

Layman's report



Life GREEN GRAPES

New approaches for protection in a modern,
sustainable viticulture: from nursery to harvesting

PROJECT LIFE16-ENV-IT-000566



ADDRESSING CROP PROTECTION PROBLEMS IN THE VINEYARD

In 2016, as reported by ISPRA, **about 124 million kilograms of pesticides were distributed only in Italy, equal to almost 60 million kilograms of active ingredients** . An enormous amount also for **the wine sector which has absorbed about a quarter of it, making it one of the most important sectors in the containment of their**

use .

Of all pesticides, **more than 60% were fungicides** and among these, in the wine sector, the predominant ones were **copper and sulfur, which represented 70% of the total** .

The alternatives available to winegrower to successfully tackle the problems of defense in the vineyard while maintaining a good balance of eco-toxicity and, therefore, to implement a phytosanitary defense with low environmental impact, at the start of the project, remained confused.

The excessively broad and widespread regulatory framework that governed other types of alternative products to pesticides (bio-stimulants, natural fertilizers and substances, resistance inducers, etc ...) has characterized the agricultural products market in recent years.

The diversity of regulatory laws between the different Member States of the European Union that existed contributed to creating uncertainty:

- both **among producers** , who had to position bio-stimulants on the markets according to their functions since these were not clearly defined within any of the existing legal frameworks.
- and **among farmers** , uncertain about which products were best suited to their needs.



The **viticultural sector** is undergoing through years of very important changes, full of **technical and cultural challenges** which affect both the **production and marketing sectors**.

One of the most delicate aspects is that relating to the **quantity of chemicals distributed with the treatments for the anti-parasite defense and their eco-toxicological impact**.

For example, the increased **demand for “healthy” products by consumers** pushes the large-scale retail trade (GDO) to set increasingly restrictive limits, often lower than those imposed by European legislation, in relation to the chemical residues present on the final product.

Given the strength of the interlocutors on which the winegrower income depends, as well as a conscious attention to the environment in which he operates, **he finds himself having to rethink his production choices**, looking for answers in areas where product and process innovation are more advanced.

The introduction of new technical means and production strategies can help to satisfy the double demand for preserving the rural environment and the farmer's income.

TACKLING CHANGES AND CHALLENGES IN THE VITICULTURAL SECTOR

THE CHALLENGES



Green Grapes Project was conceived and planned to address these issues.

The **first challenge** of the project is related to the **development of phytosanitary crop protection strategies which must take into account the new regulations that limit - or completely revoke - the use of many active ingredients**.

In Italy, from 2000 to 2020, the number of synthetic active substances available for defense went from 441 to 212 (reduction of 52%).

The active fungicides underwent a reduction from 107 to 72 (one third less in 20 years).

The **second challenge** relates to the **integration of vineyard crop protection with adequate agronomic practices**, also based on the enhancement of the biological activity of the soil and of the rhizosphere in particular, without which a good sustainable protection strategy cannot be operated.

HOW THE LIFE GREEN GRAPES PROJECT ADDRESSED THE PROBLEMS AND CHALLENGES?

LIFE Green Grapes is a demonstration project that aims to increase the defense responses of the vine with the use of products for which resistance induction or elicitor activity has been observed, included in agronomic management protocols that allow at the same time, through a reduced impact on the environment, to maintain or increase biodiversity in the vineyard.



The project evaluated **the effectiveness of application protocols** suitable for **integrated and organic viticulture**, combining the **use of forecasting defense models** with the **application of suitable agronomic techniques** .



The protocols were evaluated on **the whole wine production chain: vine nursery, vineyard for wine grapes and vineyard for table grapes.**

The goal was to **support the effectiveness of defense treatments, reducing the amount of pesticides used through the use of sustainable techniques and products for the environment and the biodiversity of the vineyard and nursery.**



Development of 3 cycles of trials

for the 4 different application protocols for integrated pest management strategies:

- nursery vines,
- table grape,
- wine grape,
- organic table grape



PROJECT ACTIONS

LIFE Project **Green Grapes** Grapes is divided into:

A) A preparatory phase included the systematization of data deriving from previous studies and the evaluation of the conditions of the experimental farms and vineyards; the definition of the application protocols of the control elements and verification of the results of the management strategies.

B) The execution of management strategies in 3 productive years with the application of the different intervention protocols on vineyards and nurseries, based on agronomic techniques and on the use of elicitors and biocontrol agents, it involved 6 different implementation actions.

The protocols were applied:

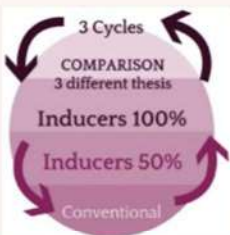
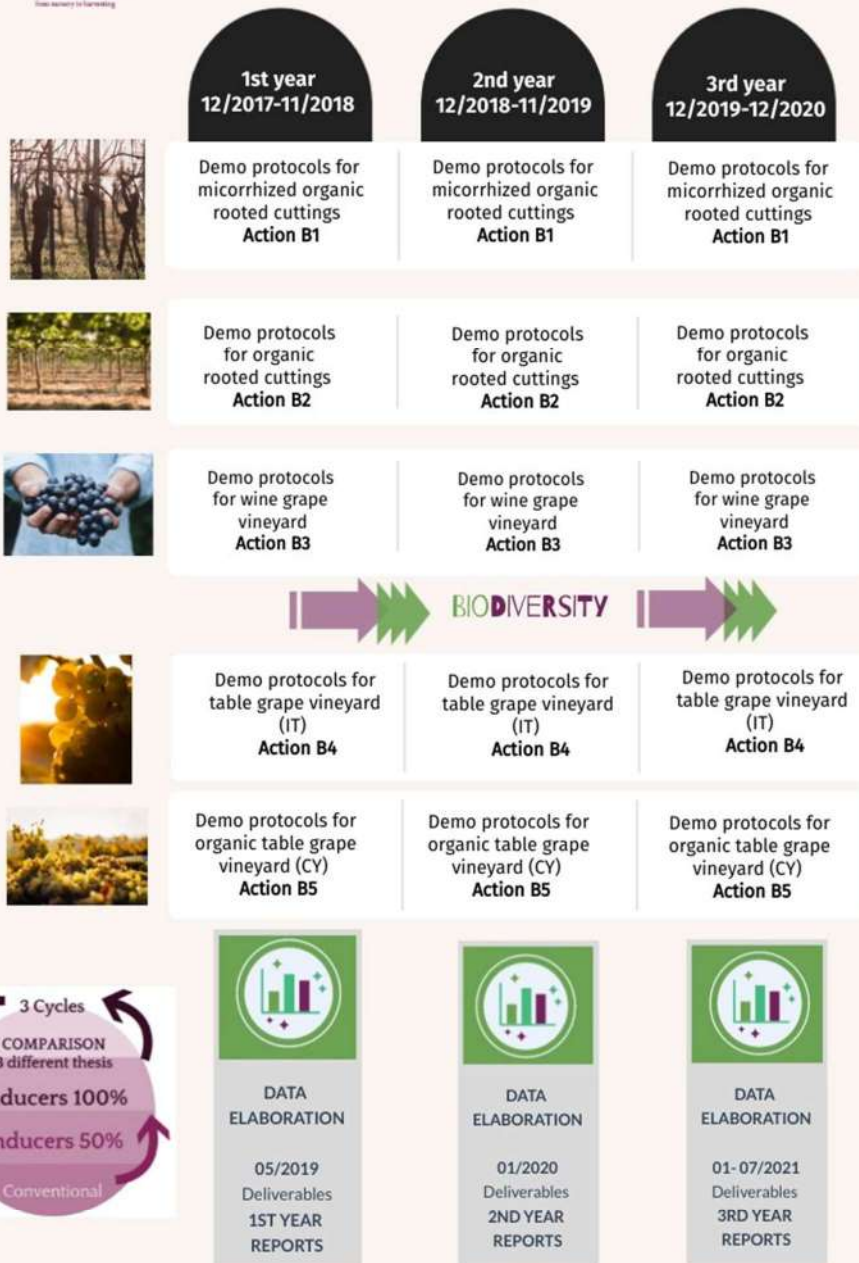
1. in vine nursery for the production of organic rooted cuttings;
2. in vine nursery for the production of mycorrhizal rooted cuttings;
3. in vineyards for production of wine grapes in both integrated and organic agriculture;
4. in vineyards for production of table grapes in Italy (in IPM) and in Cyprus (in organic agriculture).

As a last step, the best criteria for the use of products and application protocols and the related guidelines were set up.

C) The complete study of the environmental, productive, efficacy and efficiency impacts of the proposed solutions and of the socio-economic effects induced by the project, finally involved the last phase divided into three monitoring actions.



Definition of LIFE GG Protocols 11/2017

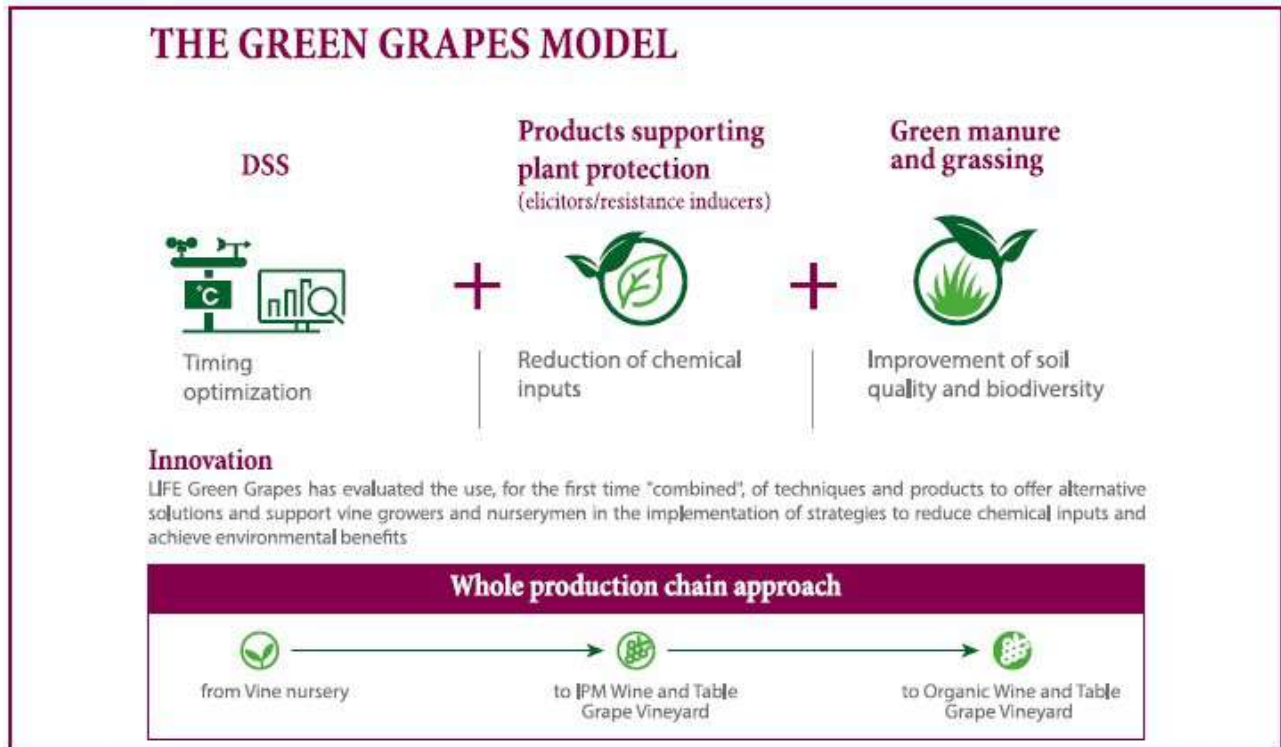


B.6 Validation optimal protocols and processing results in Handbook for end-users and stakeholders



THE MODEL

LIFE Project **Green Grapes** Grapes allowed the validation of an integration model of products, tools and techniques that supported the choices of winemakers based on the combination of use of:



The proposed solutions offer wine growers **solutions to comply with the directives of the Commission in the field of pesticide defense**. It is known that, as part of the European Farm-to-Fork and Biodiversity strategies, the European Commission is planning actions to reduce the use of chemical pesticides by 50% by 2030, to amend the directives on sustainable use accordingly. of pesticides for Integrated Defense (IPM, Integrated Pest Management) and to promote greater use of alternative methods to protect crops from pests and diseases.



RESULTS

Green Grapes management in the pilot vineyards has shown that **a 50% reduction in the use of pesticides** along the entire production chain - from nurseries to vineyards - **it is possible, sustainable and able to provide qualitative and quantitative results equal or equivalent in the final productions, compared to the integrated or organic management with which the new protocols have been compared.**

The proposed solutions, in particular the thesis of reducing pesticides by 50% with the use of resistance inducers, have been shown to have a positive impact on the aspects characterizing the wine production and on other relevant environmental aspects such as:

IMPACTS OF TRIALS AT 50% reduction	Variation
Increased biodiversity	+ 10%
Reduction of water consumption,	-15%
Reduction of greenhouse gas (GHG) emissions	-7.73%
Reduction of residues on final productions	between 27% and 71%

Furthermore, the reduced quantities of residues analyzed in the final production of table and wine grapes, as well as the lower exposure to pesticides of workers throughout the supply chain, allow to reduce the impact of wine production on human health.

The management strategies of the "Green Grapes " vineyard have made it possible to maintain the qualitative levels of the productions high, without modifying their commercial value.

In fact, with regard to all the parameters analyzed (productivity of the plants, organoleptic / product characteristics and shelf life of the grapes), there were no substantial differences between the productions obtained with the integrated company method and those obtained with the "Green Grapes " methods. .

BENEFITS OF THE GREEN GRAPES MODEL



Benefits for final productions

Equal or equivalent qualitative results in final productions with a 50% reduction in the use of pesticides / fungicides.



Benefits for human health

Reduced exposure to toxic products for workers in the vine sector.
Reduced exposure to chemical residues for final consumers.



Benefits for the Environment

Reduced consumption of
H₂O
Reduced emissions of
CO₂

INFORMATION AND REPLICABILITY

All the material produced within the project **LIFE Green Grapes** useful to know And replicate protocols yes find in the site web (www.lifegreengrapes.eu) and on social channels. In particular Yes they can find:

- **Technical handbook** "Operational handbook for vine nurserymen and winegrowers " (in Italian and English), practical consultation tool for nurserymen and winegrowers who are preparing to develop their vineyard defense strategy, without losing sight of environmental protection <https://www.lifegreengrapes.eu/deliverables/#1633458302273-5f2d54e0-0390>
- **Report of the trials of the three years** on effects of the protocols on plants, soil and final productions (<https://www.lifegreengrapes.eu/deliverables/#1599820087671-9ee61ab2-4a3d>)
- **Informative and training videos** <https://www.youtube.com/channel/UCQLTqhYsh0CeSJOJG-hxakw>
- **Contact email** lifegreengrapes@gmail.com

www.lifegreengrapes.eu



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