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# Water availability at budbreak time in vineyards that are deficitary irrigated during the summer: Effect on must volatile composition

## Abstract

In recent years, Mediterranean regions are being affected by marked climate changes, primarily characterized by reduced precipitation, greater concurrence of temperature extremes and drought during the growing season, and increased inter-annual variability in temperatures and rainfall. Generally, high-quality red wines need moderate water deficit. Hence, irrigation may be needed to avoid severe vine water stress occurring in some vintages and soils with low holding capacity. The aim of this work was to evaluate the effects of soil recharge irrigation in pre-sprouting and summer irrigation every week (30 %  $ET_0$ ) from the pea size state until the end of ripening (RP) compared to exclusively summer irrigation every week (R) in the same way that RP, on must volatile composition at harvest. The study has been carried out in 2021-2022 with four red varieties in different Spanish wine regions: Garnacha Tinta (Badajoz), Tempranillo (Valladolid), Syrah (Albacete) and Mencía (Lugo). The effects of irrigation frequency on must volatile composition have been evaluated through GC-MS.

In 2021 season, the total volatile composition (sum of free and glycosidically fractions) showed a trend to increase in R vs RP in Garnacha and Mencía cultivars due to the bound-glycosidically fraction. In contrast, Syrah cultivar showed a higher total concentration in RP than R. In 2022, a higher total concentration was observed in RP vs R for all cultivars with exception of Garnacha. These increases were motivated by bound-glycosidically fraction except to Tempranillo cultivar where the free fraction increased in RP vs R. In general, in 2022 season the soil recharge irrigation had a positive effect on musts volatile concentration. The results showed a higher effect of the variety and season than the irrigation strategy.

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