

The effect of the banker plant *Artemisia vulgaris* on aphids and natural enemies in sugar beet

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Introduction

Aphids are vectors of the yellowing viruses in sugar beet. The use of chemical insecticides become more and more limited. Therefore, the use of natural occurring enemies of these aphids becomes more important. It is known for example that ladybird beetles can consume 50-100 aphids/day (Dreistadt & Flint, 1996; Xia *et al.*, 2003). This project (2018-2021) focused on the effect of the banker plant *Artemisia vulgaris* on the number of green peach aphids (*Myzus persicae*) and their natural enemies in sugar beet (Kazatzidis & Külling, 2012) compare with a flower mixture.

Materials & method

In 2021, a field trial was conducted with the banker plant *Artemisia vulgaris* in spraying tracks. Nine plots at three different distances (1, 10, 30 meters) from the spraying track with artemisia and nine plots at three different distances (1, 10, 30 meters) from the spraying track with a mixture of flowers (figure 2). The artemisia plants were infected with the artemisia aphid (*Macrosiphoniella artemisiae*). These aphids could serve as alternative food for natural enemies. Aphids and natural enemies were counted at different moments in time.

Results

The first natural enemies were observed in the field at the end of May (figure 3), whereas the green peach aphids were present in the beginning of May (not published). There was no significant difference in numbers of aphids or natural enemies between the mixture of flowers and *A. vulgaris*. The number of green peach aphids was lower at 10 meter from the spraying track compared to 1 meter (figure 4).



Figure 1. Spraying track with a mixture of flowers at a field in Ovezande (NL, 2021).

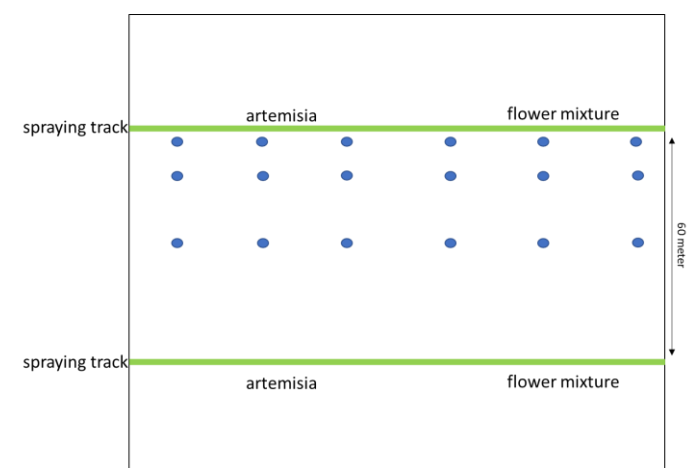


Figure 2. Overview of the field in Ovezande (NL, 2021). The plots are indicated by a blue circle. The green lines are the spraying tracks. The distance of the plots to the spraying tracks was 1, 10 or 30 meters.

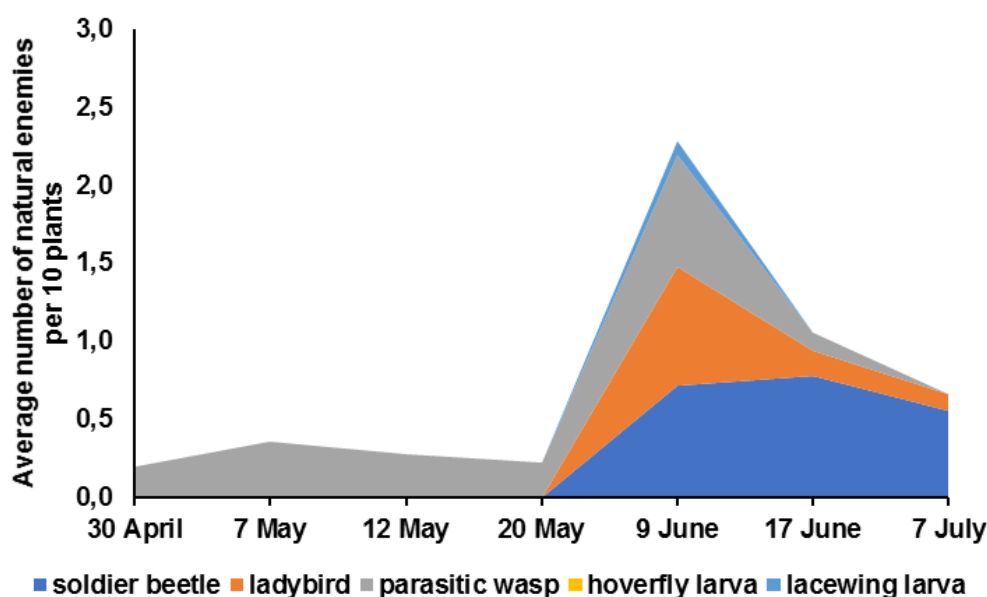


Figure 3. The distribution of the average number of natural enemies per 10 plants in all the plots (Ovezande, NL, 2021).

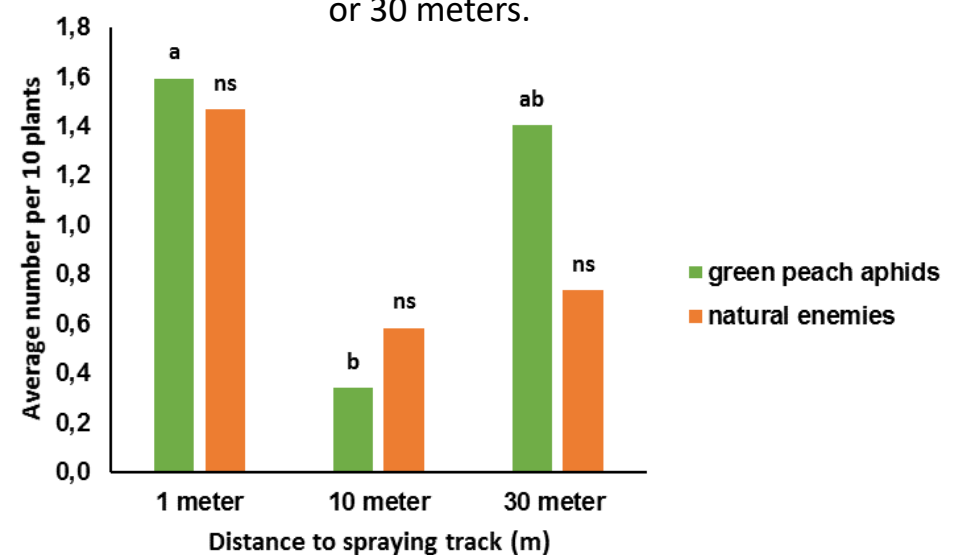


Figure 4. The average number of green peach aphids and natural enemies per 10 plants at 1, 10 and 30 meters from the spraying track with and without artemisia (Ovezande, NL, 2021).

Conclusion

- For good biological control of aphids, it is important that natural enemies are present and effective early in the season. However, natural enemies were not present prior to the pest aphids.
- Despite optimal development of the bankerplants and introduction of *Artemisia* aphids as alternative food, *Artemisia* performed similar to a mixture of flowers.
- Combination of ecological measures may be considered.

References

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