



Recognising the huge challenge VY presents to growers, BBRO took the strategic decision in 2020 to re-focus our activities and do everything possible to look for new solutions to help growers manage VY. This meant putting a few activities on hold to free up resource to focus on new projects.

Operation Emerald is a new suite of field trials focussing on VY control. Led by Dr Alistair Wright, there are three key areas:

1. Screening of the approved Recommended List varieties against Beet Yellows Virus (BYV) and Beet Mild Yellowing Virus (BMV) to determine their yield response.
2. Investigate the yield response to virus yellows at different times of inoculation to determine the significance of plant age at the time of virus infection.
3. Investigate the timing and sequence of Aphicide treatments for maximum yield benefit.



In all the new experiments the development of virus will be monitored through the crop using the BBRO drones in the summer, leaf samples will be taken and assessed for virus presence in the BBRO laboratory and each site will receive yield assessments. The project kicks off with drilling the new crop in 2021 and will run for three years.

A little bit of 'Innovation' goes a long way.....

Stephen Aldis took the lead on a new initiative in 2020 to look at some innovative approaches to crop management, again, with a particular focus on VY control. Some of the best innovation on farm comes from you – the grower! We wanted to add a bit more robustness to some of the innovations being tried and tested by replicating it on our trial sites and taking more strategic measurements and analysing the data to see if we can find any significant benefits.

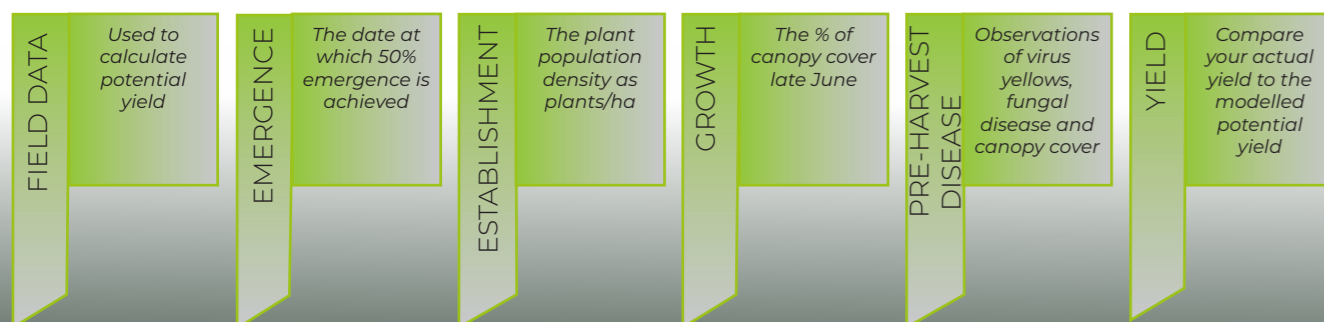
Areas we decided to focus on first were:

- The pros and cons of barley cover crops in the early stages of sugar beet development.
- Flower mixes to boost aphid eating beneficials in the field.
- Catch crops between the rows to act as attractants to aphids.
- The use of Endophyte grasses to boost natural resistance in the sugar beet crop.

We will share our findings with you as the trials develop in 2021 and also continue to support growers wanting to try out new things on their own farm.



The BBRO Beet Yield Tracker (BYT) has been developed further over the past year and following successful user group testing in 2020, we will launch it this spring on BBROPlus. Information is entered in to the BYT at six points in the season, which is summarised in the flow chart below. The BYT will then generate a yield potential and indicate potentially, how much and at what stage your crop lost any yield. The aim is to help identify key areas for improvement where the potential yield gain is greatest. Dr Georgina Barratt and Dr Simon Bowen will be out on-farm with growers in 2021 to put the new tool through its paces!



New PhD's underway in 2020

In 2020 we approved two new PhD projects that commenced in the autumn.



The first one is to develop crop management strategies for 'free-living' plant parasitic nematodes infecting sugar beet. The project will evaluate the impact of growing cover crop species and blends on free-living nematodes with a view to making recommendations for their application. This is being conducted at Harper Adams University by Nyambura Mwangi with support from RAGT Seeds, Joordens Zaden and The Lugden Hill Charity.



The second one is to understand the physiological impact of fungicides on sugar beet by understanding their impact (triazole, strobilurin and SDHI), applied at different stages of crop development; on canopy persistence, greenness and photosynthetic function. The outcome of the project will be to enable growers to optimise the timing of fungicide application for both disease control and physiological response. This is being conducted at The University of Nottingham by Annabelle Buckley with support from The Chadacre Trust and BASF.

New to the BBRO family

In the last 12 months we have welcomed three new staff members to Team BBRO.



Richard Hastings (left) and Olly Hammond (right) joined the field trials team back in the spring to help deliver our on-farm trials programme. Both Richard and Olly are from farming backgrounds and were able to hit the ground running.



I'm also delighted that Stephen Aldis (right bottom) was promoted to the Head of Field Operations role and now leads the trials team and has joined the Senior Management Team in BBRO to help us shape the future.



In the autumn Dr Georgina Barratt joined the team as our new Applied Crop Scientist. George is not a stranger to BBRO and I'm sure you will have seen at her events in the last few years whilst she was working on her PhD project on understanding the water use efficiency of sugar beet at The University of Nottingham. As well as working on new research projects George will also be working with the KE team to help deliver practical information and tools to growers.



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ANNUAL REPORT 2020-21





TRUSTED



INNOVATIVE



APPROACHABLE



INDUSTRY-LEADING

2020 What a year! Reflections from Dr Vicky Foster, Head of BBRO

The word challenging underestimates 2020, for BBRO and sugar beet growers. I have never known a year like it in my career to date, and I imagine this is the same for many people. It was certainly a year we won't forget in a hurry. In BBRO we had to be more agile and innovative than ever to develop new ways of working, and to deliver our research and knowledge exchange (KE) activities to keep supporting growers through a year of two devastating viruses: Covid-19 and Beet yellows virus!

By adapting our protocols, ways of working, and updating our risk assessments we managed to deliver successful trials and experiments in the field, glasshouse and laboratory, although the office was like the Mary Celeste! We were also very lucky that none of the team developed Covid-19 and we all remained healthy. The team never fail to amaze me how dedicated to BBRO they are and I can't thank them enough on behalf of the industry.

Our KE delivery was really put to the test and we launched numerous virtual events in place of our field events and produced many technical videos to bring you up to speed with the latest information from BBRO, you can find these on the website or search BBRO in YouTube. In a first for BBRO we launched 'BeetCast' – a podcast to bring you topical information in the cab or office, which has received great feedback. We also had a strong focus on our Brilliant Basics series launched at the end of 2019, with the release of 4 new messages in 2020. The aim for this activity was to use different media options to get messages out to you with targeted mail shots, videos, postcards and various web updates. This was a 12-month pilot activity but based on positive feedback we will continue this in 2021.

Finally, we asked you what you wanted from BBRO. Over 400 growers replied to our survey and you gave us some great feedback on what you want to see more of. It was very clear that you prefer smaller focussed group events, preferably out in the field, where we can give you a more personal touch, rather than large generic events. We are now piloting a new BBRO Agronomy Hub activity in 2021 aiming to address this and I will report back on this in next year's annual report!

Vicky



Jon



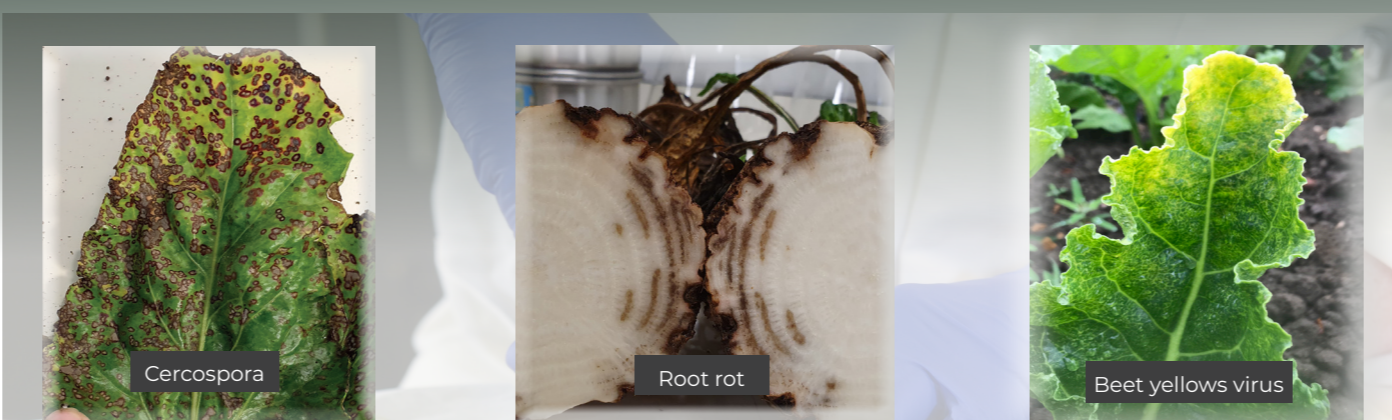
Dr Jon Knight, Chairman of the BBRO Stakeholder Committee

This last year has been extraordinary and problematic in many ways. There was the obvious issue of trying to continue as normal in the face of a pandemic and then there were the additional challenges from the growing conditions and pests and diseases, especially Beet yellows virus. Through the hard work of the BBRO team there were some crop protection solutions available, although they proved somewhat inadequate with high levels of virus in many crops. The good news is that the cold weather of this winter is predicted to have significantly reduced the overwintering populations of the aphids to a level where the use of Cruiser seed treatments, permitted by the granting of an Emergency Authorisation, will not be required. Not using Cruiser perhaps has some hidden advantages in that it shows that Integrated Pest Management is being used by the industry to only use pesticides when absolutely necessary. Hopefully the other products for aphid control will prove sufficient to manage virus yellows through the season.

As usual the BBRO team have continued to deliver research and knowledge exchange through these trying times, albeit in a rather different format which has proven to be successful; although I suspect we all miss the face to face discussions at meetings and seeing crops at field days. Let us hope that things return to normal over the course of this coming season.

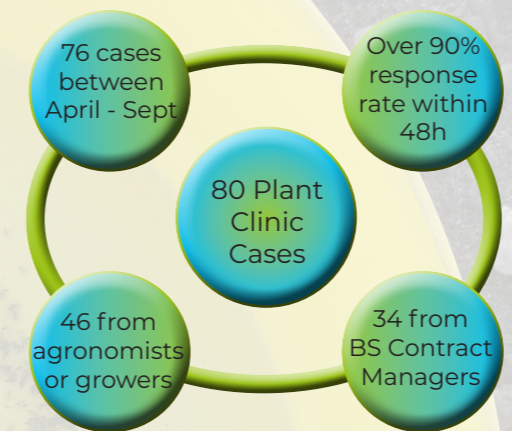
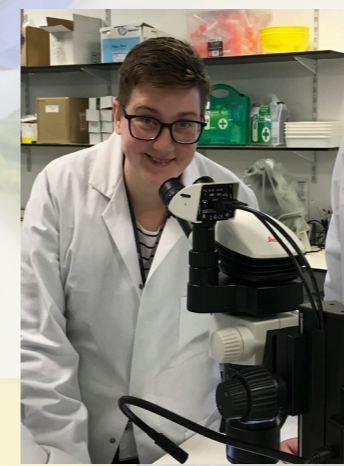
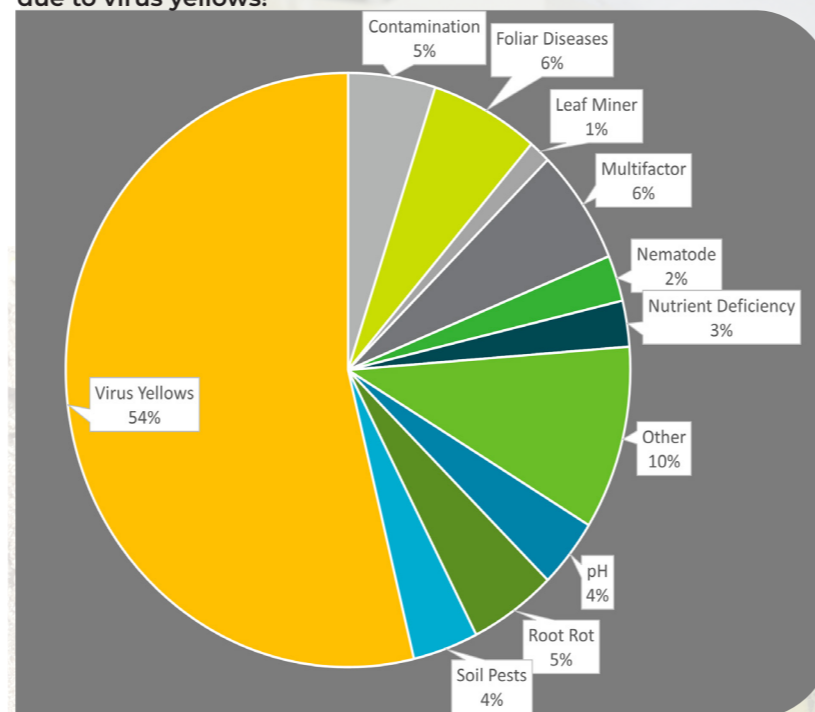
I should like to thank Alison Lawson and Graham Little for their work with the committee over their last few years providing valuable grower input to make sure the work of BBRO remains grounded and relevant and welcome their replacements.

I am looking forward to returning to normality and I hope that everyone has a successful and profitable season this year.



The BBRO Plant Clinic

Dr Kate Orman led the Plant Clinic for BBRO in 2020, and as with everything else in 2020, virus was the main problem found in the plant clinic – 54% of cases were due to virus yellows!



2020 Yellow Water Pan Summary

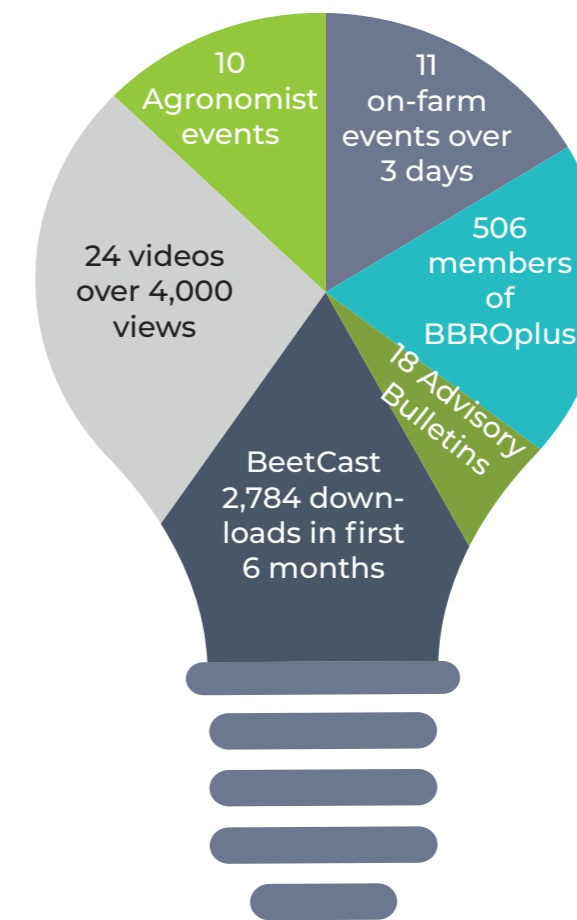
The Rothamsted aphid forecast in spring 2020 was predicting far greater risk of Virus Yellows than had been seen for many years. It was, therefore, vital that BBRO were able to provide up to date information on aphid numbers throughout the aphid migration. With COVID restrictions in place, the Yellow Water Pan survey had to adapt. Instead of sending all water pan catches into the lab in Norwich to count winged aphids, our real-time aphid mapping was based on counts of green wingless aphids on plants in the field at the 48 sites. Over the 12 weeks of the survey, the BBRO team (in conjunction with British Sugar Contract Managers), counted over 23,000 green wingless aphids in the crop. As the numbers of aphids being found started to rise, we received samples from one factory area each week to run virus testing in the lab. Nearly 9,000 *Myzus persicae* were identified from the pans and 3,426 were tested for Beet Mild Yellowing Virus (BMV). Fourteen aphids from 8 sites were found to be carrying BMV. This represents 0.4% of the aphids tested.



With virus symptoms showing earlier than usual, we also tested samples of yellow leaves found at the sites in July. At this early stage of the season 73% of the yellow leaves were infected with Beet Yellows Virus (BYV), 8% were infected with BMV and 11% were infected with both BYV and BMV. The very high levels of BYV were concerning but further sampling later in the season found a more even split between BMV and BYV infection. The earlier results may have been skewed because BYV tends to show symptoms earlier than BMV.

Knowledge Exchange activities

In response to Covid-19, BBRO had to change the way it communicated, at a time when communication had never been more vital for the industry in light of the virus yellows threat. Work has continued at pace despite the complications and impacts of both viruses.



NEW IN 2020
BeetCast - monthly beet related podcast
BBROplus - dedicated growers only area, with access to on-farm data

INCREASED
Video and online presence to provide continuous support throughout difficult year

UPDATED
Publications and advisory material, available via www.bbco.co.uk/publications

Investment summary

The expected total BBRO income for the year ending 31 March 2021 was £1.9m. Several factors had led to a reduction in the levy income during this financial year; poor establishment, drought and virus yellows were the main contributing factors affecting beet yield but there was also a lower than average sugar content. This also has a knock-on effect for budget planning for future years as BBRO's income is based on the 5-year crop average. Finger crossed for a much better campaign in 21/22!

