FINE WINES

Stormhoek

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Freshness: A New Guide for the Consumer

The goal of this 'white paper' is to demonstrate that specific advances in winemaking and viticulture over the last thirty years have enabled the development of new wine styles. These wines have 'freshness' as their flavour signature and that 'freshness' is one of the most important factors in deciding the overall quality of many wines. Further, freshness has woven its way into the fabric of quality of all wines, not just inexpensive ones. Finally, we demonstrate that recent changes in the packaging of wines relate directly to the industry's un-stated drive to deliver bright 'fresh' tasting wines to the consumer. We will show that the industry has been moving towards freshness but has remained silent on the subject due to long held consumer beliefs that will, inevitably, change over time.

Winemaking technology has changed greatly over the last three decades, and perhaps most importantly new techniques have enabled the development of new wine styles—in particular, fresh, fruit-driven characteristics which simply weren't possible before. The progress has been most pronounced for white wines, which are the primary focus of this paper, but the observations here apply also to reds.

Freshness defined

Before we can speak about 'freshness', it is important that we have a clear understanding of what the terms means in wine. For the purposes of this paper, the term 'freshness' refers to the quality and vibrancy of the primary fruit flavours normally associated with a particular grape variety. It is this fruity quality that will tend to diminish over time.

Historically, only a few wines used to be described as having exuberantly fresh fruit, with Beaujolais being the best example. This was because of the winemaking technique, involving carbonic maceration of the grapes, and the fact that the wine was brought to market very soon after the vintage. It defined both ‘fruity’ and ‘fresh’ without saying so. Of course, it was well accepted that Beaujolais, and specially Nouveau was best consumed within specific periods of time.

In decades past, the technology capable of capturing the primary fruit characteristics in wine didn’t exist, people looked for other qualities. However, over time, tastes have changed and now raciness of fruit is the primary quality indicator that consumers appreciate in a wine. It is, however, compromised by sub-standard farming methods, poor winemaking and negligent packing and handling.

Technologies That Enabled Freshness

Traditional winemaking techniques are known as oxidative: they don’t protect the wine from oxygen. This places severe limitations on the styles of wines that can be made. Historically, fresh, crisp fruity white wines could only be made in cool climates and cold cellars, with liberal use of sulfur dioxide to protect the wine.

Before the advent of refrigeration, stainless steel and inert gases, wine had many different flavours that today we have largely forgotten about. Whites were frequently honeyed, maderised and nutty, while reds tended to be earthy, green and medicinal: for both, the style was one where fruit was not necessarily the main characteristic.

Crucial to modern winemaking is an understanding of the interaction between wine and oxygen. At some stages in the winemaking process, most particularly during primary fermentation, wine needs oxygen. For a healthy ferment, yeasts need to have a steady supply. Most of the time, the exposure of wine to oxygen needs to be strictly controlled. One of the most significant changes in the process over the last 30 years has been the adoption of ‘reductive’ winemaking, where from crushing onwards, grapes are protected from harmful exposure to oxygen. These ideas were popularized late 1980s and early 1990s, and have become the norm in most first world countries.

Sulfur dioxide, a vital winemaking tool, acts to protect against microbial spoilage, (yeasts are more resistant to it than bacteria), but perhaps more importantly it protects wine from the harmful effects of oxygen. It doesn't react directly with oxygen, but instead binds up the products of oxidation (most notably acetaldehyde, formed by the reaction of oxygen and alcohol), keeping the wine fresh. Good sulfur dioxide use is important for freshness, and the goal is to get the ratio of free (the active bit) to bound sulfur dioxide as high as possible, thus maximizing the efficacy of added sulfur dioxide, while keeping total additions down. Ascorbic acid, an antioxidant, has also been employed in white winemaking to help retard the process of oxidation.

The widespread use of stainless steel in wineries for fermentation and storage has been important in the evolution of fresh wines styles for two reasons: first, it makes winery hygiene easier to maintain, and secondly, it makes temperature control possible.

Refrigeration is vital in modern wineries, without it preservation of freshness is compromised. It also allows grapes to be chilled and juice to be cold settled prior to fermentation. The widespread use of inert gases in protecting stored wine and in flushing oxygen out of equipment before use also contributes to wine freshness by minimizing oxidation.

Another key factor in the quest for freshness has been the widespread adoption of cultured yeasts. While natural (or wild yeast) fermentations can result in interesting flavours and textures, they are risky and unpredictable. As well as converting sugar to alcohol, yeasts carry out a range of metabolic reactions that convert precursor compounds present in the grape must into flavour compounds, and cultured yeast strains can be selected which complement or enhance the variety(ies) being vinified.

Changes in the vineyard

Clean fruit is a good starting point for fresh wines because any rot present on the grapes will vastly reduce the efficacy of sulfur dioxide. Good viticultural techniques also help achieve homogeneous ripening: grapes of uneven ripeness are detrimental to quality. Viticulture is a complex science, and to maximize quality there is no standard solution: trellising and irrigation procedures need to respect the physical

properties of the vineyard soil, regional climatic conditions, and also the specific vintage characteristics.

Mechanical harvesting techniques have also played a role in making possible the rapid picking of vineyards during the night or early morning where the cooler temperatures mean less freshness is lost.

The realization by winemakers of their own limitations, has also helped to maximise quality: In compensating for poor fruit standards, wine quality suffered. Control of yield, later (riskier) picking and better disease control have all helped improve grape healthiness, and the separation between winemaking and grape growing as distinct and somewhat independent processes is now disappearing.

Closures

Changes in closure technology have also contributed to the evolution of freshness. The most significant benefit gained from the switch from cork to alternative closures has been the elimination of 2,4,6-Trichloroanisole (TCA) taint defects. But with our increased understanding of the science of closures, a new paradigm is evolving: that of the right closure for the right wine. Because of their different oxygen transmission properties, closure choice is now being seen as a winemaking decision.

Synthetic or plastic corks are a cheap, taint free closure option, but with their higher oxygen transmission rates they are unsuited for wines that are designed with ageing in mind.

Tin-lined screwcaps seal very tightly, which is good news for preserving wine freshness, although care must be taken during winemaking to eliminate any sulfur containing compounds such as mercaptans which might cause reduction problems in the very low redox environment of wines sealed this way.

A new cork-based technical closure, Oeneo’s Diam, is taint free and comes in two different permeabilities. ProCork is a membrane technology that is applied to the ends of natural cork and which prevents taint and improves the cork performance.

Include into the mix novel closure types such as the Australian Zork, and it is clear that there are plenty of closure options available to assist in the preservation of wine freshness.

Finally, advances in bottling mean that it is now also possible to control just how much oxygen is left in the headspace of the wine bottle, yet, another determinant of freshness.

The time line below summarises how the evolution of viticultural and wine making techniques and the development of new packaging and handling methods have resulted in the wine quality standards of today.

TIMELINE: the 30 year journey to freshness

- **1975 White Wine Quality Standards**
  Back in the 1970s there were basically three quality levels for dry white wine. (1) Rich, oaky flavoured wines such as white burgundy; (2) other old world styles, such as Soave, Frascati and white Bordeaux: typically high acid, perhaps showing some oxidization; (3) new world: similarly light and oxidative whites made more palatable with sugar addition.
- **1978 Winemaking and Viticultural Integration Begins**
  Prior to this time, grape growing and winemaking were largely separate processes. Winemakers realized that to get better wines, they needed to achieve ripeness in the vineyard. Thus ensued conflict between growers who wanted high volume and early picking, and winemakers who wanted better grape quality, achieved by lowering yields and picking later (with its attendant risks).
- **1984 Trend Towards Flavour Enhancements**
  In the mid 1980s winemakers turned to another means for enhancing their wines: Oak. When used correctly, barrels or substitutes such as chips or staves, can be a useful tool. It can add flavour and richness. However in the 1980s the trend became ‘more is better’ and when combined with very ripe fruit, many ‘quality’ winemakers were producing overly alcoholic wines that were heavily wooded. Consumers quite liked them for a while, but the wines were ultimately not popular because they lacked freshness of fruit..

- **1987-90 Development of Reductive Techniques**

  During this time some winemakers were pioneering a new and revolutionary white wine production technique. Simply, reductive winemaking is about ensuring that the juice and resulting wine has very limited contact with oxygen. The resultant, new wave, crisp, fruity whites with lots of flavour set a new quality standard**.**
- **1994-97 Recriminations on cork—rise of the synthetic cork**

  Winemakers wanted these new wave wines to reach the consumer the way they made them, but cork quality was erratic, causing taint and random oxidation to such an extent that alternatives were introduced. In the first instance it was synthetic (plastic) corks. This eliminated the taint problem.
- **1999-2001 Recriminations on synthetic corks—rise of screwcaps: freshness created and maintained**

  Having beaten the taint problem with plastic corks, winemakers then realized that these synthetic corks allowed high levels of oxygen transmission meaning that the wines were losing freshness over a relatively short space of time. Screwcaps, with their tighter seals, were the answer. New Zealand and Australia pioneered the technology.
- **2006 The next step?**

  So we have fresh, fruity wines, and a way of packaging them that helps preserve this freshness. What is now needed is a shift in consumer awareness. People need to understand the message of freshness, and lose the idea that the best wines always improve with age. Fresh wines are best young, and consumers need to be told this: the idea of a drink-by date for wine needs to be communicated, without the attendant subliminal message that wines labelled this way are in any way less good.

Freshness Indicator as a Guide for Consumers?

Finally, we come to the issue of shelf-life. With most food products, the concept of sell-by date is well established, but not with wine. The tradition is to state the date of production (vintage), not when the wine will be at its best, which of course, we believe is of more use to most consumers. Consumers still seem wedded to the idea

that wines improve with age. Modern fruity wines, however, are best drunk within some fairly limited time constraints. Thus the idea of quality indicator dates or proscribed drinking windows for wine is logical, and would help the buying public to understand that, as with nearly all other foods, freshness does impact on quality.

The difficulty here is the widespread association between wine quality and longevity. While most consumers drink their wines on the day they purchased them, or shortly afterwards, they still believe that the finest wines are those which need or can tolerate the longest ageing. Only a very small proportion of wines on the market have the capacity to improve with age. Naturally, some wines do improve with age, with their initial fruitiness subsiding to be replaced by tertiary aromas and flavours that result in mellow complexity. However, these are typically not the wines that taste best young, or for that matter, drunk by most consumers.

Consequently, there is a negative quality association with wines that are best drunk young. This perception needs to change, especially if wines are to begin carrying drink-by dates.

As we have discussed so far in this white paper, an entirely new wine paradigm has evolved in recent decades: that of freshness and fruitiness. These wines can be of very high quality, but they are also designed for consumption during a specific time frame because this is when they are at their best and most exciting.

Consumers need to be urged to enjoy these wines at the peak of their drinkability and Stormhoek's Ultimate Freshness message is unique in explaining this to consumers.

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