



BYC newsletter – Harvest 2019

Welcome to the autumn edition of the Beet Yield Challenge newsletter. Campaign is now fully underway and BYC fields have begun to be harvested. We're looking forward to seeing how our BYC participants have performed in this challenging year.

Key messages

- Please remember to liaise with your harvest and haulage contractors as well as your BS Contract Manager where necessary to ensure you can capture the actual yield of your crops as they are delivered. Speak to your BS Contract Manager if you need any assistance as different loads can be flagged on the system if necessary.
- Once again BBRO are offering harvest testing. If you would like assistance in reducing harvest losses, please contact Stephen Aldis on 07867 141705.
- To make sure that the BYC can help you to prepare for next season, we are creating a preliminary report based on the results we receive in the first half of campaign. You will receive this in the new year with plenty of time to spare before the start of next season.
- If you haven't already, try out the yield benchmarking tool on our BBRO Plus website (plus.bbro.co.uk).
- One of the areas we're interested in assessing is yield performance this year relative to past yield performance. As part of this, we'd like you to send us your five-year average sugar beet adjusted yield.

BYC crop assessments

So, as campaign takes off, how have the BYC crops fared and what are the prospects for further autumn yield increases?

Flora (our intrepid BYC explorer!) was out visiting BYC crops in late August and early September to capture some pre-campaign crop data. For every BYC crop, she has recorded the following at three locations within your field:

- Plant population
- Crop cover & NDVI*
- Canopy vigour
- Foliage disease levels
- Leaf samples for tissue analysis
- Soil compaction (where not too dry)

(*NDVI is a standardized way to measure healthy vegetation. Generally, higher NDVI values are found where there is greater healthy vegetation.)

We will be undertaking a second canopy health assessment in late October/early November for those remaining BYC crops (courtesy of Strube UK). All this information will be key to understanding the performance of your crop and to help explain any yield gaps. This will be reported back to you once we have the yields collated.

Right: Flora assessing canopy quality at a BYC field.

Far right: Soil compaction assessments using a soil penetrometer.



Crop potential

As we reported in the summer BYC newsletter, some fine weather in the early summer resulted in rapid and vigorous canopy growth which indicated good yield potential. After the record-breaking temperatures in July, a return to wet and slightly cooler conditions allowed continued yield progression. Unfortunately, dry conditions in late August and September slowed growth down, with crops wilting and turning yellow as moisture stress increased. This has been more acute in the east of the beet growing region. It has been quite surprising to see the impact of drought so late in the season, suggesting we're still experiencing the legacy of the drought from last season with soils very dry at depth.

We've run the growth model for a typical BYC crop (sandy loam) drilled on the 31st March and harvested on the 1st October. This indicates a potential yield of 90 adjusted tonnes/ha.



Flora's early test digs in August have indicated good yield potential with large roots (left), but late season drought will have limited this in some areas where dry conditions have led to a loss of canopy (right).

The first signs of rust in late July led to most BYC growers applying their first fungicide to crops. Conditions have continued to be conducive to foliage disease, especially rust. Flora's crop assessments found a range of symptoms in BYC crops, some quite severely infected.



Moderate (left) and severe (right) infections of rust found across BYC crops.

Second fungicides have been applied to many crops, and growers with crops destined for late harvest are monitoring crops closely for the need for a third fungicide. *Cercospora* has been found to be on the increase in many crops. (Remember, BYC crops receiving a third fungicide last season showed an average uplift in yield of 9% compared to crops receiving two fungicides. This was on broadly similar soil types and at similar harvest dates.)

What about virus levels?

The BYC crops have mirrored the wider situation in sugar beet this season, typified by relatively small numbers of primary virus infected patches across fields (see the patch highlighted in the photo below). For most fields, a well-timed application of a foliar insecticide, along with some rain in some cases, helped control aphids and the subsequent wider spread of virus.

Highlighted patch of virus in one of the BYC fields.



Lots of reports of yellowing have been received at the BBRO clinic, but, thankfully, many of these have been due to other factors such as downy mildew, drought & nutrient stress and soil compaction. The information collected on your crops will allow identification of the causes of any yellowing.

You can see the impact on root size from these localised patches of virus in the photo to the right. This amounted to 30-40 % less root weight in the top three infected plants compared to non-infected plants.



Early campaign challenges

Despite the early difficulties of harvesting crops in very dry and 'tight' soils, somewhat inevitably recent wet conditions conspired to make harvest progress slow and to cause significant changes to harvest plans.

Whilst the wet weather may have affected harvest plans, selecting which fields have the greatest autumn growth potential can be key. Remember that last season we recorded a yield increase of 30-40 % between September and January. The key factors that will influence this include:

- Good canopy vigour and crop cover (low levels of leaf senescence)
- Canopy growth habit (upright canopies have more efficient light interception than prostrate (flatter) canopies)
- Low levels of foliage disease (full fungicide protection)
- Varieties with low susceptibility to rust

Right: Two varieties with different canopy growth habits – upright Sabatina on the left and prostrate Haydn on the right.



Harvest

Once again, we are assessing harvesting losses. If you are interested in having your harvesting assessed, contact either your BS Contract Manager or Stephen Aldis (BBRO) on 07867 141705.

In previous years, we have waited until all harvest data is returned before providing growers with feedback. This has meant that our advice has generally come after the start of the following season when cultivations have been completed and, in some cases, beet has already been drilled. This year, we are going to provide a preliminary report based on the data that we will have collected in the first half of campaign. This should give you some guidance when planning for the 2020/21 season.



Right: Stephen Aldis assessing harvester performance.

Data, data, data

We've come to recognise that the better quality and quantity of data that we collect during the season, the better the quality of advice we can provide to you.

Mapping canopy growth is a vital part of understanding how your crop is performing. There is a strong relationship between temperature and canopy cover, and the beet growth model enables canopy cover to be estimated. However, having actual data from the field helps us to better model canopy growth. Some of you have provided images of your canopies throughout the season; from these, we can calculate canopy cover.

In our last newsletter we mentioned that satellite data could be used to estimate canopy cover provided that the satellite data was being collected on clear days. Last year, for much of the summer the skies were clear of clouds. This year has been the opposite.

Unfortunately, it doesn't even require that much cloud to cause problems. The image below shows approximately 25% cloud cover, yet this cloud cover is doubled when their shadows are taken into account. In the photograph below, the field we were investigating is free from cloud but sat in the centre of a shadow!



Image taken from the Sentinel-2 satellite. Insert shows a close-up of a field being used for BBRO field experiments, which is in the shadow of a cloud.

Benchmarking

Have you been using our Yield Benchmarking tool? If not, head over to plus.bbro.co.uk/on-farm/login, sign up to BBRO Plus and try out the yield benchmarking tool. It will allow you to compare your yield to yields achieved in your local area and on similar soils.

As part of the BYC, we'd like to know: **what is your five-year average yield (average yield from 2014/15 to 2018/19)?** From this information we can gain an understanding of performance this year, and better link management to crop performance.

We wish you a successful campaign,

The BYC Steering Committee

Contact: BYC@BBRO.CO.UK