



GOPHYTOVID

Reducing inputs for vineyards and commercial wineries.

EAFRD-funded projects

Location: Cataluña, Castilla La Mancha, Galicia, Aragón, Madrid and Valencia (Spain)

Programming period: 2014-2020

Priority: P2 – Competitiveness

Focus Area: Farm performance, restructuring & modernisation

Measures: M16 – Cooperation

Funding:	Total budget	613 806.91 (EUR)
	EAFRD	479 845.53 (EUR)
	National/Regional	119 961.38 (EUR)
	Private/Own funds	14 000.00 (EUR)

Timeframe: 2018 to 2020

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Summary

More stringent regulation of crop protection activities is being implemented at EU level, in line with the Farm to Fork strategy's aim to reduce the use and risk of plant protection products (PPPs) by 50%. Stakeholders have different tools available to achieve these ambitious objectives, including training, adoption of new technologies and digitalisation.

This EIP-AGRI Operational Group developed a structured approach to achieve PPP reduction in viticulture in Spain. Taking advantage of existing developments such as DOSAVIÑA, WAATIC and alternative bio-PPP, the project implemented a process to adopt a Variable Rate Application (VRA) method based on canopy maps generated after using multi-spectral cameras.

After two years of work in collaboration with five commercial wineries from different regions in Spain, PPP reduction ranging from 15-35% has been achieved. Additionally, new technologies have been adopted. Training has been improved by using developments and products generated by the project.



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Project results

- Reduction in the use of plant protection products (PPP) on every commercial associate winery involved, ranging from 10-35%.
- Adoption of new technologies: All five wineries began to introduce VRA (Variable Rate Application) technology into the spray application process.
- Dissemination activities carried out during and after the project resulted in great interest from farmers involved in grape production.
- Farmers' associations have been provided with material and practical information on the adoption of new technologies.
- The project has promoted the engagement of young farmers. Several young researchers and technicians were involved in the project, combining research with practical implementation.
- Results from the project have been used in Peru in blackberry and apple production.
- The project results have been included in academic courses and training.

Key lessons and recommendations

- A 50% reduction in PPP use in viticulture can be achieved with training, new technologies and stakeholder collaboration.
- Training activities are required for farmers and advisors about the complex process of spray application.



- Vine growers are prepared to adopt the technology, which is already available, at a reasonable price.
- Digitalisation can be a useful tool when farmers are well trained.
- More yield and higher quality are achievable with less PPP use, reducing costs and pollution.
- Farmers need help to reduce their use of PPP.
- There is a low level of adoption of new technologies.
- Academic and research institutions can support the productive sector.

Context

European policy concerning the use of plant protection products (PPP) has become more stringent in recent years. Under the European Green Deal, the Farm to Fork strategy aims to reduce, on average, 50% of the amount and risk of PPP by 2030. The use of PPP is significant in the production of vineyard crops, one of the most important crops in Europe. Recently developed and available technologies such as remote sensing techniques, Variable Rate Application (VRA) and the georeferenced spraying process have not yet been widely adopted.

The main objective of GOPHYTOVID was to develop a practical and ready-to-use methodology to implement the VRA system in wineries, with the aim of reducing PPP use. Based on the differences in canopy structure measured and quantified using remote sensors, the project has been able to develop practical algorithms to describe the prescription maps (optimal PPP dose by zone considering canopy structure) and to develop corresponding hardware to guarantee an automatic system to operationally modify the working parameters at the sprayer's site in order to apply the correct amount of PPP. Five commercial wineries involved in the project experienced the benefits of reducing PPP use while maintaining effective disease/pest control.

Objectives

GOPHYTPVID aimed to demonstrate that a reduction of PPP use is possible, in alignment with the Farm to Fork strategy, when technology and training are combined. Furthermore, the project aimed to increase adoption rates of new technologies by bringing research groups together with the production sector and to engage the new generation of young farmers with the possibilities offered by new technologies in the agricultural sector.

Activities

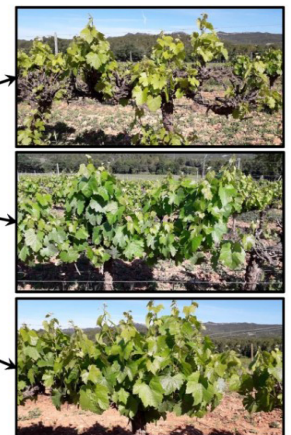
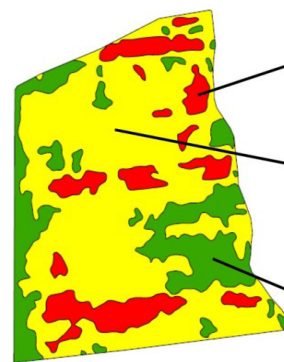
The first project activity was the development and implementation of a Variable Rate Application (VRA) automatic system based on prescription maps.

Based on images captured by a multi-spectral camera, accurate canopy maps were developed. Three flights were arranged covering the whole spraying time period. Those canopy maps were transformed into prescription maps using Dosaviña DSS. Furthermore, a compatible prescription map file was developed for upload to the dedicated hardware (Fede, Topcon, Waatic, etc.) installed in the sprayer. Using a conventional GPS installed in the tractor, the system was able to adjust the working conditions to apply a different amount of PPP in every canopy zone.

Two different types of zone had been defined after the canopy characterisation based on UAV (Unmanned Aerial Vehicle) images. These two zones were then converted into different PPP doses. These two values were transformed into the corresponding working parameters (pressure, speed, etc.) and the system implemented to execute the variable rate application corresponding to the canopy structure. Two flights were arranged during the crop development period in collaboration with project partners.

Different new techniques were implemented in order to evaluate the most suitable biocontrol agents for vineyard wood diseases. Different formulation processes were analysed in laboratory trials. After the laboratory trials, several field trials took place at Torres winery and the efficacy of the biocontrol agents was evaluated. This enabled the identification of the optimum combination of formulation and application.

Mapa vigor clasificado (NDVI)

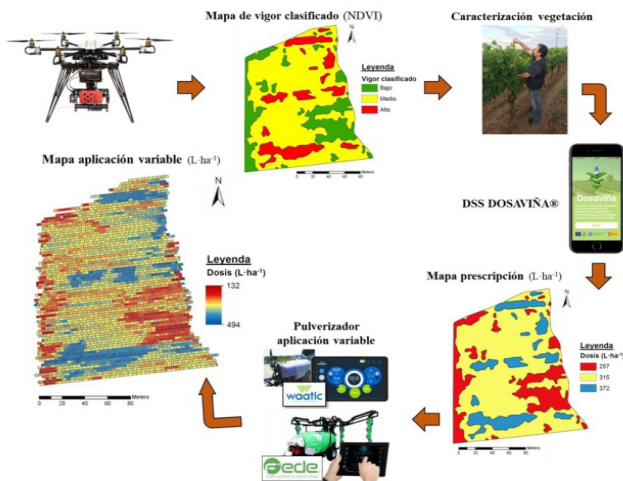


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Finally, all the partners worked together in order to generate the final recommendations concerning the implementation of VRA at a commercial level and to set out practical criteria for the adoption of biological control agents. As an overall conclusion, a variable range of PPP reduction from 10 to 35% was obtained in all five of the commercial wineries involved in the project.

The project results have already been included in academic courses such as a postgraduate course in precision agriculture, training courses such as Better Training for Safer Food (BTSF) - an initiative of the European Commission's Directorate General for Health and Food Safety - and in advanced courses about digital farming and new technologies.



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Main results

The project achieved an average reduction of PPP on every commercial associate winery involved ranging from 10-35% depending on the initial situation.

GOPHYTOVID contributed to the adoption of new technologies. All five wineries began to introduce VRA (Variable Rate Application) technology into the spray application process. Other wine and vine producers started to implement VRA technologies.

Dissemination activities carried out during and after the project resulted in considerable interest in the project developments from farmers involved in grape production. Farmers' associations have been provided with material and practical information to enlarge the adoption of new technologies, promoting the engagement of young farmers at the same time.

Several young researchers and technicians were involved in the project, combining research with practical implementation. The results of the project have been implemented in Peru in the production of blackberries and apples.

Key lessons and recommendations

A 50% reduction in the use of PPP can be achieved with a proper combination of education (training), adoption of new technologies and close collaboration among stakeholders. Training activities increase the knowledge level of directly involved stakeholders (farmers and advisors) about the complex process of spray application. Subsequently, they are prepared to adopt the available technology at a reasonable price. Digitalisation can be a useful tool when farmers are well trained. Ultimately, the project showed that more yield and higher quality is achievable with less PPP use, less investment and less contamination.

Farmers in general need support to reduce their use of PPP. There is a low level of adoption of new technologies. Digitalisation is an important topic. However, there is a need for training for farmers and their advisors. Academic and research institutions are ready to offer the productive sector interesting tools (e.g. [DSS DOSAVIÑA](https://www.gophytovid.es)).

Additional information:

Project website: <https://gophytovid.es>

Youtube: https://www.youtube.com/watch?v=eUSWtS5_JJw

Youtube: <https://www.youtube.com/watch?v=TbxFDTP7oUg>

Youtube: <https://www.youtube.com/watch?v=hujtLLqem2M>

Facebook: <https://www.facebook.com/watch/?v=622557279075588>



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