ECOORCHARD - INNOVATIVE DESIGN AND MANAGEMENT TO BOOST FUNCTIONAL BIODIVERSITY OF ORGANIC ORCHARDS

Functional agrobiodiversity (FAB) uses orchard design and management to gain more natural enemies, making orchards more robust to pests. This CORE Organic Plus project aims to collect existing knowledge and generate new knowledge in order to use FAB successfully in orchards.

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Ladybird larva in an aphid colony

The aim of EcoOrchard 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 placed on the creation and management of flower strips in the alleyways.

The resulting increase of FAB will consolidate the resilience of orchards. Methods will be developed in close collaboration with growers, thus improving the prospects for successful on-farm implementation.

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

Photo 1: Flower strip between rows of apple trees. Photo: Lukas Pfiffner, FiBL
Photo 2: Spider in organic apple orchard. Photo: Lene Sigsgaard, UCPH

Identifying promising techniques and tools

In 2015, simple methods and protocols to assess FAB were identified with growers for further testing by them in 2016. Sticking traps, visual observation of aphid nests, sentinel preys or cardboard traps have been used and compared in orchards.

Trials conducted in 2015 in Latvia, Denmark and France found visual observation and sentinel preys to be the most interesting techniques, when considering both the information produced and the time required to gather this information. A field demonstration has been documented on video by INRA team, in order to explain

how to use these methods.

In France, these simplified protocols will be compared to more stringent ones in order to validate their scientific meaning. Farmers will also be asked for feedback after field use of the methods. The aim is to improve management of FAB which consistently enhances the performance of natural enemies, reduces pest pressure and is adapted to farmers' implementation.

Perennial flower strips to boost natural pest control

In 2015, we established experimental sites in commercial organic orchards and on experimental stations to assess a novel FAB system that can be adopted in existing orchards. This will be validated for both (i) its effect on pest control and reduction of crop loss and (ii) its practical feasibility across six European countries. Two different seed mixtures and the proper management of the strips will be tested in field trials. The main goal is to maintain a high-quality food resource over years, benefitting natural enemies within the context of intensive farm practices in orchards. The project will collaborate with farmers and extension services to ensure that techniques and measures promoting FAB match end-users' needs and constraints.

Stakeholder network for knowledge exchange

A Europe-wide network of innovative stakeholders and a web-based stakeholder platform called EBIO Network is almost ready to launch. This will deliver scientifically and technically proven information on how to establish and manage functional agrobiodiversity in organic orchards. To reach this goal, comprehensive literature reviews are ongoing as well as the exploration of practical knowledge by conducting interviews with stakeholders and collecting practical information on how to implement FAB in the different participating European countries.

Learning from a participatory approach

Comprehensive interviews have been conducted with growers and advisers in ten countries. A workshop on perception of FAB in research and practice was organized during the 17th Ecofruit Conference in February 2016. Participants were invited to discuss the advantages and drawbacks of important FAB techniques (flower strips, hedgerows, animal introduction, wild bee houses, interrow mowing) which had been mentioned in the European interview surveys by farmers and advisors.

Besides, in 2016, several workshops will be held with different stakeholder groups to exchange on how functional biodiversity works for the growers, and on how growers can observe it to adapt their practices. During the workshops, farmers decide on which monitoring method seems suitable for them. In 2017 they will exchange again on their experience, discussing how manageable the monitoring method is and which FAB service they were able to assess. This process of learning from a participatory approach makes it possible to identify constraints that may hamper the adoption of innovative tools and to solve these constraints by iterative re-evaluation.

EcoOrchard team photo 2015. Photo: Baiba Ralle, LAAPC, Latvia

More info about the project

Visit EcoOrchard's own **project website** or the project website on **CORE CORE Organic Plus**

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Research news

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