Labor	Acres Completely Thinned	Acres Thinned Per Worker
1948	1,180	0	6.8
1949	6,603	0	6.7
1950	25,558	294	7.19
1951	46,190	2,123	8.71
1952	75,194	10,859	9.89
1953	52,732	27,585	11.31

During the past three years the recruited labor required to thin the crop has decreased from 14,500 workers in 1951 to 12,000 workers in 1953. This is a reduction of 16 percent. The acreage of beets has remained the same. The savings can be attributed directly to the increase in complete mechanical thinning.