

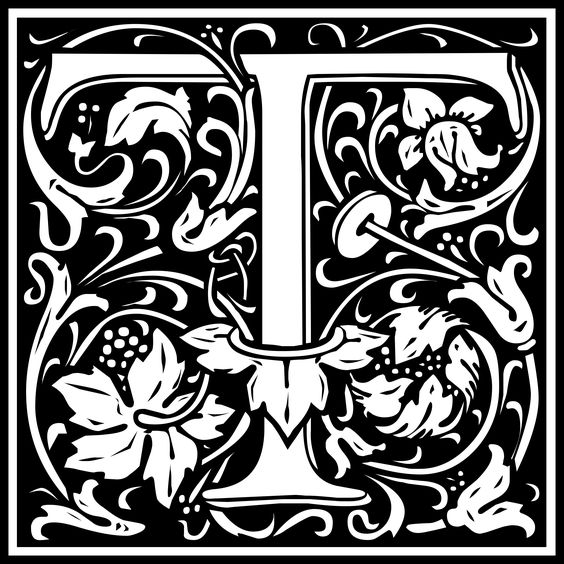
To Age or Not To Age

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BIO 224: Viticulture & Enology

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April 27, 2017



o age or not to age, that is the question. It has long been cultural practice to age wines, with the belief that to do so is to perfect them. But when, if at all, is this true? Well, that depends on a variety of factors including the quality of the wine, the vintage, the variety of the grape, and the means of storage. Over the course of this paper we will examine which wines should and should not be aged. Then, we will turn to the aging of wine to further explore how the wine should be kept, how many years it should be kept, and what to expect from the aging of the wine. This paper is intended to produce an extensive list of the various wines, and identify when they are at their finest.

When the right wine is aged it becomes balanced over time. The balance of a wine depends on features such as acidity, tannins, fruitiness, and alcohol content. When these features mature to a level of harmony the wine has successfully aged. The longevity of a wine is largely due to the tannins in the mixture. Originally the tannins give a bitter, unpleasant taste. Through the years these tannins chain together and separate from the mixture, forming a precipitate inside the bottle[[1]](#footnote-0). From youth the tannins contain pungent aroma chemicals and as they polymerize these are released, creating a stronger scent. The flavors of the wine become more balanced as the content shifts. Often this flavor shift includes the development of complex flavors that can involve earthy and leathery tones in a red wine and bready and nutty tones in a white. At the same time, red wines tend to see their color fade, while white wines gain color with age[[2]](#footnote-1).

The most important aspect of aging a wine is controlling the amount of oxygen that comes in contact with the wine. As the liquid comes in contact with air, oxygen is absorbed into the wine and begins oxidizing some of its compounds. When a wine comes to contact with too much oxygen it can cause negative effects starting with loss of fruity flavors and sometimes a development of a nutty flavor. Additionally, white wines tend to turn brown and reds lose their color. Though the aging process should not have a heavy complement of oxygen, it should not be completely void of it. The small amounts that sneak through the cork over time allow the wine to age and mature at a slow rate[[3]](#footnote-2).

Though some wines can age tremendously well, this is in fact only a small minority of the whole. In fact, out of all of the wine produced worldwide, only about 1% should be aged[[4]](#footnote-3). Most wines should be consumed within 1 or 2 years of the bottling. These are the everyday wines, such as the French Vin de Tables and most Vin de Pays, German Bereichen, and Italian Vino da Tavola, as well as American Jug wines, and the commercial equivalents such as Barefoot or Yellowtail. Moscatos, as well as most pink wines (such as White Zinfandel), and wines labeled Nouveau also generally should not be aged. Additionally, any wines not bottled, such as boxed wines, should not be aged[[5]](#footnote-4). Since the wines that age well are the finer wines, generally speaking if a bottle is below the thirty dollar range there is a good chance it should not be aged[[6]](#footnote-5).

New World grapes, such as those from California or Australia, do not need to be aged as long as their European counterparts. The relatively warm climate creates a setting with a long growth period, giving the grapes time to ripen while they are still on the vines. As the grapes ripen their sugar levels increase and they are able to produce more alcohol. At the same time, the acidity drops. The final product is a fruity wine that is low in acid and tannins. For a wine to have longevity it should have a higher acid and tannin content because the acid preserves the wine and over time the tannins soften, therefore the New World wines generally do not have lengthy longevity[[7]](#footnote-6).

Old World wines are more likely to age well. The European environment counters the California and Australian climates with shorter growing seasons due to a cooler climate. With a shorter amount of time on the vines, the grapes do not lose as much acidity and the sugar levels do not spike as high as they do in the New World. Therefore, after production, some wines need time in the bottle to let the acidity lower and develop the fruitier tastes[[8]](#footnote-7).

For our purposes we will be looking at those wines which can be aged, or “cellared”. The wines that age over longer periods of time are often the “premium” wines[[9]](#footnote-8). The most well-known region for this is Bordeaux, nearly 80% of wines that are intended for longer aging come from this region[[10]](#footnote-9). Many of these can last for decades. The vintage plays a role in the longevity of the wine as well. If a year is notably good, relatively cool, and did not experience too much rain towards the end of the growing season, the wine may be able to age longer than other vintages from the same vineyard. The regions that are most susceptible to drastic climate changes are Northern Italy, France, New Zealand, Chile, Oregon and Washington state and consequently these regions have the highest variations from different vintages[[11]](#footnote-10). For a wine from one of these regions, it is important to know the quality of the vintage in order to age appropriately.

If any wine is to be aged, it must also be stored properly. It is important that the wine be stored at cool temperature that is kept as constant as possible[[12]](#footnote-11). A healthy window for wine storage is above 45 degrees Fahrenheit and below 65 degrees Fahrenheit. 55 degrees Fahrenheit is considered ideal[[13]](#footnote-12). If the temperature of the cellar or storage environment is slightly warmer, the wines will age with greater haste, while cooler cellars will age the wine at a slower rate, allowing it to keep longer[[14]](#footnote-13). To maintain a properly cool temperature, it should be kept away from windows and heat vents. If the environment drops below 45 degrees for an extended period of time the cork can dry out, allowing oxygen to seep into the bottle. If it is cold enough to freeze, the liquid may expand as it thaws which can damage the bottle[[15]](#footnote-14).

Another important consideration is the lighting of the storage environment. Light, especially from the sun’s UV rays, can harm wine and cause it to age improperly. This explains why many wine bottles are dark in color, the darkness blocks external light from making contact with the wine. Humidity also may play a role in the aging of a wine because if the air is too dry the cork may dry out and allow oxygen to sneak into the bottle. Therefore, it’s advised to keep the bottle in a place with some moisture in the air[[16]](#footnote-15). Ideally, wine should be stored in a cellar because it provides a dark and cool, often humid environment for the wine to age in.

In storage, wine should be positioned horizontally, so as to keep the cork from drying out, while also adding additional hints of flavor. This can best be done with a wine rack, whether it be wooden, plastic, or metal. If stored over the long term, vast movements to the bottle should be avoided so the precipitate formed by the tannins is able to properly settle. Since an important factor of storing wine over a long period of is controlling oxygen contact with the liquid, the size of the bottle also effects how long a wine should be stored because the total amount of liquid contacting oxygen varies with the size of the bottle. For this paper we will be considering the average 750 mL bottle, however a larger bottle would take longer to age because the ratio of oxygen to wine is significantly less than it is in a standard bottle[[17]](#footnote-16).

**Red Wines**

Of the various types of wine, the red wines are generally better to age. This is because they have contact with the stem and skin of the grape during production. This contact adds the red color to the mixture and it also makes the wine more tannic[[18]](#footnote-17). As we discussed earlier, more tannins means a greater ability to age. We will now analyze various red wines based on their abilities to age.

*Cabernet Sauvignon*

King of the noble reds, Cabernet Sauvignon (Cab) begins its life hard and tannic. Additionally, it goes through barrel fermentation and in the best wines, 18 to 24 months of barrel aging[[19]](#footnote-18). As a result, a good California Cab can peak at 10 to 12 years, while holding its quality for another 10 years. The same is true for good Italian Cabs. If the Cabernet is particularly tannic, it can age even longer. Australian Cabernets tend to be less acidic due to the longer growing period and, consequently, will age much more quickly. These only take 4 to 6 years to mature, and will only last for another 5 years before declining. Finally, a lower-end Cabernet will most likely be less tannic, and in such an event will reach maturity much more quickly. These Cabs are best to drink after 3 to 5 years, but can then stay another 5 years[[20]](#footnote-19).

*Merlot*

The forward and fruitful Merlot does not age quite as well as the Cabernet Sauvignon, due to its lighter amount of tannins. Even so, due to its higher amount of sugar it can still age for a good number of years. The best Merlots will mature in 8 to 10 years, and can last for another 10 years before degrading. The average Merlot, though, will mature in 4 to 5 years, then only hold another 5 years[[21]](#footnote-20).

*Pinot Noir (Red Burgundy)*

As a cool climate grape often aged in oak, Pinot Noirs can also prove to be long-lasting, though not so long-lasting as the Cabernet Sauvignon. The average Pinot Noir will mature in 3 to 5 years, but the best can continue to improve for another 6 to 8. However, Pinot Noirs are notoriously hard to grow so the vintage really makes a difference. Because these wines are hit-or-miss, it is important to know that the Pinot Noir you are aging is worth the cellar space. Additionally, because their aging is more difficult to predict, it is a prudent move to keep a few of the same label so as to test its quality every few years[[22]](#footnote-21).

The best of the Pinot Noirs are grown in Burgundy, hence its alternative name of Red Burgundy. On a bad vintage, a Red Burgundy will peak after aging for 6 to 8 years, then fall apart. However, on a good vintage, these wines will mature after 10 to 12 years, then continue to hold for another 5 after that. The best Red Burgundies, such as those from Côte de Nuit, will take the same amount of time to mature, but can continue to hold for decades to come[[23]](#footnote-22).

*Zinfandel*

This mystery grape should be aged according to its quality as well as personal preference, and should not be aged if it is of the white variety. An ordinary Zinfandel will mature in 4 years, then stay at its peak for another 3 after that. A California Zinfandel will mature in 7 to 9 years, then stay a few more years before beginning to decline. The best Zinfandels from the best vintages can see their aging extended greatly. However, while the younger Zinfandels are known for their lush berry taste, the longer a Zinfandel ages the more it loses this taste, taking on instead the taste of a “nondescript old red wine”[[24]](#footnote-23). After aging for 20 years, a high quality Zinfandel will taste comparable to an equally aged Cabernet Sauvignon[[25]](#footnote-24).

*Syrah (Shiraz)*

Syrah, or as the Australians call it, Shiraz, can age well depending on where it’s from. The best of these wines are from the French region of Northern Rhône, and these can age for as many as 20 years before declining[[26]](#footnote-25). However, it may be risky to age one of these for over 16 years[[27]](#footnote-26). A more run-of-the-mill Syrah from California or Australia will not age for nearly as long as the Syrahs from the Old World regions because the New World regions do not harbor the conditions for wines with longevity. These will instead hit their peak after about 5 or 6 years before beginning to taper off[[28]](#footnote-27).

*Cabernet Franc*

The Cabernet Franc is known for being quite tannic, and as a result, it is best to age this wine. While the best of these grapes are found in Bordeaux, these are mostly used in blends. Even so, on a good year these blends will mature in 10 years, then stay for another 10 before degrading. On a bad year, these blends will only need 5 years to mature, before tapering off a few years later[[29]](#footnote-28). If you find yourself with a good Cabernet Franc from the Loire, it should take 5 years to mature but can then last for over a decade before degrading[[30]](#footnote-29). Otherwise, a varietally labeled Cabernet Franc should be given 8 to 10 years to age in order to soften its tannins. Depending on its quality and the quality of your cellar, these wines can then last for over a decade before falling apart[[31]](#footnote-30).

*Malbec*

Malbec is a thin-skinned grape that has been gaining popularity in recent years. Different profiles of Malbec age differently. The Malbecs with a heavy tannic presence can age a very long time: 10 to 20 years or more. Then there are Malbecs that are slightly less tannic, and tend to have juicy and chocolatey compliments; these can age 7 to 11 years. That being said, most Malbecs can be served right away, or with very brief aging[[32]](#footnote-31).

*Tempranillo*

Tempranillo is full-bodied a Spanish wine with good characteristics for aging. While young it starts fairly developed but with age it matures and improves. Many are aged 7 to 15 years, becoming more savory and gaining fruity aromas after the tannins have softened. The Gran Reservas age well after 20 or more years[[33]](#footnote-32).

*Nebbiolo*

Nebbiolo is one of the famous grapes of Italy. Particularly, these grapes are grown in the Northwestern region of Piemonte. The best of these are from the towns of Barolo and Barbaresco, and can age for many years[[34]](#footnote-33). These upper end Nebbiolo can take a whole 12 years to mature[[35]](#footnote-34). After maturing, a Nebbiolo can continue to hold for many years, but generally will not last more than 20 years, all told. A lesser Nebbiolo will mature at a faster rate, hitting its prime in as little as 4 years[[36]](#footnote-35).

*Sangiovese*

Sangiovese, the grape of Tuscany whose name translates to “Jupiter's Blood”, is not necessarily known for aging[[37]](#footnote-36). Broadly speaking, a Sangiovese can mature in as little as 2 years, but after a total of 8 years these wines will have begun to decline[[38]](#footnote-37). However, some Italian producers have been blending Sangiovese with Cabernet Sauvignon to make “Super Tuscans”[[39]](#footnote-38). These Super Tuscans can take a whole 10 years to mature, before quickly beginning to degrade[[40]](#footnote-39).

*Dolcetto*

Dolcetto, or Charbono as it’s called in California, is a lesser known red. It is generally low in acid, though a bottle from California will contain higher amounts of acid. A good bottle from California will mature in about 10 years, then hold for another 5 to 10 before falling apart. A less acidic Dolcetto from elsewhere may, but won't necessarily, take less time to age[[41]](#footnote-40).

**White Wines**

Unlike their red counterparts, most white wines are generally not known for their ability to age. This is in part because, with a few exceptions, white wines are not barrel aged nor barrel fermented and do not usually go through maceration. There is little to no contact with the skins and seeds so they lack the extra tannins that the reds have. Here we will go through a variety of white wines to analyze their aging abilities.

*Chardonnay*

Chardonnay is a highly sought after wine, and as a result, it's highly likely that if you have a cellar, it contains Chardonnay. However, Chardonnay is not one of those wines that you can put away and forget about for a decade. First, one must determine whether to age their bottle of Chardonnay at all, because in youth these wines vary in flavor. Those which have not gone through barrel fermentation and oak aging will tend to hold a plethora of subtle fruit flavors such as apple, pear, or citrus, while those which have gone through the aging process may taste buttery, with hints of vanilla and/or tropical fruits, as well as oak[[42]](#footnote-41). The decision to age is of course a matter of personal preference, but these differences should be kept in mind so as to avoid wasting cellar space on the type of Chardonnay you do not fancy. While a crispy and more acidic Chardonnay can last slightly longer than the others, few Chardonnays can safely be aged for more than 6 years. Upon aging, a good Chardonnay will deepen in color and obtain an accompanying oxidized flavor. In general, a Chardonnay can be aged for between 2 and 6 years[[43]](#footnote-42). A Chardonnay will be at its best between 3 and 5 years[[44]](#footnote-43).

The Chablis region of France is also notable for its Chardonnay; the aging of these wines should be noted as well. If the Chardonnay is from Chablis it will be labeled as such, but be careful because some Jug wines have been known to falsely label their product as “Chablis” as well[[45]](#footnote-44). A true Chablis, simply labeled as Chablis, can age for 6 to 8 years. A premier cru Chablis will mature in 10 years, and a grand cru will mature in 12 to 15 years. The best of these can stay strong after maturation for several decades[[46]](#footnote-45).

*Riesling*

This gateway wine is a natural crowd pleaser. If you get a good bottle from Germany, it’s not a bad idea to hold on to this one. Because the best Rieslings hold their significant acidity for quite a while, and because they are grown in a cool climate, this wine can age significantly longer than your average white wine. In addition, while most Rieslings are finished dry, the grapes are high in sugar so in the event that your Riesling is finished sweet, it can age for decades[[47]](#footnote-46). It’s hard to pinpoint exactly how long a bottle of Riesling should be aged, but the three factors to be considered are the vintage, microclimate, and sweetness, or lack thereof, of the particular wine. All things considered, a bottle of Riesling can age anywhere from 2 to 30 years[[48]](#footnote-47)

*Sauvignon Blanc (Fumé Blanc)*

Sauvignon Blanc is a highly acidic wine which can do well with a few years of aging. On average, it takes 3 to 5 years for this wine to reach maturity, then it has another 3 to 5 years at its peak before it begins to decline. The best of the best can last somewhat longer, but do not need the extra aging[[49]](#footnote-48). Upon maturity, a Sauvignon Blanc may take on the flavors of honey, melon, and pineapple[[50]](#footnote-49).

*Chenin Blanc*

Chenin Blanc is also a highly acidic wine, and as a result it can age rather well. These wines come most notably from the Loire River Valley of France, and in the best years, a Chenin Blanc produced by the best producers from the Loire can age for decades[[51]](#footnote-50). Excepting the exceptional, a good Chenin Blanc will hit its stride after aging for 7 years. While this wine can age well, it is generally less popular and usually is not aged[[52]](#footnote-51).

*Gewürtstraminer*

How long you decide to age a Gewürztraminer depends largely on where it is from. The best Gewürztraminers come from Alsace, and these are usually finished dry. As a result, these bottles will reach maturity after 5 or 6 years. They should then be able to hold for another 8 to 10 years before declining. If your bottle of Gewürztraminer was produced in California, check to see if it is finished sweet, because many from California will be left with 2% residual sugar. This of course adds to its longevity, and as a result a sweet California Gewürztraminer should be given 10 to 12 years to reach maturity[[53]](#footnote-52).

*Grüner Veltliner*

Grüner Veltliner is a white wine grown mostly in Austria. It is often dry and high in acidity. The common Grüner Veltliner is light and zesty; intended to be had while young, with only 1 to 2 years of aging. Some Grüner Veltliners have a nutty and rich flavor, and these are intended to age anywhere from 3 to 6 years[[54]](#footnote-53). However, the best of the Grüner Veltliners can benefit from aging for up to 15 years[[55]](#footnote-54).

*Pinot Grigio*

Pinot Grigio is not widely intended to be aged because it does not possess the characteristics that provide conditions for aging. This dry white wine tends to be well-balanced while young. A Pinot Grigio from Alsace will age for 4 to 5 years. However, a Pinot Grigio from Oregon probably should not be aged and is best to be consumed within 1 to 3 years[[56]](#footnote-55).

*Pinot Blanc*

Pinot Blanc is a light white wine often described as full-bodied. These wines can be both dry or sweet and are often acidic with floral notes. In general, it is not worth aging a Pinot Blanc. Most of these wines should only be aged for 1 to 3 years or not at all. A Pinot Blanc of Alsace will age for 4 to 5 years[[57]](#footnote-56).

**Others**

*Sparkling Wine (Champagne)*

Sparkling wine is generally ready to drink upon purchase, so aging is not necessarily needed. That being said, some sparkling wines have been known to be released early, and can do with a year in the cellar before drinking[[58]](#footnote-57).. You may notice that some bottles will carry a vintage date some number of years in the past, in these cases the sparkling wine spent time “on the yeast” before rebottling[[59]](#footnote-58). This should not be taken to mean that sparkling wines can be cellared for that long. There are of course some cases where the very best Champagnes can be aged for decades, but these are the rare exceptions[[60]](#footnote-59). Aging sparkling wine for too long will oxidize the wine, causing it to lose its sparkle[[61]](#footnote-60). Therefore, if you do choose to age a bottle of champagne, it is best to do so for 1 year, or 2 years at most[[62]](#footnote-61).

*Botrytis-Infected Wine*

A wine infected with Botrytis often has higher alcohol content as well as sugar levels. However, this does not play a large role for the aging characteristics of the wine. One connoisseur, Mathias Hirtzberger of Weingut Franz Hirtzberger said that their botrytis-infected wines are best when aged 10 years[[63]](#footnote-62). That being said, if aging then at the very least you should age a botrytized wine for 5 years, and at the most you should age it for 25 years[[64]](#footnote-63). There are however the exceptional botrytized wines that can age for a century[[65]](#footnote-64). Some notable grapes that can be infected with botrytis include Riesling, Grüner Veltliner, and Semillon.

**Conclusion**

It seems then that the practice of aging wines is much more complicated than one might originally think. It is not simply a matter of storing a bottle away and pulling it out again years later, but rather it is a science. The proper conditions must be met in order to properly store wine for an extended period of time, and much thought must go into the decision to age each particular bottle. Not every bottle of wine is made for aging. In fact, only a small minority of wines should age, and even then one must be aware of the vintage, the region of origin, and the quality of the particular wine. This is because when a wine does hit all the check marks for aging, there is no one right amount of time to age. Each wine will age differently depending on its variety, and within each variety every bottle’s aging period will vary depending on the aforementioned particulars. With the proper knowledge of what wines to age and how to properly store them, hopefully you can experience the joy of quality aged wines.

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