**BeetField20 Growers Questions**

Throughout the BeetField20 week held in July, growers and agronomists submitted questions to the BBRO team. Most were answered in the Q and A session held on Friday 10th July but for ease we have listed all the questions and our answers below.

**RL and varieties**

1. Robert Needham: Sara Cook/Simon

Would just like to ask how concerned we should be about using Conviso Smart technology and bolters. If you already have a large population of bolters one could argue that is you own fault because they can be controlled. With Conviso Smart, is the same going to happen and they become uncontrollable until we get Conviso 2?

*Whilst both Smart Rivetta & Janninka KWS meet the RL criteria for early drilling, care is required to avoid a bolter problem. It is recommended that they* ***are not until after mid-March,*** *bolters & groundkeepers. It is then critical to remove bolters that do develop as early as possible, ideally before pollination and at the latest before seed set. Remove bolters from the field. Also, remember to check crops during harvesting to reduce groundkeepers and remember to control in following crops.*

1. Colin Walters: Simon

A beet plant is said to be established when it has six true leaves.  The concept, therefore, of a ‘Pre-gapping establishment’ figure on the RL is incongruous.  With the key metric being the number of plants established per hectare, should we not be measuring and recording true establishment information on the RL?

*This is a good question and is part of a planned review of the RL process and protocols. The RL is designed to test the genetic potential of varieties and as such, protocols have been developed to test yield potential at optimum plant population. We have to consider whether this remains relevant to follow this approach. Watch this space!*

1. Julian Powell: Simon

On the RL 2020 why is the mean for pre-gapping establishment on the 3yr tables nearly 200?

What do I read into the 95 and 99% lsd figures?

*The figures on the 3-year Tables are a percentage of the control values which is the actual plant population when drilled at either 6 or 9cm. Use the main table to look for any significant differences between the varieties. Differences of less than 4% are not usually statistically significant and it is quite rare for a variety to be significantly different from others. Establishment was challenging in trials in 2020 and may be poorer than usual, but it remains to be seen if any variety is either better or worse.*

1. Julian Powell: Simon

Can we have a list of cover crops NOT to grow before sugar beet please?

*Difficult to generalise on as this can depend on factors such as soil type, BCN levels and adjacent crops. Remembering that brassicas are hosts to aphids (not the virus) it may be sensible to avoid these if possible. Combinations of cereals such as rye and oats with legumes, such as clover and vetch work well for many growers. Give BBRO a call if you want more detail.*

1. Chris Nottingham: Simon

One issue this spring was the very limited opportunities for fert uptake for surface applied N fert.  So placed N +/- P fert – very interesting article from Simon.  For those not able to place fert on the drill, presumably applying N +/- P fert to the surface and drilling through it would at least help to get the fert into the soil?  Could more than 40 kg N be applied pre-drilling like this, given that it would be more dispersed across the soil, or are there seed safety considerations which limit this?  What is the max dose that could be applied like this?  I appreciate that there is a wheelings issue to consider if applying fert in front of the drill like this.

*Yes, this approach will work although possibly not as effectively as a placed band. You could consider applying up to 60 kg/ha. Applying any more could carry a risk in dry conditions.*

1. Chris Nottingham: Simon

Conventional practice is to wait for full crop emergence before applying the 2nd N dose, for example on light soil the 2nd dose might be 80 kg following 40 kg applied at drilling.  Is this for crop safety reasons in the event of significant rainfall?  If not, can all of the N fert (or the rest of it, if you have already applied some, as above) be applied straight after drilling, as this would just give more time to catch a rainfall event to get the N in to the soil?

*No problem with applying the remainder on N after drilling. Just bear in mind that in a cold wet period, there is a risk of losing some nitrogen out of reach of roots. If crops are likely to emerge quickly, get the second nitrogen on.*

1. Chris Nottingham: Simon

Getting seed into moisture – what is the maximum suggested drilling depth for beet seed now if trying to chase moisture which might be 25 – 30 mm+ deep?  Or is it too hard to generalise on this given soil & seedbed variations?

*We generally advise drilling at 20-30cm and you are right about drilling into moisture so adjusting depth to conditions in key. Maximum drilling depth would be 40cm but in poor seedbeds we wary of even going this deep.*

1. Anon: Simon

Are BBRO doing any work on how Sugar beet can contribute to capturing carbon and achieving Net Zero on Farms?

*BBRO trials have shown no consistent effect of the use of foliar biostimulant such as AminoA Flo applications on relatively healthy plants in respect of final yield and sugar content. Where root function has been compromised, for example by BCN, these products may have some effect and I would tend to focus on applying essential macro (NPK) and micro (Mn, Mg, B, S) as a priority before considering biostimulant applications.*

1. Anon: Simon

As there is no statistical difference in sugar content between varieties, do we ignore that when selecting varieties?

*Don’t expect to see large differences under field conditions – but if you do see typically sugars on the low side choose a variety with higher sugar if other traits fit*

1. Anon: Simon

 Bolting is something I want to avoid, is there a chance that I will still get bolters if I choose a variety that has no normal sown bolters.

*A cold spell in later March may result in some bolters, but experience shows that generally a variety with 0 or low bolters will be OK*

1. Anon: Simon

Are you still doing to do the demo farms and get farmers to look at them even if we have to social distance?

*Yes, we are planning some events for late summer/early autumn, restrictions permitting. Keep an eye on the BBRO website or in the Advisory Bulletin for latest information. We were able to drill some Demo site pre-lockdown and have RL variety demos at Bracebridge, Thorney (P’boro) Morley and Bury St Ed*

1. Colin Walters: Vicky

With regard to seed quality testing, I welcome the opening of the market to a wider number of seed pelleting houses and feel this can only encourage innovation and bring greater transparency to the commercial arrangements.  Can you tell me about BBRO’s work in this area and please can you confirm whether the cost of these current trials is being covered by the seed processors or whether this is something which growers and BS are funding via the BBRO?

*The aim of the pellet trials is to test different priming and pelleting treatments to understand their performance in UK conditions and to provide sugar beet growers with a wider selection of higher performing pellets, and to give them more choice. The decision was taken to fund these trials from the levy to enable BBRO to own the resulting data and ensure it is freely available to disseminate to growers.*

**Varietal Traits**

1. Anon: Alistair

Do the BCN tolerant varieties reduce the level of BCN in beet fields and which is best one to use?

*Evidence shows that you can expect reduced reproduction of BCN on a tolerant variety (vs. A susceptible one), although some cysts will still form as tolerant varieties are not completely resistant. Therefore, population levels will still increase when you cultivate sugar beet in an infested field.*

1. Dr Reuben Morris: Alistair

Will the results from Goliath be published?

*Once we have gathered sufficient information from ‘Goliath’ from the first two years of experiments we will aim to publish the data both as a summary report for the Industry and also in an academic journal*

1. Stephen Ashford: Having watched Georgina Barratt speak on Tuesday morning about the subject of water-use efficiency I would like to ask:

'If a prostrate growth variety is so much more efficient at using water, especially now that we seem to be getting seasons with extended dry times more frequently, is it now possible for the Recommended Variety List to include basic information about growth habit (ie prostrate v upright)?' This would allow a grower to include this information when choosing a variety.

*This is a great question and an area we are very interested in. Georgina’s work is at early stage, so we need to collect a little more data. However, we are also looking at variety growth habit in relation to aspects such as weed suppression, light interception and relationship to harvest date. We do find some large seasonal and soil type interactions with growth habit and in the last two years, we have seen how drought can affect the growth habit in the later part of the season. However, we do believe this information has an agronomic value and are looking to provide this information to growers once we have gathered a little more data.*

**Soil Management and nutrition**

1. Mike: Stephen

What's the best practice for weed control when using plastic?

*There would most certainly be further work to establish best practice for weed control under the polythene, for the initial work we are completing we have been using a typical pre-em herbicide applied by the film layer itself. Results have been comparable with field standard and the importance of the pre-em has been clear against untreated. Length of covering will also come into play as removable or breakdown will allow further herbicide application.*

1. Mike: Stephen/Alistair

Could you use satellite technology to assess the level of virus in this year's crop (& perhaps use that info to help with an emergency use for seed treatments applications!!)?

*Good question. This is an area we are very involved with. Our primary focus is to look at how we can identify and quantify virus levels in the foliage as well as understanding the potential yield implications. Unfortunately, it is not as simple as the more symptoms showing, the greater the yield loss as some varieties respond differently to infection. We are making great progress at the plot level but are confident this can be extended to a wider geographical area going forward.*

1. Anon: Stephen

What is the cost/ha of using plastic to advance and protect my crops against aphids. What level of protection against virus will it give?

*The cost is approximately £250/ha for the plastic or £300-320/ha laid. Clearly, we need to understand the benefits this approach will deliver whether this be yield advantage and/or protection against aphids and virus transmission. We have seen some very significant advantages in canopy growth under plastic to date and this has translated into yield increases. We are currently understanding how this this may translate in lower virus infection. Watch this space!*

1. Anon: Stephen

 Is there a critical soil moisture level or soil clod size that I should use as a trigger for rolling?

*It is difficult to be precise on this as different soil types have different properties, especially their plasticity under pressure. Our trials deliberately cover a range of soil types so we are hopeful that we can explore this in greater detail and see if it is possible to provide a trigger.*

1. Anon: Stephen

 My crops were so poorly established this year, I considered re-drilling, what is the latest date that I could have done this by to get a sensible yield?

*I suspect this was a dilemma that one or two growers had to consider this season. We know that drilling the end of April can carry a 20% yield reduction, but this assumes seed goes into a good moist seedbed where germination is relatively quick. In 2020, this was not the situation and emergence would have even more been delayed in the continuing dry conditions. Thinking about seedbed conditions rather than focus on date is important.*

1. Anon: Stephen

Is there a means to remotely monitor soil water potential so we can optimise seedbed preparation? To Achieve optimum seedbed aggregate size

*Remote imagery is getting ever more sophisticated and there are systems which claim this can be achieved. These tend to be based on measuring soil water content, but the actual workability of soil is a consequence of other factors such as structure, soil type and organic matter content to mention a few so this is complicated. However, it may be possible to use this as guide, when used in conjunction with soil type.*

**Crop Protection**

1. Geoff Hotchkin: Mark

Many growers have sprayed 3 times using the 3 permitted sprays which can only be used once, the third Biscaka is unobtainable because of late authorisation for use this year.   What can we now do to protest late emerging plants if we get a further influx of aphids.

*Aphid numbers have declined rapidly over the last 2-3 weeks, and with the large numbers of predators being seen and with the beet crop, in most situations past the 16-leaf stage, there should be no need to apply any further aphicides.*

1. Martin Liddell: Mark

The simplest way of controlling the virus is with a seed treatment. Not spraying up five times with various insecticides. Can't there be a derogation to allow the use of seed treatments for Sugar beet as it's a non-flowering crop.

*Neonicotinoid seed treatments were withdrawn across Europe in 2018. The UK industry did apply for emergency use for such treatments in 2019 but this was declined by government. It is extremely unlikely these will become available again hence the need to apply for the emergency use of aphicides in 2020 until a wider range of methods become available for future virus control (e.g. virus yellows tolerant/resistant varieties).*

1. David Harrod : Mark

Does the application of foliar Zinc Sulphate to sugar beet help to stop sugar beet virus yellow etc? What is BBRO views on this? Is there anything else BBRO has looked at in the lab that may have potential for aphid control?

*BBRO is aware of previous work looking at the role of zinc for plant health benefits, including the protection against certain plant viruses. Zinc is an important element for plant growth and physiology which may have some benefits, but no zinc-based products are registered as plant protection products.*

*BBRO continues to evaluate a range of alternative approaches for aphid control both in the laboratory and field and is currently re-evaluating the concept of mature plant resistance with a joint PhD at the University of Wageningen in the Netherlands.*

1. Alisdair Dunn: Mark

With a history of violet root rot, a field is due to be sugar beet next year. But it has not grown sugar beet for at least 6 years. What thoughts do you have?

*Ensuring the gap between host crops is important and six years is a good break between beet crops that will clearly help. However, other crops that you may grow can be hosts too, including carrots and potatoes as well as certain weed species (e.g. creeping thistle). This needs to be taken into consideration.*

1. Alexander Krick: Mark

With regards to virus yellows, when do you expect tolerant/partially resistant varieties to become available to growers?

*The European sugar beet companies are making good progress at developing virus yellows varieties for the future. However, virus yellows is a complex of three different viruses and there do not appear to be any major sources of virus resistance available in wild relatives, hence many minor genes are needed to afford protection. We anticipate the first generation of BMYV-tolerant varieties in the next 2-3 years.*

1. Sam Markillie: Mark

Is anyone monitoring sugar beet being grown for AD plants for virus levels? Especially where they are not lifted until late spring with minimum agronomy.

*Any sources of beet, whether root remnants, groundkeepers, re-growth on spoilage heaps and other crops such as spinach or beet for AD are a risk to future crops. Wherever possible these should be destroyed or harvested before the next spring crop is sown to remove the green bridge. In the absence of neonicotinoid seed treatments and high levels of virus yellows in 2020 this has never been more important.*

1. Lucy de la Pasture: Mark

Is there any potential in using oils to protect from VY in a similar way to the potato seed industry does to protect seed crops?

*BBRO has looked at the use of oils in the past but these are primarily used to control non-persistently transmitted viruses (e.g Potato virus Y in potatoes) and as the virus yellows complex is a mixture of semi- and persistently transmitted-viruses, their use for aphid control and stopping virus transmission is limited.*

1. Philip Simons: Mark

Do you think virus symptoms are less on coast as suspected with perhaps more prevailing winds?

*At the stage symptoms are continuing to develop so it is difficult to confirm this observation. However, onshore prevailing winds can negatively affect aphid migration and hence the numbers invading crops and their subsequent progeny so it is possible that we could see less virus in crops close to the coast.*

1. James Southgate: Mark

Will destruction time of the cover crops have an impact of aphid transfer? Do we know where aphids are likely to go if the cover crop is destroyed 2 months or more before drilling?

*The earlier the destruction the better to ensure the impact of any green bridge is minimised. Surviving aphids are likely to move onto weeds in other crops or plants in margins/hedgerows. However, aphids will not be flying if temperatures are below 15C.*

1. Anon: Mark

At what date will I know the full extent of virus infection in my crop and why am I now seeing so much virus in my crop even though I sprayed three times?

*We anticipate seeing the full extent of virus infection by the end of August. 2020 has been unprecedented for aphids and potentially now for virus and akin to the mid-1970s.*

*Initially, when beet were small and crops were being constantly re-invaded reports from the field suggested that efficacy of aphicides was being compromised. However, in BBRO trials most treatments have worked well and reduced populations significantly (assessments have been made at 3 or 4 days post application and then again after 10-12 days). The plants in BBRO trials were at the 6-8 true leaves.*

1. Anon: Mark

What will be the yield impact on my crop if 25% goes yellow due to virus?

*This will depend on the timing of infection and which virus is present as there are three in the virus yellows complex. Beet yellows virus (BYV) can decrease yield by up to 50% and Beet mild yellowing and Beet yellows virus (BMYV & BChV) by up to 30%. Therefore if 25% of a crop goes yellows an anticipated yield loss could be between 10-15%.*

1. Anon: Mark

In the pellet trial is all raw seed from common source?

*In 2020 paired seed lots were used between pellet types. In future common sources will be investigated.*

*Thank you to all those that contributed to this event.*