

## OPERATIONAL GROUP VITE & VINO

**PROJECT TITLE:** *PROductivity and Sustainability vines-viniculture* - “PRO.S.IT.”

**FUNDING PROGRAM:** RDP Basilicata 2014-2020 – Measure 16.1 “Support for the establishment and management of PEI Working Groups”

**Project budget:** 260.000,00 €      **Duration:** 2018 - 2023

## PARTNERSHIP

**Coordinator:** CONSORZIO QUI VULTURE

**Agricultural enterprises:** Az. Viticola Mastrangelo, Az. Viticola Marino, Masseria Cardillo, Az. Agr. Cifarelli, Az. Agr. Petito, Az. Agr. Battifarano, Az. Agr. F.lli Dragone, Az. Biologica Scarano Maria, Az. Agr. Lagaria, Cooperativa Agricoltura 2000.

**Research Institutions:** UNIBAS-DICEM, UNIBAS-DIS, UNIBAS-SAFE, CNR-IMAA, CNR-ISM, ENEA, ALSIA

**Consulting:** AGREENMENT Ltd

**SMEs:** Con.Pro.Bio. Lucano, STARFINN Ltd, GEOSPAZIO ITALIA Ltd

**Others:** ASSOCIAZIONE ENOTECA REGIONALE LUCANA, Consorzio di Tutela Vino Aglianico del Vulture DOC e DOCG superiore.

## PROJECT SUMMARY:

VITE&VINO Operational Group (OG) was born from an intense activity of territorial commitment in which the main needs of innovation were highlighted for entrepreneurs in the sector and also for their representative. The meetings were also attended by individual entrepreneurs whose companies fall into vine-growing areas not included in the current DOC areas.

Project: *PROductivity and Sustainability vines-viniculture* - “PRO.S.IT.” has been developed on the following Work Packages (WPs):

- WP1, WP2: OG Vite&Vino implementation and maintenance. WP1 and WP2 have had the following purposes: Establishment of the Operating Group; Coordinating and following up technology transfer activities; Interface with Regione Basilicata and EIP-AGRI of the European Community; Administrative management and project reporting. In particular, they have aimed to ensure the maintenance of the OG (meetings and scheduled debates); Provide a fruitful collaboration between the different partners of the project; Monitor the transfer of technology from research to companies/consortia/association partners of the OG in accordance with the schedule; Interact with other OG and PEI-AGRI at national and international level.

- WP3, WP4: Create a WebGis platform for discovering and promoting Basilicata's vineyards. Through WP3 and WP4 an innovative methodology has been transferred to the winery to reduce production costs and intensify the sustainability of the vineyards, assess the vocationality of the vineyard area, increase the productivity of the vineyard and the profitability of the winegrowers, increase resilience to climate change in high-value areas.

Purpose of the two WPs was to create a WebGis platform with maximum resolution at the level of single cadastral parcel; Smartphone applications for vineyard monitoring and platform automatic updating with georeferenced data; Models for the prediction of the date of harvest, of the grapes produced, of the phytosanitary status of the vineyard; Thematic maps of vocationality of the territory and vineyards (for example: soil temperature and vegetation, soil transitability, vegetal-productive state of the vineyard).

- WP5: Preparation of a collection of innovative starter yeasts for the productivity and sustainability of Basilicata wines. The goal was to set up a collection of indigenous wine yeast strains, previously isolated from grapes from the regional territory; transfer to the partner companies' native vine-specific strains. Through the activities carried out within the framework of the WP5, have been provided several tools to support the conservation of the biodiversity of indigenous wine yeasts; typify Lucan wine production and increase the quality of wines. In this way it has been supported and improved the link among the territory, production environment and finished product providing new and high quality products to the market.

- WP6, WP7: Divulcation and Networking. Within these two WPs the various communication and dissemination actions have been planned and implemented in order to inform other parties outside the project partnership. WP6 and WP7 allowed for the implementation of a disclosure plan, to identify objectives, media, timing and actions; define the visual identity of the Project as a logo, template for presentations, other documents (to be used for: press releases, fact sheets, reports, final results, etc.).

## PROJECT GOALS:

The purpose of the Operating Group and the PRO.S.IT. project has been to provide companies working in the field with innovative tools for a better knowledge of their vineyard, to minimize design and management errors, intensify sustainability, increase profitability, and ensure a positive impact on local economies. This goal has been achieved by using dedicated applications that interface with Web-GIS systems/smartphones and in the cellar using indigenous strains of yeasts for wine making and through the establishment of a bank of wine yeast stumps originating from Basilicata.

## PROJECT IMPACT:

### Implementation of territorial WEB-GIS

The project activities have led to the creation of a territorial WebGis implemented on a single cadastral plot scale. From it has been possible to infer the distribution of the areas planted with vines in Basilicata which shows the marked vocation of the Lucanian environments for viticulture. However, the land register data is not up-to-date. In fact, thanks to a procedure that incorporates photointerpretation and geospatial analysis in the GIS environment, the geography of the wine growing areas of the Basilicata region has been reconstructed. The geospatial analysis shows that the vineyard area is smaller than that of the cadastre and mostly concentrated on certain areas of the region. In addition, the information in the SIAN database shows, for the first time in Basilicata, an overall picture of Lucanian viticulture in which it is possible to derive the extent and position of individual vine varieties, the age of the vineyards, and other useful information for the management of the vineyard.

### Biophysical parameters of the vineyard

As part of the PRO.S.IT project measurements have been made directly in the field on individual plants in order to assess specific parameters such as, for example, the plant water state through analysing the sheets colour components or angle variations between the foil and the leaf stalk. This activity has been performed at ALSIA's Metapontum Agrobios research centre. These experiments were preparatory for interpreting the images acquired by RGB (color spectrum of the visible) or NIR (near infrared spectrum) cameras mounted on drones or satellites.

Another important result achieved through the implementation of the project activities has been to deepen the dynamics of the "vineyard system" through micrometeorological and mass balance techniques allowing the calculation of the water and carbon footprint. For this purpose, an Eddy-Covariance station has been installed and operating for supplying, continuously, measurements on carbon dioxide and water exchanges between vineyard and atmosphere.

The study of these parameters will allow, furthermore, a correct management of the crown the water and nutritional availability of plants as well as the calculation of the carbon footprint that can certainly be the proper driver for wine's marketing policies.

### Biodiversity in the vineyard

Among the various dissemination activities of the Operating Group Vine and Wine, greater awareness have been encouraged among winegrowers about the importance of increasing biodiversity as a prerequisite for the health of the vineyard ecosystem by its sustainable management. Structural

interventions are equally important, as are different land management and more rational pest protection. Real examples are those that concern the spontaneous winter-spring grassing, where the already known benefits of soil protection is added to the positive influence on useful insects.

### **Yeast date bank**

The activities carried out in three cellars of the DOC Matera area, have contributed to the setting up of an indigenous wine yeasts bank for Basilicata region. In fact, in the cellars, on a pilot scale, have been tested in fermentation, indigenous yeasts in “Primitivo” and “Aglianico del Vulture”.

The results obtained have shown that indigenous yeasts are able to efficiently conduct the fermentation process and lead to the production of wines with aromatic characteristics more appreciated than wines obtained with the commercial strain. At one of the three companies involved, the starter used has proven to be able to efficiently conduct the fermentation process even without the addition of sulphites, leading to the production of a wine characterized not only by good organoleptic quality, but also possess characteristics that we could define "functional", due to the high content of polyphenols and antioxidant activity. These are innovations that local producers can exploit to revive local production, new market and quality products.

### **Development of nutraceutical properties for Lucan wines**

Various laboratory activities have been carried out to evaluate the anti-inflammatory effects of Aglianico del Vulture wine and to deepen the nutraceutical properties of Lucan wines. The anti-inflammatory activity of “Aglianico del Vulture” wine extract was evaluated on human primary monocytes and it was first ascertained that the red wine extract did not induce cytotoxicity. For this purpose, the cells have been treated by both increasing concentrations of extract and employing different methodologies which have shown the total absence of toxicity up to a concentration of 800 µg/ml. In addition, in collaboration with the Institute of Immunology of the Medical University of Vienna, multiple parameters related to anti-inflammatory properties and innate immunity have been measured by observing an effect of reducing the levels of the main pro-inflammatory cytokines.