



Méthode Cap Classique, Part 1: Viticulture

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As grape and juice samples (destined for MCC production) started to enter the lab at a steady state, flagging the onset of the new harvest season, we thought it only appropriate to start 2017 blog posts with an article on MCC production. This is the first part of a short series of articles aimed at giving bits of information to aid producers in the making of the new year's bubbly.

For the producer, understanding the relationship between **vineyard management, chemical parameters** and **wine quality** may be even more difficult for MCC than for table wines. As opposed to table wines, desirable chemical attributes of MCC usually include alcohol content of 10.5-11.5% vol, high total acidity (10-14 g/L), low pH (2.9-3.2) and low flavonoid content (also low aldehydes, low metal content, low volatile acidity and little colour). It is thus possible to apply management strategies developed for the production of fruit grown for table wine to the production of fruit grown for MCC.

Variety selection

Studies have shown that the **volatiles produced** during winemaking were **more influenced by variety used** than by soil type or stage of ripening. Traditional Champagne varieties such as Chardonnay and Pinot noir are mostly used for MCC production, however the use of other varieties are becoming increasingly popular and local MCC labels are seen with the likes of Sauvignon blanc and Chenin blanc. Foreign wineries are also experimenting with varieties such as Verdejo and Italian Riesling leading to cultivar and regionally specific wines.

- Chardonnay and Pinot blanc base wines = floral, citrus and apple aromas
- Pinot noir and Pinot Meunier base wines = berry and vanilla/butter aromas

However, important to note that often aroma profiles exhibited by the base wines do not enable prediction of the sensory profiles of MCC after aging on lees. **Winemaking processes** that includes yeast autolysis and secondary fermentation will inevitably influence the final organoleptic properties of the wine.

The **cultivar** can also influence the **foaming properties** of the MCC. Blending of different varietal wines improved the foaming properties owing to a synergistic effect among components. In general **Pinot noir** has a **higher foaming height** when compared to Chardonnay.

Clones are also sought out for their **higher acidity**, higher yield and **lower anthocyanin** and **tannin** content than their table wine counterparts.

Yield

Yields in Champagne are prescribed by the AOC and results in **fruit removal** prior to harvest in cases where predictions exceed permitted yields. The notion that lower yields lead to higher quality grapes and wines are unsupported and it could be speculated that the root cause of this rule is to limit production and retain higher prices.

Recommendations in Champagne are that **fruit removal around véraison is ideal** for quality grape production and would lead to a considerable reduction of yield depending on the severity of bunch removal. The **possible quality improvement** by bunch removal should, however, be carefully weighed against the **loss in tonnage** delivered to the winery. Publications report contradicting results when it comes to the effectiveness of this treatment in adjusting quality, however it was proven that crop reduction induce **early ripening**, which could be used as a tool during harvest planning.

Training, pruning and canopy management systems

Some **training systems** have shown to be less desirable for MCC production due to higher pH and lower titratable acidity (such as simple Guyot and double Guyot), however other studies reported **little or no impact** on grape or wine composition and no impact on sensory compositions. In this case the **yield** would be the decisive factor and could be increased without impacting fruit composition.

A study comparing **mechanically pruned** vines showed a greater number of **smaller clusters** with more **intense fruit flavours** and quality aromas. This could be due to the smaller berry size under mechanised pruning. Timing of **pruning could influence the harvest date** and, in Champagne, vines are not pruned too early in an attempt to avoid early budburst and possible spring frost damage. The harvest date could, in this way, be manipulated and studies have shown that delaying pruning by 6 weeks delayed budburst and maturity by approximately 5 days.

Pre-flowering leaf removal has been reported to result in **lower hydroxycinnamate** content and **higher tartaric acid** content in base wines and could affect the texture and mouthfeel of the resulting MCC. Other than that, early leaf removal can also lead to **looser clusters** and improved quality traits, especially increased soluble solids and colour.

Late (pre-véraison) leaf removal should be avoided due to overexposure of clusters that could lead to undesirable **decrease in malic acid**.

Harvest date

In practice, the harvest date of base wine grapes is mainly determined by

- sugar concentration, total acidity and pH

An earlier harvest date (one week before the commercial harvest date) will lead to MCC with more herbaceous notes compared to wines harvested at the commercial harvest date. The **higher foaming properties** of **earlier harvested grapes** has also been reported supposedly due to the lower alcohol content. Riper fruit flavours are required to give rise to complexity in MCC, however a good **balance** between green and ripe flavours are desirable, especially considering the overexpression of varietal character in certain grape varieties at riper stages.

Harvesting method

Harvesting and **handling** of the grapes could greatly influence the composition of the base wine, mainly due to the **extraction** of various compounds depending on the technique used. **Mechanical harvesting** is not permitted in the Champagne region due to **oxidation** and **anthocyanin extraction**, however the limited space between the rows also do not allow for this technique to be used. In other regions the use of mechanical harvesting could result in excessive anthocyanin extraction which could necessitate the use of charcoal or PVPP in the juice possibly leading to a loss in aroma and/or foamability of the final wine. The **extraction of phenolic compounds** also **negatively affects foaming** and may cause **bitterness** and reduced aging capacity.

For certain a current and increasing trend is the diversification of growing regions and the use of alternative varieties and clones. This type of diversification could set South African MCC apart of the rest. Articles to follow includes winemaking techniques used and the effect thereof on MCC production.

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