Abstract

Under the actual conditions of international wine market, it is necessary to implement methodologies to improve the quality of the grapes to winemaking. One of them corresponds to Precision Viticulture (PV), which uses (1) ground based variables obtained from a sampling grid and (2) remote sensing tools conjunct with ground based measurement using high density determinations, like electrical conductivity properties. In Chile, few studies had been developed to incorporate the technology of PV. For this reason, the objective of the present investigation was to evaluate and compare different tools of PV (associated to 1 or at 2 type methodologies) for the visualization of associated areas to different yield and quality classes in the vineyards, in order to perform a differential harvest. For it, were evaluated the effects of the soil physical-chemical properties, leaf analysis and irrigation system over the yield and quality of grapes, by using a sampling grid of 10 points per hectare (associated to 1) or the Normalized Difference Vegetation Index (NDVI), obtained by multiespectral remote sensing, and EC with a Veris 3100 sensor (associated to 2). A low correlation was observed among the ground based variables (1) and the yield-quality of the grapes (r^2 <0.35). On the other hand, the NDVI shows a higher correlation for yield (r^2=0.7) and quality (r^2> 0.76) of the grapes. On this way, it is postulated that NDVI as an integrative variable of the factors that influence the yield and quality of the vineyard. This variable will allow better vineyard monitoring, reducing costs and, at the same time, generating a clearer representation of the existent variability of the vineyards, which is a valuable tool for the crop segmentation according to qualities. Finally, it was found that a relationship of balance of 1 m^2leaf/Kg-fruit shows the best results for optimize the quality of the harvested grapes.