

ITALY

Climate change adaptation

Location

Bolgheri region

Programming period

2014 – 2020

Priority

P5 – Resource-efficient,
Climate-resilient Economy

Measure

M16 - Cooperation

Funding (EUR)

Total budget 207 589.20
EAFRD 80 337.02
National/Reg. 106 493.26
Private: 20 758.92

Project duration

2016-2018

Project promoter

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Offering a coordinated multi-stakeholder approach in terms of training, technology transfer and decision making to finding alternative approaches to pest management and reducing pesticide use in the wine-producing sector of Tuscany.

Summary

The objective of the Artisans of Tuscan Wine (“Artigiani del Vino Toscano” (BIOCONVITO) project is to promote effective and environmentally-friendly grapevine pest control techniques in the heart of the Bolgheri region of Tuscany. The need to manage pest populations is increasing rapidly due to warmer temperatures caused by climate change. The heat not only boosts insect growth and reproduction, it also allows for winter survival, thereby contributing to higher population densities.



This is particularly the case for two major grapevine pests, the European grapevine moth (*Lobesia botrana*) and the vine mealybug (*Planococcus ficus*). Both species proliferate in warm temperatures and controlling their spread in the EU is becoming increasingly challenging. This problem is coupled with the need to reduce pesticide use to protect human health and the environment. To mitigate the rising damage to grapevines, the project - based in the Italian wine-growing region of excellence in Bolgheri, Tuscany- focused on joint testing of biological control agents and mating disruption, as well as promoting cooperation amongst researchers, industry actors, and growers.

Results

Strong cooperation was fostered among the multiple wine sector stakeholders who all had diverse perspectives, knowledge and skills. Hundreds of farmers and other actors gained awareness and understanding about Integrated Pest Management (IPM) and biological control alternatives to chemical pesticides. The project led to the adoption of tailor-made biological control strategies applied on thousands of hectares of high-value vineyards and to reductions in pesticide use and associated environmental impacts.

Lessons and recommendations:

- ❑ The coordinated involvement of researchers, industry, advisors and farmers contributed to an integrated approach towards increasing the understanding of the principles of IPM as well as viable biological alternatives to combat pests.
- ❑ Dedicated on-farm training with tools and demonstrations to promote capacity building and spread confidence in alternative strategies.

Context

In vineyards across Italy and beyond, the overuse of chemical pesticides has led to the development of resistance in targeted insect pests. It is also severely affecting non-target organisms and human health. The situation is worsened by climate change-induced global warming which is boosting insect pest species' reproduction rates and leads to more crop damage.

Several eco-friendly and effective tools for managing pest populations have been developed. Unfortunately, they are still underused by a substantial number of Mediterranean stakeholders due to their lack of knowledge and trust in those alternatives. While farm managers are often aware of the existence of novel and eco-friendly tools for pest management, they tend to be unsure of the potency of a given technique or strategy and/or do not have full confidence in their effectiveness. This may be partially due to a communication gap between researchers, policy makers, and farmers at the national and regional level.

Different forms of knowledge provision exist to close this gap. For example land-grant universities in the USA (universities that focus on practical, scientific education) have publicly funded extension services to support farmers in implementing innovative methods to deal with pests and diseases. In Italy, the region of Trentino South Tyrol hosts a successful example of close cooperation between growers and research institutions, which led to the establishment of IPM in the region. The driving force behind the implementation of IPM has been the adoption of the pheromone mating disruption (MD) approach over the past 20 years, which has strongly reduced insecticide use in the region. Unfortunately, this adoption has not been replicated throughout the rest of Italy, in part because of the lack of cooperation between research institutes, industry, and growers. There is an urgent need to support the adoption of eco-friendly and effective pest management tools in the Tuscan areas of excellence for wine production.

Objectives

To reduce insecticide use, manage grapevine pests effectively and respond to the fact that climate change is boosting pest populations, the project focused on:

- Fostering the fruitful cooperation between research institutes, industry and farms to solve the problem and share knowledge and experience on the issue.

- Promoting the timely use of biological control agents and a pheromone-based mating disruption technique for managing both *Planococcus ficus* and *Lobesia botrana* pest populations.
- Improving the ability to produce high-value Tuscan wines with minimal pesticide residues.

Activities

The project used eco-friendly and highly effective pest control techniques including the use of two important biocontrol agents of the *Planococcus ficus* (the coccinellid predator *Cryptolaemus montrouzieri*) and the encyrtid parasitoid *Anagyrus vladimiri* (ex A. sp. near *pseudococci*) which are mass-produced at industrial level. In addition, *Lobesia botrana* numbers were efficiently managed through pheromone-based mating disruption. To apply both techniques, it was crucial to have both proper tools and knowledge of how to monitor pests and carry out the biocontrol techniques. The project therefore incorporated technology transfer activities that were directly carried out in the field by university researchers and farmers. Additionally, interactive workshops were organised to update farmers on novel strategies, including how to use selected biocontrol agents and/or mating disruption approaches.

During the project, the technology transfer activities conducted in the field led to the training of over 50 operators (four or more per farm), who, as skilled operators, can continue to actively monitor vineyard pests to ensure a timely and effective approach when applying control strategies. Furthermore, throughout the project's duration, over 200 farmers and winemakers participated in technology transfer workshops, conducted in various locations on the coast of Tuscany. Besides interactive workshops, hands-on field day activities were carried out by applied entomology university professors with policy makers. During the grape growing season – from early April to late September, seven field days per month were held on various Tuscan farms members of the BIOCONVITO project.

Additionally, lectures and presentations were delivered in more than 30 events during the project, reaching a total of more than 200 participants. Print articles and posters were published and discussed with policy makers, and online videos, shared by the University of Pisa (e.g. <https://www.youtube.com/watch?v=ILa2ZawSBHc&t=2s>), were used to train farmers and agronomists to monitor pest abundance and to understand, monitor, and promote the use of biological control agents.

Main Results

During the course of the project, the cooperation between the stakeholders encouraged the use of biocontrol agents and mating disruption techniques in an increasing number of vineyards across Tuscany. This resulted in a major reduction in pesticide use. This reduction brought direct benefits to the farmers' health and the environment and minimised residues on grapes and in the wines (as detailed in the project's final report). Significantly, the alternative techniques were capable, even in changing climate conditions, of managing both *L. botrana* and *P. ficus*. Insecticide-based interventions have been completely eliminated on the project's participating farms. Thus, in less than four years, Integrated Pest Management (IPM) approaches were adopted on about 1 200 ha of high-value Tuscan vineyards.

Key lessons

The BIOCONVITO project can be considered an example of good networking between the different stakeholders who each brought different perspectives, knowledge, information, and practical skills to the project, but shared the common goal of improving Tuscan vineyards' capacity to adapt to climate change and its impact on pest populations. The results of the BIOCONVITO project are available to all interested stakeholders in the wine sector on the project website (<http://www.bioconvito.it/>).

Additionally, the IPM approaches promoted at regional scale by the project have had a wider impact – they have been highlighted at EU level in the meetings of the EIP-AGRI Focus Group on diseases and pests in viticulture. The methods that form the basis of the project are transferable to other EU rural areas facing similar issues, but especially to territories with high-value vineyards. However, the approach is not limited to wine-producing areas. Relying on an approach comparable to that of BIOCONVITO, projects promoting IPM understanding, decision making and implementation have been recently proposed for various arable crops, including wheat (EuroWheat - www.eurowheat.eu.dk).

Additional sources of information

<https://www.youtube.com/watch?v=ILa2ZawSBHc&t=2s>

*This project has been categorised under 'Climate change adaptation' by the nominating National Rural Network