

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

Project short name and title

Vineman.org

Integration of plant resistance, cropping practices, and biocontrol agents for enhancing disease management, yield efficiency, and biodiversity in organic European vineyards.

Project summary

The Project involves 9 research groups in 5 EU Countries. The VineMan.org Project aims at designing, developing, and testing innovative cropping systems for organic vineyards in Europe. In detail, the project focuses on enhancing organic grape production and its stability through a more efficient control of the grape diseases. The Project aims at improving disease control, which is one of the main and most difficult tasks in organic viticulture, integrating plant resistance against fungal pathogens, cropping practices, and use of BCAs depending on environmental conditions. VineMan.org is organised in 8 Work Packages (WPs), each of them led by a competent partner, and they are closely related one to each other. Management of the project activities, knowledge, IPR and exploitation of the results have a specific WP (WP1). Methods for inducing the innate immunity of plants against fungi and oomycetes pathogenic to *Vitis vinifera* will be evaluated in WP2. The effect of some viticulture management options on the development of the target diseases will be investigated in WP3, with particular focus on canopy structure and cluster/berry morphology modifications. WP 4 is devoted to the study of the relationships between the target pathogens and the environmental conditions with emphasis to the development of weather-driven, mechanistic, dynamic models for predicting plant disease epidemics. In WP5, the fitness, impact, and efficacy against the main grape diseases, will be evaluated in four BCAs representing bacteria and fungi including yeasts already registered in the EU as microbial biopesticides. WP6 will be focused on the development of new strategies based on design-assessment-adjustment cycle. Two WPs will be aimed to field trials (WP7) and to the evaluation and monitoring of the microbial communities present on grape leaves and berries (WP8).

Aim, objectives and hypotheses

The aim of the project is to design, develop and test innovative cropping systems for managing organic vineyards across Europe, able to: i) improve control of common, key plant diseases (the target diseases are: downy and powdery mildews, grey mould, and black rot); ii) enhance grape production efficiency in terms of sustainability, yield, stability, and berry composition; iii) reduce mycotoxin contamination; iv) increase the microbial biodiversity in the vineyards and natural suppressiveness against grape diseases; and v) minimize the environmental impact of agriculture in the grape-growing areas. The innovative cropping systems will be based on the integration of: i) plant resistance against fungal pathogens; ii) optimised cropping practices and canopy management; iii) use of compatible mixtures and specific sequential applications of biological control agents (BCAs) and natural products.

Expected results and their impact/application

The major result from the Project is the development of innovative cropping strategies and techniques for efficient disease control in organic European vineyards. This result will contribute to solve one of the main issues the organic grape-producers face, i.e. growing healthy plants, as shown by the investigation carried out within the EU project "ORWINE" (www.orwine.com). For instance, 10% of attack by mould diseases (a level that can adversely affect wine quality) is frequently reached in Germany (where 70% producers face this situation at least every 3 years), Austria and Switzerland. Powdery mildew, which also has a potentially high negative effect on wine quality, is also a major concern in Spain, Italy, France, and other EU Countries. Insufficient disease control is often the main reason for growers to abandon organic production. The progressive reduction of copper fungicides (Council Regulation (EEC) 2092/91, Annex II) further increases this problem. Development of new and efficient strategies for controlling grape diseases based on environmentally friendly and durable methods, such as plant resistance, cultural practices, and BCAs will provide to the EU grape growers new opportunities for entering/remaining in this sector. These results should have a large impact on the European organic viticulture, due to the increasing interest for this sector. The 5 countries involved in the VineMan.org project account for about 90% of the EU27 total surface of the organic viticulture (FiBL 2008; <http://orgprints.org/10909>).

Coordinator, partners and countries involved

Coordinator:

Università Cattolica del Sacro Cuore (UCSC), Italy

Partners:

Agricultural Research Council (CRA-VIC), Italy;

Institute of Plant Health (IPGH, AGES), Austria;

Staatliches Weinbauinstitut (SWI), Germany;

University of La Rioja (UDLR), Spain;

Institute of Food and Agricultural Technology-CIDSAV, University of Girona (IFAT-UDG), Spain;

Agricultural Institute of Slovenia (KIS), Slovenia;

Education and research centre for enology and pomology (LFZ), Austria;

University of Natural Resources and Life Sciences (BOKU), Austria.