

ABSTRACT

It is a challenge growing quality grapes in dry and hot climatic conditions. Warmer climate induces faster berry sugar loading and acid degradation while phenolic ripening develops semi-independent thereof. This is a problem in hot regions such as Spain. The increase in global temperatures (IPCC) worsens this issue. The objective of this study was thus to delay maturity by an increase of crop load, based on the findings of other investigations (Intrieri et al., 2011; Archer & Van Schalkwyk; Martinez de Toda 1999; Clingleffer 1988).

The experiment was conducted on a Merlot vineyard, in Madrid, Spain: Treatment 1 and 2 were traditional two-bud spur, and Treatment 3 three-bud spur pruned, with no lateral shoot or sucker removal in T2 and T3. Canopies were left in sprawl and vines were irrigated (Ψ_f : -1,2MPa). Yields, basic must parameters and phenolic composition (Glories) were measured from veraison onwards. LAI was obtained at harvest by relating shaded soil measurements with fresh weight of foliage (Williams & Ayars 2005). Wines were also analysed.

The results show increase in yields in T2 and T3 with crop yields in T1: 6.54 t/ha, T2: 8.49 t/ha and T3: 15.86 t/ha, although no significant difference in berry weight. The fertility of T2 was decreased. LAI is also significantly higher in T2 and T3. Must composition does not show differences, although a tendency of lower °Brix and higher titratable acidity in T3 is noted. LAI/crop ratio for all treatments are within the range according to Keller (0.8-1.2 m²/kg) although T3 have a much lower ratio (0.95). All wines fulfill oenological requirements.

Maturity was only slightly delayed as the season was extremely hot and dry which could have altered the effect of the treatments. Main differences in wine and must composition are due to the competition between bunches and the lower LAI/crop. Although grapes were ripened fully, in the future it should be considered to correct the LAI to the high crop load.