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Plant diversity in the vineyard can help controlling grapevine pests

BIOVINE



Aim of the project:

Natural solutions based on plant diversity to control pests, reduce pesticide dependence, increase plant health and services provided from the ecosystems .

Main activities:

- ▶ Identify and select candidate plants
- ▶ Test plants in controlled conditions or small scale environments for their ability to control arthropod pests, promote beneficials, control soil-borne pests (oomycetes, fungi, nematodes) and foliar pathogens, carry arbuscular mycorrhizal fungi.
- ▶ Design new viticultural systems able to exploit plant biodiversity in organic vineyard
- ▶ Test the new viticultural systems in several locations in Europe, in comparison to the current practice
- ▶ Assess how the innovative viticultural systems affect provisioning, regulatory and cultural ecosystem services

Introduction

BIOVINE will develop natural solutions based on plant diversity to control pests (harmful organisms, including arthropods, nematodes, oomycetes and fungi), reduce pesticide dependence, increase plant health and services provided from the ecosystems to humans.

BIOVINE will exploit plant diversity in the vineyard to control pests in order to provide farmers with alternative solutions to pesticides. Solutions proposed will be tested in Italy, France, Romania, Spain, Slovenia and Switzerland.

Background

The capability of plants for increasing the ecosystem resistance to pests and invasive species is a well-known ecosystem service. However, monocultures (including vineyards) do not exploit the potential of plant diversity and still rely on large external inputs to control harmful organisms. Plant diversity can also positively affect arbuscular mycorrhizal fungi, which can consequently improve plant health and soil conditions.



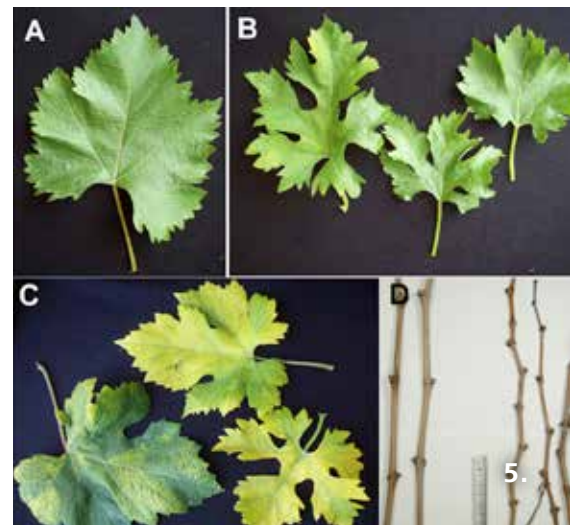
Expected results

- ▶ Provide organic farmers with strategies to control pests in the vineyard, based on plant diversity to control pests and reduce pesticide dependence.
- ▶ Identification and study of candidate plants for the enhancement of functional biodiversity in the vineyard.
- ▶ Development of new and efficient strategies for controlling grapevine pests.
- ▶ Test of the new viticultural systems in different countries in Europe.
- ▶ Estimate the effect of the developed and tested viticultural systems on ecosystem services.



Societal and long term benefits

Soil and plant biodiversity provides numerous essential ecosystem services, including natural control of pests, release of nutrients in forms that can be used by plants and other organisms, purification of water by removing contaminants and pathogens, contribution to the composition of the atmosphere by participating in the carbon cycle, and providing a major source of genetic and chemical resources. BIOVINE results will contribute to improve environmental conservation. The impact of the new designed viticultural systems on ecosystem services, including carbon sequestration, water purification, soil erosion reduction, landscape, organic matter and soil health, will be evaluated. BIOVINE can also have a positive impact on human health (because of less pesticide residues and mycotoxins in wine), and cultural development in the vine and wine sector.



How to reach target groups

Professional users of the results will be reached by the project website www.biovine.eu. Project leaflets will be translated into different languages, articles will be written for professional magazines and journals and workshops with stakeholders and end-users will be arranged.

Coordinator

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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. Flower strip in a vineyard in Switzerland. Photo: Stéphane Emery
2. Grapevine plant showing symptoms of fungal trunk pathogens. Photo: Josep Armengol
3. Researcher assessing grapes in the vineyard. Photo: Paolo Debenedettis
4. Cover crops sown in the vineyard inter-row. Photo: Aurora-Maria Ranca
5. Healthy (A) and GFLV diseased (B, C, D) grapevine leaves and canes. Photo: Saša Širca
6. Cover crops in a traditional vineyard in Mediterranean conditions in Spain. Photo: Rafa Laborda
7. Coccinella septempunctata on grape. Photo: Agroscope