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Nutrient absorption in vines (*Vitis vinifera* L., cv. Tempranillo blanco) under two water management approaches in a semiarid region of the north of Spain

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Abstract (250 words)

Two treatments were studied in vines of cv. Tempranillo blanco (*Vitis vinifera* L.) during the 2012-2018 period in an experimental plot located in Rincón de Soto (La Rioja, Spain). Rainfed treatment (R0) was compared with respect to an irrigation treatment (R2) equivalent to 30% of the crop evapotranspiration (ET_0) from fruitset to harvest phenological stages. Pre-veraison irrigation ranged from 43 (2014) to 66 mm/m^2 (2018) while post-veraison irrigation ranged from 37 (2017) to 115 mm/m^2 (2012).The normalized difference vegetation index (NDVI) was assessed by measures of reflectance, nutrients were determined by analysis of petioles sampled at veraison, grape production was determined at harvest as well as renewable wood weight was assessed at pruning time.

NDVI results showed a higher biomass development for R2 which in general agreed with higher R2 production at harvest as well as a trend to a higher renewable wood weight at pruning time. Due to it, nutrient content in petioles showed, in general, the higher limitation in R2 with respect to Mg uptake and, in a lesser extent, K uptake, which were also reflected in the Ca/Mg and Mg/K ratios in petiole. Furthermore, the higher Ca and P concentrations in petiole observed for R2 throughout the season suggests their sufficiency and higher availability in R2 soils with respect to the dryer conditions of R0 soils. Finally, the higher Carbon concentration in petiole of R0 also showed the higher limitation of R0 for nutrient availability and later uptake with respect to R2.

Keywords: water stress, limited irrigation, nutrient uptake, reflectance, nutrient availability.