

# Evaluation of the aphid warning system to control virus yellows in the Netherlands

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Fig. 1 Virus yellows in sugar beet.

## Introduction

In 2019, the aphid warning system was re-introduced to control green peach aphids (*Myzus persicae*), the most important vector of virus yellows in sugar beet. The aphid warning system is part of the strategy to control virus yellows, which is a complex of three plant viruses (BYV, BMV and BChV). Without any control measures, early infections can cause up to 50% yield loss in sugar beet<sup>1,2,3</sup>.

## Materials & methods

To minimize yield loss due to virus yellows, advisors from Cosun Beet Company and Delphy count green aphids, along with eight species of beneficials (Fig. 2) and five species of other harmful insects, in about 100 fields throughout the Netherlands on a weekly basis; from emergence of the seedlings to mid of July. When the numbers of green aphids exceed damage thresholds, farmers receive a text message (SMS) from Cosun Beet Company to monitor their own sugar beet crop (Fig. 3).

## Results

The warning system helped farmers to check their fields in time and apply an insecticide spraying when necessary. Early infections with aphids led to a higher use of insecticides (Fig. 3 and Table 1) and higher costs for farmers to control virus yellows (Fig. 4). Early infections also led to higher incidence of virus yellows.

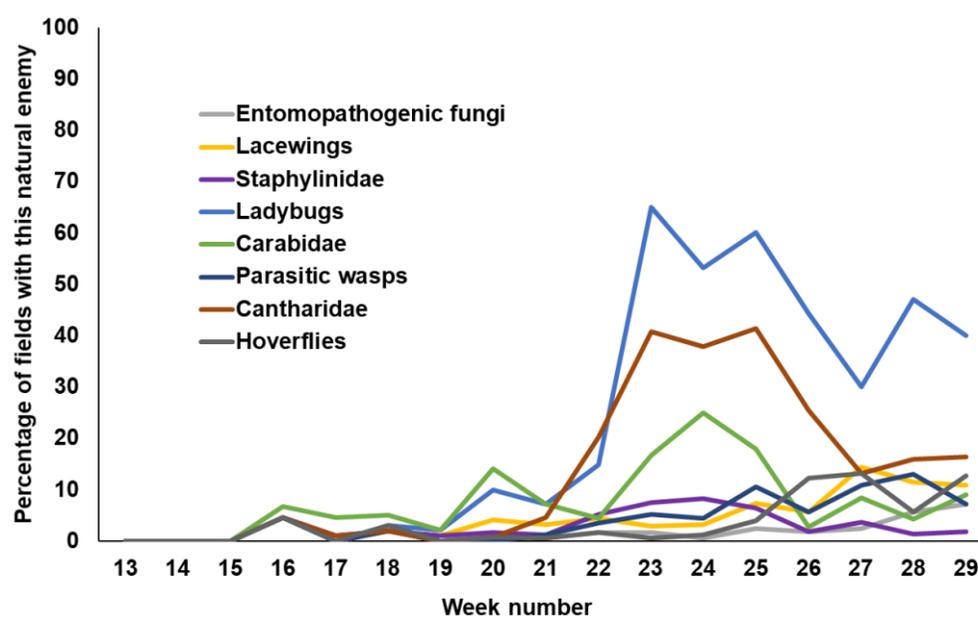


Fig. 2 Presence of different beneficials in sugar beet fields. An example of 2021. Ladybugs and soldier beetles (Cantharidae) were most dominant.

Table 1 Mean number of insecticide applications per region to control aphids and virus yellows (2019 – 2021).

Region	Mean number of insecticide applications		
	2019	2020	2021
Central	2.0	1.1	0.4
North West	0.9	1.1	0.4
North	0.3	0.5	0.1
North East	0.3	0.1	0.0
South East (clay/loess)	0.6	0.9	0.5
South East (sand)	0.8	0.8	0.5
South West	0.9	1.4	0.6
Netherlands	0.7	0.8	0.4

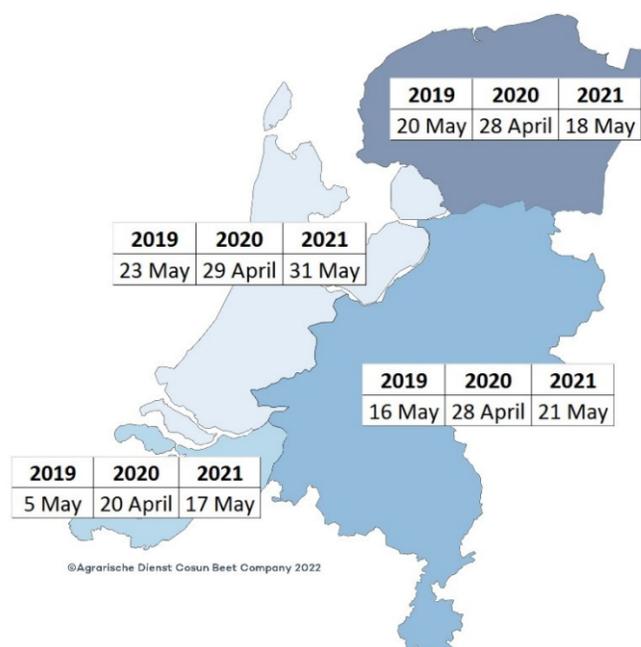


Fig. 3 Date of exceeding damage threshold level of green aphids in sugar beet for the different regions (2019 – 2021).

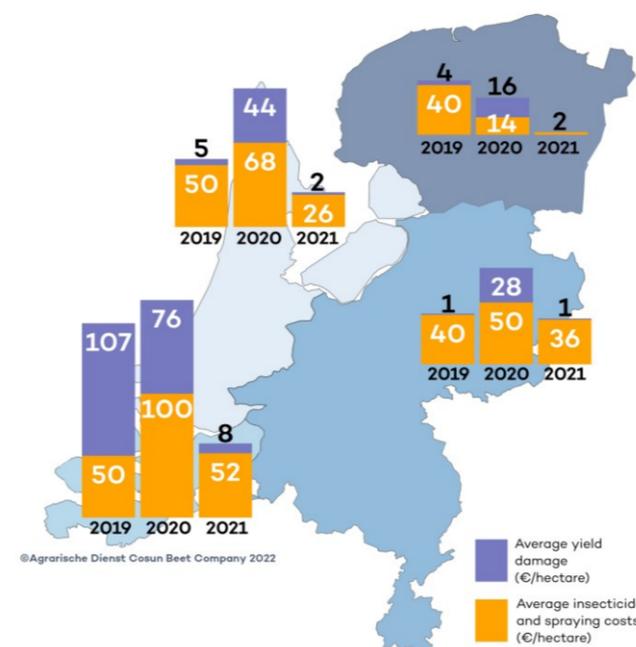


Fig. 4 Financial impact of virus yellows in sugar beet for the different regions (2019 – 2021).

## Conclusions

The aphid warning system, which is a good example of Integrated Pest Management (IPM), has contributed to the just-in-time applications of the limited number of available insecticide sprays to control virus yellows; thereby reducing yield losses.



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