

Sugar Beet Storage Problems

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The ultimate goal the sugar industry constantly strives to attain is to store sugar beets for long periods of time with a minimum of weight and sugar loss. The problems arising out of such storage will vary somewhat from area to area, but in general they are the same, at least to the agriculturist who is charged with the responsibility of delivering about as many beets to the factory as were paid for.

Of course the greatest cause for loss is spoilage, and with our present day knowledge of this problem, there should never be any loss from spoilage. We in the northern Rocky Mountain area have experienced a wide range of varying, detrimental conditions and have thus learned to cope with practically all of them. To begin with, we work our pile grounds early and keep them cultivated all summer, following this with a leveler just before campaign to level and firm up the ground. This of course eliminates all manner of vegetation and trash which could start spoilage.

In starting the building of the pile, the boom is raised approximately four feet and the pile started by moving the boom constantly from one side to the other. When this space has been filled, the piler is moved a short distance ahead and the boom raised accordingly. The pile is built to the desired height in the foregoing manner; however, the first piled beets are not allowed to become completely covered. This is accomplished by moving the piler ahead when beets start to roll back over that portion which was first piled. The piles are about 18 feet in height, which size and shape is governed more or less by the piling ground available. All piles are so built and placed that they may be shoveled into from any direction to reach a serious hot spot rapidly should one occur.

Continuing the building of the pile, the sides and top are kept as uniform as is possible so that snow will not accumulate in the valleys, which are generally caused by moving the piler too far at a time. This accumulation of snow has been known to thaw and run into the pile, causing the pile to freeze from top to bottom when temperatures dropped. Alternate freezing and thawing have caused serious spoilage in some of the piles.

While beets are flowing off the boom into the pile, it has been demonstrated that it is important to keep the boom moving in order to prevent an accumulation of dirt and trash in one spot. This accumulation forms a cone which seals out the air and invariably spoilage will start in a very short time. (Human nature being what is is, we have learned not to trust the operator to keep the boom moving. Boom oscillators have been installed on some of the larger stations or where the pile will be *in* storage for a longer period of time.

The condition of the loads of beets being delivered is, of course, most important as good preparation and operation cannot cure all the ills con-

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tained in a bad load of beets. Naturally no frozen beets are allowed to enter the pile. When beets become frozen in some of the areas which are served by pilers only, another small pile is made or they are stacked against the outside of the pile where they can be reloaded promptly. This problem of beets freezing in the field is becoming less and less acute as mechanical harvesting increases.

In regard to loads of beets delivered by a grower containing excessive amounts of clods or trash, the offender is called on with the view of helping him correct the condition. In cases where the grower will not cooperate, the load is rejected; but in most cases, a friendly and helpful visit gets the job done. When receiving loads containing excessive amounts of trash, it often helps considerably to slow the piler so that beets do not pass over the screen too rapidly and tend to carry trash on over the reverse rolls. Also, the amounts of beets being fed into the piler should be restricted by hoisting the truck box a little at a time. This will keep the screen from being overcrowded and will result in more effective removal of trash by the screen.

One condition that cannot be corrected in most cases is that which occurs when freezing, temperatures are encountered for several days and the face of the pile becomes frozen each night. This is the case in which lack of room in the pile ground will not allow the piler to be moved ahead to leave a space so as not to cover up the frozen part of the pile. These piles are given careful attention and, at the first signs of heating, large holes are dug into the pile by hand labor to get air to the affected spot or, in more serious cases, a power shovel is moved in and the whole section of the pile is removed and processed before serious deterioration can take place.

The last two harvest seasons have been extremely warm and temperatures have ranged between 80 and 90 in the daytime and 40 and 50 at night. These temperatures have caused a lot of top growth in the piles and no doubt have been responsible for the major part of our weight and sugar shrinkage. By careful attention as mentioned above spoilage is avoided.

Present day loading equipment is highly mobile and it is for this reason, as was stated that no loss should ever occur in a pile on account of spoilage.

Summary

Experience has taught some basic rules which should be followed when storing sugar beets. These are:

1. Grade pile grounds to produce clean and level grounds.
2. When building the pile, start with boom lowered and avoid covering the first piled beets by raising boom and moving ahead slightly.
3. Boom should be kept moving constantly to avoid accumulation of trash in one spot.
4. Sides and tops of pile are kept uniform to avoid valley which will collect snow.
5. A close inspection of all loads should be maintained so as

not to allow frozen beets or loads with excessive trash and dirt to enter pile.

6. Slow down the piler and restrict the amount of beets being fed into the piler so that the screen can be more effective in trash removal.

7. Locate and build piles in such a manner that the center may be reached in a short time with reloading equipment should any serious trouble develop.