

Innovative design and management to boost functional biodiversity of organic orchards

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Abstract

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). Ongoing research in this CORE Organic Plus project aims to collect existing knowledge and generate new knowledge in order to use FAB successfully in orchards.

Keywords: Functional biodiversity, rosy apple aphid, biological control, beneficials

Introduction

The aim of the project is to assess how far functional agrobiodiversity (FAB) can reduce pest damage and pesticide use in organic apple orchards. The main expected outcomes of this project are to develop innovative and practical 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 FAB will consolidate the resilience of the orchards. Methods will be developed in close collaboration with growers which will increase the chance for a successful on-farm implementation. The project investigations will take place in nine different EU countries in Europe (Table 1) and the outcome will be relevant for growers in the whole EU region.

Material and Methods

The main activities of the project are: 1) To identify promising techniques, tools and monitoring protocols to improve management of FAB, which consistently enhance the performance of natural enemies, reduce pest pressure and are adapted for farmers' implementation. 2) To assess promising techniques, namely specific flora introduction to provide and optimize supplementary alternative food/ prey for natural enemies, and specifically adapted habitat management. 3) To create a European-wide network of stakeholders for collecting, sharing and improving scientific and practical knowledge and experience in FAB management for resilient organic orchards. 4) 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 reevaluation (Figure 1).

Results and Discussion

The first year of the project has passed and a European-wide network of innovative stakeholders and a web-based stakeholder platform "EBIO-Network" is almost ready to launch which delivers scientifically and technically proven information on how to establish and manage functional agrobiodiversity in organic orchards.

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In 2015, simple methods and protocols to assess FAB were identified with growers for further testing in 2016 by them. Management of existing and design of future orchards will be supported by simple protocols for the establishment and monitoring of FAB elements. In 2015, we established experimental sites in commercial organic orchards and on experimental stations to assess a novel FAB system that can be adopted into existing orchards. This will be validated for both (i) its effect on pest control and reduction of crop loss and (ii) on its practical feasibility across six European countries. The project will collaborate with farmers and extension services to ensure that methods meet end-users needs and constraints. Therefore, comprehensive interviews have been made with growers and advisers in ten countries and in 2016 several workshops will be held with different stakeholder groups to discuss the results.

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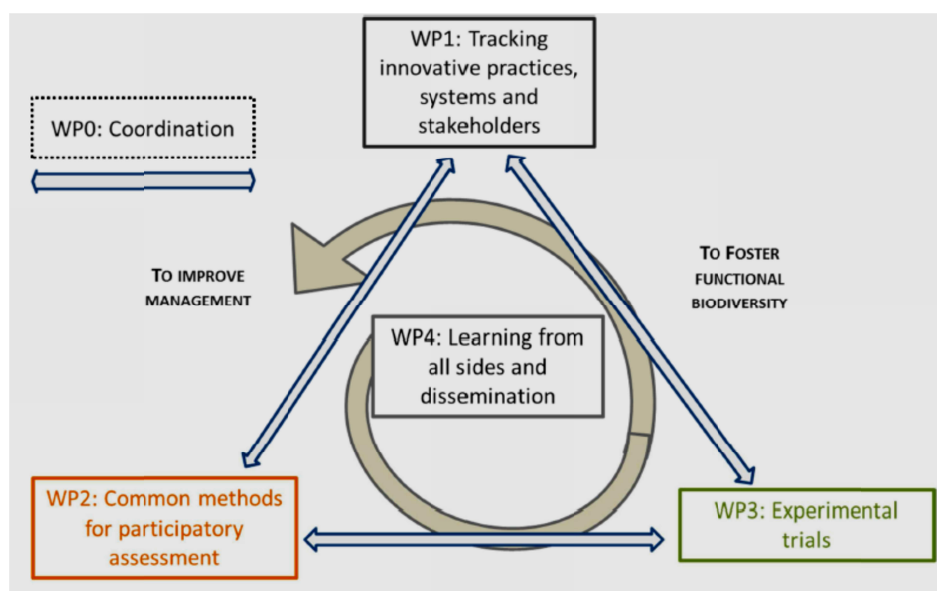


Figure 1: Coordination and interaction between workpackages of the EcoOrchard project.

Table 1: Partners in the EcoOrchard project.

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

Citation of the full publication

The citation of the full publications from the EcoOrchard project will be found on organic eprint as soon as available.