Wine

This article is about the beverage. For other uses, see Wine (disambiguation).

Wine (from Latin vinum) is an alcoholic beverage made from fermented grapes, generally Vitis vinifera or its hybrids with Vitis labrusca or Vitis rupestris. Grapes ferment without the addition of sugars, acids, enzymes, water, or other nutrients,\(^1\) as yeast consumes the sugar in the grapes and converts it to ethanol and carbon dioxide. Different varieties of grapes and strains of yeasts produce different styles of wine. These variations result from the complex interactions between the biochemical development of the grape, the reactions involved in fermentation, the terroir (the special characteristics imparted by geography, geology, climate, viticultural methods and plant genetics), and the production process. Many countries define legal appellations intended to define styles and qualities of wine; these typically restrict the geographical origin and permitted varieties of grapes, as well as other aspects of wine production.

There are also wines made from fermenting other fruits or cereals, whose names often specify their base, with some having specific names. Wines made from plants other than grapes include rice wine and various fruit wines such as those made from plums or cherries. Some well known example are hard cider from apples, perry from pears, pomegranate wine, and elderberry wine.

Wine has been produced for thousands of years. The earliest known evidence of wine comes from Georgia (Caucasus), where 8000-year-old wine jars were found.\(^2\)\(^3\) Traces of wine have also been found in Iran with 7000-year-old wine jars\(^5\)\(^6\) and in Armenia, in the 6100-year old Areni-1 winery, the earliest known winery.\(^7\)\(^8\) Wine had reached the Balkans by c. 4500 BC and was consumed and celebrated in ancient Greece, Thrace and Rome. Throughout history, wine has been consumed for its intoxicating effects, which are evident at normal serving sizes.\(^9\)\(^10\)

Wine has long played an important role in religion. Red wine was associated with blood by the ancient Egyptians\(^11\) and was used by both the Greek cult of Dionysus and the Romans in their Bacchanalia; Judaism also incorporates it in the Kiddush and Christianity in the Eucharist.

1 History

Main article: History of wine

Archaeological evidence has established the earliest known production of wine from fermented grapes during the late Neolithic site of Hajji Firuz in the northern Zagros Mountains or early Chalcolithic in the northern...
The earliest chemically attested grape wine was discovered at Hajji Firuz in the northwestern Zagros Mountains, ca. 5400 BC. Both archaeological and genetic evidence suggest that the earliest production of wine may slightly predate this, with the earliest wine-making likely having taken place in Trans-Caucasia (including Armenia, Azerbaijan, Georgia), through the region between Eastern Turkey, and Northwest Iran.

The earliest evidence of a grape-based fermented drink was found in Georgia, where wine residue inside ceramic jars dates from c. 6000 BC, and in Iran, from c. 5000 BC. The earliest evidence of a wine production facility is the Areni-1 winery in Armenia and is at least 6100 years old; presumably, wine had started being produced much earlier.

A 2003 report by archaeologists indicates a possibility that grapes were mixed with rice to produce mixed fermented beverages in China in the early years of the seventh millennium BC. Pottery jars from the Neolithic site of Jiahu, Henan, contained traces of tartaric acid and other organic compounds commonly found in wine. However, other fruits indigenous to the region, such as hawthorn, cannot be ruled out. If these beverages, which seem to be the precursors of rice wine, included grapes rather than other fruits, they would have been any of the several dozen indigenous wild species in China, rather than *Vitis vinifera*, which was introduced there 6000 years later.

The spread of wine culture westwards was most probably due to the Phoenicians who spread outward from a base of city-states along the Lebanese, Syrian, and Israeli coasts. The wines of Byblos were exported to Egypt during the Old Kingdom and then throughout the Mediterranean. Evidence includes two Phoenician shipwrecks from 750 BC discovered by Robert Ballard, whose cargo of wine was still intact. As the first great traders in wine (cherem), the Phoenicians seem to have protected it from oxidation with a layer of olive oil, followed by a seal of pinewood and resin, similar to retsina.
The English word “wine” comes from the Proto-Germanic *winam, an early borrowing from the Latin vinum, “wine” or “(grape) vine”, itself derived from the Proto-Indo-European stem *wino-. The earliest attested terms referring to wine are the Mycenaean Greek me-tu-wo ne-wo meaning “in (the month)” or “(festival) of the new wine”, and wo-no-wa-ti-si meaning “wine garden”, written in Linear B inscriptions. Linear B also includes, inter alia, an ideogram for wine, i.e. 𐀤. The Georian word goes back to Proto-Kartvelian *ɣwino- which is generally believed to be a borrowing from Proto-Indo-European. Another hypothesis is that the lexeme was borrowed from Proto-Armenian *ɣʷeinyo- whence Armenian gini, but this is disputed. On the other hand, Fähnrich considers *ɣwino- a native Kartvelian word derived from the verbal root *ɣun- (‘to bend’). See *ɣwino- for more. All these theories place the origin of the word in the same geographical location, Trans-Caucasia, that has been established based on archeological and biomolecular studies as the origin of viticulture.
fruits were native or introduced for other reasons.

3 Starch-based “wine” and wine-based products

Other beverages called “wine”, such as barley wine and rice wine (e.g. sake), are made from starch-based materials and resemble beer more than traditional wine, while ginger wine is fortified with brandy. In these latter cases, the term “wine” refers to the similarity in alcohol content rather than to the production process. The commercial use of the English word “wine” (and its equivalent in other languages) is protected by law in many jurisdictions.

Some UK supermarkets have been criticised for selling “wine based” drinks, which only contain 75% wine, but which are still marketed as wine. The International Organisation of Vine and Wine requires that a “wine based drink” must contain a minimum of 75% wine, but producers do not have to divulge the nature of the remaining 25%.

4 Grape varieties

Grape vineyard

Main article: List of grape varieties

Wine is usually made from one or more varieties of the European species Vitis vinifera, such as Pinot noir, Chardonnay, Cabernet Sauvignon, Gamay and Merlot. When one of these varieties is used as the predominant grape (usually defined by law as minimums of 75% to 85%), the result is a "varietal" as opposed to a “blended” wine. Blended wines are not considered inferior to varietal wines, rather they are a different style of winemaking; some of the world’s most highly regarded wines, from regions like Bordeaux and the Rhone Valley, are blended from different grape varieties.

Wine can also be made from other species of grape or from hybrids, created by the genetic crossing of two species. V. labrusca (of which the Concord grape is a cultivar), V. aestivalis, V. riparia, V. rotundifolia and V. labrusca are native North American grapes usually grown to eat fresh or for grape juice, jam, or jelly, and only occasionally made into wine. Hybridization is different from grafting. Most of the world’s vineyards are planted with European V. vinifera vines that have been grafted onto North American species’ rootstock, a common practice due to their resistance to phylloxera, a root louse that eventually kills the vine. In the late 19th century, most of Europe’s vineyards (excluding some of the driest in the south) were devastated by the infestation, leading to widespread vine deaths and eventual replanting. Grafting is done in every wine-producing region in the world except in Argentina, the Canary Islands and Chile—the only places not yet exposed to the insect.

The range of possible combinations of these factors can result in great differences among wines, influencing the fermentation, finishing, and aging processes as well. Many wineries use growing and production methods that preserve or accentuate the aroma and taste influences of their unique terroir. However, flavor differences are less desirable for producers of mass-market table wine or other cheaper wines, where consistency takes precedence. Such producers try to minimize differences in sources of grapes through production techniques such as micro-oxygenation, tannin filtration, cross-flow filtration, thin-film evaporation, and spinning cones.

5 Classification

Main article: Classification of wine

Regulations govern the classification and sale of wine in many regions of the world. European wines tend to be classified by region (e.g. Bordeaux, Rioja and Chianti), while non-European wines are most often classified by grape (e.g. Pinot noir and Merlot). Market recognition of particular regions has recently been leading to their increased prominence on non-European wine labels. Examples of recognized non-European locales include Napa Valley, Santa Clara Valley and Sonoma Valley, Anderson Valley and Mendocino County in California, Willamette Valley and Rogue Valley in Oregon; Columbia Valley in Washington; Barossa Valley in South Australia and Hunter Valley in New South Wales; Luján de Cuyo in Argentina; Central Valley in Chile; Vale dos Vinhedos in Brazil; Hawke’s Bay and Marlborough in New Zealand; and Okanagan Valley and Niagara Peninsula in Canada. Some blended wine names are marketing terms whose use is governed by trademark law rather than by spe-
5.2 Beyond Europe

New World wines—those made outside the traditional wine regions of Europe—are usually classified by grape rather than by terroir or region of origin, although there have been unofficial attempts to classify them by quality.\[64]\[65]

6 Vintages

Main article: Vintage

In the United States, for a wine to be vintage-dated and labeled with a country of origin or American Viticultural
Area (AVA) (e.g. Sonoma Valley), 95% of its volume must be from grapes harvested in that year.\[66]\] If a wine is not labeled with a country of origin or AVA the percentage requirement is lowered to 85%.\[66]\]

Vintage wines are generally bottled in a single batch so that each bottle will have a similar taste. Climate’s impact on the character of a wine can be significant enough to cause different vintages from the same vineyard to vary dramatically in flavor and quality.\[67]\] Thus, vintage wines are produced to be individually characteristic of the particular vintage and to serve as the flagship wines of the producer. Superior vintages from reputable producers and regions will often command much higher prices than their average ones. Some vintage wines (e.g. Brunello), are only made in better-than-average years.

For consistency, non-vintage wines can be blended from more than one vintage, which helps winemakers sustain a reliable market image and maintain sales even in bad years.\[68]\][69]\] One recent study suggests that for the average wine drinker, the vintage year may not be as significant for perceived quality as had been thought, although wine connoisseurs continue to place great importance on it.\[70]\]

### 7 Tasting

**Judge color is the first step in tasting a wine.**

Main article: Wine tasting

See also: Wine tasting descriptors

Wine tasting is the sensory examination and evaluation of wine. Wines contain many chemical compounds similar or identical to those in fruits, vegetables, and spices. The sweetness of wine is determined by the amount of residual sugar in the wine after fermentation, relative to the acidity present in the wine. Dry wine, for example, has only a small amount of residual sugar. Some wine labels suggest opening the bottle and letting the wine “breathe” for a couple of hours before serving, while others recommend drinking it immediately. Decanting (the act of pouring a wine into a special container just for breathing) is a controversial subject among wine enthusiasts. In addition to aeration, decanting with a filter allows the removal of bitter sediments that may have formed in the wine. Sediment is more common in older bottles, but aeration may benefit younger wines.\[71]\]

During aeration, a younger wine’s exposure to air often “relaxes” the drink, making it smoother and better integrated in aroma, texture, and flavor. Older wines generally fade (lose their character and flavor intensity) with extended aeration.\[72]\] Despite these general rules, breathing does not necessarily benefit all wines. Wine may be tasted as soon as the bottle is opened to determine how long it should be aerated, if at all. When tasting wine, individual flavors may also be detected, due to the complex mix of organic molecules (e.g. esters and terpenes) that grape juice and wine can contain. Experienced tasters can distinguish between flavors characteristic of a specific grape and flavors that result from other factors in winemaking. Typical intentional flavor elements in wine—chocolate, vanilla, or coffee—are those imparted by aging in oak casks rather than the grape itself.\[73]\]

Vertical and horizontal tasting involves a range of vintages within the same grape and vineyard, or the latter in which there is one vintage from multiple vineyards. “Banana” flavors (isoamyl acetate) are the product of yeast metabolism, as are spoilage aromas such as “medicinal” or “Band-Aid” (4-ethylphenol), “spicy” or “smoky” (4-ethylguaiaicol), and rotten egg (hydrogen sulfide).\[74]\]

Some varieties can also exhibit a mineral flavor due to the presence of water-soluble salts as a result of limestone’s presence in the vineyard’s soil. Wine aroma comes from volatile compounds released into the air.\[76]\]

Vaporization of these compounds can be accelerated by twirling the wine glass or serving at room temperature. Many drinkers prefer to chill red wines that are already highly aromatic, like Chinon and Beaujolais.\[77]\]

The ideal temperature for serving a particular wine is a matter of debate by wine enthusiasts and sommeliers, but some broad guidelines have emerged that will generally enhance the experience of tasting certain common wines. A white wine should foster a sense of coolness, achieved by serving at “cellar temperature” (13 °C [55 °F]). Light red wines drunk young should also be brought to the table at this temperature, where they will quickly rise a few degrees. Red wines are generally perceived best when served chambré (“at room temperature”). However, this does not mean the temperature of the dining room—often around (21 °C [70 °F])—but rather the coolest room in the house and, therefore, always slightly cooler than the dining room itself. Pinot noir should be brought to the table for serving at (16 °C [61 °F]) and will reach its full bouquet at (18 °C [64 °F]). Cabernet Sauvignon, zinfandel, and Rhone varieties should be served at (18 °C [64 °F]) and allowed to warm on the table to 21 °C (70 °F) for best aroma.\[78]\]
8 Collecting

See also: Aging of wine, Investment wine, and Storage of wine

Outstanding vintages from the best vineyards may sell

for thousands of dollars per bottle, though the broader term “fine wine” covers those typically retailing in excess of US$30–50. “Investment wines” are considered by some to be Veblen goods: those for which demand increases rather than decreases as their prices rise. Particular selections have higher value, such as “Verticals”, in which a range of vintages of a specific grape and vineyard, are offered. The most notable was a Château d’Yquem 135 year vertical containing every vintage from 1860 to 2003 sold for $1.5 million. The most common wines purchased for investment include those from Bordeaux and Burgundy; cult wines from Europe and elsewhere; and vintage port. Characteristics of highly collectible wines include:

1. A proven track record of holding well over time
2. A drinking-window plateau (i.e., the period for maturity and approachability) that is many years long
3. A consensus among experts as to the quality of the wines
4. Rigorous production methods at every stage, including grape selection and appropriate barrel aging

Investment in fine wine has attracted those who take advantage of their victims’ relative ignorance of this wine market sector. Such wine fraudsters often profit by charging excessively high prices for off-vintage or lower-status wines from well-known wine regions, while claiming that they are offering a sound investment unaffected by economic cycles. As with any investment, thorough research is essential to making an informed decision.

9 Production

Main article: Winemaking

See also: List of wine-producing countries and List of wine-producing regions

* FAO estimate.
** May include official, semi-official or estimated data.
* FAO estimate.
** May include official, semi-official or estimated data.
*** FAO data based on imputation methodology.

Wine grapes grow almost exclusively between 30 and 50 degrees latitude north and south of the equator. The world’s southernmost vineyards are in the Central Otago region of New Zealand’s South Island near the 45th parallel south, and the northernmost are in Flën, Sweden, just north of the 59th parallel north.

9.1 Exporting countries

The UK was the world’s largest importer of wine in 2007.


2005 Estimate (thousands of hectoliters)

1. Italy: 60,562
2. France: 52,107
3. Spain: 34,789
4. Germany: 9,256
5. Portugal: 7,266
11 Culinary uses

Wine is a popular and important beverage that accompanies and enhances a wide range of cuisines, from the simple and traditional stews to the most sophisticated and complex haute cuisines. Wine is often served with dinner. Sweet dessert wines may be served with the dessert course. In fine restaurants in Western countries, wine typically accompanies dinner. At a restaurant, patrons are helped to make good food-wine pairings by the restaurant’s sommelier or wine waiter. Individuals dining at home may use wine guides to help make food-wine pairings. Wine is also drunk without the accompaniment of a meal in wine bars or with a selection of cheeses (at a wine and cheese party).

Wine is important in cuisine not just for its value as a beverage, but as a flavor agent, primarily in stocks and braising, since its acidity lends balance to rich savory or sweet dishes. Wine sauce is an example of a culinary sauce that uses wine as a primary ingredient. Natural wines may exhibit a broad range of alcohol content, from below 9% to above 16% ABV, with most wines being in the 12.5%–14.5% range. Fortified wines (usually with brandy) may contain 20% alcohol or more.

12 Religious significance

See also: Alcohol and religion, Kosher wine, Christianity and alcohol, and Islam and alcohol.
12.1 Ancient religions

The use of wine in ancient Near Eastern and Ancient Egyptian religious ceremonies was common. Libations often included wine, and the religious mysteries of Dionysus used wine as a sacramental entheogen to induce a mind-altering state.

12.2 Judaism

Wine is an integral part of Jewish laws and traditions. The Kiddush is a blessing recited over wine or grape juice to sanctify the Shabbat. On Pesach (Passover) during the Seder, it is a Rabbinic obligation of adults to drink four cups of wine. In the Tabernacle and in the Temple in Jerusalem, the libation of wine was part of the sacrificial service. Note that this does not mean that wine is a symbol of blood, a common misconception that contributes to the Christian myth of the blood libel. “It has been one of history’s cruel ironies that the blood libel—accusations against Jews using the blood of murdered gentile children for the making of wine and matzot—became the false pretext for numerous pogroms. And due to the danger, those who live in a place where blood libels occur are halachically exempted from using red wine, lest it be seized as “evidence” against them.”

12.3 Christianity

See also: Christian views on alcohol and Alcohol in the Bible

In Christianity, wine is used in a sacred rite called the Eucharist, which originates in the Gospel account of the Last Supper (Gospel of Luke 22:19) describing Jesus sharing bread and wine with his disciples and commanding them to “do this in remembrance of me.” Beliefs about the nature of the Eucharist vary among denominations (see Eucharistic theologies contrasted).

While some Christians consider the use of wine from the grape as essential for the validity of the sacrament, many Protestants also allow (or require) pasteurized grape juice as a substitute. Wine was used in Eucharistic rites by all Protestant groups until an alternative arose in the late 19th century. Methodist dentist and prohibitionist Thomas Bramwell Welch applied new pasteurization techniques to stop the natural fermentation process of grape juice. Some Christians who were part of the growing temperance movement pressed for a switch from wine to grape juice, and the substitution spread quickly over much of the United States, as well as to other countries to a lesser degree. There remains an ongoing debate between some American Protestant denominations as to whether wine can and should be used for the Eucharist or allowed as an ordinary beverage, with Catholics and some mainline Protestants allowing wine drinking in moderation, and some conservative Protestant groups opposing consumption of alcohol altogether.

12.4 Islam

Alcoholic beverages, including wine, are forbidden under most interpretations of Islamic law. In many Muslim countries, possession or consumption of alcoholic beverages carry legal penalties. Iran had previously had a thriving wine industry that disappeared after the Islamic Revolution in 1979. In Greater Persia, mey (Persian wine) was a central theme of poetry for more than a thousand years, long before the advent of Islam. Some Alevi sects—one of the two main branches of Islam in Turkey (the other being Sunni Islam)—use wine in their religious services.

Certain exceptions to the ban on alcohol apply. Alcohol derived from a source other than the grape (or its byproducts) and the date is allowed in “very small quantities” (loosely defined as a quantity that does not cause intoxication) under the Sunni Hanafi madhab, for specific purposes (such as medicines), where the goal is not intoxication. However, modern Hanafi scholars regard alcohol consumption as totally forbidden.
13 Health effects

See also: Health effects of wine
Further information: Red wine headache

13.1 Short-term effects

Main article: Short-term effects of alcohol

Wine contains ethyl alcohol, the same chemical that is present in beer and distilled spirits and as such, wine consumption has short-term psychological and physiological effects on the user. Different concentrations of alcohol in the human body have different effects on a person. The effects of alcohol depend on the amount an individual has drunk, the percentage of alcohol in the wine and the timespan that the consumption took place, the amount of food eaten and whether an individual has taken other prescription, over-the-counter or street drugs, among other factors. Drinking enough to cause a blood alcohol concentration (BAC) of 0.03% – 0.12% typically causes an overall improvement in mood and possible euphoria, increased self-confidence and sociability, decreased anxiety, a flushed, red appearance in the face and impaired judgment and fine muscle coordination. A BAC of 0.09% to 0.25% causes lethargy, sedation, balance problems and blurred vision. A BAC from 0.18% to 0.30% causes profound confusion, impaired speech (e.g. slurred speech), staggering, dizziness and vomiting. A BAC from 0.25% to 0.40% causes stupor, unconsciousness, anterograde amnesia, vomiting, and death may occur due to inhalation of vomit (pulmonary aspiration) while unconscious and respiratory depression (potentially life-threatening). A BAC from 0.35% to 0.80% causes a coma (unconsciousness), life-threatening respiratory depression and possibly fatal alcohol poisoning. As with all alcoholic beverages, drinking while driving, operating an aircraft or heavy machinery increases the risk of
an accident; many countries have penalties against drunk driving.

### 13.2 Long-term effects

See also: Long-term effects of alcohol consumption

The main active ingredient of wine is alcohol, and therefore, the health effects of alcohol apply to wine. Drinking small quantities of alcohol (less than one drink in women and two in men) is associated with a decreased risk of heart disease, stroke, diabetes mellitus, and early death.\(^9\) Drinking more than this amount; however, increases the risk of heart disease, high blood pressure, atrial fibrillation, and stroke.\(^9\) Risk is greater in younger people due to binge drinking which may result in violence or accidents.\(^9\) About 3.3 million deaths (5.9% of all deaths) are believed to be due to alcohol each year.\(^10\)

Alcoholism also known as “alcohol use disorder” is a broad term for any drinking of alcohol that results in problems.\(^10\) It was previously divided into two types: alcohol abuse and alcohol dependence.\(^10\)\(^2\)\(^10\) In a medical context, alcoholism is said to exist when two or more of the following conditions is present: a person drinks large amounts over a long time period, has difficulty cutting down, acquiring and drinking alcohol takes up a great deal of time, alcohol is strongly desired, usage results in not fulfilling responsibilities, usage results in social problems, usage results in health problems, usage results in risky situations, withdrawal occurs when stopping, and alcohol tolerance has occurred with use.\(^10\) Alcoholism reduces a person’s life expectancy by around ten years\(^10\) and alcohol use is the third leading cause of early death in the United States.\(^9\) No professional medical association recommends that people who are nondrinkers should start drinking wine.\(^9\)\(^9\)\(^9\)

Although lower quality evidence suggest a cardioprotective effect, no controlled studies have been completed on the effect of alcohol on the risk of developing heart disease or stroke. Excessive consumption of alcohol can cause liver cirrhosis and alcoholism.\(^10\) The American Heart Association “cautions people NOT to start drinking ... if they do not already drink alcohol. Consult your doctor on the benefits and risks of consuming alcohol in moderation.”\(^10\)

Population studies exhibit a J-curve correlation between wine consumption and rates of heart disease: heavy drinkers have an elevated rate, while people who drink small amount (up to 20 g of alcohol per day, approximately 200 ml (7 imp fl oz; 7 US fl oz) of 12.7% ABV wine) have a lower rate than non-drinkers. Studies have also found that moderate consumption of other alcoholic beverages is correlated with decreased mortality from cardiovascular causes,\(^10\) although the association is stronger for wine. Additionally, some studies have found a greater correlation of health benefits with red than white wine, though other studies have found no difference. Red wine contains more polyphenols than white wine, and these could be protective against cardiovascular disease.\(^10\)

Although red wine contains the chemical resveratrol and there is tentative evidence it may improve heart health, the evidence is unclear for those at high risk as of 2013.\(^11\) Grape skins naturally produce resveratrol in response to fungal infection, including exposure to yeast during fermentation. White wine generally contains lower levels of the chemical as it has minimal contact with grape skins during this process.\(^11\)

### 14 Forgery and manipulation

Main article: Wine fraud
See also: List of food contamination incidents

Incidents of fraud, such as mislabeling the origin or quality of wines, have resulted in regulations on labeling. “Wine scandals” that have received media attention include:

- The 1985 Diethylene Glycol Wine Scandal, in which diethylene glycol was used as a sweetener in some Austrian wines.
- In 1986, methanol (a toxic type of alcohol) was used to alter certain wines manufactured in Italy.
- In 2008, some Italian wines were found to include sulfuric acid and hydrochloric acid.\(^11\)
- In 2010, some Chinese red wines were found to be adulterated, and as a consequence China’s Hebei province has shut down nearly 30 wineries.\(^11\)\(^11\)}
15 Packaging

See also: Cork (material), Closure (bottle), Alternative wine closure, Wine bottle, Box wine, and Screw cap (wine)

Most wines are sold in glass bottles and sealed with corks (50% of which come from Portugal). An increasing number of wine producers have been using alternative closures such as screwcaps and synthetic plastic "corks". Although alternative closures are less expensive and prevent cork taint, they have been blamed for such problems as excessive reduction.

Some wines are packaged in thick plastic bags within corrugated fiberboard boxes, and are called "box wines", or "cask wine". Tucked inside the package is a tap affixed to the bag in box, or bladder, that is later extended by the consumer for serving the contents. Box wine can stay acceptably fresh for up to a month after opening because the bladder collapses as wine is dispensed, limiting contact with air and, thus, slowing the rate of oxidation. In contrast, bottled wine oxidizes more rapidly after opening because of the increasing ratio of air to wine as the contents are dispensed; it can degrade considerably in a few days.

Environmental considerations of wine packaging reveal benefits and drawbacks of both bottled and box wines. The glass used to make bottles is a nontoxic, naturally occurring substance that is completely recyclable, whereas the plastics used for box-wine containers are typically much less environmentally friendly. However, wine-bottle manufacturers have been cited for Clean Air Act violations. A New York Times editorial suggested that box wine, being lighter in package weight, has a reduced carbon footprint from its distribution; however, box-wine plastics, even though possibly recyclable, can be more labor-intensive (and therefore expensive) to process than glass bottles. In addition, while a wine box is recyclable, its plastic bladder most likely is not.

16 Storage

Main article: Storage of wine

Wine cellars, or wine rooms, if they are above-ground, are places designed specifically for the storage and aging of wine. Fine restaurants and some private homes have wine cellars. In an active wine cellar, temperature and humidity are maintained by a climate-control system. Passive wine cellars are not climate-controlled, and so must be carefully located. Because wine is a natural, perishable food product, all types—including red, white, sparkling, and fortified—can spoil when exposed to heat, light, vibration or fluctuations in temperature and humidity. When properly stored, wines can maintain their quality and in some cases improve in aroma, flavor, and complexity as they age. Some wine experts contend that the optimal temperature for aging wine is 13 °C (55 °F), others 15 °C (59 °F).

Wine refrigerators offer a smaller alternative to wine cellars and are available in capacities ranging from small, 16-bottle units to furniture-quality pieces that can contain 400 bottles. Wine refrigerators are not ideal for aging, but rather serve to chill wine to the proper temperature for drinking. These refrigerators keep the humidity low (usually under 50%), below the optimal humidity of 50% to 70%. Lower humidity levels can dry out corks over time, allowing oxygen to enter the bottle, which reduces the wine's quality through oxidation. While some types of alcohol are sometimes stored in freezer, such as vodka, it is not possible to safely freeze wine in the bottle, as there is insufficient room for it to expand as it freezes and the bottle will usually crack. Certain shapes of bottle may allow the cork to be pushed out by the ice, but if the bottle is frozen on its side, the wine in the narrower neck will invariably freeze first, preventing this.

17 Professions

There are a large number of occupations and professions that are part of the wine industry, ranging from the indi-
viduals who grow the grapes, prepare the wine, bottle it, sell it, assess it, market it and finally make recommendations to clients and serve the wine.

18 See also

Main article: Outline of wine

19 References


[9] “BAC per Drink tables”.

[10] “Effects At Specific B.A.C. Levels”.


[14] “Grape Wine”.

[15] “Unearthing Georgia’s wine heritage”.


[22] MIT technology helps map ancient Phoenician shipwrecks MIT press release.


[32] οἶνος Liddell, Henry George; Scott, Robert; A Greek–English Lexicon at the Perseus Project.

[33] Found on the PY Fr 1202 tablet.

[34] Cf. μῦθος in Liddell and Scott.

[35] Found on the PY Vn 48 and PY Xa 1419 tablets.


[37] T.G. Palaima, The Last days of Pylos Polity, Université de Liège

[38] James C. Wright, The Mycenaean feast, American School of Classical Studies, 2004, on Google books

[39] Palaeolexicon, Word study tool of ancient languages

[40] Benjamin W. Fortson IV Indo-European Language and Culture, an introduction, Blackwell Publishing 2010, p. 42, on Google books


For example, Berry Brothers & Rudd, one of the world’s largest dealers, start “fine wine” prices at about £25—in March 2009 with a wine from Au Bon Climat website “Fine wine offers”.


Crops processed at the Food and Agriculture Organization of the United Nations (FAO) website


Crops and livestock products at the Food and Agriculture Organization of the United Nations (FAO) website


Salih Muslim Book 043, Hadith Number 7186.


“Alcohol and cardiovascular health: the dose makes the poison...or the remedy.”. Mayo Clinic Proceedings. 89 (3): 382–93. doi:10.1016/j.mayocp.2013.11.005. PMID 24582196.


“Almost Like Wine” Alcohol and Heart Health


timesofmalta.com – Italian wine under investigation for adulteration, 4 April 2008


[117] fineliving.com Storing Wine

[118] maridajesgourmet.com Storing Wine Temperature

[119] “Wine Fridges and Wine Cabinets”.

21 External links

- The Guardian & Observer Guide to Wine

20 Further reading


22.3 Content license

- Creative Commons Attribution-Share Alike 3.0