

Highlights of Analytical Chemistry in Switzerland

The Influence of Vine Harvesting Dates on the Quality of Pinot Noir Wines

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The date of the vine harvest has a notable influence on the quality and style of wine produced. The wine-making process in red wines is more complex than that of white wines. The level of tannin maturity plays a vital role in determining the sensorial quality of the wine. For a given grape variety and vineyard, vine harvesting at an early date will give a dry wine, with green tannins and a more or less herbal aromatic character. On the other hand, although a later harvesting date produces a more full-bodied, smoother wine, the unique grape fruit quality is masked and the resulting aroma penalised. The choice of date of vine harvesting is therefore the result of a compromise between these various properties and will depend, in particular, on the style of wine that the wine-maker wishes to produce.

Overall grape maturity is difficult to capture since it depends on several criteria whose discriminating factors differ accordingly to the desired type of wine. Sugar content (reflected by density or 'Oechsle'), together with acidity, is the most widely used parameter. As far as red wines are concerned, phenol compounds and especial-

ly the quality of tannin in grape skins and seeds should be equally taken into consideration. The study of their development during the ripening period is therefore of considerable interest. During the time of ripening, the content of anthocyanins increases, reaches a peak and then falls off again. Tannins behave differently as their content decreases in grape skins and seeds. The decrease in fruit skins is small. The tannin decrease in seeds, however, is much greater and non-linear.

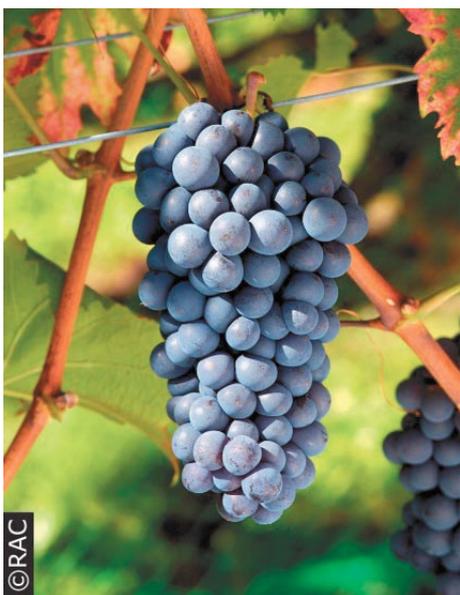
The determination of anthocyanins involved total reaction of free anthocyanins in the presence of SO₂ to form colourless bisulfite compounds. The determination of tannins (proanthocyanidins) is based on hot oxidative depolymerisation in a mineral acid environment of proanthocyanidins to form anthocyanidins with a red absorbance reading at 550 nm.

The best wines are obtained from grapes harvested about ten days after the peak of anthocyanin content has been reached. In spite of occasionally higher alcohol content and a less pronounced bouquet, the ample and smooth tannin content confers silkiness and harmony to these wines. These findings enable wine-producers to integrate all the influencing parameters and serve as a guideline in choosing an optimum vine harvesting date, according to the stage of grape growth and the type of wine required.

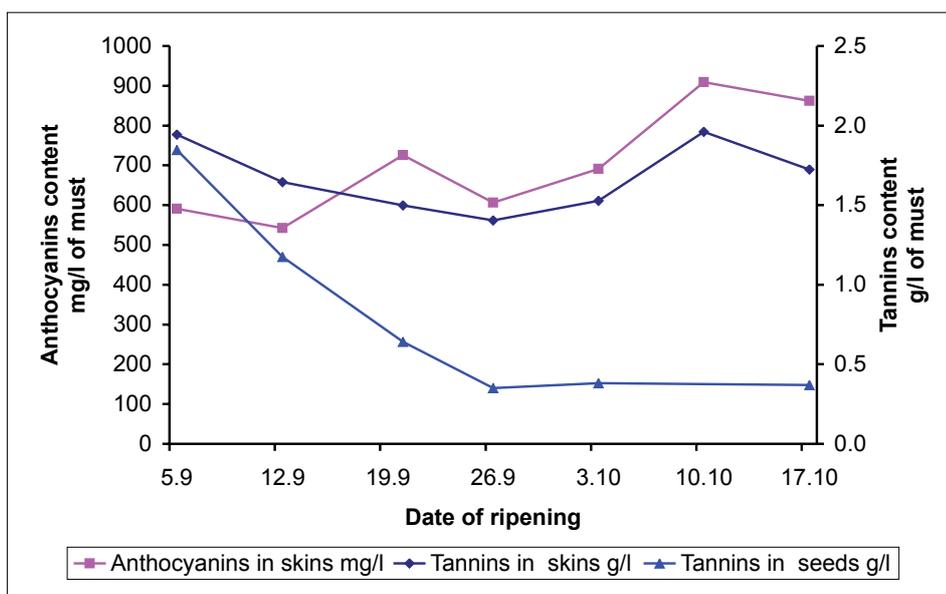
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A ripe Pinot Noir grape (copyright: acw.admin.ch)



Evolution of the content of anthocyanins and tannins in grape skins and seeds during maturation (Pinot noir, Valais 2005)

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