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Harvesting & storage: an essential guide for growers

Fig. 1. Mixed establishment 2019 = variable size roots 2020 late harvest

As I write, the cereal harvest is in full swing. It only seems like yesterday that the 2019-20 campaign came to a close and we all breathed a sigh of relief, and yet the 2021 sugar beet campaign is about to commence. As the BBRO team continue to assess our trials for impact of viruses there have been many challenges in both trials and commercial crop right across the growing area.

The crop to come

As quick as the weather turned from dry to wet, back in the autumn of 2019 it was just as fast to turn the other way in the spring, saturated stubbles and poor primary cultivations began to dry out extremely quickly leading to dry, coarse seedbeds for the 2020 crop.

Whilst different soil types and drilling timings have led to some good establishment and populations a lot of crops were down on population and showing variable emergence through the dry spring.

Late rain fall has eventually helped the crop fill out however the split emergence will lead to harvest challenges and compromises on beet quality.

Fig. 2. Growth rate very different across fields as shown by this late arrival

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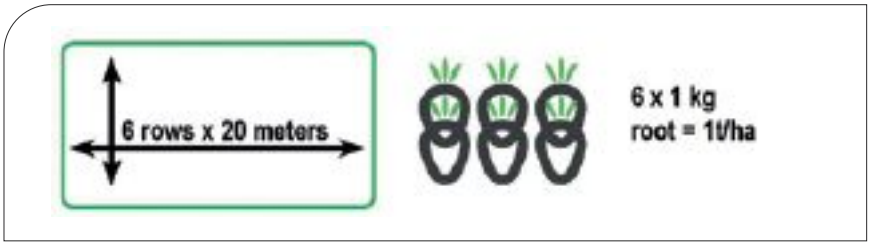

Fig. 3. Calculate your potential losses using the harvester testing guide available at www.bbro.co.uk/publications

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Mixed establishment presents many problems when looking to reduce harvester losses and the first process that can cause a challenge will be topping. With huge variation in crop establishment achieving consistent whole beet topping will be difficult and will require decisions to be made on how much green makes it through on smaller beet and how much crown is removed from the larger roots. The decision will depend on the ratio of large to small roots and every crop will be different, with a high percentage of small roots, the decision may lead to some large roots being over crowned, however, with the use a modern cleaner loader it is possible to send the small roots through with excess green which will be removed later.

Surface or whole beet losses will obviously be affected by the variable root size and should be monitored especially in high clod or stone conditions. Working with operators and contractors to give feedback on crowning and loss of performance has added importance when working in these conditions, do not panic if you head out with your harvester testing guide and see a high number of roots in your surface loss area. Mixed establishment will often lead to these roots being far smaller than 1kg so it is advised to weigh your sample to calculate your yield loss rather than counting roots.

Field Selection – when and what should I lift first?

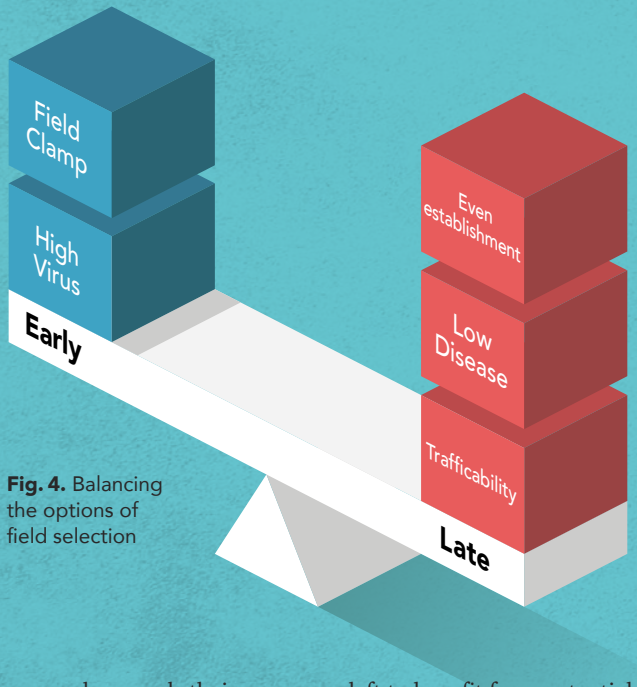

Fig. 4. Balancing the options of field selection

As someone who spends their time trying to improve harvester performance, cultivation efficiency and seedbed quality, ground conditions will always be my primary focus when thinking of harvest field selection to go early or late. I am sure with the 2019-20 campaign still firmly in our memories, we will look to repair any damage that could potentially be done.

Selecting heavy soils or poorly drained fields to lift early will be high on the agenda.

Should you have a single soil type that is suitable for early or late lifting, there are many more questions to ask about which of these crops should be left to benefit from potential autumn growth. As a rule, the healthiest, most consistent crop should be taken forward for the greatest yield response. It may be tempting to leave low populations crops to fill out in the autumn, or for late established crops to catch up, however, the gains from a well-established field will provide the biggest yield lift, reduced harvest losses and improved ground conditions through the growing crop.

Virus is the new unknown and a reality many are facing, this is no different for our trials, which we assessed in August finding that the majority of BBRO plots had some level of virus. There are many

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unknowns with the interaction of viruses, fungicide programs and autumn growth, but at a harvest planning level the preference would always be to harvest crops with the most virus and disease infected canopies before those that remain healthy. Whilst all of your fields may contain virus, infection levels can vary dramatically field to field and ranking virus spread in each maybe key to completing your harvest schedule and deciding on your fungicide programs.

Clamp to the conditions

Unfortunately, there has been little in the way of new research on clamps and storage, even though I have trawled the IIRB's latest research papers. The guidance therefore remains the same, but let's take a closer look at a few bits of information that could be put to better use.

As we visit growers and contractors for harvester testing a visit to the clamp can shatter illusions of reducing losses or confirm that the system is delivering maximum yield. Choosing clamp sites is vitally important, with poor sites responsible for the majority of fresh weight losses in clamp. From these observations we have found that the biggest gains in reducing sugar losses, are made due to the in-field decisions made prior to lifting.

Short term storage

Fig. 5. Guide to early season clamp

There often seems there is only one way to clamp beet on farm, and that's 'as high as possible with a level top', whilst this maybe a clamping technique used to protect against frost or driven by a lack of storage space, it does go against early season clamp guidance, and logic, where the risk of mild and high temperatures are the biggest risk.

Sugar Losses

Sugar loss can be driven by several factors and is often associated with the longer storage of a late campaign and overall root damage, however increased air temperatures can lead to high rates of sugar loss over short periods of time. Keeping storage time to a minimum is especially critical with warm ambient temperatures and this should therefore be a focus before putting the harvester in the field.

There is no defined date as to when clamping should switch from early to late season clamps but rather the focus should be on the expected weather and your planned delivery times.

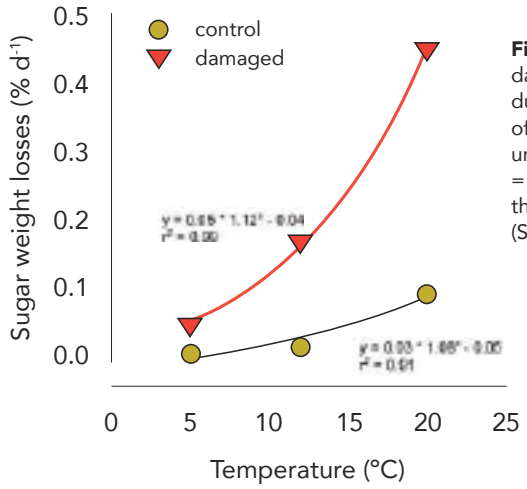

Fig. 6. Impact of beet damage on sugar losses during storage; 27 days of storage, control = undamaged beets, 100% = amount of sugar at the beginning of storage (Source: Kenter et al.2006)

Less is more.... pushing up

If ground conditions are suitable utilising field space for clamping can provide the best solution, a large area allows trailers to tip without running on the crop, maximises the surface area of the clamp and negates the need for any pushing up.

Pushing up beet clamps should be avoided for three keys reasons:

- Increased height reduces air flow
- Increases root breakages accelerating sugar loss
- Compresses the beet, reducing air flow through the clamp further
- If heaping beet cannot be avoided, always use a bucket with a scooping action to reduce compression and breakage.