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Irrigation frequency in red varieties of vineyards in Spain: production and quality

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The irrigation water management in the vineyard is a crucial aspect to obtain a sustainable quality production over time. Previous studies have set the water requirements to be applied in the vineyard at 30 % of the reference evapotranspiration (ET_0), although there are no studies that settle the effects of the frequency of application of the irrigation water needs for the vineyard on red varieties in Spain. The present study contemplates the application of deficit irrigation (30 % ET_0) applying the weekly dose in a single irrigation (T07) or in two irrigation events per week (T03). The study has been carried out in 2021 in four Spanish wine regions in four red varieties: Garnacha Tinta (Badajoz), Tempranillo (Valladolid), Syrah (Albacete) and Mencía (Lugo). The effects of irrigation frequency on production (t.ha⁻¹) and bunch number and weight, as well as must composition (^oBrix, pH, acidity and potassium content) have been evaluated. In addition, the effects on the aromatic composition at the family level have been evaluated. The results show a tendency towards higher yields for T07 in the Garnacha and Mencía varieties, due to a greater number of bunches, despite the fact that, except for Garnacha, the average weight of the bunch was higher in the T03 treatment. Regarding the qualitative parameters, different behaviors have been observed according to the variety, with the exception of the potassium content, which has been higher in the T03 treatment, in the four varieties. Total volatile composition (sum of free and glycosidically fractions) was not significantly affected by treatment for any cultivar studied, however a tendency to increase the glycosidically-bound fraction in T3 respect to T7 was observed. More years of study are needed to obtain solid conclusions about the effect of irrigation frequency.

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