

Harvest and Storage

Key Points:

- ▶ Operate a 'just in time' harvesting and delivery approach for as long as possible.
- ▶ Crops with the poorest yield potential should be harvested first; leave the better crops for later lifting.
- ▶ Handle beet gently to prevent bruising and sugar loss.
- ▶ Planning is key; your harvesting programme should be developed in conjunction with your harvesting contractor, haulier and British Sugar Area Manager.
- ▶ Crop growth can increase yield by up to 40% from September to December.



Operate a 'just in time' harvesting and delivery approach for as long as possible. This will ensure that stocks on farm are kept to a minimum, allowing maximum growth and minimising sugar losses after harvest.

Crops with the poorest yield potential should be harvested first; leave the better crops for later lifting.

Handle beet gently to prevent bruising and sugar loss. Bruised beet will respire rapidly.

Foliar diseases should be controlled to maintain a healthy leaf canopy and benefit late-season growth.

Harvester operators should be fully trained and familiar with equipment. Maintenance is critical and harvesters should be fully serviced and any worn parts renewed where necessary.

Carry out regular assessments during harvester operations.

Estimate yield loss.

Beet with < 2cm root-tip breakage diameter (%)	Loss (t/ha)
> 80-100	0.5
> 60-80	1
> 40-60	2
> 20/40	3
0-20	>4

For more exact measurement assess the diameter of the root tip breakage point of 20 representative beets and calculate the loss with the root tip breakage tool at www.uksugarbeet.co.uk



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Harvester Set-up: DRY SOIL CONDITIONS

Type of loss/damage	Suggested setting changes
Whole root losses	<ul style="list-style-type: none"> • Set lifting mechanism deeper • Fit discs in place of shares • Decrease forward speed • Add Opel wheel star wheels • Check condition of shares - if worn, replace or repair if possible
Root tails broken off at lifting	<ul style="list-style-type: none"> • Reduce forward speed
Root damage - chipping, breakage and cracking in the cleaning mechanism	<ul style="list-style-type: none"> • Set lifting mechanism deeper • Fit turbine gate plates • Reduce turbine speed • Fit ringed turbines and/or more helper tines • Consider increasing or decreasing forward speed • Remove agitator rollers from chain cleaning systems

Harvester Set-up: WET SOIL CONDITIONS

Type of loss/damage	Suggested setting changes
Whole root losses	<ul style="list-style-type: none"> • Increase or decrease forward speed • Set lifting mechanisms deeper • Replace discs with shares or close discs
Root tails broken off at lifting	<ul style="list-style-type: none"> • Adjust depth of lifting mechanism - raise/lower
Root damage - chipping, breakage and cracking in the cleaning mechanism	<ul style="list-style-type: none"> • Reduce turbine speed • Increase forward speed • Check lifting accuracy
Excessive soil adhering to harvested roots	<ul style="list-style-type: none"> • Increase turbine speed • Remove gate plates • Fit pigtines instead of railed gates • Fit lifting shares in place of discs • Raise lifting mechanism • Fit agitator rollers and chains • Increase turbine gate gaps • Increase angle of roller bed and lower grub chain

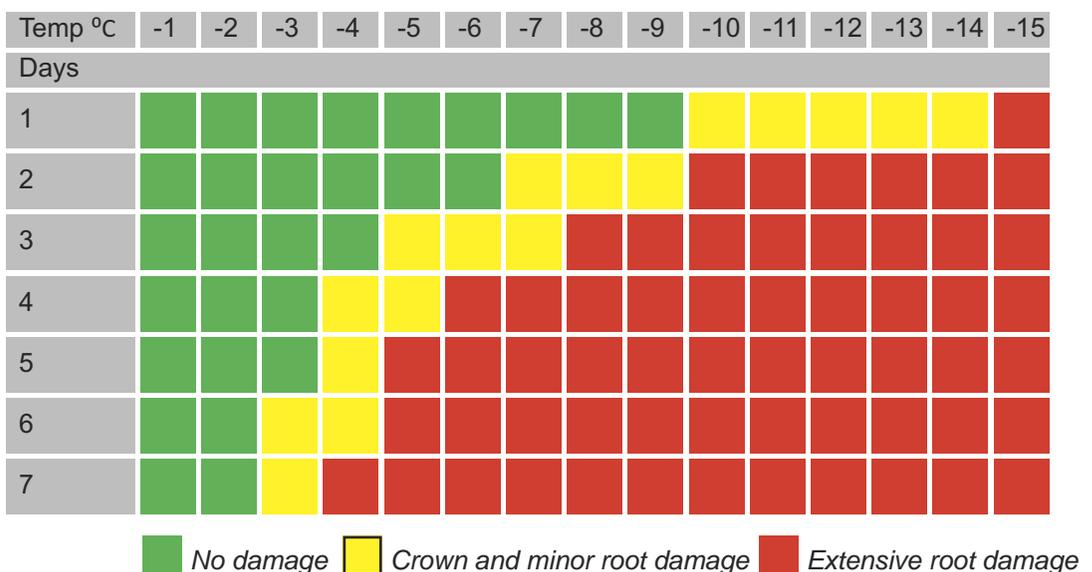


Harvester Set-up: CROP CONDITIONS

Type of loss/damage	Suggested setting changes
Small beet	<ul style="list-style-type: none"> • Fit gate plates • Reduce pitch of cleaning/transport chains or fit plastic pipe over chain links to reduce pitch • Close turbine finger wheel gaps • Close Opel wheel gaps
Gappy beet	<ul style="list-style-type: none"> • Open discs and move further from skids • Sharpen topper knives • Reduce scalper arm pressure
High weed infestation	<ul style="list-style-type: none"> • Increase gap between turbine and gates • Increase angle of roller bed • Replace flails on topper • Sharpen knives

In-field storage considerations

The main risk to in-field storage is frost. The chart below shows the level of root damage that might be expected for different levels of frost.



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Average losses in clamp are circa 0.1% of total sugar volume per day but **BBRO storage trials** have shown that **best practice** techniques can result in just **0.039% of total sugar volume loss per day**.

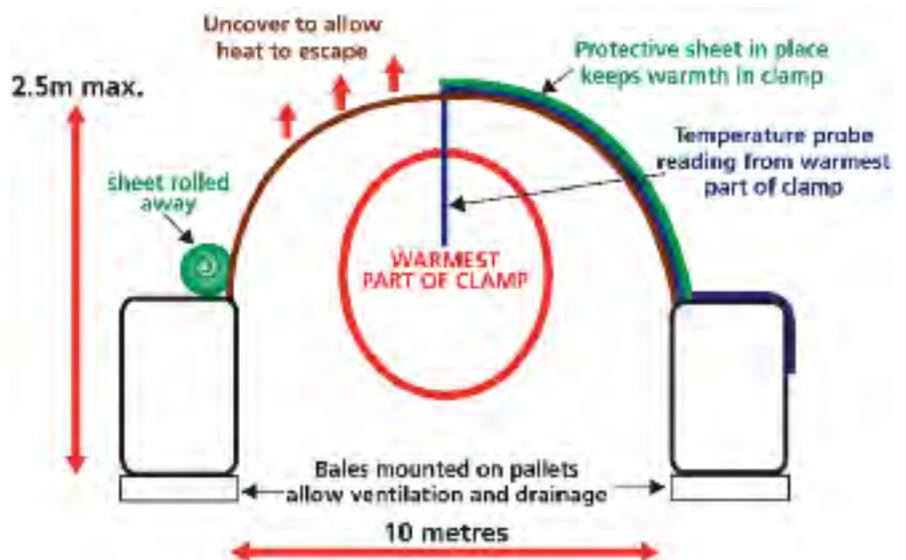
If storage is managed poorly, the result can be very serious and lead to load rejections and beet becoming unsaleable with a total loss of value.

Planning and attention to detail is fundamental when building a clamp. Where it is necessary to harvest and store beet on farm, the following should be considered.

All clamps

- Clamps should be built in an open area to aid ventilation and cooling.
- Choose a firm, well-drained site which will be suitable for loading and unloading.
- Never push beet up the face of the clamp. This will break beet, compact the clamp and in turn restrict air movement, allow heat to build-up and increase the rate of sugar loss.
- Sugar beet stores best where it has only minimal damage from harvesting.

Cross section of a traditional clamp





Early season clamp



Early in the season beet should be in a clamp for no more than a few days, and certainly less than two weeks. These clamps should not be covered or have retaining walls.

Short-term clamps are designed to give maximum surface area and therefore cooling to reduce sugar loss through respiration.

Clamps should be made up of individual loads and be no more than 2m high.

Late season clamp



Late season long-term clamps should be no more than 2.5m high with a level surface so there are no frost pockets.

Clamps should be built using straw retaining walls. Bales should be placed on pallets with the open end facing outward to aid ventilation.

Only use clamp sheets if the ground temperature is forecast to be below -3°C .

Clamp sheets are made of polyfelt which not only offer protection but also allow the beet to breathe.

A-shaped clamp - for self-propelled cleaner-loaders



Where a self-propelled cleaner-loader is used, clamps should be built in an 'A' shape of the correct width to allow the machine to operate effectively. The beet must be placed on a flat un-rutted surface.

Clamps are normally built on the headland but consideration needs to be given for machinery to access the clamp easily.

A-shaped clamps are best built with a harvester rather than a trailer to avoid rutting in the clamp base.