

## **Effects of soil characteristics on grape juice nutrient concentrations and other grape quality parameters in Shiraz**

Maria Concepción Ramos (1) and Maria Paz Romero (2)

(1) University of Lleida, Environment and Soil Sciences-Agrotecnio, Lleida, Spain (cramos@macs.udl.es), (2) Department of Food Technology-Agrotecnio, University of Lleida, Spain (maripaz@tecal.udl.cat)

This study investigated the response of grapes to soil properties in the variety Shiraz (SH) cultivated in the Costers de Segre Designation of Origin (NE, Spain). The research was carried out in two areas with differences in vigor, which was examined using the Normalized Difference Vegetation Index (NDVI). Soil properties such as organic matter content, pH, electrical conductivity and nutrients (N, P, K, Ca, Mg, Cu, Zn and Mn) were analysed in the two areas. Soil analyses were limited to the upper 40 cm. Soil N-NO<sub>3</sub> was measured in 2M KCl extracts. Assimilable phosphorus was analysed by extraction with 0.5 M NaHCO<sub>3</sub> at pH 8.5 using the Olsen method.

The available K, Ca and Mg were evaluated in hemaaxinecobalt trichloride extracts and the available fraction of Cu, Zn, Mn and Fe in DTPA- trietanolamine extracts, by spectroscopy atomic emission/absorption. Berry grapes were collected at maturity. Nutrients in grape juice (K, Ca, Mg Cu, Zn, Mn and Fe) were determined after a microwave hydrogen peroxide digestion in a closed vessel microwave digestion system and measured by spectroscopy. Other grape properties that determine grape quality such as pH, berry weight and sugar content were analysed using the methods proposed by the OIV.

Differences in soil properties were observed between plots, which determined the differences in vigour. The vines with lower vigour were grown in the soils with higher pH, electrical conductivity and silt content, which had in addition higher Ca, Mg and K available levels as well as higher levels of Fe and Mn than the soil in which vines had higher vigour. However, the available fraction of Cu and Zn was smaller. Similar differences in nutrient concentration in the berry were observed for all nutrients except for Cu. Grape juice pH and total soluble solids (°Brix) were higher in the most vigorous vines. However, the differences in berry weight and total acidity at ripening were not significant.

**Keywords:** acidity; berry weight; nutrients; pH; soil characteristics, sugar content.