

Short description of project funded by CORE Organic II partners in the first call of CORE Organic II

<p>Project short name and title</p> <p>BICOPOLL - Targeted precision biocontrol and pollination enhancement in organic cropping systems</p>
<p>Project summary</p> <p>Organic berry and fruit production suffers heavily from the lack of effective disease and pest management tools, and from inadequate insect pollination at times. As a consequence, the expanding demand on organic berries cannot be filled today. BICOPOLL expects to change this, and to significantly improve the yield and quality of organic fruit and berry production and thus, farm economics. We will use bees to (i) target deliver biological control agents to the flowers of the target crops to provide control of problem diseases (or pests), and to (ii) improve the pollination of organic horticultural crops. BICOPOLL will provide a pan-European case study on protecting organic strawberry from its most important disease, the grey mould. In addition we will improve the efficiency of the entomovector technology via innovative research on bee management, manipulation of bee behavior, components of the cropping system, and on the plant-pathogen-vector-antagonist –system, and will investigate possibilities of expanding the use of the concept into other organic berry and fruit growing systems. This is a highly innovative approach to solving some of the most difficult disease and pest problems in organic berry and fruit production, offering solutions in areas where no solutions as yet exist. The entomovector approach represents the only significant breakthrough in sight for improving plant protection in organic cropping systems, particularly in high-value crops. BICOPOLL brings together for the first time the fragmented research in the area, where small groups have worked on their own. We investigate, exploit, and support the natural ecological functions of biocontrol and pollination, and enhance these via innovative management. The entomovector technology contributes to improved resource use and efficiency in production, and enhances local biodiversity unlike most other plant protection systems. The main target groups of the BICOPOLL project are organic strawberry growers, other organic berry and fruit growers, as well as beekeepers and their organizations, to whom technology and knowledge transfer will be implemented during the project via direct contacts.</p>
<p>Aim, objectives and hypotheses</p> <p>General objective: to significantly improve the yield and quality of organic fruit and berry production via efficient, innovative plant protection and improved pollination, and thus, the economics of organic production</p> <p>Specific objectives:</p> <ul style="list-style-type: none"> ○ to provide a strong, convincing pan-European case study on protecting organic strawberry cultivations from its most important disease, the grey mould, using bee vectored biocontrol and improved pollination ○ to improve the efficiency of the entomovector technology by innovative research on bee management, bee behavior, components of the cropping system, and on the plant-pathogen-vector-antagonist -system ○ to develop reliable, user- and bee-friendly inoculum dispensers and carrier materials ○ to investigate possibilities of expanding the use of the entomovector concept into other organic berry and fruit growing systems

Our main hypothesis is that organic berry and fruit production suffers heavily from the lack of effective disease and pest management tools, as well as from inadequate insect pollination at times, and that these limitations can be overcome via development of targeted precision bio-control and pollination enhancement involving honey bees, bumble bees, and solitary bees.

Expected results and their impact/application

1. Improved yield quantity and stability: 25% to 100% increases have been obtained in pilot studies as the combined effect of disease biocontrol and improved pollination; no extraordinary yield losses have been experienced under any weather/disease pressure conditions (control effect equal or better than that of the best fungicides);
2. Improved quality of products: heavier, more full berries as a result of improved pollination;
3. Improved shelf-life for products: shelf-life of strawberries was significantly prolonged by using bee vectored precision biocontrol of grey mould (data from Finland, 2007);
4. Improved farm economy: higher yield and earlier ripening (data from pilot studies) as a result from the dual function of effective biocontrol of the disease and more complete pollination. This responds for the organic sector to the latest trend in marketing fresh strawberries: in the Netherlands a large company only buys strawberries from farms, which have a contract with a "pollination beekeeper", in order to get premium quality berries;
5. Improved ecological and economic sustainability of organic berry and fruit production

Coordinator, partners and countries involved

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Partners:

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