



Climate Change and its effect on Franconian wine

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While the majority of the highest quality wine-producing regions in Western and Central Europe have benefitted from an increase in quality ratings due to climate change, traditional Franconian wine is in danger of losing its unique characteristics and its traditional spatial distribution.

A long-term (1948-2010) study was made of reference vineyard observations in Lower Franconia. This wine region in the federal state of Bavaria is one of the most northerly in the world. The climate required the use of adapted grape varieties (frost resistant and early maturing) which has an impact on the unique quality of traditional Franconian wine. In this research, phenological events (budburst, flowering and harvest) and composition (acid and sugar content during harvest) of white grape varieties (Silvaner and Müller-Thurgau) were summarized and assessed. The phenological events were recorded by a local winery (Bürgerspital zum Heiligen Geist) in Würzburg and the Landesanstalt für Weinbau und Gartenbau (regional office for viticulture and horticulture, LWG) in Veitshöchheim. In addition, climate datasets were obtained from local climate stations operated by the Deutscher Wetterdienst (German weather service, DWD) adjacent to the phenological stations; variables included mean, maximum and minimum temperature, hours of sunshine and precipitation.

Multiple regression procedures were used to relate the viticulture variables (phenology and composition) to the climate variables. The regression of phenological intervals and climate data revealed that the phenology of Silvaner and Müller-Thurgau grapevines in Lower Franconia have tended towards earlier occurrence. In addition, a shortening of the flowering period and of the growing season was revealed. The relative amounts of sugar in the grapes prior to harvest have tended to increase while the organic acid content decreased over the last decade.

The findings confirm a consistent relationship between onset dates of phenological phases and the corresponding climate data. The observed warmer season results in greater ripening potential in Silvaner and Müller-Thurgau grapes. As a consequence, the sugar content increases while the organic acid component decreases, resulting in a changed wine quality. The balanced ratio of sugar and acid content shifts in favour of the sugar component, which may result in a loss of the traditional character of Franconian wine.