



Using multivariate geostatistical methods and geographical clustering to delineate homogeneous winegrowing zones

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Characterization of homogeneous zones is difficult because of the complex combination of factors which could affect it. In winegrowing regions, zoning studies not only define areas according to their potential to produce specific wines but also identify the key drivers behind their variability and optimize vineyard management for sustainable viticulture.

With the aim of characterizing the spatial variability of the main vine-related environmental variables and using this information to determine different zones, climate and topographical data were obtained in Extremadura (southwestern Spain), an important wine region. Thus, accurate maps of all climate indices were produced by using regression-kriging as the most suitable algorithm in which exhaustive secondary information on elevation was incorporated. Maps of topography-derived variables were obtained using GIS tools. Later, principal component analysis and multivariate geographic classification were carried out to define areas of similar characteristics, resulting in three zones.

This territory zonification constitutes a basic tool for rational region management, demarcation of production areas, studying new cultivar suitability and its interaction with environment, and it can be the basis for viticultural zoning at larger scales. Finally, the suitability of the territory belonging to the Ribera del Guadiana Denomination of Origin for viticulture was analyzed