

Beet Receiving Equipment

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Many changes have been made *in* beet receiving equipment during the past two decades. The original highline beet dumps which were so familiar throughout beet growing territories have all been dismantled and replaced with modern beet receiving equipment. The old stationary grizzly bar screens *on* highline dumps have given way to modern screening machinery. Manually operated highline dumps have been replaced with the new modern beet dumps operated with electric power.

The old familiar scene of many wagons and trucks lined up beside the beet pile and men shoveling the beets from the wagons and trucks into the pile has been replaced with beet piling equipment capable of handling the heavy daily beet deliveries. The potato chain screens have been replaced by Rienks screens and other modern screening equipment. All of these changes have improved and expedited beet receiving.

The innovation of mechanical beet harvesters increased the need for beet receiving equipment which would handle heavier daily beet deliveries and do a better job of removing foreign material from these deliveries. A change from the original closed type steel Rienks wheels in the screens to open type steel wheels, and more recently to rubber wheels, resulted from the need for improved screening devices.

Many of the original single unit beet dumps and beet pilers have already been replaced by the double type beet dumps and pilers to meet the need created by faster harvesting. Late improvements on beet pilers include large hoppers, longer stacker booms, improved moving clutches with dual track drive, improved tare samplers and equipment to remove excess trash and dirt, combined with heavier construction throughout. These advancements have helped keep pace with the many changes taking place in the harvesting and receiving of sugar beets.

Modern beet receiving equipment has made it possible to combine two or more small receiving stations of the old fashioned equipment into one large receiving station where several hundred truckloads of beets are received daily.

Even with the many fine improvements which have been made in recent years on beet receiving equipment there is still the problem of effectively screening out dirt, trash and rocks. Mechanical harvesting has generally increased the amount of foreign material transported to the receiving stations by the growers. This is not true in all instances but growers with large acreages, particularly in the northern Rocky Mountain section of the United States, must aim to complete their harvest by November 1 each year or otherwise take a chance of having their crop frozen in the ground. Faster machine harvesting increases the amount of dirt and trash going into the beet receiving stations. There is a definite need for improved

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screening equipment. The new rubber Rienks screens have aided in solving this problem. It is suggested that wider and longer screens would help remove more foreign material and consequently reduce tare.

Reducing the flow of beets over the screen by slower dumping of loads will improve screening results. Improved dirt removal will also result from reducing the size of the opening between the hopper and elevator, causing a boiling action of the beets in the hopper.

The beet pilers at all of our large receiving stations have been equipped with stacker boom oscillators. A 1/2 H.P. electric gearmotor is used to drive this mechanism. Lever-type limit switches are used to stop the stacker boom at the desired point. This attachment has definitely improved storage conditions of beet piles because any dirt and trash which enters the pile is scattered, avoiding accumulation of foreign material in one place. The boom may be stopped at any point. This is important so that the outside edges of the beet pile can be built up to the desired height.

Most beet pilers are today equipped with hand operated tare takers which pass into the stream of beets and are removed quickly to obtain approximately a 30-pound sample. For many years there has been a demand for a fully automatic tare taker which would eliminate the human element in taking tare samples. One Silver piler in the factory yard at Worland, which handles about 30,000 tons of beets annually, was equipped with such a tare taker in 1953. This tare taker is powered with an electric motor equipped with stop switches. The piler operator presses the button that sets the tare taker into motion. It works very similarly to the hand operated tare takers available for Silver beet pilers. This fully automatic sampling device enters the center of the stream of beets directly below the shield as the beets come off the Rienks screen. The motor immediately reverses and the sample is swung around near the platform where the tareman then places the sample in the tare bag. This new tare sampling device has met with the approval of all concerned.

This tare taker could be improved by slightly increasing the horse power of the driving motor and somewhat heavier construction throughout. It has also been suggested that it be changed to dump the sample into a hopper. The sample would pass downward through a pipe into the tare bag at the ground level. This change would eliminate the tareman from being stationed on the piler and further decrease the human element in tare sampling. The factor of temporarily storing tare samples must be considered if the tareman is stationed on the ground. The present tarehouse provides effective and adequate storage.

Central tare houses are generally used throughout the Rocky Mountain district. These tare houses are equipped with two electric self-registering scales, beet washers, automatic top taring machines and a hot air dryer to remove excess water from the washed beets. This method of taring beets was prompted by the need for a more accurate means of determining tare and a shortage of labor. It has received approval from all concerned.

Ninety-five percent of the total 1953 crop at the Worland plant was harvested mechanically. Deliveries were exceptionally heavy beginning on

the first day of harvest. Machine harvesting has created problems of handling heavy daily tonnages as well as foreign materials when harvesters are improperly operated. Close cooperation between company and grower, coupled with improved screening on beet receiving machines, is essential in eliminating losses in beet storage piles and operating factories to capacity.