



## **Report by Michel Salgues, WineSkills Sparkling Wine Production Mentor, Sept 2012**

This report is the result of 8 first time visits to English vineyards with established or future wineries. They cover a wide range of projected production volumes and grape styles (Vinifera or Hybrids) and interests.

### **1- General observations:**

**Dynamic business:** UK Sparkling wine is a dynamic business, still in expansion with already proven results.

**Climate is still limiting:** A limiting climate as opposed to too warm, too dry, is an asset for producing quality sparkling wines.

It is also responsible for some low yields, late or insufficient maturation, development of *Botrytis*, mold and a lot of variations. Vintages differ widely in quantity and quality. Harvest 2012 was extremely late with generally low yield. This could happen again. Sustainability requires a strategy for dealing with difficult maturation vintages.

### **A blind spot?**

Although the profession is very open to influences from the “new world” especially remote English speaking countries, it looks to be that one model has been neglected: Champagne. This area is the closest and most credible model for Sparkling Wine production in UK. The soils, climates and wines are comparable, at least for southern regions. The Champagne region has a long and successful experience with vineyards and wine making, relatively available. The CIVC has an excellent R & D program. I recommend visiting, meeting with champagne producers with same size and scope. Also a subscription to the *Vigneron Champenois* will provide, 2 to 3 times a year, useful technical and practical information.

**A Production Strategy** should be developed for dealing with vintage variability

**In the Vineyards** (out of my scope) emphasis should be put on:

- Early maturity (rootstock, clones, density, cultural practices...) over the years will result in better yields and quality.

- More consistent yields: using “quality” clones and the “regular” (high producers) clones will save yields in a bad year.

-For classical varieties (Chardonnay, Pinot Noir and Pinot Meunier), the clones, the studies and practices developed in Champagne are the most likely to apply directly in England.

### **In the Winery:**

-Whole Cluster Champagne Pressing is the tool for making the best of a “not so perfect” crop. Unripe and dry berries are not open broken; the juice is less green, less veggy and less moldy. The extraction of undesirable *Botrytis* enzymes and by products is minimized.

-Wineries bigger than say 100 000 bottles/year can build a reserve program for buffering the annual variations of quality and volume. Those reserve wines can age in wood or stainless steel containers. They will bring more consistency and complexity to the blends. Keep the blend below the threshold of perception of oak.

-Smaller wineries can use some barrel fermentation or aging in 3 to 4 years old average barrels, for +/-2 months rotations. This oak contact will, especially in “unripe” years soften the aggressiveness of the wine and bring complexity (again: below the threshold of oak). Another strategy is to “vintage” all the production, authorizing the winemaker to deliver wines different every year.

**2-The technology of sparkling wine:** Two frequent topics have been addressed during the visits: pressing and sulfur derivative off flavor.

Many goals and principles for still winemaking do not apply to sparkling wines. The safest starting point is to follow the experience of Champagne. It is the shortest way to reach excellence. Variations from those “fundamentals” can be implemented after few years of production and repeated experimentations, if one want to promote a personal style.

**Whole Cluster Champagne Pressing:** is the foundation of method champenoise.

-Whole cluster: selective hand picking in the vineyards; eliminate moldy, mildew, bunches with more than 10% Botrytis, 2nd crop and split berries. Use small containers, less than 40 Kg, avoid mud contamination. Bring the grapes a.s.a.p. to the press without any juicing. Load directly the press in less than 20 minutes.

- Gentle slow pressing program: the goal is to extract selectively the juice from the pulp of the ripe berries only, (note: green berries are not broken as they would be after crushing), to minimize the extraction from the skin and seeds, to avoid generation of solids. Solids generated during pressing are contaminants due to a negative technology. They expose degradation enzymes with skin substrates and air, leading to very fast oxidation. Browning, bitterness, vegyness, aroma destruction take place. Harsh manipulations and pomace turn over (rotations for a bladder press), create solids

by abrasion and shredding and should be reduced to the minimum. High pressure does not create solids. Because the degradations initiated by solids are very rapid, it is preferable to avoid creating solids than eliminating the solids of a careless pressing. The damage to the juice is already done.

- Separate Juice Fractions: juice composition varies during pressing:

-- 1 -Self pressing free run juice: this juice collects the contaminated open berries: yeast, acetobacter, off flavor and dust from the vineyard, plus the juice produced by self-crushing during transportation and loading. It is often desirable to separate the first 10 to 15 liters per ton, add 70+ ppm SO<sub>2</sub>, settle separately and mix with the *tailles* or discard if not good.

-- 2 -*Cuvee*, +/- 533 liters/ton obtained by bringing the press directly in pressing position (no turnover, no rotation) and 3 elementary cycles increasing gradually the pressure from 0 to 1 bar, each one of 30 to 50 minutes, separated by one pomace turn over (one turn only exceptionally two) *Cuvee* is more acidic, less tannic, less veggy, has less color, less potassium and a lower PH. It is the noble part of the grapes. Blending *Cuvee* wines is usually a "no brainer"

-- 3 -*Tailles*: +/- 130 liters/ton obtained with 4 elementary gradual pressure cycles from 0.4 - 0.6 bars to 1.2 - 1.6 bars. They often require some stripping/fining. The *tailles* wines are more turbid, more fruity, less elegant, eventually veggy, phenolic, stemy and require shorter time *sur lattes* (on tirage)

- *Belon*: that is a receiving tank positioned directly below the press, with 2 or 3 compartments where the juice can be directed for a clean juice separation. Each compartment has a racking box and valve. It is a useful tool for --- an accurate separation of the different juice fractions --- individual targeted treatments of the fractions such as fining and SO<sub>2</sub> addition and --- a first fast racking off of gross lees, more than 50% are eliminated. "Pureing" of the gross lees during pumping is avoided.

-SO<sub>2</sub> Addition: in the *belon*, add 50 to 70 ppm SO<sub>2</sub>, less in the *cuvee* than in *tailles*, more if *Botrytis* is on the grapes. Eventually for the *tailles*, delay SO<sub>2</sub> addition in the settling tank or after racking, to allow some preventive oxidation and to reduce the *taille* character (steminess). On the *cuvee* this operation would neutralize the fruit.

-Juice Settling: let the juice fractions settle, each one in a separate tank for 16 to 24 hours at +/-16 degrees C. Eliminating the solids will prevent many off-flavors in the fermented wine.

- Conclusion: Champagne pressing compared to crushed-destemmed grape pressing provides a selective juice extraction, no green or dry berries, no skin contact, a separation of juice fractions --- much less solids generated --- less vegginess, less bitterness, less degradations from *Botrytis*, less oxidation and (yes) less reductions (sulfur compounds). The wines present a cleaner and purer fruit, they are more elegant and longer.

**Sulfur derivatives off flavors:**

Sparkling wines are sensitive to sulfur derivative off flavors, more than still wines. Below threshold of identification the wine is “closed” unbalanced and short, above it is nasty.

- H<sub>2</sub>S: the most common is the rotten egg smell or reduction off flavor due to H<sub>2</sub>S. It is produced by yeast during the alcoholic fermentation in nutrient deficient juices. See D. Cowderoy WineSkills report Aug. 2012 for preventive solutions. Note: avoid fermentation tanks more than +/- 3 meters high: the wines fermented inside will show sulfur derivative off flavor (higher pressure on thicker lees)

-OTHER COMPLEX SULFUR CONTAINING DERIVATIVES are responsible for sulfur off flavors ranging from: metallic, goyave, “sauvignon” vegetal, dirty bathroom, garlic, cabbage, burnt match, burnt tyre... Those derivatives present a very large range of volatility, odor and threshold of perception. They are in part interchangeable, often by oxydo-reduction. For example, by oxidation, H<sub>2</sub>S can lead to disulfides with a lower threshold of perception and a nastier off odor: a so called “reduction” off flavor can be increased by oxidation. It explains the high sensitivity of the empty glass test: many sulfur off flavors can be detected 10 minutes after the glass is empty even if they were not identified in the full glass.

More often than not, those compounds are already present in the juice before fermentation, even in the vineyards. They can escape detection as heavy, low volatility precursors. They will lead later on to recurrent sulfur off flavors through further reactions in the finished wines.

They result from the metabolism of “wild” yeast, particularly on elemental sulfur. The factors are the presence of elementary sulfur, especially micronized (“wetable”) sulfur (no micronized sulfur treatment after flower set and no sulfur dust on the last 2 treatments for oidium), split berries contaminated with wild yeast, juice produced by self-crushing in the picking bins, high temperatures (sun exposed harvest bins kept too long before pressing, high temperature settling tanks), crushing before pressing, insufficient settling of the juice (fermentation on solids).

The best test for identifying the presence of heavy precursors is to taste the lees after racking in the settling tank: they have to taste fresh and clean. If not, be prepared to a recurrent “reduction” problem. Analyse then what is the origin of those precursors.

-Curative Treatments: none are satisfactory, prefer prevention. Copper Sulfate eliminates H<sub>2</sub>S, it is almost useless on complex sulfur derivatives. It has negative effects on the wine. Last resort treatment: Charcoal, It presents some efficiency for removing sulfur derivatives off flavors. Batch treatment results in negative organoleptic side effects. Low charcoal concentration (1 to 5 g/hl) mixed with the DE feeding during a DE filtration results in a more targeted elimination of Sulfur compounds, with less side effects.

-LIGHT STRUCK: It is a photo-chemical reaction induced by UV light. End products are sulfur derivatives responsible for the off flavor, similar to the previous ones: garlic, burnt tyre. Sparkling wines are especially sensitive to light struck because of their lower concentration of UV absorbing tannins. The principal factor is the UV energy reaching the wine. Direct sun and fluorescent light on the bottles especially during long exposures have to be prohibited. Green and antique brown glass intercepts 5 to 20+ times more UV than clear glass. Clear glass is absolutely not recommended: no one is guaranteed that a bottle will not be exposed to UV after leaving the winery. The marketing advantage of clear glass (?) is easily offset by a communication with the consumer that a darker glass will deliver a "perfect" wine on their table.

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