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Boosting Innovation in ORGANIC FRUIT production through stronger networks

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PRACTICE ABSTRACT

Indirect regulation of aphids in organic stone fruit orchards with natural enemies

Problem

Aphids are one of the main pests in modern organic stone fruit production, especially when covered with rain-protection roofs and closed with insect nets. Natural enemies are often present in too low quantities and/or come too late when the damage is already severe.

Solution

Promote the natural regulation of the black cherry aphid by releasing natural enemies in the season and providing habitat and food sources to enable population growth (e.g., via flower strips).

Applicability box

Theme

Crop production, Horticulture, Temperate fruits

Keywords

Temperate fruits, Stone fruits, Plant protection, Aphids, Functional biodiversity

Context

Stone fruit orchards (covered)

Application time

Spring and summer

Benefits

Aphids can be regulated without or with fewer plant protection applications, thanks to natural enemies.

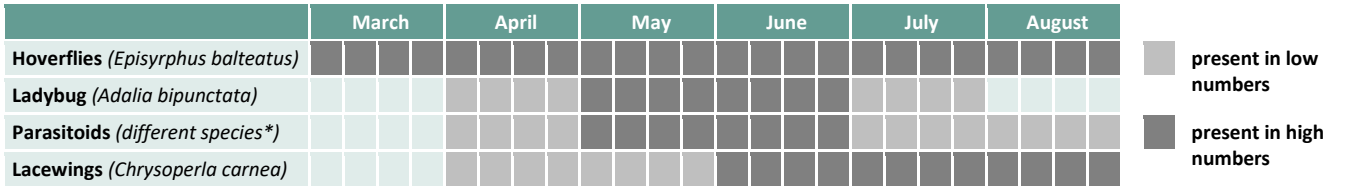
Practical recommendations

Indirect regulation with natural enemies

The following natural enemies are effective in regulating the stone fruit aphids, e.g., the black cherry aphid:

- Hoverflies: Larvae feed on aphids (Picture 2). Adults need to feed on nectar and pollen (Picture 4).
- Ladybug: Larvae and adults feed on aphids (Picture 6, 7). Adults of some ladybug species also need pollen.
- Parasitic wasps: Adults lay their eggs within the aphids. The aspect of the parasitised aphid (aphid mummy) is typical for each parasitoid (Pictures 9, 10, 11). Adults feed on nectar.
- Lacewings: Larvae feed on aphids (Picture 14). Adults feed on nectar, pollen, and honeydew (Picture 16).

These natural enemies can be released early in the season (March/April) and/or promoted by implementing flower strips around and within the orchard. The period of these natural enemies' natural occurrence is during the season and are as follows:



* *Aphidius colemani, Aphidius ervi, Aphidius matricariae, Aphelinus abdominalis, Praon volucre, Ephedrus cerasicola*

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Picture 1. Hoverfly egg in a black cherry aphid colony. (Photo: C. Boutry, FiBL)

Picture 2. Hoverfly larvae eating black cherry aphids. (Photo: C. Boutry, FiBL)

Picture 3. Hoverfly pupae. (Photo: C. Boutry, FiBL)

Picture 4. Hoverfly adult feeding on flower nectar. (Photo : J. Kambor, FiBL)

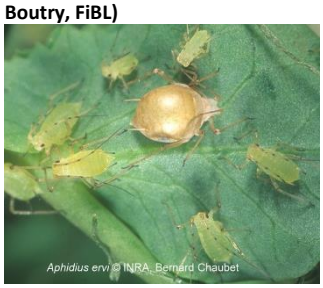
Picture 5. Ladybug eggs in a black cherry aphid colony. (Photo: C. Boutry, FiBL)

Picture 6. Ladybug larvae eating black cherry aphids. (Photo: C. Boutry, FiBL)

Picture 7. Ladybug pupae. (Photo: C. Boutry, FiBL)

Picture 8. Ladybug adult and eggs (Photo: C. Boutry, FiBL)

Picture 9. *Aphidius colemani*. (Photo: R. Bernard, FiBL)



Picture 10. *Aphidius ervi* mummy. (Photo: B. Chaubet, FiBL)

Picture 11. *Aphelinus abdominals* mummy. (Photo: Biological services, Loxton, Australia)

Picture 12. *Praon volucre* mummy. (Photo: B. Chaubet, INRA)

Picture 13. Lacewing egg. (Photo: C. Boutry, FiBL)

Picture 14. Lacewing larvae. (Photo: C. Boutry, FiBL)

Picture 15. Lacewing pupae. (Photo: C. Boutry, FiBL)

Picture 16. Lacewing adult. (Photo: J. Kambor, FiBL)

Further information

Further reading

- M. Friedli, A. Häseli, P. Stefani, F. Baumgartner, C. Boutry, C. Daniel, F. Cahenzli. Different approaches to regulate the black cherry aphid (Myzus cerasi) in organic table cherry production.
- L. Pfiffner, L. Jamar, F. Cahenzli, M. Korsgaard, W. Swiergiel, L. Sigsgaard, 2018. Perennial flower strips – a tool for improving pest control in fruit orchards. pp. 1-16. (Available in many languages)

Weblinks

- Check the Organic Farm Knowledge platform for more practical recommendations.
- Boutry, C., Friedli, M. 2022. Practice abstract Direct regulation of the black cherry aphid in organic table cherry production. FiBL. BIOFRUITNET.

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