BIOFRUITNET
Boosting Innovation in ORGANIC FRUIT production through stronger networks

CIHEAM BARI

PRACTICE ABSTRACT

Control of *Aphis gossypii* in organic citrus orchards

Problem

The aphid *Aphis gossypii* is an efficient and common vector of the *Citrus tristeza virus* (CTV). To protect European citrus from CTV, aphid control is mandatory.

Solution

Beneficial insects and biopesticides are eco-friendly control approaches. Depending on the strategy, the synergy between them may result in effective aphid control.

Benefits

Beneficial insects and biopesticides are safe for the environment. Pests do not develop resistance, and higher yields may compensate for the increased costs.

Practical recommendations

- Effective beneficial insects include the parasitoid *Aphidius colemani* and larvae/adults of the predatory coccinellid, *Coccinella septempunctata* (Picture 1 A and B).
- Low-input management supports the presence of other beneficial insects, such as hoverflies and lacewings.
- Focus on controlling ants to support the establishment of beneficial insects and reduce the movement of aphids within the crop and from surrounding habitats.

Applicability box

Theme

Crop production, Environment and society

Keywords

Crop production, Pest control, Biological control, Citrus

Context

Global, Mediterranean basin

Application time

During the cropping season and when the infestation is detected on-site

Required time

From two weeks to two months, depending on the strategy

Period of impact

Less than one year

Equipment

Depends on the strategy

Best in

Low-input management cropping systems

Picture 1: (A) Biocontrol agents effective against aphids; (B) the parasitoid *A. colemani*, and below: an adult ladybug; (C) Entomopathogenic fungus kills aphids. Photos: insectosutiles.es, mygarden.com and Shutterstock, respectively.

- Biopesticides active against aphids are fungal pathogens (Picture 1C), such as *Verticillium lecanii* (Zimmerman), *Bauveria bessiana* (Bals.-Criv.) and *Paecilomyces fumosoroseus* (Wize). Fungi are harmless for beneficial insects and can be used in conjunction, enhancing control efficiency.
- Release beneficial insects and fungal pathogens several times within the growing season, especially in spring and early summer if infestation rates are high.
- Consider that fungal pathogens are more effective when pests are subjected to stress. Higher control rates are expected by applying the pathogens together with low dosages of biopesticides.

- Abamectin and Azadirachtin are efficient biopesticides but could have negative effects on beneficial insects if simultaneously used. Therefore, release beneficial insects 7-10 days after treatment with these biopesticides.

Further information

Further reading

- Flint, M. L., Dreistadt, S. H. 1998. Natural enemies handbook: the illustrated guide to biological pest control. Vol. 3386. Univ of California Press.
- 2021. Bio-Insecticide - Beauveria Bassiana and its Use in Agriculture. Medha Hedge.
- 2021. Biopesticides in Sustainable Agriculture: A Critical Sustainable Development Driver Governed by Green Chemistry Principles. Fenibo EO, Ijoma GN and Matambo T.

Weblinks

- Aphids, Biobest Group NV
- Check the Organic Farm Knowledge platform for more practical recommendations.

About this practice abstract

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