



# COMPANY

# PROTOCOL

**To:** GROWERS  
**From:** Wyoming Sugar Company Ag Department  
**Date:** May 10, 2022  
**Re:** Harvest Conditions Protocol

Sugarbeets grown by Wyoming Sugar Company Growers are harvested in a limited time frame and need to be stored up to 150 days to await processing. It is during this storage period, that sugar is used as an energy source in normal respiration. It is estimated that respiration causes around 70% of sugar loss during storage. Decay, fermentation (due to low oxygen content due to poor ventilation), and the freezing and thawing cycles cause the remaining 30% of sugar loss. Sugar loss caused by respiration is controlled through forced-air ventilation and splitting of piles (increased air flow). To minimize the 30% loss caused by decay and fermentation, adherence to harvest protocols is our best and only tool.

The first step is proper defoliation. The occurrence and origin of decay is much greater in roots that have been wounded during harvesting. Traditionally, crown tissue had been removed at harvest because it contained a high amount of impurities, which increased sugar loss to molasses. The removal of this crown tissue exposes the most vulnerable pith tissue to decay. Excessive crown removal results in two to three times more decay and an increase in respiration. The amount of decay originating at wounds at the tip of the taproot and on the body of the root does not significantly increase during storage, but decay in the crown area continues to advance and eventually accounts for a major portion of the total area of decay. Thus, proper defoliation should minimize the wounding of the crown area through correct scalper adjustments or scalper elimination while maintaining delivery of a foliage-free beet.

# **Harvest Conditions Protocol**

Harvest condition protocols allow everyone to know what scenarios may require special harvest procedures to help minimize storage losses. These harvest protocols are in place to help us achieve our harvest goals that include maximizing yield, reducing field losses and tare, and optimizing beet storage quality by maintaining pile integrity.

## **The Following Scenarios are Possible**

- Warm Conditions (beet temps).
- Freezing Conditions (frost damage).
- Wet Conditions (mud).
- Diseased Beet Conditions.
- Clamping & Clamp Sampling.

## **Warm Weather Conditions**

Wyoming Sugar Company does not want to receive beets warmer than 52 degrees Fahrenheit as measured by WSC staff. The decision to suspend harvest will be made on the following considerations:

- Beet temperature at certain times of day (morning vs. afternoon).
- Forecasted moisture.
- Nighttime and daytime ambient temperatures (actual and forecasted).
- Pile ventilation availability (storage capacity).

## **Harvest Options for Warm Conditions**

- Digging partial days.
- Keeping the defoliator close to the harvester (exceptions below).
- Let topped beets that do not get harvested cool down over night.
- Digging early mornings.
- Digging during nighttime hours.
- Keeping defoliator just ahead of harvester.
- Not loading warm beets in trucks for next day delivery.
- Topping ahead the night before (limited) with approval of the Ag Department.

As listed above, options for suspending or modifying harvest may include digging partial days or digging during the nighttime hours when beets can be received at optimum temperatures.

Growers will be put on alert as soon as possible of impending conditions by texts and posts in scale houses. Then they will be notified by the same means when a decision is made. We will give a two-three hour lead so the beets that are topped can be harvested

and delivered. Wyoming Sugar Company's hope would be that growers would get any beets harvested that were already topped and **not** leave any beets on trucks.

### ***Alerts during warm weather conditions***

- Growers will be put on alert ASAP of impending conditions.
- Text Messages.
- Posting in Scale Houses.
- Goal is to notify with a 2-3-hour lead time.
- Discontinue topping.
- Empty all trucks.

The Wyoming Sugar Company Ag Staff will provide text notices as beet temperatures reach the up 40s. The Ag Staff will attempt to time these notices so that all topped beets can be harvested and delivered without any beets exceeding 52 Degrees. The Ag Staff in making these determinations will consider all of the conditions referenced above (forecasted temperatures, availability of ventilation, pending weather events etc.). The Ag Staff may decide to continue to receive beets with temperatures in excess of 52 Degrees if pile ventilation is available and nighttime temperatures are conducive to beet/pile cooling, or if extreme weather is forecasted. \*

### **Beets Received with Temperatures Exceeding 52 Degrees**

- 1st Truck may be received and processed ASAP. However, if excessive, 1st load will be sent home for unloading and cooling of beets.
- 2nd Truck will not be received and returned to grower for unloading and cooling of beets.
- Goal is to maintain pile storage temperatures as cool as possible.
- Maximize use of ventilation and evaporative cooling.
- May continue to be accepted under certain conditions, if warranted by the Ag Staff and notice is provided by text, as stated above.

**Financial penalties for violations may be assessed**

**\* WSC uses the Weather Underground web based forecasting service.**

## **Cold Weather Conditions (Frost Damage)**

We simply cannot put frozen beets in a pile. Allowing for the beets to heal before piling will let them store better, therefore minimizing loss. The decision to suspend harvest will depend upon frost damage to the beets. Harvest will resume when there is no longer evidence of frost damage in the beet roots. While it is our goal to harvest all beets, severely frozen beets, even once healed, will not store well much past 30 days.

### ***Alerts during cold weather conditions***

- A cold weather warning will be issued the day before depending on weather forecast.
- Text messages.
- Posting in scale houses.
- A field survey will be performed at 7:00 am.
- Text message will be issued if harvest hours are modified.
- The morning after a freeze warning, grower should not send any trucks until “go-ahead” has been determined. Fields will be released by Ag Staff on a field-by-field basis.

## **Beets Received with Frost Damage**

- 1st Truck may be received and processed ASAP.
- 2nd Truck will not be received and returned to the grower. Frozen beets may not be accepted.
- The objective is to always maintain pile integrity.
- Work with Ag Department to get frozen beets processed ASAP.

**Financial penalties for violations may be assessed**

## **Wet Weather Conditions**

Muddy beets are not conducive for beet storage. Warm and wet beets can lead to increased pile degradation through excessive respiration and the production of “hot spots.” Damage to receiving grounds is possible and can result in poor pile storage and reloading/rehaul of piles. Loads delivered to the pilers with excessive mud will plug up the pilers and cause damage. Cleaning out clogged pilers or making repairs takes the piler out of service and will add to the overall wait times for unloading beets that will negatively affect everyone.

### ***Alerts during wet conditions***

- A wet weather warning will be issued the day before depending on weather forecast.
- Posting in scale houses.
- Amount of moisture will determine when receiving stations will be open.

## **Beets Received with Excessive Mud**

- 1<sup>st</sup> Truck may be received and processed ASAP, if mud is detrimental to piler operation, beets will not be accepted unless properly cleaned.
- 2<sup>nd</sup> Truck will not be received and returned to the grower. These beets will not be accepted unless properly cleaned.

**Financial penalties for violations may be assessed**

## **Diseased Beets**

- Identify and communicate to Ag Department.
- Beets will be directed to a designated piler if they are unable to be processed right away.
- If excessive, notify Ag Department before harvesting.

# **Clamping & Clamp Sampling**

## **Approval**

Full consultation and approval of clamping must be obtained in writing from WSC & the ag staff. This includes approval of beet clamping equipment (carts, transport, loading, and rehaul), time of clamping, rehaul schedule, piling location, and amount (tonnage) being placed into the clamp.

## **Clamp Size & Configuration**

At some point prior to or during the clamp building process, a beet cart must be used to provide additional cleaning before the beets are received in the wet hopper. Beet carts are also an ideal piece of equipment to make the desired A shape without additional handling that could cause damage to the beets.

The size of a given clamp can vary, primarily on the reloading method used. A-shaped clamps should be built where a self-propelled cleaner-loader is being used. For this clamping method beets should be placed on a flat, rock free surface such as a headland. The height of an A-shaped clamp should no greater than 2 meters but can also be determined by the width of the reloading equipment used. With the height restriction and guidelines for the general shape of the clamp, a specific clamp length isn't necessary.

## **Length of Storage**

Length of storage is determined by the agreed upon destination and hauling arrangements of a specific clamp. When beets are being hauled directly to the wet hopper, they can remain in a clamp for 10-14 days. Great effort should be made to clean clamps up within 7 days of piling.

Beets stored in clamps that will be received in the factory yard should be rehailed 1-2 days after being placed in the initial clamp. Great effort should be made to rehaul these clamps 1 day after piling. All harvest protocols (warm weather, cold weather, muddy beets, etc.) should be adhered to when clamped beets are to be received into the factory yard. Pile integrity is of the utmost importance.

## **Transportation**

If Transystems is being used to rehaul a clamp, initial payment for transportation costs will be made by WSC. The amount paid by WSC for a given growers clamp rehaul will then be withheld from their following beet check.

When using Transystems for the rehaul of tons tied to Class B shares a credit will be given to the grower. The credit being given to the grower is for the Transystems

loading fee, since loading is done by the grower. No other transportation allowances will be considered for the rehaul of clamps done by Transystems. If a grower is using their own trucks for rehaul, no changes will be made regarding credits or transportation allowances.

## **Receiving**

Beets received from a clamp, into the factory yard, after regular harvest/receiving hours must be coordinated with the ag staff at least 24 hours in advance. After-hours receiving will be subject to harvest conditions and personnel availability.

## **Clamp Sampling**

The WSC ag department has determined the following practices to be the standard by which field piled and clamped beets are to be sampled.

Clamped beets will be sampled regularly to determine accurate tare and sugar percentages. When utilizing a third-party rehaul company such as Transystems where a tractor-trailer with a pup is being used, two tare samples should be taken for each load. When using a regular live bottom or end dump truck/trailer, one sample should be taken per load. This sampling procedure is in place for instances where the beets will be dumped directly into the flume/wet hopper, not ran across a piler.

When clamps are being picked up and loaded into rehaul trucks through the Holmer Terra Felis or the Holmer RRL 200, tare samples should be taken as follows.

If the loading machine (Terra Felis or RRL 200) does not have a tare sampling feature, a sampling device must be fashioned and approved by the WSC ag staff prior to use. An example of an acceptable sampling device would be a funnel with a large enough opening to collect everything coming off the loading machine's boom. It would then have a gate near the base of the funnel to regulate the amount of beets going into the tare bag. Once sampled, any extra beets or tare in the device should be removed before the next sample is taken.

The first trailer should be loaded by the Holmer's boom. Once full, the boom will immediately be positioned over the tare sampling device. Once the boom is in place, the operator will run the desired number of beets into the sampling device where dirt, rocks, beets, and anything else being ran through the machine is collected. Once the sample is collected, it will be dropped into a tare bag. This process will be repeated for each trailer loaded with beets. The loaded tare bags will be sent back with the driver to WSC for analysis. Tare bags will be provided by the WSC ag staff, and a surplus will be maintained for the duration of the clamp rehaul.

## **Extra considerations**

- Please confirm that you and your employees are getting the Wyoming Sugar Company texts. we can add them if needed.
- Ensure the correct RFID card is used at the scale house. Check that the grower and contract is correct. Cards and changes can be made at the scale houses.
- Communication with WSC & the Ag Department is very important when dealing with various harvest conditions. We will work with growers to ensure that our harvest goals are met.
- If you have a load of beets that do not meet the protocols or need to finish up a small portion of topped beets, call the Ag Staff. It is our goal to get all of the beets harvested and we are able, to a limited degree, to help.



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Michael D. Greear, CEO