EXTENDED ABSTRACT

Identification and evaluation of the winemaking sub-zones of the PDO Amyndeo winegrowing region

Theodoros Gkrimpizis[1], Nikolaos Tsakridis[2], Serafeim Theocharis[1], Christina Karadimou[1], Sotirios Kechagias[2], Nikolaos Tziolas[3], George Zalidis[2], Stefanos Koundouras[1]
*Corresponding author: skoundou@agro.auth.gr

[1] Laboratory of Viticulture, School of Agriculture, Aristotle University of Thessaloniki, 54124 Thessaloniki, Greece
[2] Laboratory of Remote Sensing, Spectroscopy, and GIS, School of Agriculture, Aristotle University of Thessaloniki, 57001 Thermi, Greece
[3] Southwest Florida Research and Education Center, Department of Soil and Water Sciences, Institute of Foodland Agricultural Sciences, University of Florida, 2685 State Rd 29N, Immokalee, FL 34142, USA

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The concept of terroir involves the investigation of how the natural environment influences the physiology of the vine, the composition of the grapes and, ultimately, the quality of the wine. This approach focuses on the use of viticultural classification techniques, which allow for the systematic characterisation and analysis of terroirs. These techniques help to identify the interactions between environmental factors and vine growth. Despite the importance of terroir, the integration of remote sensing technologies with established delimitation methodologies has not been explored in depth, particularly in regions where climate and grape cultivation data are limited or unavailable.

This study aims to identify and validate the wine subzones within the PDO Amyndeon wine-growing area in Western Macedonia. The study integrates remote sensing data with viticultural data collected during two consecutive growing seasons. To achieve this, easily accessible and free satellite data were used to extract information on soil properties, climatic conditions and topography in the study area. These data were analysed to generate spatial maps that supported the selection of experimental vineyards. The chosen plots were monitored throughout two growing seasons, during which detailed measurements of grapevine quantitative and qualitative characteristics were collected. These included parameters such as leaf area, stem water potential, bunch weight, pruning wood weight, and total anthocyanin content, enabling robust validation and refinement of the preliminary zoning assessments.

The initial mapping of the PDO Amyndeon region classified the area into four distinct suitability categories for the cultivation of Xinomavro. Validation through vineyard measurements confirmed the accuracy of this classification. Vineyards located in the Petres area showed statistically significant differences in bunch weight, and pruning wood weight when compared with those in Limni, Vegora, and Lofos. These differences confirmed the higher suitability of the Petres area, as indicated by the satellite evaluations. In contrast, the Limni, Vegora and Lofos sub-zones showed lower performance in terms of leaf area/yield index and anthocyanin content, which supports their classification as less suitable for the cultivation of high quality Xinomavro.

In conclusion, this study highlights the value of combining remote sensing data with viticultural field measurements to improve the accuracy and applicability of terroir delineation in viticultural areas. The approach adopted in the Amyndeo PDO area offers a model that is applicable to other areas experiencing data limitations.