



Climate and wine quality: Chianti in Tuscany

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Climatic factors and weather types (WT) frequencies affecting Tuscany are examined to discriminate between vintages ranked into the upper and lower quartile years as a consensus from six rating sources of Chianti wine during 1980 to 2011. These rankings represent a considerable improvement on any individual publisher ranking, displaying an overall good consensus for the best and worst vintage years. Climate variables are calculated and WT frequencies are matched between the eight highest and the eight lowest ranked vintages in the main phenological phases of Sangiovese grapevine.

Results show that higher heat units, mean, maximum and minimum temperature and more days with temperature above 35°C were the most important discriminators between good and poor quality vintages in the spring and summer growth phases, with heat units important during ripening. Precipitation influences on vintage quality are significant only during veraison where low precipitation amounts and precipitation days are important for better quality vintages. In agreement with these findings, WT analysis shows good vintages are favoured by WT4 (more anticyclones over central Mediterranean Europe - CME), giving warm dry growing season conditions. Poor vintages all relate to higher frequencies of either WT3, which, by producing perturbation crossing CME, favours cooler and wetter conditions, and/or WT7 which favours cold dry continental air masses from the east and north east over CME.

This approach shows there are important WT frequency differences between good and poor quality vintages. Trend analysis shows that changes in WT frequencies are more important than any due to global warming.