



Biocontrol and pollination

-Targeted precision biocontrol and pollination enhancement in organic cropping systems

BICOPOLL

Aim of the project: To get a high yield of healthy, beautiful strawberries by effective biocontrol and pollinators.





Introduction

BICOPOLL will improve strawberry crop quality and marketable yield by developing simple, effective, targeted biological control of the most important berry disease – the grey mould – and by improving crop pollination by bees. Grey mould destroys 10-20 % of conventional strawberry crop despite heavy spraying of fungicides – organic growers have no means of protection, and can lose up to 100% of the crop. Bees can be used to improve crop pollination, and to disseminate effective biocontrol organisms onto it, everywhere in Europe, and elsewhere.

Background

Strawberry is an extremely important crop in Europe, with a very good market potential. It suffers heavily from the grey mould disease, against which organic growers have no means of protection. Biological control of the disease can be achieved by bees, which are used to carry effective – already existing - biological control agents directly onto strawberry flowers. Spraying the biocontrol agents will not protect the berries effectively, because it does not provide continuous protection (unlike bees, which visit the flowers several times every day).

Benefits of the project

- Improved yield quantity and stability: 25% to 100% increases have been obtained as the combined effect of disease biocontrol and improved pollination;
- Improved quality of products: heavier, more full berries as a result of improved pollination;
- 3. Improved shelf-life for products;
- Improved farm economy: higher yield and earlier ripening as a result from the dual function of effective biocontrol of the disease and more complete pollination;
- Improved ecological and economic sustainability of organic berry and fruit production



Expected results

Adopting the entomovector technology developed in BICOPOLL will make organic production more profitable, contribute to improved resource use and efficiency in production, and enhance local biodiversity unlike most other plant protection systems. It will function as an example of innovative, sustainable method of crop protection and crop enhancement that can be used by other scientists for improving similar crop systems, and for educational purposes. This will also be an important case to policy-makers as an example of functioning ecological cropping systems.

Expected long-term impacts

BICOPOLL is expected to boost organic berry growing, but also to have spill-over impacts on conventional berry growing and other cropping systems, where similar approaches can be developed. It will improve the economic and ecological sustainability of cropping.

Target groups

- Organic berry growers
- Beekeepers
- Plant protection scientists
- Advisory services
- Biocontrol manufacturers
- Policy makers

These are not restricted to partner countries

- the approach is adaptable to all countries.





Main activities

Gap-filling research and workshops on:

- grey mould and its biocontrol agents
- honeybees, bumble bees, and other bees and their behavior, management, and utilization
- safety of the technique to bees, growers, and consumers
- demonstration strawberry fields in each partner country where growers, other scientists, advisors etc can visit;
- presentation of project results at all levels of dissemination
- production of guidance leaflets and handbook





Coordinator

Professor Heikki Hokkanen, University of Helsinki, Finland E-mail: Heikki.hokkanen@helsinki.fi

Partners

Dr. Otto Boecking, Lower Saxony State Institute for Consumer Protection and Food Safety, Germany Professor Marika Mänd, Estonian University of Life Sciences, Estonia Professor Guy Smagghe, Ghent University, Belgium Dr. Jasna Kralj, National Institute of Biology, Slovenia Research Leader, PhD Bettina Maccagnani, Agricultural and Environment Center Association, Italy Professor Cafer Eken, Erzincan Horticultural Research Institute and Ardahan University, Turkey

Related projects



BICOPOLL-NET: http://www.nordforsk.org/en/programs/ nordic-research-network-for-biocontrol-and-pollination-bicopol-net

BeeNOVA: http://www.beenova.org

Project dissemination

- Project internet pages, kept up-to date and attractive in contents and in design: all papers arising from the project, and illustrative power-point presentations on the topic
- Articles in scientific journals (e.g., BioControl, Arthropod-Plant Interactions, Pest management Science);
- Articles in professional magazines (e.g., berry-growers' and beekeepers' magazines), (made available 'open access' via Organic Eprints)
- Presentations in international and national conferences
- Presentations at national professional societies and to interested public
- · Presentations and interviews on public media

How to reach the endusers

- Practical handbooks for professionals (beekeepers, growers): at least one, translated into several languages
- Workshops with stakeholders and end-users of results: one organized specifically by BICOPOLL, additional as special sessions at other workshops and/or professional training events
- Project leaflets in all partner country national languages for dissemination at suitable events
- Organization of popularizing events at each demonstration field site (one in each country), with popular (TV, newspapers) and professional media as well as growers and beekeepers attending, once per year



Further information

This project is funded via the ERA-net CORE Organic II by national funds to each partner. CORE Organic II is a collaboration between 21 countries on initiating transnational research projects in the area of organic food and farming. In 2011, CORE Organic II selected this project and 10 more for funding.

Read more at the CORE Organic II website: http://www.coreorganic2.org/ and in Organic Eprints: http://orgprints.org/view/projects/BICOPOLL.html