Beet Yield Challenge – pre-campaign newsletter

Dear BYC participants,

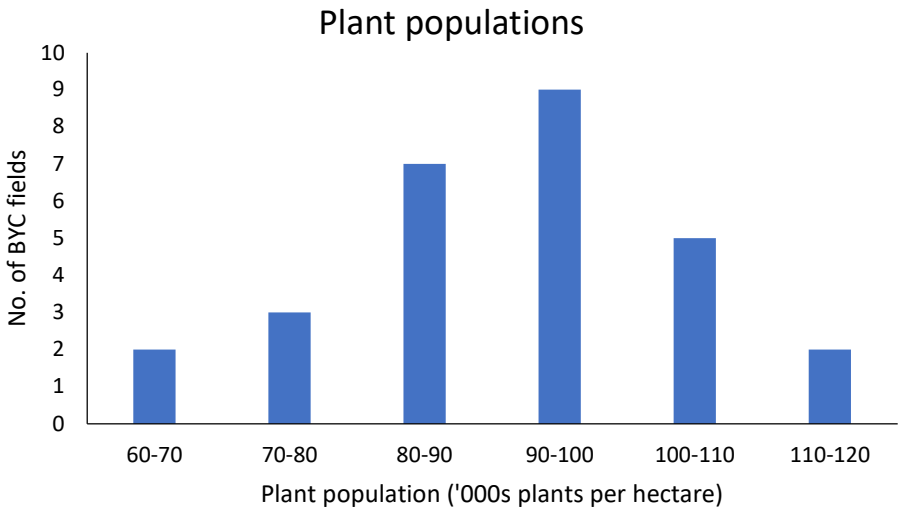
Saying that 2020 has been an incredibly challenging year feels like a massive understatement. We have been charting the impacts of this year across all your BYC crops – poor & variable emergence, virus yellows, drought, and more recently some aggressive cercospora foliar disease infection.

As campaign begins, the legacy of these impacts will be all too visible in many crops. However, even in the face of these challenges, it is important that the Beet Yield Challenge continues and we collect data on our BYC crops, as it this information that is critical to understanding how we can improve the way we deal with the challenges in the future. So, please persevere with your BYC crops.

We've been analysing some of the data collected from our summer visits

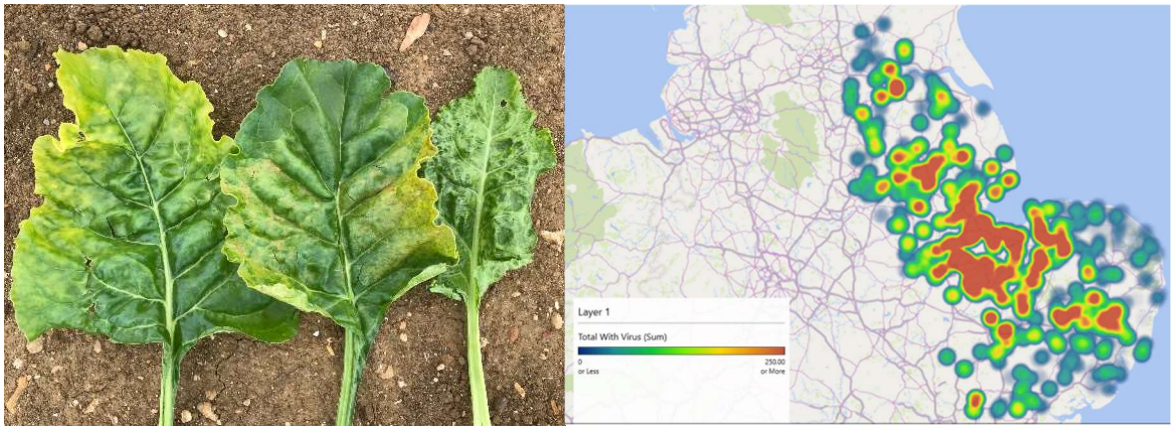
Plant counts

You won't be surprised that plant counts were very variable this year (see graph below). The maximum was just shy of 118,000 plants/ha whilst the lowest was just below 66,000 plants/ha. The average plant counts this year were 91,000 plants/ha, which is the lowest found in the four years of the BYC. (Previously, 2017 had the lowest plant populations with 95,000 plants/ha.) The lower plant populations were generally found in the Bury and Wissington factory areas, which were the areas most affected by drought conditions this spring.



We did see big variation in emergence across fields and there were successive flushes of germination following rain. This will carry through to harvest with many fields having smaller beet plants competing to grow under the canopy of the larger beet, resulting in some variable root sizes.

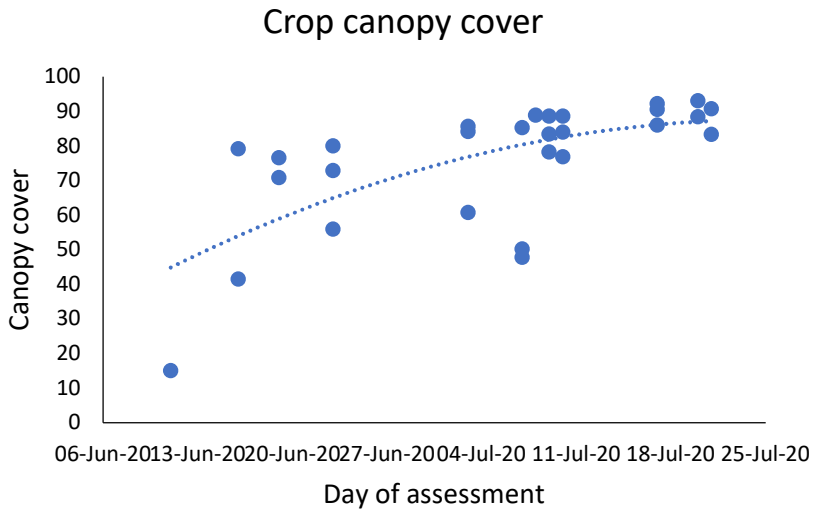
Obviously, virus yellows has dominated our attention this summer. We started seeing the early stages of widespread infection in our summer visits to the BYC fields. Counts by British Sugar Contract Mangers were made as part of the 480 survey fields at the end of July and a map showing the regional variation in infection is shown below. This is to degree reflected in our BYC crops.



Virus symptoms found in crops and the regional distribution of infection levels.

Crop canopies

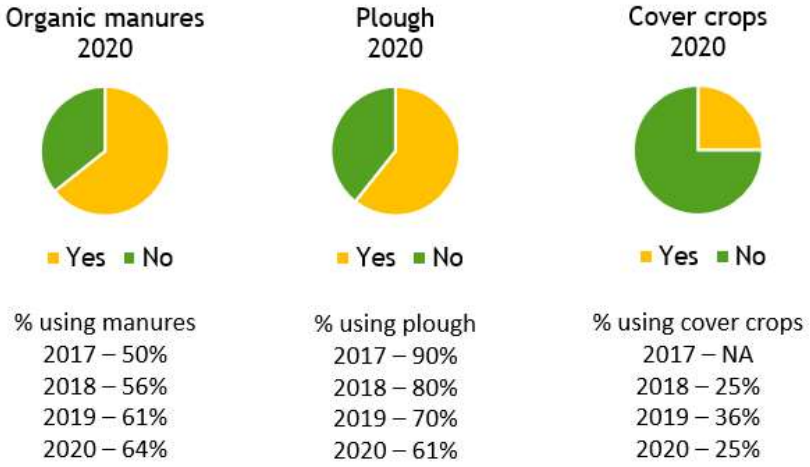
We measured crop canopies during our visit. We took 10 measurements across the field using the Canopeo phone app. This allowed us to capture variation and not be biased by bad or good areas. The graph below shows the average canopy of the fields visited against the time that they were taken.



As would be expected, canopy cover increased as we progressed through June and July. However, there was much variation in canopy size between BYC fields with some crops growing much slower

than expected. We generally find crops reach full canopy by the start of July yet some of the BYC crops were far from reaching full canopy at that point. It can be assumed that these were crops that were struggling with the later establishment in dry seedbeds.

Although virus yellows has been the dominating topic in sugar beet, drought has also again been a key challenge to our crops. Strategies for increasing tolerance to moisture stress practiced by growers include increasing organic matter via manures and/or cover crops and reducing tillage intensity. Although these practices are used for many different reasons, there is a lack of robust evidence in the scientific literature for these practices increasing soil resilience to moisture stress. The BYC however has been able to show how these are linked to improved crop yields. The charts below show some changes in the use of these in the BYC over the last four years.



% using manures	% using plough	% using cover crops
2017 – 50%	2017 – 90%	2017 – NA
2018 – 56%	2018 – 80%	2018 – 25%
2019 – 61%	2019 – 70%	2019 – 36%
2020 – 64%	2020 – 61%	2020 – 25%

If the virus hasn't been bad enough, we have seen foliar diseases increasing in the BYC crops, especially over the last few weeks. Much of this has been due to cercospora leaf spot (photo below) following the rain toward the end of August and the recent warm temperatures. The warmer inland areas of Cambridgeshire and Lincolnshire appear to be more affected. This has resulted in the loss of canopy in some crops. As autumn progresses, remain very vigilant for foliar diseases to allow crops to continue to produce yield. Maintain fungicide programmes to protect green growth, not letting the interval between applications get too large. A third fungicide in crops destined for later lifting may be required to protect green and active canopies although unfortunately for some crops, disease may have progressed too far.

Cercospora

Canopy needs protection

Advanced disease, further control unlikely

Your BYC crops- the next steps:

1) **Harvest plans** - firstly, could you give us an idea of when you plan to lift your beet – this will help us support you to get the yield data and also allow us to coordinate field visits.

2) **Final canopy assessment** - we plan to visit each field prior to harvesting to get a final assessment of canopy cover, leaf senescence, foliar pests & disease and of course virus levels. These assessments will be key to understanding the performance of your crop in this challenging season. Knowing an approximate harvest date is very useful in planning these visits.

3) **Harvester testing** - we will also endeavour to undertake some harvesting testing on BYC crops this campaign, but this does require some advance knowledge of when harvesting is due! Keep in contact with us or your BS Contract Manager.

4) **Crop information is key** - please complete the attached questionnaire when returning your yield data. The questionnaire will also allow us to collect some additional information to help us understand what has been going on with your crops this year. For example, we would like to know, given the dry conditions, who has been using irrigation this year.

5) **Your yield** - the key piece of information that we need from all participants is the BYC field's adjusted yield. Determining this for a field is a case of flagging the loads from that field on BS Online. Ideally, the beet harvested from the BYC should not end up in clamp with beet from other fields. Some of our BYC growers did find it difficult last year due to some rain-disrupted campaign. If you are unsure, your Contract Manager can guide you through the process. We are also interested in your soil tare and impurity data. These all affect crop performance and provide useful parts of piecing together the 'jigsaw'

Finally……..Introducing Beet Yield Tracker

As the BYC approaches its final year we are keen to take what we have learnt from the BYC approach and develop a similar 'slimmed-down' version for more growers to use. The new tool is called 'Beet Yield Tracker' and it is in its final stages of testing. BYC data from last year and this year are being used to test the Tracker. The idea behind this new tool is to remove some of the laborious number-crunching that normally happens with the BYC thus making it accessible to a wider group of growers.

It is a testament to all the BYC growers over the four years that we have been able to progress the project to a new level and we would like to thank you all for your support. All BYC growers will be able to transfer over to the Beet Yield Tracker and we will keep you briefed on this.

Kind regards,

Simon Bowen and Toby Townsend, September 2020

Simon: 07718422717, simon.bowen@bbro.co.uk; Toby: byc@bbro.co.uk