

IRRIGATION FREQUENCY IN FOUR GRAPEVINE RED VARIETIES IN SPAIN. EFFECT ON MUST VOLATILE COMPOSITION

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Background

The irrigation water management in the vineyard is a crucial aspect to obtain 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 irrigation application on red varieties in Spain.

The present study contemplates the application of deficit irrigation (30 % ET_0) applying a weekly dose in a single irrigation (T07) or in two irrigation events (T03) per week. 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).

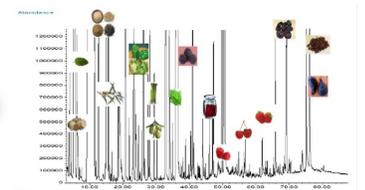
Material & Methods



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).

Treatments: Single irrigation (T07) and two irrigation events (T03) per week

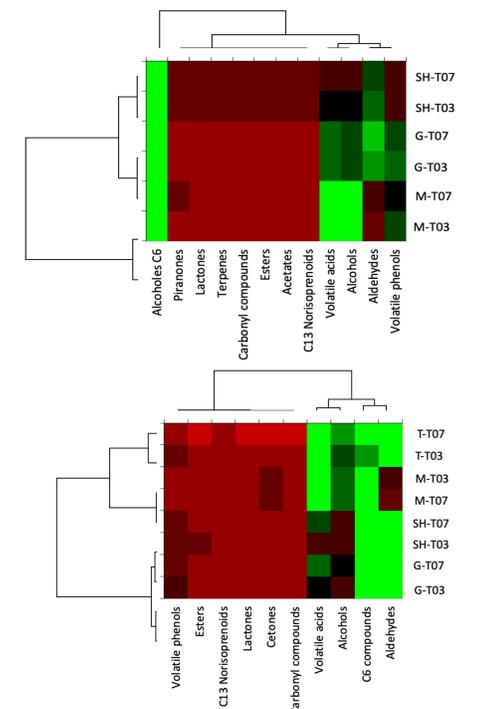
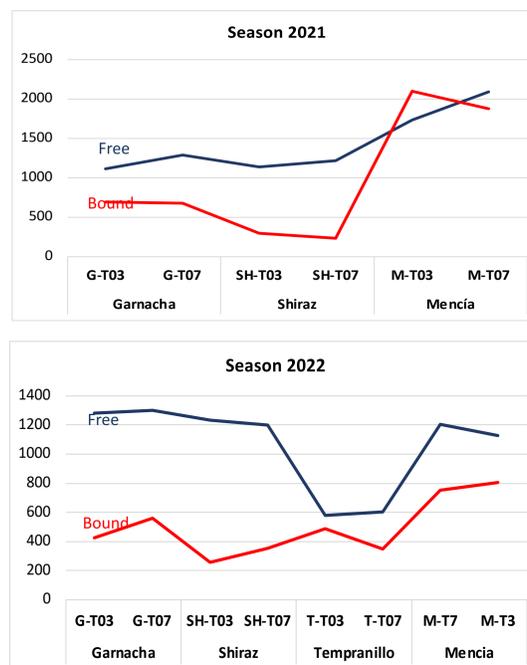
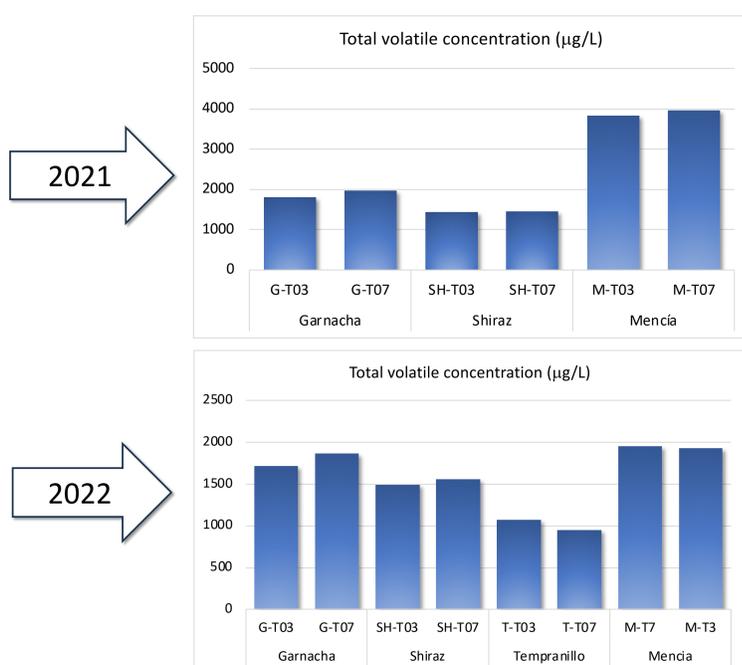
The effects of irrigation frequency on must volatile composition have been evaluated by SPE and GC-MS.



Results

In 2021 season, the total volatile composition (sum of free and glycosidically fractions) showed a trend to increase in T07 vs T03 in Garnacha (G), Syrah (SH) and Mencía (M) cultivars.

In 2022, the same trend was observed in Garnacha and Syrah, however the total volatile concentration in T03 was higher than T07 in Tempranillo cultivar (T). In the same way that in 2021 season, these tendencies were motivated by bound-glycosidically fraction. Free and bound compounds showed different behaviour among cultivars, seasons and treatments. Finally, Heat Maps showed the distribution and clusters in basis to treatments and chemical groups of volatiles in 2021 and 2022 seasons.



Conclusion

In general, applying a weekly dose in a single irrigation increased the total musts volatile concentration. An effect of the season and cultivar was also observed.