



Issued: 13th December 2022



IN BRIEF

Advisory Bulletin Frost Special 13th December 2022

- Cold weather is increasing the risk of frost damage to sugar beet, with increasing cases of damage being reported. Freezing temperatures followed by sudden thaws could cause the deterioration of roots.
- Crops in clamps are likely to be most susceptible to frost damage. Maus clamps with a higher surface area may be more prone. Crops still in the ground may be at lower risk but this will depend on the extent of insulation provided by canopy leaf growth. Gappy crops and those affected by foliar disease or beet moth (where is less leaf cover to protect them) will also be more susceptible.
- Beet tends to freeze at temperatures below -3°C and below. However, the susceptibility to frost damage will be highly variable from field to field and even between plants within a field. Sources of variation may be different air temperatures and duration of low temperatures, acclimation due to prior cold exposure and stress history of the crop, and of course the extent of top leaf cover. The chart below highlights how the severity of damage increases with duration and intensity of freezing temperatures.

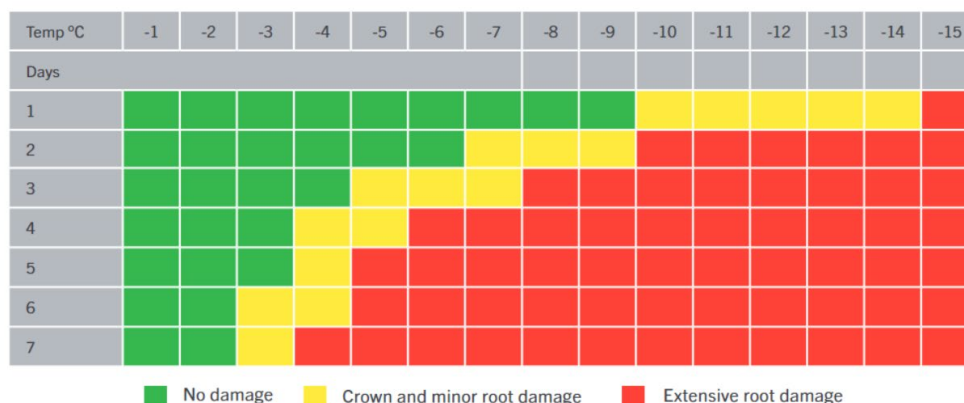


Fig 1: Damage increases due to severity and length of cold period.

- Recent temperatures will have increased the risk of frost damage, but in many fields, conditions will have been borderline for more extensive damage.
- Some harvesters are unable to harvest as the ground is just too hard. Where the ground is frozen and has not thawed in the day, there may be no symptoms showing. Cold conditions appear to be set for the week with some warmer temperatures at the weekend when we will see a greater thaw and the extent of any damage will become more visible.

- It may be worth checking crops. Check the crown of the beet to see if it is frozen. Digging and then slicing some roots into sections, and then letting them thaw for a few hours should reveal the extent of damage.



ADVISORY

Symptoms of frost damage will be apparent when beet have thawed following freezing. Damage will be more apparent from the crown down through the root and will depend on the extent of freezing. Damage is due to rupturing of the cells. On thawing, a frosted root will take on a translucent glassy appearance with the vascular rings more prominent and may have a brown/black discoloration. Frost damage may be followed by secondary rots caused by fungi and bacteria, this will be more severe the warmer the temperatures are following frost damage. However, not all frosted beet will deteriorate, and in some cases, beet will stabilise but may have a lower sugar content and higher impurity level.

Assessing levels of frost damage- as temperatures are forecast to remain low for the rest of the week, it will take a while for any symptoms to show fully. Organise a programme of checks across roadside piles, any longer-term clamps, and crops in the ground to get a complete picture as possible. Keep checking for symptom progression when temperatures increase.



Fig 3: Glassy appearance of root crown



Fig 2: Discoloration of frost damaged area clearly visible



Fig 4: Glassy and prominent vascular rings

Reduce risk of frost damage - whilst the risk of frost remains, focus on clearing roadside stock rather than increasing harvested crops, as beet will be more protected in the ground. Make sure any longer-term clamps have level tops to avoid frost pockets from forming, and ideally consider covering clamps, if possible. Do not load frosted beet into longer-term storage clamps.

If the crop shows signs of deterioration, you may want to consider lowering scalpings to remove more of the crown. Careful consideration must be taken to ensure there is a net benefit to crop yield and not an excessive loss of sound roots. Also, skim clamps to remove deteriorated beet before delivery.

Communications - keep in close contact with your harvester operator, haulier, and your British Sugar Account Manager on any potential issues.



Fig 5: Sliced sections of root to assess extent of damage



EVENTS

BBRO BeetTech23

[7th February – Newark Showground](#)

[9th February – Newmarket Racecourse](#)

A promotional poster for the BeetTech23 event. The top section features a landscape with a rising pink line graph and the BBRO logo. The main title 'BEETING THE CHALLENGE' is in large green letters, with the subtitle 'Invest time now to build resilience in future' and the booking link 'BOOK: WWW.BBRO.CO.UK/EVENTS'. The poster lists a guest speaker, Professor Rosemary Collier, and a list of featured presentations. It also mentions collaborators and provides the event dates, locations, and times.

BEETING THE CHALLENGE
Invest time now to build resilience in future
BOOK: WWW.BBRO.CO.UK/EVENTS

Guest Speaker
Professor Rosemary Collier, University of Warwick
A trained entomologist, Rosemary's main research interest is in IPM strategies. Her areas of research include application of novel pesticides and biopesticides, biological control, host-plant resistance (in collaboration with colleagues at Warwick), methods of physical control and approaches that influence pests through increased plant diversity in the cropping system.

Featuring
Presentations from the BBRO team including:

- Champion your soil for better beet
- Disease decisions - new actives
- Your beet future - PhD presentations
- Carbon monitoring supported by Dr Iain Gould (Lincoln University)

Collaborators
Meet some of our collaborators and hear of our joint endeavours to help bring practical solutions to the fore.

BeetTech23

7th February 2023 9th February 2023
Lady Eastwood Building Millennium Suite,
Newark Showground Newmarket Race Course
9:00 - 12:45

Drill training.

Half day event supported by
Germains, Kverneland, Monosem and
Vaderstad.

22nd February – Morley

23rd February – Bexwell

DRILL OPERATOR TRAINING



**Drilling for better establishment
& improved crop performance**

A successful sugar beet harvest begins with the preparation of the seed bed and ensuring optimum performance of both drill and operator. Good crop establishment leads to healthy uniform plants, improved yield and profitability.

This course is open to all sugar beet drill operators, providing the basic principles of drill set-up for all models.

Sessions to include:

- » Practical soil management
- » Cultivation techniques for the perfect seed bed
- » Pelleting and seeds
- » Drill maintenance for optimum performance

Wednesday 22nd February 2023
Morley Farms, Deopham Road, Morley, Nr Wymondham. NR18 9DF

Thursday 23rd February 2023
BBRO, Bexwell, Bexwell Road, Downham Market. PE38 9LH

Arrival 12:30, commence 13:00-16:30
Lunch included (sponsored by Germains)
Book online at: www.bb-ro.co.uk/events

Presentations and practical support from:





CONTACTS

British Beet Research Organisation, Centrum, Norwich Research Park, Colney Lane,
Norwich, NR4 7UG

Prof Mark Stevens mark.stevens@bbro.co.uk 07712 822194

Dr Simon Bowen simon.bowen@bbro.co.uk 07718 422717

Stephen Aldis stephen.aldis@bbro.co.uk 07867 141705

General Enquiries info@bbro.co.uk



BASIS POINTS

Two BASIS points in total (not per bulletin) have been allocated for the period between 01/06/22 and 31/05/23 reference **CP/120094/2223/g**. To claim these points please email cpd@basis-reg.co.uk

Two NRoSO points in total (not per bulletin) have been allocated between 01/06/2022 and 31/05/2023 **NO471260f** reference. To claim these points please email NRoSOCPD@cityandguilds.com