



Viticultural zoning of Graciosa island of the Azores archipelago - Portugal

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The management and sustainability of the traditional vineyards of the Azores settled on lava field terrains is strongly affected by practical limitations of mechanization and high demand on man labor imposed by the typical micro parcel structure of the vineyards. In a recent macrozoning approach study Madruga et al (2015) showed that besides the traditional vineyards there are significant areas in some of the Azores islands whose soils, climate and physiographic characteristics indicate a potential for the development of new vineyard areas offering conditions for better management and sustainability.

The objective of this study was to conduct a detailed viticultural zoning at the level of the small mapscale (smaller than 1:25,000), for the island of Graciosa where, besides the traditional lava field terroir, there are also some localized experiences of grapevine production over normal soils, offering thus some comparative information on this type of production conditions.

The zoning approach for the present study was based in a geographic information system (GIS) analysis incorporating factors related to climate and topography which was then combined with the soil mapping units fulfilling the suitable criteria concerning the soil properties taken as the most relevant for viticulture, being the result a map of homogeneous environmental units. The climatic zoning examined the direct quantitative variables (precipitation, temperature, evaporation) in relation to climate index, bioclimatic and viticultural specific values. Topography (elevation, slope, aspect, orientation) was analyzed based on the tridimensional models of the islands in GIS to include the best slopes for the mechanization of the vineyard cultural operations (0-15%). Soils were analyzed based on data and soil map units as defined in the soil surveys of the Azores archipelago. The soil properties taken for the analysis and definition of the potential vineyard areas were drainage, water holding capacity, depth to bed-rock and pH.