

Relationship of Screening to Beet Population

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Early in the spring of 1953 we became quite concerned with the high beet population which was observed in our fields at Clarksburg. In making stand counts in connection with mechanical thinning we noted much to our amazement that many of the hand-thinned fields had higher populations than mechanically thinned stands. We have also noted the increase of doubles, triples and clumps in these fields over past years.

As we have discussed the reasons for and some of the agronomic results of these high populations in a paper presented to the agronomy section of this society we will confine ourselves in this paper strictly to the problems caused by these high populations at the receiving stations and the related harvest problem.

At Clarksburg the receiving station consists of a 7-foot Molnau screen preceding a standard 84-inch Rienks screen. All of the beets delivered to Clarksburg are received over this station. The average tare for the first 30 days of harvest in 1952 over this installation was 4.0 percent. The average tare for the first 30 days of 1953 over this same installation was 6.6 percent. This is a comparison of beets received from the same growers in the same area, with the same harvest equipment. Ninety-eight percent of the beets received both years was from mechanical harvesters.

We were greatly concerned at Clarksburg by this increase of 2.6 percent in our tare over the previous years and we immediately began an investigation to determine the reasons.

On careful study of the situation we found that the increased tare was due to the increased number of small, poorly topped beets which were being caught in the sample bucket. In addition we noted a large number of unmarketable beets which were being screened out through the Molnau screen.

As a matter of interest we decided to take the screenings from average six-ton load of beets and determine whether there was any correlation between field population and the number and weight of unmarketable beets which were being received. Table 1, and photographs 1, 2, 3, and 4 of Figure 1, show the results of this study. It is interesting to note the high positive correlation between the field population and total weight and number of unmarketable beets in the screenings.

The problem of the poorly topped small beets in the sample is of course related directly to the harvest problem. The majority of the harvesters in our territory are the Marbeet Midgets and Marbeet Standard two-row. With these machines, as well as with any beet harvester which we have observed, when beets are left in clumps the largest beets or the beet with the highest crown gets topped and the rest of them barely get a

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haircut. Photograph 5 of Figure 1 shows graphically what we are talking about. Of the twelve or more beets which are to be harvested only four are going to receive an acceptable topping job.

In addition, there is the added harvest problem of recovery. With the Marbeet Midget particularly, and we think this applies to almost all one-row harvesters, if two beets grow side by side in the row there is a very good chance that only one of them will be harvested. It is practically impossible to stay exactly in the center of the row at all times, and when the harvester comes to these beets if it is off to one side or the other to any extent one of these two beets is going to fall to the side and not be picked up. Photograph 6 of Figure 1 shows an example of two such beets.

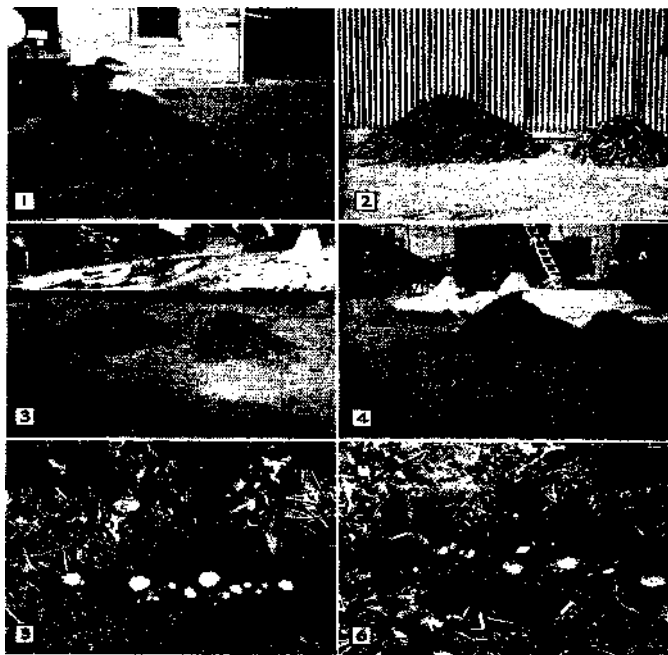


Figure 1.—Photograph 1—Hand-thinned, 110 beet stand; 2—hand-thinned, 158-beet stand; 3—cross-blocked, 165-foot stand; 4—Dixie, 173-beet stand; 5 and 6—field stands with tops removed (see text).

It is our conclusion therefore that we in the beet industry in striving to push spring mechanization have caused our growers to become too lax in their field supervision of hand labor. We have also allowed them to leave too many poorly thinned beets in the fields, and many growers using mechanical thinners have left too high a population. We feel that more harm is being done by leaving too many beets than would be done by leaving too few. While this increased population may or may not affect the tonnage it has without a doubt lowered the quality of the harvesting job, and has increased the amount of trash which must be handled at the receiving station.

As final proof of this we would like to cite the comparison of total screenings from beets received at Clarksburg in 1952 and 1953. Prior to the first rain at Clarksburg in 1952 we had received 183,964 tons of beets with 11,245 tons of screenings. In 1953 from 183,554 tons of beets, again prior to any rains, we had received 12,479 tons of screenings. It is our opinion that this increase of 1,234 tons of additional screenings in 1953 is due to the increased number of unmarketable beets caused by leaving too high a population in the fields at thinning time.

Table 1.—Comparison of the Amounts of Unmarketable Beets in the Screenings from Average 6-ton Loads at Clarksburg—September 30, 1953.

	Population Per 100' of Row at Harvest Time	Total Wt. of Screening	Wt. of Small Beets in Screenings	Number of Small Beets in Screenings
		lbs.	lbs.	
Hand Thinning	110	260	3.31	55
Hand Thinning	158	560	93.13	940
Cross-Blocked	165	570	100.57	977
Dixie Thinner	173	1,200	145.76	1,293