



Innovative orchard management enhances soil fertility, biodiversity and economic sustainability

DOMINO



Aim of the project:

Improving the long-term sustainability and the ecological foot print of intensive organic fruit orchards.

Main activities:

- ▶ Development of new strategies to manage the space between fruit trees by increasing the biodiversity of the orchards (use of living mulches)
- ▶ Optimization of fertilisation strategies using regionally available recycling fertilisers and leguminous intercrops to improve nutrient balances and ecosystem services
- ▶ Understanding and managing the soil fertility to optimize nutrient use of fruit trees, increasing tolerance to diseases
- ▶ Evaluating partly closed cover systems to support non-chemical pests and diseases control
- ▶ Assessing potential long-term positive consequences on the environment of the mixed production systems
- ▶ Calculating economic impact of the proposed strategies on organic fruit growing systems

Background

Organic fruits production systems are characterized by a ‘conventionalization’ of the management methods that are frequently reducing biodiversity and depend largely on external inputs to maintain soil fertility and assure plant protection.

There is thus a need to introduce new strategies using multifunctional cover crops which can improve also the economic return of orchards.

Introduction

DOMINO aims at improving the long-term sustainability and the ecological footprint of intensive organic fruit orchards.

It focuses on the interaction of fruit trees with different wild species, organic residues and microbioma and it intends to break the paradigm of monoculture in organic fruit growing, enhancing the ecosystem services.

The innovation is due to the development of new intercropping strategies with different living mulches and legumes and new organic fertilizers. Crop protection will be enhanced by using overhead covering.

The activities are planned in different major fruit production regions, located in continental and mediterranean countries.



Societal and long term benefits

The proposed mixed production systems implicate new methods to tackle current critical issues of organic fruit growers: economic sustainability of the crop, certification-related issues and ecosystem services. The expected wide impact of the project derives also from its cross-disciplinary approach, with a broader applicability to other production systems.

The contribution to make perennial fruit growing more compatible with organic principles could simplify conversion to organic farming, increasing the potential for further growth of the sector and reducing the risk for negative environmental impacts.



How to reach target groups

Classic dissemination tools (i.e. website, brochures, workshops) will be used, as well as innovative tools (i.e. interactive open days, internet channels, social media and educational videos) to reach and work together with stakeholders (farmers, advisors and their associations).



Coordinator

Davide Neri,

Agricultural, Food and Environmental Sciences,
Università Politecnica delle Marche, Italy

E-mail: d.neri@univpm.it

Partners

- Hristina Kutinkova, Fruit Growing Institute, Bulgaria
- Markus Kelderer, Laimburg Research Centre, Italy
- Eligjo Malusa, Research Institute of Horticulture, Poland
- Marie Lisa Brachet, Centre Technique Interprofessionnel Fruits Légumes, France
- Michael Friedli, Research Institute of Organic Agriculture – FiBL, Switzerland
- Sabine Zikeli, Hohenheim University, Germany
- Werner Castiglione, BioSudtiro, Italy
- Christian Gamper, Vi.P Bio Vinschgau, Italy
- Reinhard Verdorfer, Bioland Südtirol, Italy
- Ulrich Kiem, SBR organic, Italy
- Vincenzo Vizioli, AIAB Associazione Italiana Agricoltura Biologica, Italy
- Christoph Höfflin, Fördergemeinschaft Ökologischer Obstbau e.V., Germany

Further information

This transnational project is funded via the ERA-net CORE Organic Cofund based on funds from participating countries and funding from the European Union.

CORE Organic Cofund is a collaboration between 26 partners in 19 countries/regions on initiating transnational research projects in the area of organic food and farming. CORE Organic Cofund has initiated 12 research projects. Read more at the CORE Organic Cofund website: <http://projects.au.dk/coreorganiccofund/>

Photo legend

1. Experimental apple orchard with tillage in the inter row. Extended and repeated tillage may reduce soil organic content and biodiversity.
2. Apple blossom is a key period for achieving high production: biodiversity can improve pollination. Photo: Karin Ullvén
3. Checking pheromone traps at the experimental orchard to improve insect control.
4. To reduce the competition during the first two years, in apple orchard under row close to tree collar, it is commonly used a very superficial and limited tillage.
5. Counting peas after dense seeding in organic apple orchard. Photo: Sascha Buchleither
- 6+7. Wild strawberry living mulching to control weed growth under grapevine trees in the winter and in the spring.
8. Peas tilled with a Ladurner in an organic apple orchard. Photo: Sascha Buchleither

