Short description of the project

Project title: Innovative design and management to boost functional biodiversity of organic orchards
Project short name: ECOORCHARD

Project summary:

Organic tree fruit quality and yield are often reduced (10 - >80%) because of insect and pest damage. No effective control measures exist for many of these pests. This increases economic risk and can reduce growers' motivation to develop organic production. At the same time, there is a large potential for organic apple production as consumers become increasingly interested in organic food. The aim of the project is to reduce pest damage and pesticide use by increasing on farm functional (agro)-biodiversity (FAB). The two main expected outcomes of ECOORCHARD are to a) identify common assessment methods and compare these to new approaches to increase FAB and b) recommend a method suitable for monitoring FAB on farms and in scientific trials. Methods will be developed in close collaboration with growers, which will increase 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.

Aim, objectives and hypotheses

Aim: To reduce pest damage and pesticide use by increasing on farm functional (agro)-biodiversity (FAB)

Objectives:
1. 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.
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 functional biodiversity 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 re-evaluation.

Hypothesis:
We hypothesize that the resilience of organic orchards versus pests can be improved through the implementation of specific methods and tools for increasing functional biodiversity.
Further we hypothesize that a) Methods and tools will be applicable for commercial organic fruit growers in a wide range of economic and ecological situations. b) An active network of committed fruit growers, from technicians but also from science side can be created which takes care of the sustainable dissemination and implementation.

Expected results and their impact/application

The organic fruit sector will obtain a European-wide stakeholder platform which delivers scientifically and technically proved information on how to establish and manage more resilient orchards. 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, (a) its effect on pest control and pesticide reduction and (b) on its practical feasibility across 6 European countries. On a long term scale 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.

Coordinator, partners and countries involved

Coordinator: Lene Sigsgaard, *University of Copenhagen*, **Denmark**

Partners:

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