



BEGINNER SPARKLING WINE PRODUCTION



Material contained in this document applies to multiple course levels. Reference your syllabus to determine specific areas of study.

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“Come quickly, I am drinking the stars.”
—Dom Perignon

This quote is often attributed to Dom Perignon, a Cistercian monk, upon drinking champagne for the first time. This is a lovely quote and story indeed, even if a bit romanticized. Dom Perignon was constantly annoyed with the bubbles (refermentation) in Champagne and tried desperately to keep the bubbles out! He finally succumbed to the inevitable sparkle and remains an iconic founding father of Champagne. Not only did he reluctantly witness the creation of Champagne- but he invented a coquard press to turn grapes into a clear liquid, studied and understood the importance of blending different grapes and vineyards, utilized strong English glass bottles, and reintroduced the cork. While the first two contributions make Champagne better, it simply could not exist without the last two mechanisms.

Wines from the cold climate region of Champagne always had a slight sparkle to them. Waiting for the grapes to ripen on the vine until late fall, they would begin to ferment only to be halted by winter's cold temperatures. The wines were contained, and once they warmed up in spring, fermentation would resume. The carbon gas produced by the fermentation process had nowhere to go so it integrated into the wine causing a bubbly carbonation.

So let's make some Champagne!

We have to start with some still wine that is preferably high in acid and low in sugars. With two fermentations required, the first fermentation should result in a low-alcohol wine. A gentle pressing with a horizontal basket or bladder press should be used. In the Champagne region of France the grapes used are Chardonnay, Pinot Noir, and Pinot Meunier.

The juice is extracted in phases:

1st is Cuvee which is high in sugars and acids and is derived from the central pulp.

2nd is Taille which is richer in minerals and lower in both acids and sugars. It is derived from the flesh nearer to the skins and pips.

3rd is Rebeche which is too coarse for Champagne production and used to make spirits instead.

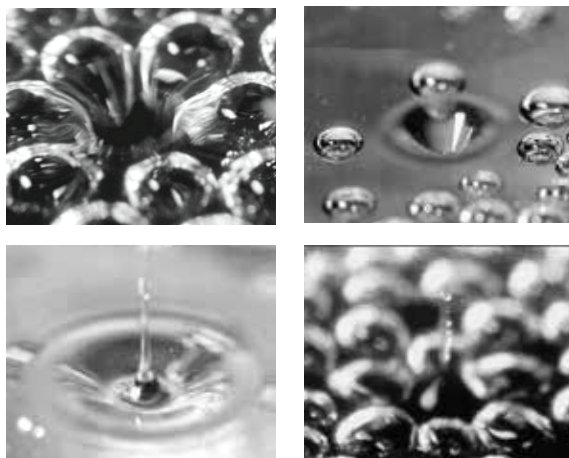
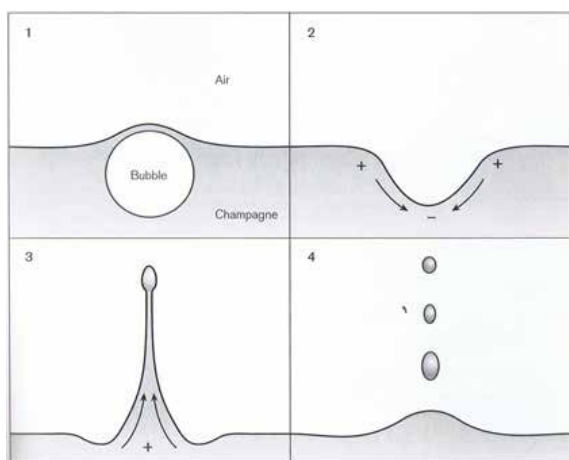
Then the juice is set (Debourbage). The solid particle sink, and are separated from the now clear juice. A warm fermentation begins at 60-70F (10-16C) and lasts for a week to 10 days. Malolactic fermentation can take place too. The resulting base wine should be 10-11% abv and can be chaptalized (sugar added for the purpose of increasing the resulting alcohol level rather than to sweeten a wine) if need be. Next the wine is raked (Soutirage), which removes the solid matter and clarifies the wine again. Now the blending begins. Most Champagnes are a blend of different grapes and vineyards and the results of which are greater than the sum of its parts.

Then it is fined, raked, and Cold Stabilized to clean clarify, and let the tartaric acid precipitate out. Next we make bubbles!



BEGINNER SPARKLING WINE PRODUCTION

The prise de mousse, or setting the foam, is the 2nd fermentation that results in a carbonated wine. This is a longer and cooler fermentation (60-63F/10-12C) that lasts for 28-56 days. The process creates 4.9-6 atmospheres of pressure and about 1.5% more alcohol by volume (abv). The base wines are bottled, both yeasts and sugars (liquer de tirage) are added to the bottle, and then it is capped tightly. This, the liquer de tirage, is the fuel for the second fermentation. Bottles are then placed in a pupitre and stored at 12C/54F for the length of the second fermentation. A Pupitre is a framed structure with holes for bottles slanted down at a 45 degree angle and is a home for champagne-to-be bottles during their evolution. The bottles are frequently and abruptly turned- shaking the sediment and moving it slowly down to the neck of the bottle from a horizontal to vertical position. During this 4-8 week process, the wines are aged on the lees (sur lees). (Lees are dead yeast cells which give champagne its breadly doughy aromas and flavors.) These days a gyropallatte is used in place of the old fashioned and less efficient pupitre.



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So now the wine was made and turned into Champagne- but there is a big chunk of lees/sediment in the upside down bottle. To remove this it's time for the degorgement process. The bottle is inverted and placed in a cold liquid to chill it to 45F/7C. This reduces the pressure and freezes the sediment/lees. The bottle is turned right side up, the top removed, and the frozen puck of sediments shoots out. Then the Dosage (liquer d'expédition) is added- which is a wine and sugar mixture. The wine replaces what was lost during disgorgement and the sugar addition determines the final sugar level of the Champagne.

Brut Nature	Bone Dry	No Sugar Added
Extra Brut	Extremely Dry	Less than .6% RS
Brut	Dry	Less than 1.5% RS
*Extra Dry/Extra Sec	Off Dry	1.2-2.0% RS
Sec	Slightly Sweet	1.7-3.5% RS
Demi-Sec	Sweet	3.5-5% RS
Doux	Very Sweet	More than 5% RS

BEGINNER SPARKLING WINE PRODUCTION

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For non vintage Champagne, this wine is aged for 15 months; and for Vintage Champagne, it ages 36 months.

This is the classic Champagne method known as Methode Champenoise. As its name suggests, this is the technique used to create Champagne, as well as Franciacorta in Lombardy Italy. A sparkling wine made in this method outside of the appellation boundaries of the Champagne region is called Cremant. Cava from Penedes, Spain is made in this method too- but the grapes used in the base blend are Parellada, Macabeo, and Xarel-lo.

There are other methods to produce sparkling wine:

Transvasage, or Transfer method, is used in sparkling wine production for small and large bottle sizes. The wine has its secondary fermentation in the bottle, is poured into a large vessel, and re-poured into the chosen bottle sizes. This can be done for splits (187ml), and above 3L only (375ml, 750ml, 1.5ml must all have second fermentation in the bottle, riddled, disgorged, and liquor de triage added.

In the Tank, Cuve Close, or Charmat method both the first and second fermentation take place in a closed tank. This process simulates what happens in an individual bottle on a much larger scale. While much less labor intensive and less expensive the Tank method produces sparkling wine of much less finesse than the traditional Methode Champenoise. Prosecco is made by this fermentation process from Glera (aka Prosecco) grapes from Veneto, Italy. German Sekt is made in this way too.

The most cost effective technique to make a sparkling wine is carbonation. Yes, the same thing they do to make Coca-Cola bubble can be done to wine. Carbon Dioxide is injected into the base wine and incorporated as large clumsy bubbles.

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