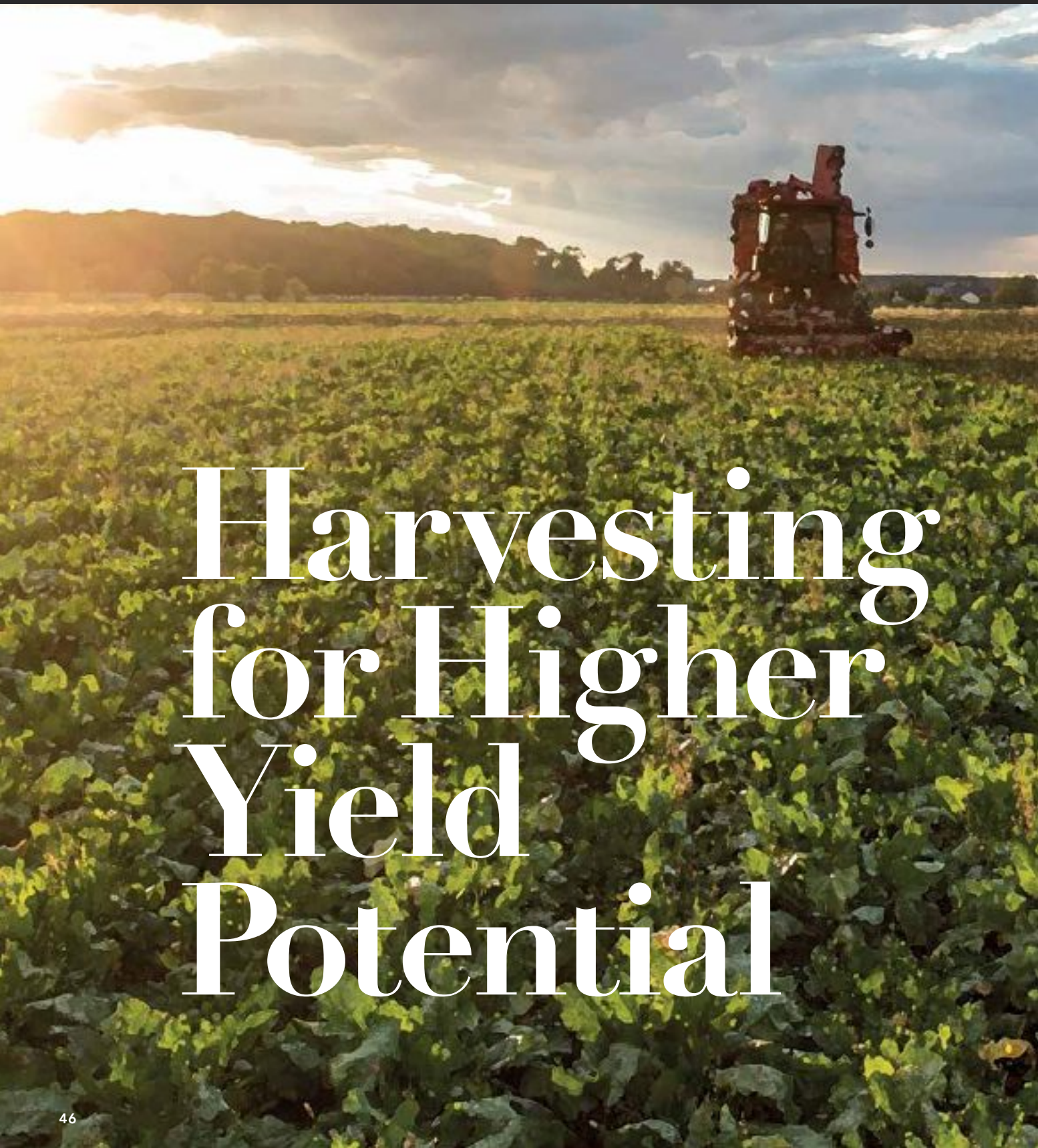




**By Dr Toby Townsend**  
*BBRO Knowledge  
Transfer Partnership  
Associate*

# BBRO



# Harvesting for Higher Yield Potential

One of the aspects that makes the Beet Yield Challenge (BYC) so valuable is that it allows us to “peer over the hedge” at a whole spectrum of crops managed by a group of growers with very different approaches. We learn about what growers are doing well, but also where growers need more support. In a way, the BYC enables BBRO to understand what our priorities are for helping the industry.



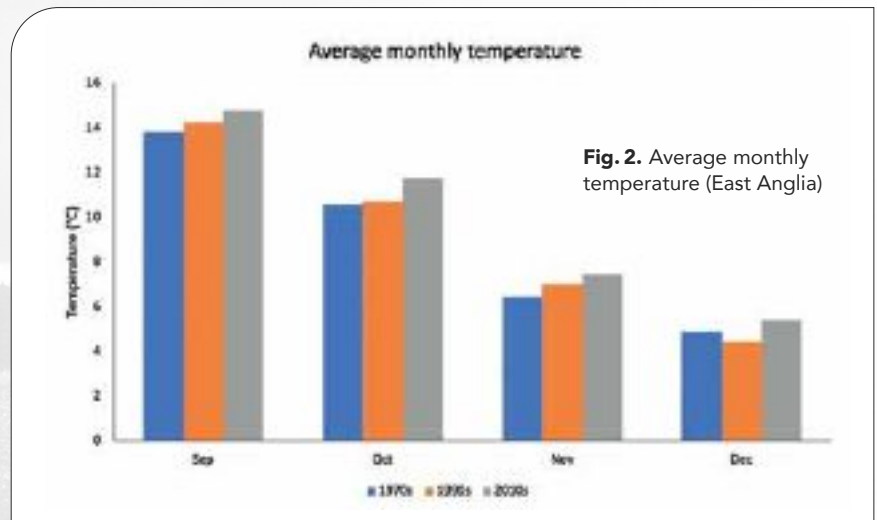
**Fig. 1.** Two different looking beet crops in December



**Fig. 3.** Would you want this regrowth if you are just about to harvest

One of the areas where there is an opportunity to improve yields is in the management of crop canopies throughout the autumn. Some BYC growers achieved a 25-30% increase with later lifting but some did not. Why was that the case? What is clear is that there is no “one size fits all” approach to managing the crop at this time. The crop has to be managed to the specific conditions – such as soil type, weather, disease pressure – meaning that growers have to adapt their approach constantly to get the best from their crop. The BYC

lets us see that adaptation in action. This adaptation is complicated by climate change. Our weather patterns are changing and throwing up many challenges. We’ve experienced a fluctuation of very dry and very wet weather. Autumns are becoming warmer on average (Pic. 2), which provides the opportunity for greater autumn growth potential. However, to take advantage of that requires effectively managing your crop for the increased risk of fungal disease resulting from that warmer weather.



**Fig. 2.** Average monthly temperature (East Anglia)

By the time this article is published some growers will have already started applying fungicides. From our observations and data, this current part of the season can make or break a good yield. So how did our Beet Yield Challenge growers do?

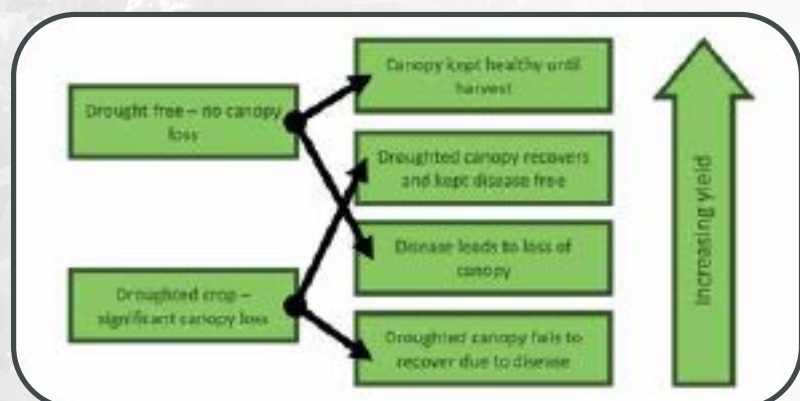
The key thing growers did, was to adjust their management to the conditions as best they could. For those lifting early, an early application of fungicide when disease appeared, made sure that their canopies were in the best condition to intercept sunlight throughout late summer and early autumn. Those planning to

leave their crop for longer tended to delay fungicide application but generally added a second spray within 28 days of the first. Some growers used a third spray for later-lifted crops to keep hold of a productive canopy. Not all canopies were perfect at harvest, but that canopy loss tended to happen close to when the grower knew they would be lifting.

Where some growers could have benefited, was with their decisions when to lift crops, particularly with regards to the state of the canopy. We saw four main pathways last year (Fig. 4).

**Fig. 4.** Patterns of growth in 2019’s Beet Yield Challenge crops. What will crops look like in 2020?

Continued over...





Some of the crops lost canopy due to drought. With the return of rain in autumn, canopies started recovering. Then disease moved into the crops, with some being worse hit than others. The yield achieved, tended to follow the pattern shown in the figure. This highlighted some important considerations:

- A canopy that stays healthy can be left in the ground.
- Where there is little canopy and disease has set in, it is better to lift early.
- Where there is limited canopy but the possibility of canopy recovery, either lift it immediately or delay lifting until at least several weeks after canopy recovery. The beet will expend energy to regrow canopy. If the canopy is allowed to regrow but harvested before the new canopy has a chance to build up late-season growth, sugar yield will be lost. (This is a new area of interest for BBRO and one which needs further work. We will keep you informed of this).

We recognise that some growers will not have flexibility with regards to lifting. For example, last year the wet weather disrupted many growers' lifting plans. Where there is flexibility with field choice, awareness of the potential performance of these crops could help maximise yield potential.

If fields are lifted at different times, consider the varieties that you have (of course, you'll be fully aware of which variety you have in every field!). Varieties differ in their disease susceptibility, which will impact on their late-season growth potential. Look at the Recommended List to see their susceptibility to rust, but also look at the crop in the field to see which canopies are looking healthiest and leave those until later. Last year, of the later-lifted BYC crops, the varieties Kortessa, Degas, Sabatina and Daphna showed fewer signs of disease impact, which relates reasonably well to their rust ratings.

One way that this year will differ from last is that virus yellows are much more prevalent this year. The extent of these infections should be taken into consideration when planning harvest. Crops that have lost significant canopy to virus yellows are unlikely to have a high autumn growth potential – the virus will be present in any regrowth limiting yield recovery. These may be more appropriate for early lifting. However, assess crops on a field-by-field basis for their extent of healthy canopy when making decisions about lifting.

## IMPORTANT 'TAKE HOME' MESSAGES FOR GROWERS

- **Leaving drought-affected crops for later harvesting?**

Allow 3-4 weeks for canopy regrowth and sugar levels to recover

- **Later harvesting improved yields by 25-30%**

Trade-off between high yielding early harvested crops and foliage disease control cost and the risk of poor harvesting conditions in later harvested crops. Consider your soil type in this respect.

- **Use the disease rating on the Recommended List to select your varieties carefully for later harvests**

Avoid varieties with low scores. Select crops with strongly growing canopies.

- **Vital to retain canopy through good foliage disease control**

Maintain fungicide protection, monitor disease carefully, avoid large intervals between applications, 3x better than 2x in crops lifted from November onwards in high disease pressure situations.

- **Virus Yellows**

Heavily infected fields unlikely to recover – these may be better suited for early lifting.