British Beet BBRO Research Organisation

Advisory Bulletin

Issued: 15th July 2020

IN BRIEF

- **Some crops are now showing progressive virus symptoms. In many cases, Beet yellows virus, Beet mild yellowing virus and Beet mosaic virus can be found in the same field. These are all aphid-transmitted viruses. Aphid numbers have reduced significantly making it unlikely that crops will need further aphicide applications**
- **A detailed Q&A is provided on the virus situation below**
- **Remain vigilant for the first signs of foliar disease, such as powdery mildew, rust or cercospora leaf spot. Check more susceptible varieties as a priority and apply fungicides at the first onset of symptoms**
- **Bolters and weed beet are established in many crops and need managing. If they have already been pollinated and have set seed, they should be removed from the field to avoid seed returning to the soil. Remember that crops using the Conviso-Smart technology (Smart Janninka KWS) must be a priority for removal of bolters**
- **Make sure any uncontrolled beet growth on old beet clamps and spoil heaps is dealt with. These can act as a source of infection**

Virus symptoms

Pic 1: Beet Yellows Virus

Pic 2: Beet Mild Yellowing Virus

Pic 3: Beet Mosaic Virus

Early foliar disease symptoms

Pic 4:Rust

Pic 5: Cercospora

Pic 6: Powdery mildew

Eight-point plan for autumn disease management.

1. Know what disease(s) are in your crop in order to select the best fungicide options.
2. Cercospora leaf spot appears to be an increasing problem in the UK and strains of this fungus are potentially resistant (due to Qol resistance) to strobilurin fungicides. If in doubt contact the BBRO for help with disease identification.
3. As seen from previous BBRO trials, do not apply fungicides too early, wait for early symptoms to show.
4. Conversely, do not apply products too late otherwise effective disease control will be difficult for the remainder of the season.
5. Always follow label recommendations for applying products at the correct growth stage.
6. Ensure the gap between the first and second, or second and third applications, is kept to within 28 days to prevent significant re-infection occurring between treatments.
7. Ensure water volume recommendations are adhered to and are not cut back.
8. Know where specific varieties are sown within fields to monitor any variety- disease interactions.

Virus Q&A

1. Many growers have sprayed their full quota of aphicides, what can we now do to protect 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.

2. 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? How effective is the control of the insecticide applications available, because re infestation level seems to be very quick?

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

Initially, when beet were small, crops were being constantly re-invaded. Reports from the field suggested that efficacy of aphicides were 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.

3. Is there a current estimate of the level of virus carrying aphids?

Due to COVID-19 we have had to make a number of changes to our aphid studies this year, but to date we have tested over 3,000 individuals for BMYV, with results currently running around 0.4% carrying this virus. This is in line with recent years, but the sheer numbers of aphids migrating into crops has raised the risk of virus infection.

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

At this 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.

5. 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 chlorosis virus (BMYV & BChV) by up to 30%. Therefore if 25% of a crop goes yellow an anticipated yield loss could be between 10-15%.

6. What products do you think we will realistically have over the next couple of years, with Biscaya now withdrawn i.e do we only now have Teppeki & Insyst – and thus only two authorised insecticide applications going forward? (We have applied four this year!)

As it stands today, in 2021 you will only have one application of Teppeki available. BBRO anticipate applying for emergency authorisations to give three active ingredients, with different modes of action and hopefully one or more of these products will be able to be used more than once.

7. 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.

8. 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 sugar beet 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.

9. The simplest way of controlling the virus is with a seed treatment. Not spraying up to 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?

   The impact on beneficials would seem to be detrimental and thus unsustainable going forward?

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). However, anything we can do to promote and build beneficial insects across the farm is important. BBRO is looking at ways we can encourage beneficial and/or distract aphids from landing in beet crops using other plant species when grown in strips and zones.

10. How far away is plant breeding from launching a commercial variety that is tolerant to the virus yellows complex?

These are currently being developed by the breeding companies and it is hoped the first generation of virus yellows resistant varieties will be available soon.

11. What sort of yield lag do you think there could be?

In the absence of virus infection, yields are anticipated to be around 90% of current RL control varieties. However, this will be very similar to previous first generation rhizomania, BCN and ALS varieties.

EVENTS

Missed BeetField20? Catch-up with all the events and discussion session via our website.

CONTACTS

British Beet Research Organisation, Innovation Centre, Norwich Research Park, Colney Lane, Norwich, NR4 7GJ

Dr Mark Stevens mark.stevens@bbro.co.uk 07712 822194

Dr Simon Bowen simon.bowen@bbro.co.uk 07718 422717

Stephen Aldis stephen.aldis@bbro.co.uk 07867 141705

General Enquiries info@bbro.co.uk

BASIS POINTS

Two BASIS points in total (not per bulletin) have been allocated for the period between 01/06/20 and 31/05/21 reference **CP/100686/2021/g**. To claim these points please email michele@basis-reg.co.uk

City and Guilds are now back in operation, NRoSO points will be made available as soon as possible.