



## Innovative design and management to boost functional biodiversity of organic orchards

<http://coreorganicplus.org/research-projects/ecoorchard/>



### Aim of the project:

To assess how far functional biodiversity can  
reduce pest damage and pesticide use in organic  
apple orchards.



## Introduction

The aim of the project is to assess how far functional agro-biodiversity (FAB) can reduce pest damage and pesticide use in organic apple orchards.

The main expected outcomes of this project are to: develop innovative and feasible tools to design and manage organic orchards. The focus is given on the creation and management of flower strips in the alley ways. This increase of Functional Biodiversity will consolidate the resilience of the orchards.

Methods will be developed in close collaboration with growers which will increase a successful on-farm implementation.

The project investigations will take place in nine different countries in Europe and the outcome will be relevant for growers in the whole EU region.

## Background

Organic fruit growers often suffer economic losses due to insect damages. The available natural pest control products are not always effective; and most important: many organic fruit growers would prefer not to use any pesticide at all.

Growing flowers in order to gain more natural enemies, and hence less pests is a technique called Functional Agro-Biodiversity (FAB). More knowledge is necessary in order to use FAB successfully in orchards.

**Apple trees, organic orchard**

## Main activities

- ▶ To identify promising techniques, tools and monitoring protocols to improve management of functional biodiversity, which consistently enhance the performance of natural enemies, reduce pest pressure and are adapted for farmers' implementation.
- ▶ To assess promising techniques, namely specific flora introduction to provide and optimize supplementary alternative food/prey for natural enemies, and specifically adapted habitat management.
- ▶ To create a European-wide network of stakeholders for collecting, sharing and improving scientific and practical knowledge and experience in functional biodiversity management for resilient organic orchards.
- ▶ To learn from a participatory approach about potential constraints that may hamper the adoption of innovative tools and how to solve these constraints by iterative re-evaluation.





## Expected results and impacts

The organic fruit sector will obtain a European-wide stakeholder platform which delivers scientifically and technically proved information on how to establish and manage functional agro-biodiversity.

Management of existing and design of future orchards will be supported by simple protocols for the establishment and monitoring of functional biodiversity elements that are suitable for wide adoption in different European countries.

A novel, functional biodiversity system that can be adopted into existing orchards will be tested and validated for both,  
(i) its effect on pest control and pesticide reduction and  
(ii) on its practical feasibility across 6 European countries

Application of FAB measures will make orchards more robust, reducing the need and input of direct control, and increase the overall on-farm biodiversity for the benefit of growers, consumers and the environment on a wide European scale.



**Codling moth in apple**

## Expected societal benefits of the project

In order to achieve the environmental goals of the EU and to meet the objective of food security, the development of low impact strategies for pest management with a long-term sustainability is essential.

Overall, functional biodiversity contributes 1) to increase the economic resilience of apple production for growers by reducing pest losses and promoting clean and environmentally friendly products (such as safe, unpeeled fruits), 2) to improve the community welfare through a pesticide-free environment and the promotion of biodiversity, and 3) to provide the market with a more stable production of high quality organic apples.

In addition, the reinforcement of local plant diversity (within and around orchards) usually involves a significant positive change to the landscape. It can also favour other wildlife such as birds and it produces increased aesthetic value, which in turn can promote ecotourism in certain regions.



**The lacewing adult feeds on nectar and pollen from flowers. Its larvae are voracious aphid predators**



**Syrphids are precious beneficials as their larvae eat high quantities of aphids. They require specific pollens and nectars to establish.**

## Coordinator

Lene Sigsgaard, UCPH, Denmark

## Partners

University of Copenhagen, Denmark  
InHort, Poland  
FiBL, Switzerland  
INRA, France  
GRAB, France  
Kühn-Institut, Germany  
SLU, Sweden  
VZ-Laimburg, Italy  
Latvian Plant Protection Research Centre, Latvia  
CRA-W, Belgium  
EcoAdvice, Denmark

## How to reach target groups

The EcoOrchard will be building up a European network of innovative stakeholders and a web-based stakeholder platform. Workshops will be held with stakeholder groups during the project.

The project will collaborate with farmers and extension services to ensure that methods meet end-users needs and constraints. In addition, with the dissemination of results in relevant journals and other communications channels the target group will be met.



**Ladybird larva in an aphid colony on apple**

## Further information

This project is funded via the ERA-net CORE Organic Plus, which is a network of 20 countries on initiating transnational research projects in the area of organic food and farming systems. In 2014, CORE Organic Plus selected EcoOrchard and 10 other projects.

Read more at the CORE Organic website: <http://www.coreorganic.org/> and find publications from the project at <http://coreorganicplus.org/research-projects/ecoorchard/> and at: <http://orgprints.org/view/projects/ecoorchard.html>

