

Background:

In 2021, The majority¹ of varieties on the 2022 BBRO/BSPB Recommended List (RL) were assessed for their susceptibility to Virus Yellows by BBRO. This trial was conducted at only one site, and due to the ever-evolving nature of the RL the varieties will continue to change each year and consequently the data set you will see is limited. Therefore, it must be interpreted with caution, and it is paramount to note that this experiment does not form part of the formal RL variety assessment procedure. However, we believe that this dataset is a valuable piece of information which could help guide your on-farm decision making.

How can you use this dataset?



Plan – BBRO provides this information to you as a guide to support variety selection and the order of drilling your seed. Varieties which show more impact from either of the viruses assessed (BMVY or BYV) could be more susceptible to virus damage and therefore may benefit from being sown soonest. As always, bolting risk and seed bed conditions must also be considered.



Protect – regardless of any indicated resilience to BMVY or BYV from our experiment, it is paramount that you continue to check crops for aphids this spring and respond using aphicides if your crop reaches threshold (one aphid per four plants until the 12-leaf stage). This will provide the best method to minimise spread of virus in your fields from virus carrying aphids.



Perform – ensure you record the exact areas where you sow each variety you order so you can monitor their yields and any impact of virus you suffer on farm. BBRO plans to offer support to growers to contrast trial findings with your on-farm experiences to help validate our results.

The Virus Yellows complex:

A quick reminder that Virus Yellows is a complex of three different viruses which differ in their severity of yield loss, despite all having very similar symptoms. The viruses are:

Beet chlorosis virus - BChV – the least severe, causing around 25% yield loss

Beet mild yellowing virus – BMVY – up to 30% yield loss

Beet yellows virus - BYV – the most aggressive virus, resulting in up to 50% yield loss

Plants may be infected by one or a selection of viruses. All three viruses must be transmitted by an aphid vector, usually *Myzus persicae*, the peach-potato aphid.

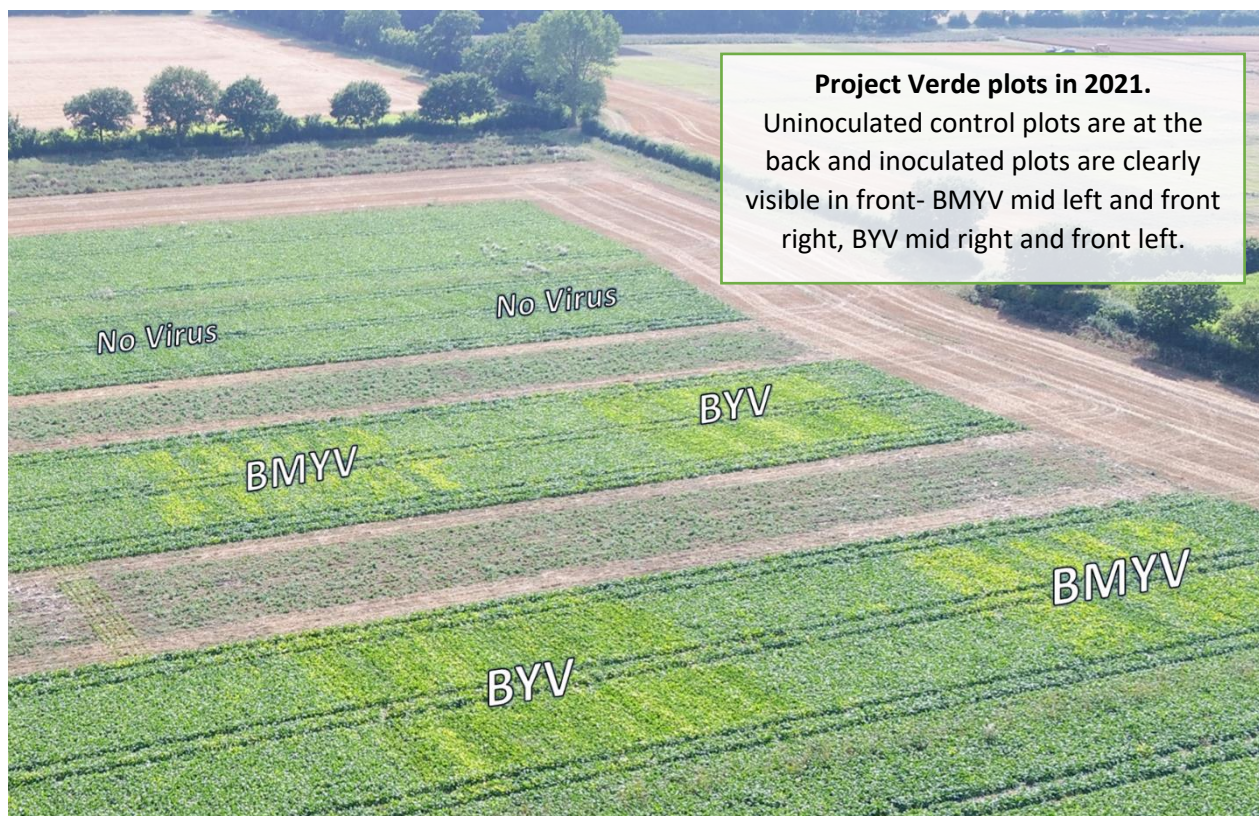
BChV and BMVY are closely related, both being from the polerovirus family (which includes *Turnip yellows virus* and *Potato leaf roll virus*). BYV is unrelated and from the closterovirus family.

Historically, poleroviruses have tended to be most prevalent in the UK. However, the profile of viruses you find on farm will depend on local sources. The exact level of yield loss will depend on the age of plant when it is inoculated as well as the conditions experienced by the crop as it grows and of course, the variety. Therefore, we offer these data on the 2022 RL to help guide your on-farm decision making when establishing your sugar beet crops in 2022.



Project Verde:

This is the experiment from which the yield data were collected to support this document. Verde was sown on 3 April, in plots 3 rows by 7.5m. All plants in inoculated plots were then infected with either BMV (Beet mild yellowing virus) or BYV (Beet yellows virus) during the week commencing 31 May when the plants were at the 6-8 leaf stage. Aphicides were then used to kill the virus vectoring aphids and limit un-desired virus spread within and around the trial. Virus symptom progression was then regularly monitored, and harvest occurred 22/23 November 2021.

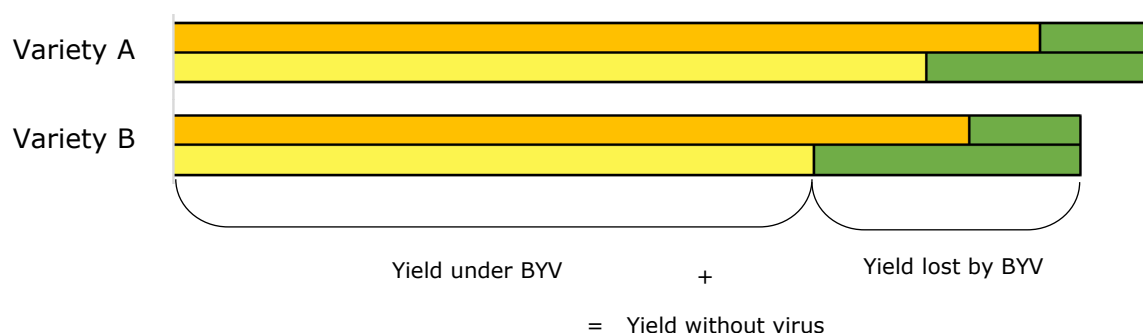


How to interpret the results: Each variety's yield is shown in the results graph with stacked bars. These illustrate the relative yield of the varieties against each other in the absence of virus (shown by the combined length of the virus and uninoculated bars). The narrower the green bar, the less yield was lost by the virus. Orange bars show the yield obtained under BMV infection and yellow bars under BYV infection. The total length of each bar shows the uninoculated yields and varieties, which are ranked from highest to lowest uninoculated yield.

As can be seen from the results, BMV was found to be less damaging than BYV in most varieties. However, the level of yield loss was less severe than recent years (BMV averaging 15% yield loss and BYV 26%), likely due to a range of factors but potentially including the dull conditions in August, the lack of drought or secondary disease stress experienced which would compound the yield damage suffered due to virus. The experimental plots averaged 119 adjusted tonnes in the absence of virus, 100 tonnes under BMV and 88 tonnes under BYV.



Example:



As expected, in the example above, both Varieties A and B suffered more yield loss under BYV than BMVY. Due to the Variety A bars being wider, we can also see, on average, that it yielded higher than Variety B in this experiment. However, both varieties show very similar patterns of yield loss under both BMVY and BYV.

As always, the official Recommended List should be used to formally compare varieties and their yield potentials. Important note: Maruscha KWS is the only variety to claim any tolerance to a virus (BMVY only) and this data set cannot and should not be used to confirm any tolerance in any other varieties.

Need further advice?

A thorough guide to these data will be given as part of the BeetTech22 events on the 8th (Norwich) and 10th (Newark) of February. We encourage you to attend to hear the full briefing and ask any questions to the BBRO team of experts. Click here to book your place: bbro.co.uk/events

In the meantime, if you need further help please get in touch via email info@bbro.co.uk

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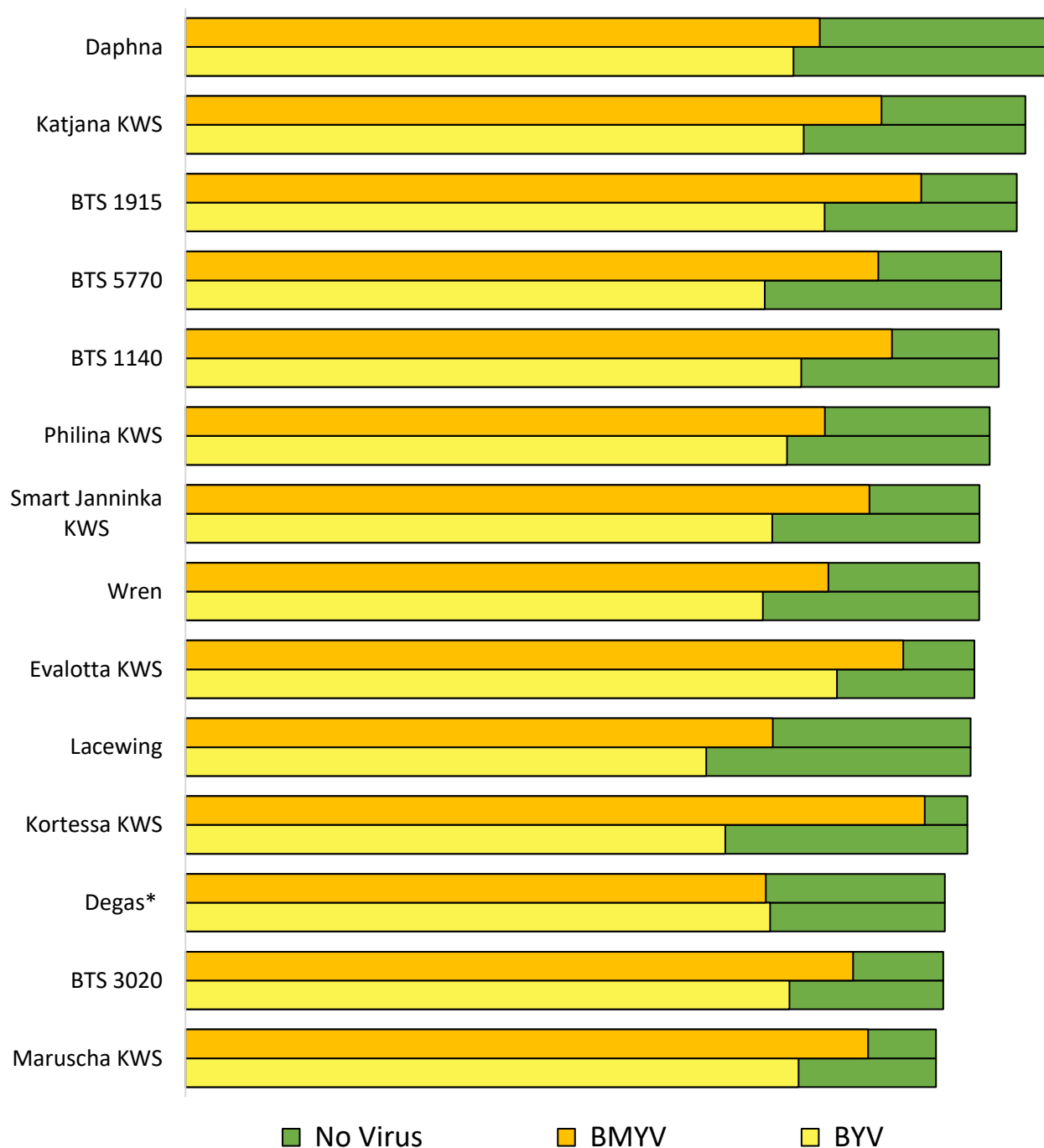
January 2022



Yield responses of varieties in the 2022 BSPB/BBRO Recommended Listⁱ to beet mild yellowing virus (BMV) and beet yellows virus (BYV) observed in BBRO's Project Verde field experiment in 2021.

Data are provided for guidance only and should be interpreted with caution as they may not reflect ultimate performance in-field as they are only from one experiment and one year's worth of data. Varieties available to order in 2022 with data available are listed only.

Relative Yield



ⁱ All RL varieties were included apart from Smart Rixta KWS. * Degas is included on this dataset as it was used as a control variety in the experiment.

