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Intercropping beet-barley to reduce aphid populations in sugar beet fields in Belgium

ViroBett
Dompter la jaunisse virale, Protéger la betterave

Introduction

Virus yellows is a viral plant disease transmitted by aphids. Since the 90's, aphids were controlled by neonicotinoids, a systemic insecticide coated on beet seeds. In 2018, this family of insecticides has been banned in Europe. Alternatives are now urgently needed to control beet yellows infections. Preventive methods are the key of the IPM strategy as cultural technic. Intercropping is known as a pest control strategy. In this respect, we tested the effect of sugar beet-barley intercropping on the aphid dynamics and virus yellows infection.

Materials & Methods

2022 : 6 trials
2023 : 5 trials

Fields divided into two parts: one with intercropping beet-barley (60 kg/ha) and the other with beet alone. No insecticide treatment.

Barley sown just before beet. Barley destroyed mechanically and/or chemically at the stage of about 6 leaves of the beet.

Weekly aphid countings. Virus yellows assessed during the summer

Sugar yield assessed at the end of the season

Figure 1 : Trial field. On the left, intercropping beet-barley. On the right, beet alone.

Results and conclusion

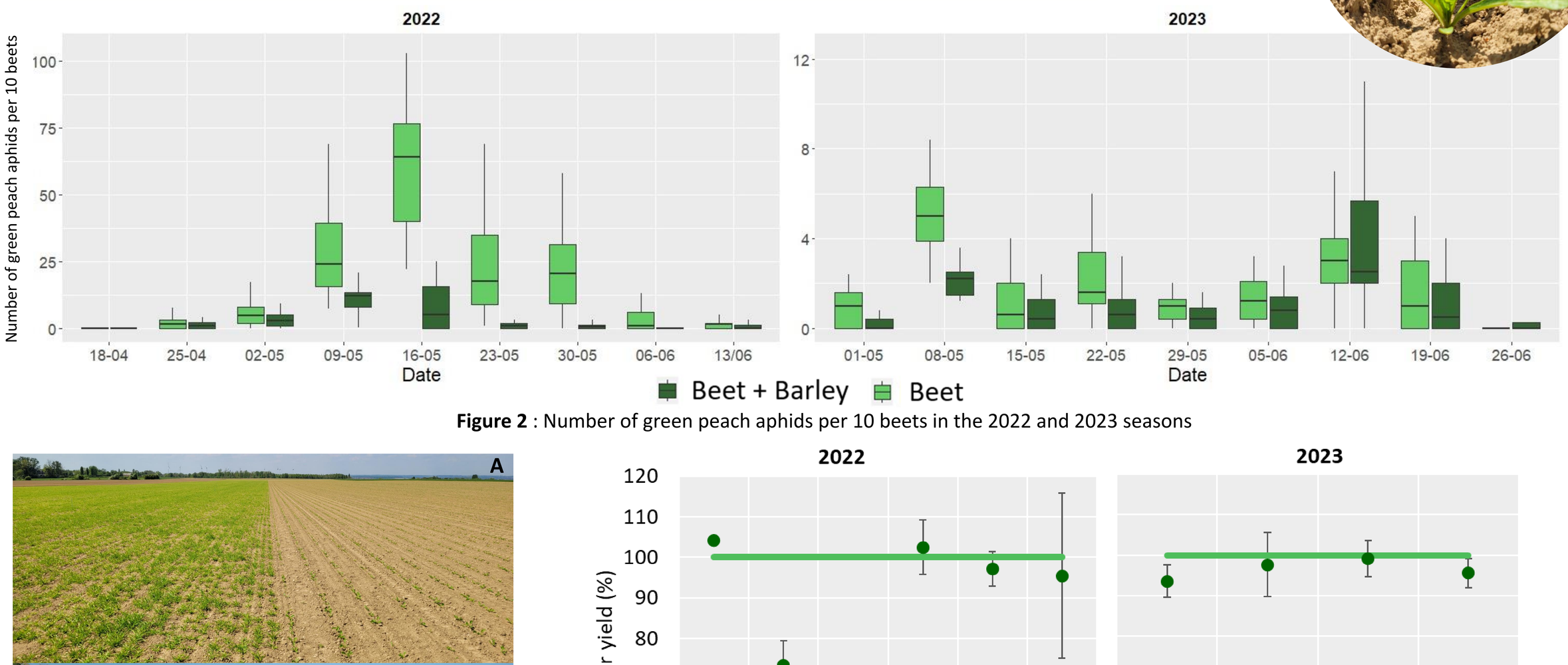

Figure 2 : Number of green peach aphids per 10 beets in the 2022 and 2023 seasons

Figure 3 : Trial 2022 at Vellereille. On the left of the field, intercropping beet-barley and on the right, beet alone. **A.** Photo taken on 3 May 2022. **B.** Photo taken on 12 October 2022. The proportion of virus yellows is higher in beet alone than in intercropping beet-barley.

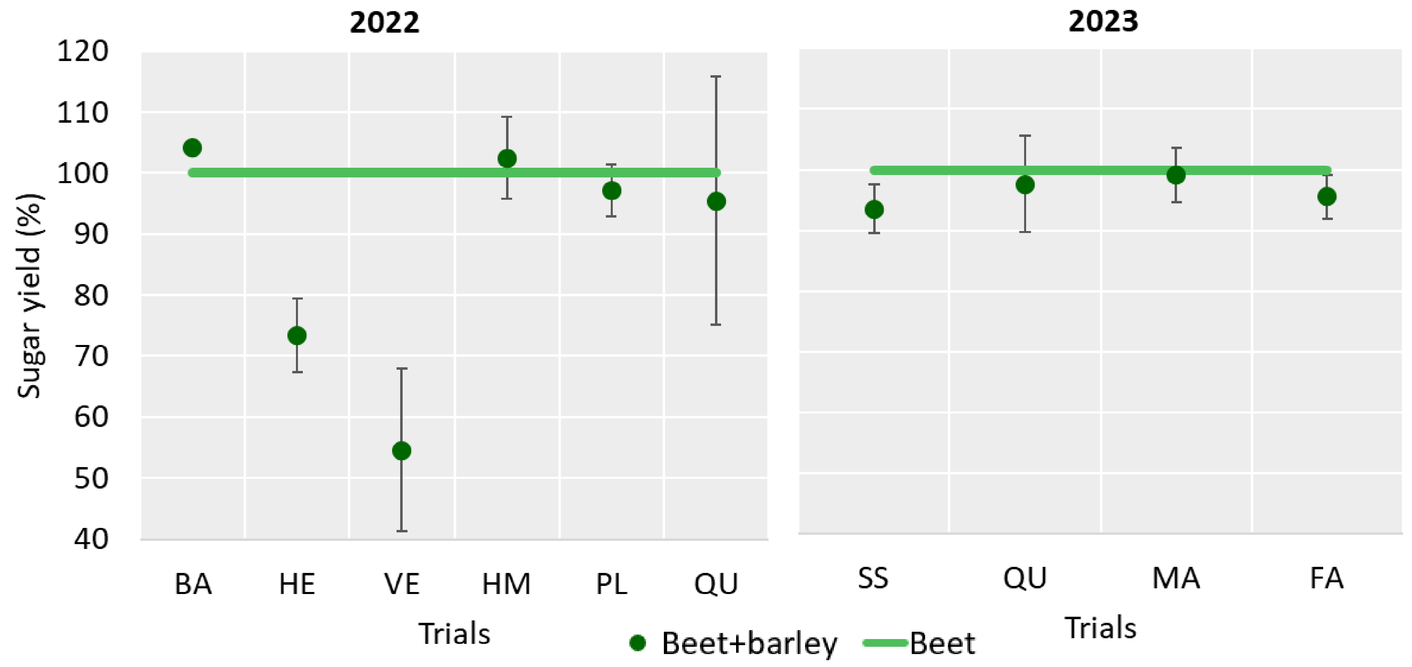

Figure 4 : Sugar yield/ha (%) from 2022 and 2023 trials

Take home message

Very high aphid numbers in 2022 compared with 2023.
→ Intercropping beet-barley :

- **reduces** the number of **aphids** on beet, especially when aphid numbers are quite high
- **reduces** the proportion of **virus yellows**
- must be **carefully managed**. Late destruction of barley can lead to significant yield losses

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