

# Alternative to traditional postharvest fungicide treatments applied in apple and pear production

## Summary

In Catalonia, the fruit sector represents 15.5% of the agriculture production whose pear and apple are important. During the cold storage period can appear some alterations evaluated between 4-6% from the total fruit stored, the 50% of them are caused by fungi. Nowadays, the most used method to control those postharvest disease is the application of chemical fungicides after harvest using a drencher. This application increase fruit residues, complicates the fruit management in the packinghouse and creates a residual water management problem. The present project study some alternatives to control this postharvest diseases

## Objectives

The main aim of this project is searching alternatives for fungicide treatments in postharvest. In particular, (i) establish the efficiency of different strategies of chemical and biological fungicides applied on field in alternative of the postharvest treatments, (ii) development of methodologies to improve the prophylaxis on the packinghouses and (iii) analyse the potential of different treatments to reduce and/or remove the residues from the fruit.

## Description of project activities

The actions, carried out were related to the specific objectives:

1. Evaluate the efficacy of different strategies of chemical and/or biological fungicides applied in preharvest, and analyse of fruit pesticide residues.
2. Assess the efficacy of disinfectant products for environment, surfaces and containers of the packinghouses, and analyse of fruit residues in contact with studied products.
3. Assess of efficacy of the treatments for reducing and/or removing fruit residues.
4. Develop the guideline of good practices for both species and varieties.
5. Organize courses and conferences for technical staff.

## Final results and practical recommendations

Postharvest rot control strategies evaluated for different apple and pear varieties in two different production zones have shown that; (1) Some of the fungicidal products used in pre-harvest allow the same level of control as the postharvest applications made by shower and have a lower impact on fruit residues. (2) The most effective fungicides were Boscalida + Piraclostrobin and Fludioxonil applied near the harvest. Pre-harvest studied biological products have shown little or no efficacy to control postharvest rot. (3) For early apple varieties (Gala, Golden and Red Delicious) and other varieties in short conservation, it is possible don't do any treatment with fungicides (pre and postharvest), if harvest management is appropriate and the cleaning and disinfection practices of the cameras and the boxes. (4) In general, a certain level of efficacy has been observed in all disinfectants studied. In the case of the environment, those that proved to be most effective are Aero Green DT and Dioxpure. In the study of packaging, products with more uniform results in terms of effectiveness in the different materials and types of fungi were the FruitEpro and the Dybac NT. (5) The efficacy of eliminating fruit residues is low with running water or by adding disinfectants, especially for those fungicides that adhere to apple waxes.

(6) A good practice guide has been developed for the management of postharvest for both species and varieties.

## Conclusions

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The following conclusions derive from the project:

1. The fungicides Boscalida + Piraclostrobin, Fludioxonil and Fluopiram + Tebuconazole applied at pre-harvest are just as effective as post-harvest treatments in apple and pear
2. The varieties of early and short preservation apples do not require these treatments, provided that the appropriate cleaning and disinfection conditions
3. Cleaning is basic and the most effective and uniform disinfectant products have been Aero Green DT and Dioxpure for environments and FruitEpro and Dybac NT for packaging.
4. Washing with water alone or with the addition of disinfectants does not eliminate the residues in fruits, but reduces its quantity

## Operational Group Leader

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Tipologia d'entitat:

**Agrupació o associació de productors agraris**

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## Other Operational Group members (beneficiaries of aid)

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## Keyword-category

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Agricultural production system

Pest / disease control

## Territorial scope

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### Province

Lleida

Girona

Barcelona

### County

Urgell

Segrià

Segarra

Pla d'Urgell

Baix Llobregat

Baix Empordà

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

- 3 Presentacions en Jornades tècniques de fruita
- 4 Reunions amb els membres del Grup Operatiu a Lleida i a Girona

**Pàgina web del projecte****Other project information****Projecte period****Approved budget**

Starting date (month-year): Novembre 2015	<b>Total Budget:</b>	<b>144.098,89 €</b>
End date (month-year): Setembre 2017	<i>Funding source DARP:</i>	59.273,67 €
Project status: <i>Finalised</i>	<i>Funding source UE:</i>	44.715,22 €
	<i>Own funds:</i>	40.110,00 €

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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: 18 2015*