

COPERNICUS SUPPORTS PRECISION FARMING FOR AN APULIAN VINEYARD

EUGENIUS is a SME network for the provision of Copernicus based services for end users. The first pilot was done in Apulia for vineyard management.

The challenge

Wine production in Apulia for 2016 is extraordinarily positive with a significant progression from 6 million hectolitres in 2014 to almost 10 million hectolitres in 2016. Apulia wine production represents 14% of the national production. According to ISTAT (Italian National Institute for Statistics), the vine surface grows by 1% each year, to reach, in 2016, 85,000 hectares. With only 3% of wine production with a Protected Designation of Origin (PDO), this significant increase mainly concerns wine without quality labels. Improving and optimising wine-making practices is therefore a major challenge for this business sector in Apulia to cope with economic and environmental constraints. Improving wine quality and quantity whilst reducing environmental impacts and the use of chemical inputs is a key issue for the sustainability of Apulia vineyards. That makes Apulia a very promising market for EUGENIUS solutions and particularly for Earth observation services for vine monitoring.

The space based solution

The EUGENIUS solution for vineyard precision farming is CEnoview®, operated by Terranis and proposed in Apulia by Planetek, thanks to the Eugenius platforms network implemented in the framework of the Eugenius H2020 Copernicus project as well as to the Copernicus images. CEnoview® uses multispectral satellite imagery to generate added value products. Biophysical parameters such as the Green leaf cover fraction (GLCV) are extracted from these images to provide a clear status on the vigour and the heterogeneity of the vine. This information is ultimately analysed and formatted in order to help users make the right decisions.

In 2017, the first experimental pilot service was conducted for the Tormaresca vineyard in Salento (Apulia), an Apulian vineyard property of the Antinori family. More than 200 ha were monitored combining high frequency of acquisition and free of charge Sentinel 2 with very high resolution satellite images and agronomical in-situ datasets (grape variety, cultural practices, etc.). CEnoview® supported Tormaresca wine-growers in managing sub-field and inter-field variability of the vine vigour. Several critical stages of the grape development are monitored, with a special focus during the veraison stage (a few weeks before harvesting). Zoned maps are also produced to define homogeneous areas on which specific agricultural practices such as fertilisation, water monitoring, pruning and bunch thinning can be implemented.

Benefits to Citizens

The benefits of the CEnoview® service are threefold: decrease production costs by optimising farming practices, reduce environmental impact by limiting chemical inputs and improve the quality and productivity of the vineyard. Moreover, public authorities, such as innovation agencies can include this service in



CEnoview® products to monitor Tormaresca Bocca di Lupo Vineyard in Minervino Murge (Apulia).

Thematic Area



AGRICULTURE,
FOOD, FORESTRY
AND FISHERIES

Region of Application



APULIA

Sentinel mission used



S2

Copernicus Service used



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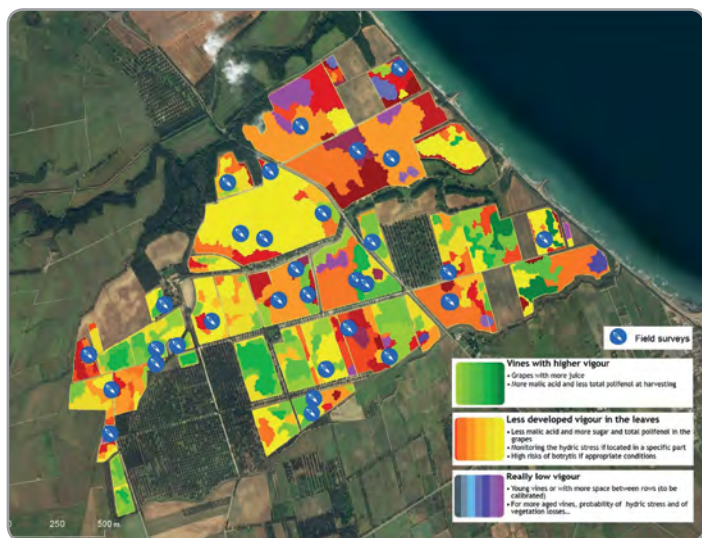
Usage Maturity Level



3

the agronomical practices support to small farmers promoting the digital innovation. This is also supported by EU policies promoting innovation in farming & food processing through EU research projects to increase productivity and reduce environmental impact.

To winegrowers, Œenoview® offers the opportunity to improve the profitability of the vineyard thanks to accurate mapping of each plot. Image processing algorithms combined with oenological know-how make it possible to extract useful indicators for a better management of the harvest and optimisation of agricultural practices (fertilisation, irrigation, health protection). Areas with anomalies (diseases or nutrient deficiencies for instance) can be detected early so that appropriate decisions can be made. Œenoview® provides wine cooperatives with an instantaneous and large scale characterisation of the qualitative potential of the vineyard parcels. This improves the efficiency of vine parcel selection to achieve production goals.



Œenoview® provides accurate information to define homogeneous areas for harvest optimization and wine quality improvement.

Credit: Contains modified Copernicus Sentinel data [2017]

“We found satellite monitoring the most accurate and affordable survey method to support the production of high quality wine.”

Giuseppe Palumbo, Tormaresca

Outlook to the future

This first experimentation in the Apulia region was successful and demonstrated that the Œenoview® service now being proposed for French vineyards can be fully operational even in a new climate and soil environment. New pilots are foreseen in 2018 as well as a quantification of the economical benefit.

Acknowledgements

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ABOUT COPERNICUS4REGIONS

This Copernicus User Story is extracted from the publication “**The Ever Growing use of Copernicus across Europe's Regions: a selection of 99 user stories by local and regional authorities**”, 2018, Edited by NEREUS, the European Space Agency and the European Commission.

The model cases focus on local and regional authorities who successfully applied Copernicus data in 8 major public policy domains. The views expressed in the Copernicus User Stories are those of the Authors and can in no way be taken to reflect the official opinion of the European Space Agency or of the European Commission.

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