

# Biological pests control in commercial apple plantations

## Summary

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The project consisted of applying a global pest defense strategy based on biological control, on two commercial plantations of apple trees protected above with hail protection nets, and laterally by anti-insect netting. The actions carried out are mainly aimed at the biological control of aphids, in particular the gray poppy (*Disaphys plattaginea*), green poppy (*Aphis pomi*) and Ilugus poppy (*Eriosoma lanigerum*).

## Objectives

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The main objective of the project is to test polyethylene netting for the biological control of pests in apple trees. The secondary objectives are to promote the use of alternative methods to phytosanitary products, reduce their application and the problems derived from the presence of residues fruits, restore, preserve and improve biodiversity, modernize fruit farms by prioritizing low environmental impact methods, and foster cooperation for innovation between the production and research sector.

## Description of project activities

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The actions planned in the project consist of adopting the necessary measures to facilitate the biological control of the objective pests: Aphids and *Pseudococcus viburni*. The passive protection of plantations with polyethylene netting, treatments in the fall to difficult the return of grey aphid adults to the plantation, installation of refuges for auxiliaries and releases of predators from biofactories.

## Final results and practical recommendations

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Population dynamics of auxiliary insects in commercial apple tree plantations protected with with hail protection nets above and laterally by anti-insect netting has been different between farms and years. The release of predators did not work to control grey aphids in the first year. Agronomic practices in the fall of 2016 along with the release of parasitoids in 2017 has reduced the wintering of this insect and has facilitated its biological control in one of the two plantations.

Some of the common pests (carpocapsa, grafolita and pandemic) have been active in protected plantations and preventative and / or control measures have been taken such as sexual confusion, mass capture and reinforcement treatments, but have not caused damages to the production. The growth of some secondary plagues has been appreciated (poll of San José, rodents of the skin).

### Practical recommendations

The use of total coverage netting reduces the dependence on insecticides. The control of the vigor of the trees is very important to reduce the sensitivity of the crop to aphids. We need to integrate agronomic and biological methods to achieve effective biological control of the potentially most harmful species of aphids in apple trees. It is necessary to find out which other biological products can be used for the control of *P. viburni*.

## Conclusions

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In plantations protected with polyethylene netting, the exclusive release of auxiliary fauna has not been

sufficient to achieve the biological control of the target species. With the integration of agronomic practices, the results have been improved and biological control of aphids has been achieved in one of the plantations. The control of other pests (corc, fly) has been satisfactory. Biological products for the control of *P. viburni* have not been effective. In protected plantations the number of insecticides can be significantly reduced.

### Operational Group Leader

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Tipologia d'entitat:

**Empresa agrària**

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### Operational Group Coordinator

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### Other Operational Group members (beneficiaries of aid)

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Entitat: **FUNDACIÓ MAS BADIA**

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### Keyword-category

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Agricultural production system

Farming practice

Pest / disease control

### Territorial scope

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#### **Province**

Tarragona

Lleida

Girona

Barcelona

#### **County**

Urgell

Selva

Segrià

Pla d'Urgell

Noguera

Baix Llobregat

Baix Empordà

Baix Camp

Alt Empordà

### Project dissemination *(publications, seminars, multimedia...)*

Reunions tècniques, Jornades tècniques d'IRTA-Mas Badia. III Jornades de Tècnics d'ADVs de Catalunya, 22/11/2016. Jornada DARP, Barcelona, 21/06/2017. IV Jornada interactiva de protecció vegetal, IRTA, 19/09/2017.

## Pàgina web del projecte

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## Other project information

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Visites: 8/03/2016 Grup de Fructicultors de Giropoma Costa Brava (26 persones), 13/09/2016 Consell de Giropoma, (11 persones)

## Projecte period

## Approved budget

Starting date (month-year): Novembre 2015	<b>Total Budget:</b>	<b>173.116,15 €</b>
End date (month-year): Setembre 2017	<i>Funding source DARP:</i>	71.209,63 €
Project status: <i>Finalised</i>	<i>Funding source UE:</i>	53.719,55 €
	<i>Own funds:</i>	48.186,97 €

## With the support of:

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*Basic regulation: Ordre ARP/258/2015, de 17 d'agost, per la qual s'aproven les bases reguladores dels ajuts a la cooperació per a la innovació a través del foment de la creació de grups operatius de l'Associació Europea per a la Innovació en matèria de productivitat i sostenibilitat agrícoles i la realització de projectes pilot innovadors per part d'aquests grups, i es convoquen els corresponents a 2015.*

*Id. projecte: 35 2015*