



## Temperature influence on grapevine phenology in the Lisbon winemaking region

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Grapevine is a climate sensitive crop since its growth and development are governed by atmospheric elements. In fact, winegrape phenology is mostly controlled by temperature throughout the growing season, though precipitation and radiation are also important, as attested by previous studies. As an illustration, a 10°C base temperature is required for grapevine budburst onset. In the present work, the impact of inter-annual temperature variability on phenological timing is analysed for the Lisbon winemaking region. This region is the second most important in Portugal concerning total wine production. The year-to-year fluctuations in the phenophase timings are examined through multivariate linear regressions over the period from 1995 to 2010. Annual dates of budburst, flowering and véraison of *Vitis vinifera* L. varieties (e.g., Alfrocheiro, Trajadura) are related to local atmospheric parameters. The varieties are grown in an experimental vineyard (Dois Portos; geographical coordinates of 39.0°N, 9.2°W and elevation of 110 m). Phenological intervals and timings are analysed for each variety separately. Monthly means of the maximum, minimum and mean temperatures are used as independent variables in the regression approach. Significant correlations are found between phenophases and temperatures. Flowering dates reveal the most statistically significant relationships, particularly with maximum/mean temperatures in the March-April period. Springtime temperatures are shown to have a strong effect on grapevine phenology and, ultimately, on yield and wine quality.