

# Effect of different virus yellows infection timepoints on storability

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## Introduction

Sugar beet yield can be decreased up to 50% due to infection with virus yellows. It has been shown previously that sugar beet that have been infected with virus yellows have higher sugar losses during storage and altered beet tissue\*\*. This COBRI-study aimed at investigating the effect of infection of beet with Beet Mild Yellowing Virus (BMV) on different timepoints on storage losses and beet texture.

## Materials and methods

The trial set-up consisted of:

- 3 trial fields in 2022: in Belgium, Germany and the Netherlands
- 2 varieties: susceptible and tolerant to BMV
- 4 treatments: control, infection at BBCH12-14, June, July (fig. 1)
- infection with BMV-infested aphids (3% of plants in plots)
- 4 replications
- 32 plots per site
- harvest in October 2022

Sampling and measurements:

- 2 sample bags per plot (in total: 96 ref. + 96 storage samples)
- storage of samples in climate container for 53-72 days at 9 °C (fig. 2)
- at harvest: determination of root yield, sugar content, sugar yield, root tip breakage, topping diameter, marc content, beet texture (penetration, compression)
- after storage: determination of moulds and rot, sugar mass loss



**Fig. 1** Beets infected with BMV on different timepoints (photo: COBRI-trial NL, September 2022).



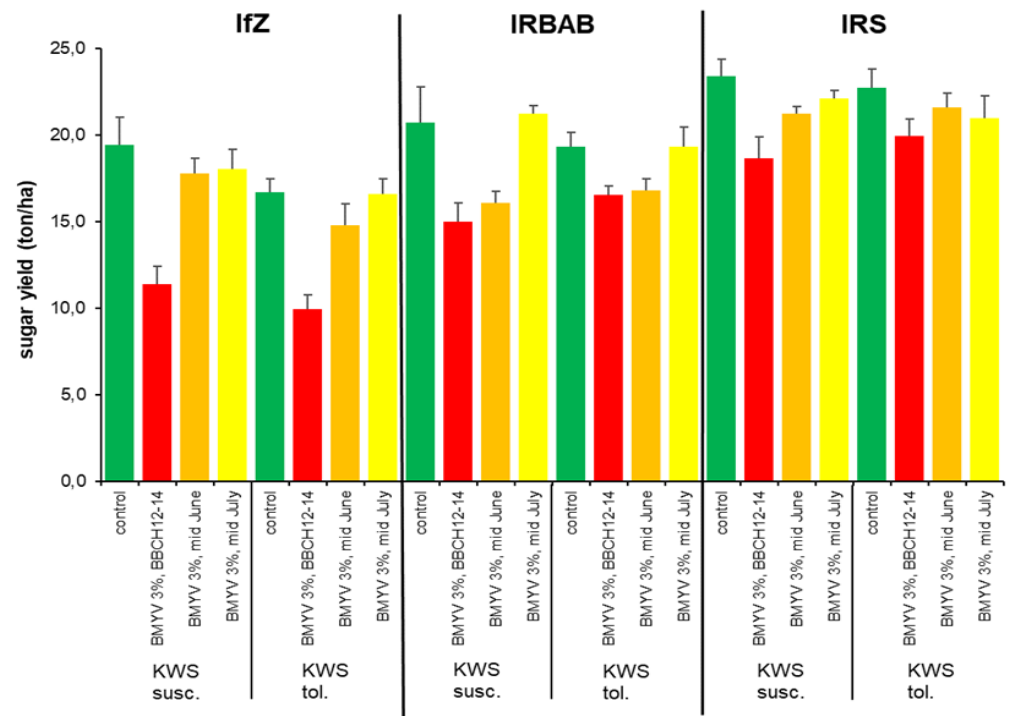
**Fig. 2** Climate container for storage of beet sample bags at 9 °C.

## Results

BMV-infection had a significant effect on sugar yield at harvest, especially at early infection timepoint (fig. 3). Infection at BBCH12-14 resulted in yield losses up to 40%. For marc content, beet texture, root tip breakage and topping diameter effects were visible from the different sites and the varieties. No clear differences were observed between VY-infested beets and the control.

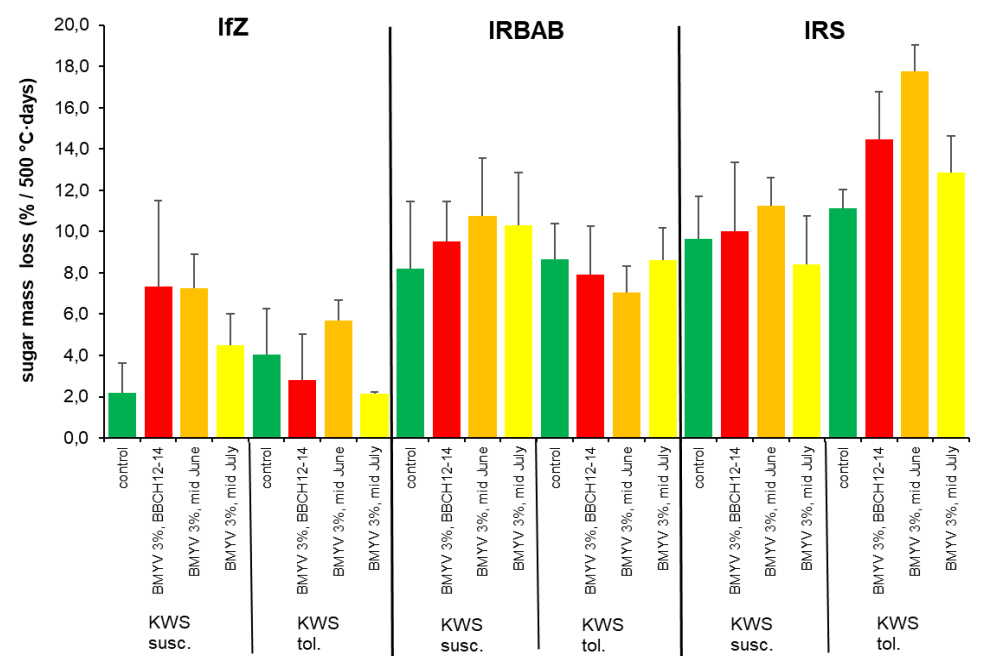
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\*\* Hoffmann, C.; Leijdekkers, M.; Wauters, A.; Ekelöf, J. Storability of virus yellows infested beets. Presentation at the 78<sup>th</sup> IIRB Congress, Mons, Belgium, 2022.



**Fig. 3** Sugar yield of the various objects at harvest.

In most cases, higher sugar losses were observed for VY-infested beets after storage compared to the control beets (fig. 4). No clear differences between moulds and rot after storage between the VY-infested beets and the control could be observed. There was a large effect of the site on the average sugar losses during storage, which could be interesting for further study.



**Fig. 4** Sugar mass loss after storage (calculated to a storage duration of 500 degree days).

## Conclusions

- Significant effect of BMV-infection on sugar yield, the earlier the infection the higher the yield loss
- Marc content, beet texture, root tip breakage, topping diameter: site and variety effects visible, but no clear differences between VY-infested beets and control
- Higher storage losses for VY-infested beets compared to control in most cases
- Large effect of growing site on the average storage losses