
Wine Fundamentals

From *Managing Bar and Beverage Operations*,
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A knowledge of wine fundamentals is essential to the education of a bar and beverage manager. Wine is by far the most complex beverage in the annals of human history: the variety of hauntingly elusive flavors is, by itself, staggering. The methods that produce these flavors are an odd combination of centuries-old nature-dependent processes, stainless steel vats, and computer technology. The subject of wine is further cloaked in mystery and romance and obscured by millions of words written by "experts" in heated disagreement with one another. Getting the fundamentals in one chapter is no easy task.

Nevertheless, your success in the bar and beverage management arena may well be defined by the extent of your wine knowledge. In a bar or beverage operation with little or no food service, you will need relatively little knowledge. You will stock dry and sweet vermouth for mixes (martinis and manhattans), perhaps some champagne or other sparkling wine in full bottles, half bottles, and "splits" (about 6 1/2 ounces), some traditional wine-by-the-glass offerings, brand name aperitif wines like Dubonnet and Campari, and dry and sweet sherries.

In such operations you will be guided more by market trends and brand names than by a knowledge of wine fundamentals. For instance, Americans over the past few years have created a trend toward drinking white wine instead of cocktails—usually a Chablis or Chardonnay with a small degree of sweetness. Part of the reason for this trend lies in a growing societal disapproval of conspicuous alcohol consumption—white wines *generally* (not always) have less alcohol by volume than reds or other wines. Wine "spritzers" (usually white wine with carbonated water added) further reduced the alcohol and led to the marketing of "wine coolers"—sweet, artificially carbonated, fruit-flavored beverages with a wine base—sold by the bottle like beer. Although wine lovers will be quick to point out that wine coolers are little more than alcoholic soda pop, a bar or beverage manager would be wise to keep some brands in stock to satisfy the demand by younger customers (a demand fueled by millions of advertising dollars).

The primary reason for knowing wine fundamentals is the use of wine to enhance a meal. As a bar and beverage management professional, you can aspire to no higher (and richer) calling than that of a manager of a great restaurant with a great wine inventory. Even if you don't have such aspirations, consumers are becoming more and more sophisticated about wine and you will need to keep ahead of their demand for good wine with their meals, not only by learning wine fundamentals, but by keeping up with a rapidly changing marketplace.

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In this chapter we will start with a brief overview of some basic classifications of wine, move to the growing and harvesting of wine grapes, through various production methods, on to an understanding of the regulation and labeling of wines, and end with a brief primer on wine tasting.

Basic Wine Classifications

Table Wines

Table wines make up the largest category of wines and, as the name suggests, include wines primarily suited to accompany food, but not limited to such purpose. On a wine menu, table wines will be further classified by color as *red*, *white*, or *rose*. However, these colors are approximations: "reds" run from purple to slightly red-tinged brown to clear, light red; "whites" run from clear as water to green-tinged, varying shades of yellow through gold, and light brown. Although rose wine is generally described by its rose color (light pink to light orange-red), it is made by leaving the skins of red grapes in the fermentation process for a short period, then removing them. Its taste characteristics (which vary widely) are more to the point. Color is an important distinction when wine with the same name comes in both red and white. A Graves is a famous white wine from the Bordeaux district in France; there is a red Graves, however, which is a fine wine but is neither well-known nor particularly important.

Natural and Fortified Wines

Most table wines are **natural wines**: basically the product of grape fermentation without the addition of alcohol or sugar (beyond a small amount allowed for certain wines under specified conditions). Natural fermentation stops when there is no more sugar to convert to alcohol or when the alcohol reaches 14% by volume. Thus, table wines may have as little as 7% alcohol but never more than 14%. (Many table wines, however, are created by stopping fermentation by *unnatural* means—by heat, by adding sulfur dioxide, and by removing the yeast through sterile filtration.)

Fortified wines, on the other hand, may range in alcohol content from 14% to 24%. Alcohol—usually in the form of a brandy distilled from wine—is added to a wine during fermentation. Adding alcohol produces two results: the extra alcohol brings the alcohol content beyond what is naturally possible; the unfermented sugar stays in the wine, producing a sweet wine. Some fortified wines (such as sherry) allow for complete fermentation of the sugar, adding the brandy (and often a sweetener) after fermentation. Port and vermouth are other examples of fortified wines.

Aperitif and Dessert Wines

Aperitif wines (from the French, *aperitif*, meaning "appetizer") are wines that are traditionally served before meals as an appetizer or cocktail. They are often fortified and herb-flavored (vermouth, for instance, is both fortified and flavored with herbal ingredients). Besides Dubonnet and Campari (mentioned earlier), other brand names include Punt e Mes and Lillet. Dry sherries are often included in this category.

Dessert wines, as the name implies, are meant to be served after dinner with dessert or *as* dessert. Dessert wines are often fortified—the sweet varieties of sherry

("Cream" and "Oloroso," primarily) and port are examples. Madeira is another. Natural wines, such as some varieties of Sauternes and many German wines classified as *Beerenauslese* or *Trochenbeerenauslese*, are sweet wines that are often used as dessert wines.

Sparkling Wines

Basically, any wine can be made into a sparkling wine by the addition of carbon dioxide under pressure. However, sparkling wines are usually made by re-fermentation. The already fermented wine is made to ferment a second time by the addition of yeast and sugar with the resulting carbon dioxide trapped instead of released. In the classic champagne method, the second fermentation takes place in the bottle in which it is sold—a laborious and exacting process which accounts for the high price of the best Champagne. Less expensive methods include the *transfer process* (the wine is transferred through a filter to another bottle) and the **Charmat** or **bulk process** in which the second fermentation takes place in a vat and the wine is later filtered and bottled under pressure.

The most famous of the sparkling wines is, of course, Champagne. Champagne, by law, can only come from the Champagne district of France. American "champagne" must be identified as "American champagne," "California champagne," or "New York state champagne." The Italian word for "sparkling" is *spumante*; the German word is *Schaumwein* or *Sekt*.

The Growing and Harvesting of Wine Grapes

All grapes are basically vines, members of the *Vitis* genus, *Vitaceae* family. These vines were climbing trees or sprawling shrubs for millions of years before they were cultivated expressly for wine production by human beings. The growing of grapes for wine goes back to our earliest records of human activity—to the Bible and the hieroglyphics of early Egyptian dynasties.

The main sugar in grapes is fructose (often referred to as grape sugar) which, like all sugars, can be fermented. Even so-called table grapes can produce a wine, however unsavory. However, one species of *Vitis*—*Vitis vinifera*—stands out as the great European wine grape. From it have come more than 4,000 named varieties of wine grape.¹

North America has its own species, *Vitis labrusca*, which withstands the cold winters of New York state, as well as Ohio, Michigan, and other cold-winter areas. However, the varieties of *vinifera* are by far the most used in making wine. Although we don't know where or how the first varieties were brought into existence, selective breeding is still going on. A cross between the Riesling and Muscadelle varieties created the Emerald Riesling, the grape used in the production of the fruity, soft, lively Emerald Dry wine produced in the United States.

The story of how wine grapes are grown and harvested is a fascinating one. The immense complexity and variety of wine starts with the many different areas and growing conditions in which the wine grape is grown. We will explore this process briefly in the following sections, from the ground up.

The Soil

The French swear by the attributes of soil as being responsible for great French wines. The physical attributes of soil—texture, porosity, drainage, and depth—are

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probably more important to growing than the chemical content. Oddly, good wine grapes do not prosper in a rich, loamy soil. Such soil holds too much moisture and nutrients and, consequently, the roots of the vine don't have to develop in their search for moisture. A gravelly or rocky soil provides good drainage, causing vine roots to "chase" after moisture during dry periods. This process ultimately gives the vine the stable root support needed for good grape production.

The soil of the famous Chianti Classico region of Italy looks like nothing but gravel and rocks. Yet, the grapes prosper. Such a rocky soil is also beneficial because it absorbs a considerable amount of heat in the daytime which helps to keep the roots above 50° F (10° C) at night. (The roots do not function well below this temperature.)

The soil must, however, contain enough fine material to carry adequate nutrients. A good source of nitrogen, phosphorus, and other nutrients must be present. If not, fertilizer must be added to provide them. Many vintners make sure that stems and pressings of the grapes are returned to the soil where these materials can break down and provide needed nutrients such as nitrogen.

A grape vine can live for 50 years or more, producing a big crop of grapes each year. However, the soil in which it grows must receive proper care. The soil must be tilled, weeded, and cared for just like any ordinary agricultural crop. If you ever drive by a vineyard, you will see how well-manicured and cared for it is.

The Vine

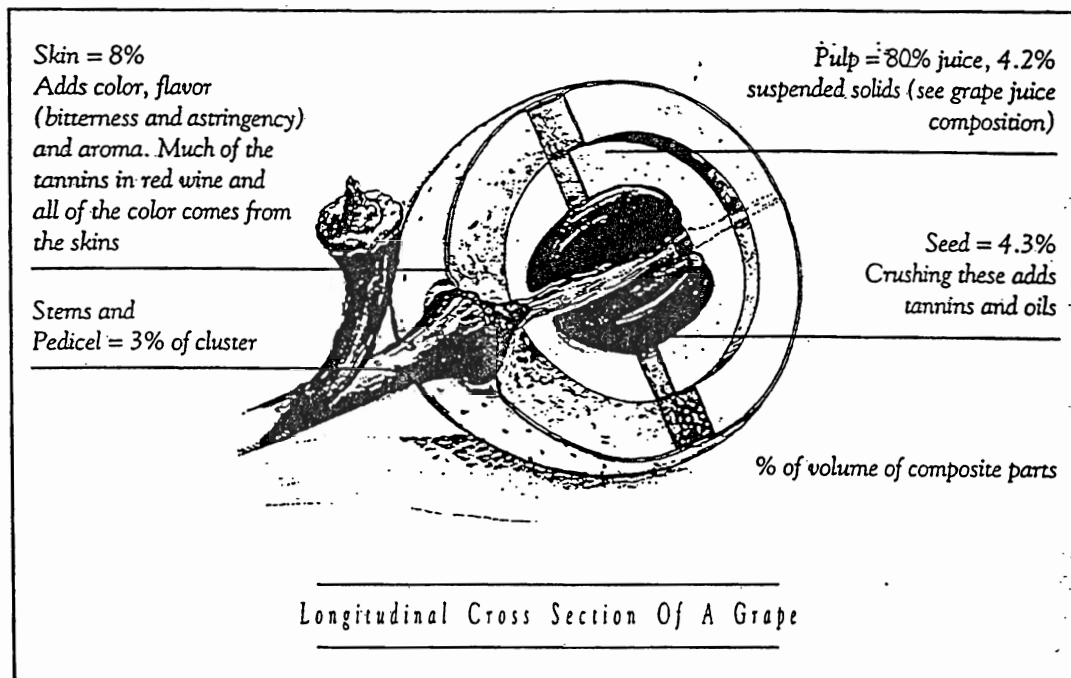
The vast majority of modern European vineyards consist of selected European *vinifera* vines grafted on to a selected American rootstock (*Vitis labrusca*) which is naturally resistant to the deadly, vine-killing *phylloxera*—a variety of plant lice. In the middle of the last century, phylloxera was carried to Europe on *labrusca* rootstock by some English vintners who thought that the hardy American grapes would prosper in England. Crossing the channel, the phylloxera virtually wiped out all the vineyards in France, Germany, and Italy. The discovery that grafting the branches of the *Vitis vinifera* on to the rootstocks of the *Vitis labrusca* would cancel the destructive power of phylloxera revitalized the shattered European wine industry. Today, virtually all of Europe's vines grow on American roots.

Grafting of vines (called scions) to different rootstocks is now common practice for other reasons: In California, a grower can decide to change his grape crop to adjust to market trends by sawing off a vine which has been in production for many years and "T-bud" grafting another variety scion in its place. Within two years the grower will have a producing vine of a totally different variety.²

The other major vine care activity is pruning. Expert pruning is required to train grapevine growth to desirable patterns. In hot climates, vines are pruned and trained to grow on high trellises that serve to shelter the grapes from ripening too soon under the leaf growth. In Germany, the opposite is required. Many vineyards are trained to a height suitable for mechanical harvesting.

Pruning takes place every year in the winter, and is usually very thorough—90% to 95% of new growth is cut back. Central to the objective of pruning is the notion that "the greater the quantity, the lower the quality." While this notion is overstated, the principle is correct—the more grapes on a given vine, the more competition for sunlight, nutrients, and moisture. While pruning is, traditionally, a job for experts, mechanical pruners (with some follow-up hand pruning) have been in use for about 10 years. Carefully monitored results have shown little difference in the quality of the next year's crop whether mechanical or hand pruning is used, with mechanical pruning costing just 15% that of hand pruning.

Exhibit 1 Longitudinal Cross Section of a Grape



Courtesy of Sonoma County Wineries Association

The Grape

The grape, of course, is the essence of wine. Not only do wine grapes provide a multitudinous variety of wines, but every part of the grape can have an effect on taste; even stems are sometimes purposely kept in the fermentation (see Exhibit 1). Wine is made from the juice of one variety of grape or a blending of the juices of two or more varieties. Both by custom and by government regulation, certain wines can only be made from one variety of grape or a blend of the juices of specified grapes. Thus, the Nebbiolo grape alone is needed to make the rich, red Barolo wine of Italy; the Chardonnay grape to make a French Chablis; and only the Palomino grape gives a proper sherry. A wine coming from just one grape variety is called a **varietal** wine.

Wine made from a blend of wines to resemble a particular wine of a region such as the Rhine is called a **generic** wine. U.S. federal law calls such wines *semi-generic*, and requires that the place of origin be included on the label (as in "California Burgundy"). However, blending is commonly practiced, and the assumption that blended or generic wines are inferior to varietals is erroneous. Wines are blended for increased complexity—the blend often superior in taste to either of the blend components alone. French Champagne is almost always a blend of grape varieties. Brand name wines are blends which rely on the bottler's reputation for consistency, quality, price, and value.

In some countries such as France, a varietal wine must be made from 100% of the grape variety. In the United States, a wine may be identified as a varietal with only 75% of the grape variety actually used. In either case, a varietal wine may or may not be an indicator of quality. In California, with its wide variety of great wine grape growing areas, the best growers have produced wines primarily from one

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variety and have so identified their products. This has led to a consumer identification with varieties as "high-quality" wines.

Hybridization is an important factor in growing wine grapes. New grape varieties are constantly being developed through crossbreeding. The cross that created the Emerald Riesling mentioned earlier was developed in California to make the parent Riesling grape more adaptable to warmer growing conditions than are found in the part of Germany where the Riesling originated. German *viticulturists* (wine grape growers) are still trying to develop a Riesling variety which will ripen earlier (and avoid autumnal killing frosts) and still retain the taste characteristics of the parent. However, the great parent varieties were naturally developed over thousands of years, and the wine-buying public is relatively slow to accept new varieties.

Geography and Climate

The wine grape likes to grow in a temperate area, not too hot and not too cold. It grows poorly, if at all, below 50° F (10° C), and does well up to just over 90° F (32° C). Thus, the Champagne, Loire, and Alsace regions in France and the region starting about mid-Rhine in Germany are about as far north as the wine grape will prosper. England, north Germany, and northern France are a bit too cold for it. On the other hand, the Italian peninsula is just about one vast vineyard with its abundant sun and warmth. However, parts of Sicily are almost too warm for good wine production. Northern Algeria, Israel, and many countries of the Near East are not too warm for wine production.

A similar band of climatic conditions in both the northern and southern hemispheres favors grape growth. Thus, in the southern hemisphere, the land band formed by Chile, Argentina, South Africa, Australia, and New Zealand, the wine grape grows well. In the northern hemisphere, certain areas of the Near East, Iran, and the United States also produce good wine grapes.

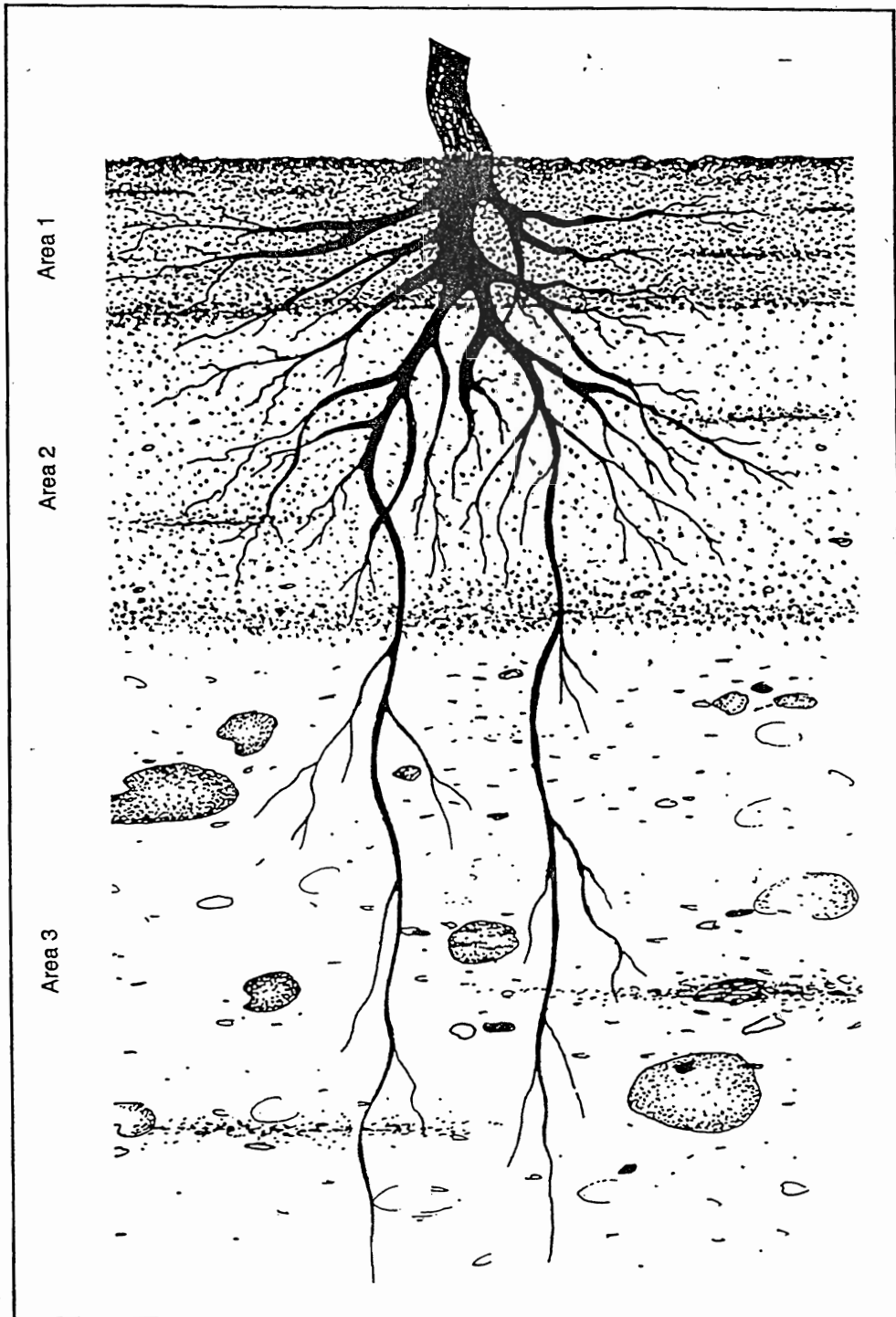
Warmth and sun are needed not only for the vines to grow, bloom, and produce a healthy, plentiful crop of grapes, but also to develop adequate sugar for the production of enough alcohol to give a good keeping wine. In certain areas, the warmth and sun are so abundant that the grapes produce an excess of sugar, so sweet wines like the Tokaji Aszu, Sauternes, port, or Madeira are possible.

There is an old German saying that "the soil is the mother of wine, the vine its father, and the climate its fate." The spring, summer, and fall must be sufficiently long for the grape to leaf out, send out new roots, blossom, grow a rich, full, juicy, and fully ripened grape. Around 120-150 frost-free days are needed for this cycle.

The regions of Alsace and the Rhine have about the minimum of frost-free days, and their wines are dry and crisp and are not high in alcohol content because the grapes ripen without sufficient sugar; all the sugar in the grapes *have* to be fermented to get a minimally acceptable amount of alcohol. On the other hand, some very warm wine-growing areas such as southern Spain or Southern California have more than enough sun and warmth to fully ripen the wine grapes. However, wine grapes in such areas will often lack sufficient acidity for good table wines—all wines require a certain amount of acidity to retain character.

Too little or too much rain can be a problem. Too little can be solved by irrigation—Australia and Chile rely on irrigation for their considerable wine industries. However, too much rain can be devastating. Grape vines need to develop long taproots that often extend to 15 feet or more as they search for deep groundwater (see Exhibit 2). Too much rain can keep these taproots from developing. Ideally, rain,

Exhibit 2 The Root System of a Grape Vine



In Area 1—about 8 inches of topsoil—there are few roots; this area is tilled to remove weeds. Area 2 often extends to two feet and is the area with the most extensive root growth. Most of the vine's food and water will be supplied from here. Note the long taproots extending down through Area 3. These taproots provide low-lying groundwater during times of drought.

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should be adequate during vine and leaf growth, but sparse during the ripening of the grapes.

Winters must also not be too rugged. Young vines cannot stand a hard winter. A state like Montana is not favorable for grape production, because the young vines are often killed by the low winter temperatures there. However, a period of several weeks or even more when the ground remains frozen is not harmful. In fact, some good winter chill drives the sap down out of the vine and makes for a more sturdy plant in the growing season.

Local Growing and Weather Conditions. Various local growing conditions throughout the world may be more significant than geography, especially when it comes to growing the truly great wine grapes. It is generally accepted among viticulturists, for instance, that the slopes of hills are best for wine grape growing. Not only does the angle of an incline capture more solar radiation, but cold air, accumulated during the nights will roll off the slopes more quickly. A south slope is almost always ideal, but local growing conditions (an autumnal morning fog, for instance) may favor a western slope because the sun won't break through the fog until the afternoon. French wine will often carry names prefixed with *cotes* or *coteaux* which means "slopes." The world-famous Cote d'Or (literally, "slope of gold") in the Burgundy district of France produces some of world's greatest wines on its south-and east-facing slopes.

Also part of the magic and mystery of wine growing is the specific climatic conditions (often referred to as "microclimates") in various growing areas. These areas (and the famous *cotes* are good examples) seem particularly favored not only by their slopes and soil, but by their receiving the right amounts of sun and moisture at the right times more consistently than less favored areas. Such areas are singled out in the French classification system as *crus* or "growth" areas (as we shall see later in this chapter). Microclimates can so affect small areas—even individual vineyards—that a good year (a year in which the grape crop receives the optimal sun and moisture) can vary even from one part of a region to another.

Harvesting

Just as vines are pruned on the basis of "the higher the quantity, the less the quality," so also do most wine-producing countries limit the yield per acre that can be harvested (the United States is a notable exception). In France, the highest quality *crus* limit the harvest to about two tons per acre. Before reunification the Federal Republic of Germany (West Germany) allowed an average of 5-6 tons per acre.

The German wine-making emphasis is more on achieving the right balance between sugar and acidity at the time of harvest than it is on limiting yield. This balance and the natural sugar content of the grape is tested in the vineyards: Before a wine can bear various quality designations on its label, it must pass government tests for specific sugar content before the grapes are harvested.

In fact, the balance between sugar and acidity is the critical element in the harvesting of all wine grapes. As the grape becomes more ripe, its sugar content begins to outweigh its acidity. There is no one "right" ratio, but each type of wine will have a ratio appropriate to its particular taste characteristics.

Some grapes may be left on the vine for a long time in the fall until they are overripe, developing a large concentration of sugar. In late fall, the morning mists and afternoon sun create ideal growing conditions for a mold called *Botrytis cinerea* or, more commonly, "noble rot." It is called "noble" because it creates some of the greatest, naturally sweet wines.

The traditional method of harvesting is to send pickers out into the field with special cutting knives or shears, carrying baskets which are filled with 35 to 50 pounds of bunches of grapes which are mostly ripe. (Picking individual ripe grapes is a relatively rare practice and limited to some very expensive types of wine). These filled baskets are dumped into carts, called *gondolas*, to be moved to the pressing room. Hand picking is still the preferred method because human judgment can be used to select desirable grapes while rejecting undesirable ones. However, machine picking is catching on, especially in California, and may become more common in the years to come.

Wine Production

The basics of fermenting grapes are utterly simple. Squeeze the juice from the grapes and the yeasts which grow naturally on the grape skins will cause the juice and skins to ferment. White skins produce white wine and red skins produce red wine. However, thousands of years of tradition and experimentation would fill volumes on the subtleties of making thousands of varieties of wines. And today, with stainless steel vats, computer-assisted controls, genetic research, and other technological developments, the production of wine worldwide is reaching unprecedented heights of quantity and quality. The following sections offer the bare basics of winemaking.

Pressing

The gondolas filled with grapes are brought to the presses where the grapes are washed and gently crushed to begin the process of removing the juice, which is called must. Some of the juice obtained is what is called *free run*. This is the must that runs off after the grapes are crushed but before they are pressed. Most of the must coming from the pressings is retained for wine, but some of it may not be fermented for wine—a portion may be fermented separately and distilled into brandy or used for other purposes, such as making wine vinegar. The final pressings in the making of sherry are separately fermented and then distilled into brandy for use in fortifying the sherry wine.

Pressing must be done with care, since rough or heavy pressing can extract undesirable components. Thus, the crushing of the seeds can give an excessively bitter wine. In the past, grapes were pressed by bare feet, which gave just about the right pressure and action to remove the juice without getting undesirable substances into the must. However, today's presses are so designed as to just about duplicate the pressure of human feet. Modern presses are more efficient than bare feet in extracting must but tend to leave a higher proportion of solids such as skins, flesh, pips, and dirt in the must. For this reason, the must (especially for white wines) is cleaned before fermentation—by allowing the solids to settle out, by a powerful vacuum filter, or by careful centrifugal pumping.

Fermentation

Almost universally, the first thing vintners do before fermentation is to add a small dose of sulfur dioxide (SO_2) to the must. The amount used is regulated by law. It is used to kill the wild yeasts present on the skins of grapes and thus prevent premature and uncontrolled fermentation; it is also used to prevent oxidation.³

The next basic decision required is whether sugar should be added to the must—a process called *chaptalization*. This process is often necessary when

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weather conditions prevent grapes from ripening fully and developing enough natural sugar to convert into the amount of alcohol prescribed (often by law) for certain wines. In some countries, chaptalization is controlled and some wines may not be allowed to be chaptalized. (Some expert tasters say they can tell by the after-taste if a wine has been chaptalized.)

All wines also need some acidity. If acid is lacking, the vintner can blend in grapes with enough acid to make up for any deficiency. Pickers may also be instructed to pick enough unripe grapes to give the required acidity.

The proper fermentation temperature is different for different kinds of wine, and individual vintners have sharply differing views on proper temperature. A vigorous chemical process, fermentation develops heat and may have to be controlled so the temperature does not rise too high and develop undesirable substances. Wood and concrete vats are very poor conductors of heat; for this reason alone, stainless steel vats are now in wide use.

Red wines are fermented at temperatures usually from 70° to 90° F (21° to 32° C) and whites at from 45° to 65° F (7° to 18° C). The lower temperature for whites is used to give a more fresh and fruity flavor to the wine. The usual cold fermentation temperatures are from 65° to 70° F (18° to 21° C) for reds and 44° to 59° F (7° to 15° C) for whites.

Fermentation occurs only as long as there is sugar to ferment. When it is used up, fermentation stops. It also stops when the alcohol content rises to 14%, because the alcohol at this point kills the remaining yeast. If sugar remains with alcohol at this percentage, the wine will tend toward sweetness—a wine of 2% sugar content is sweet.

Red wine is red because it is made with red (or black) grapes and fermented *with* the skins. The red in grape skins is made up of *anthocyanins* which are soluble in alcohol and some other organic substances, but not in water. Thus, as the must ferments and alcohol is produced, a red color pervades the ferment. When skins are left in, a thick cap develops on top of the fermenting wine which hinders fermentation by blocking oxygen. Either this cap must be broken up frequently or wine must be pumped from the bottom and run over the cap so oxygen is available.

White wines are made from white grapes or red and black grapes with their skins removed so they do not color the wine. Many French Champagnes are made from mostly black or red grapes with the skins removed—the so-called *grand noir* Champagnes.

A rose wine is made by fermenting the must with the red skins for only a short period, usually overnight. For this reason a rose is often called *le vin de nuit* (the wine of the night).

Malolactic fermentation can easily occur in the fermentation process. This is a bacterial change and a breakdown of malic acid into lactic acid and carbon dioxide along with other minor substances. Malic acid is much more tart than lactic acid so the overall result is less tartness. Since the wine becomes smoother, malolactic fermentation is generally considered a favorable fermentation reaction. However, in warm areas such as California, malolactic fermentation must be controlled—it tends to remove too much acidity—acidity needed both for preservation and for character. Malolactic fermentation can be controlled by filtration (see below) or by the addition of sulfur dioxide.

Some wines (primarily reds) are produced by a fermentation process called *carbonic maceration*. Uncrushed grapes are vatted in a sealed chamber and fermentation starts. The oxygen is used up and only carbon dioxide now fills the chamber. Without oxygen, the wine produces less acid and a rich, fruity flavor and brilliant red color. This relatively new process has been particularly successful with wines—

such as the Beaujolais Nouveau—which are intended for consumption when very young.

Aging

Aging of wines is the storage of wines that takes place after fermentation, but before bottling; its purpose is to allow further chemical reactions with a small amount of air, with suspended particles in the wine, and sometimes, with the storage medium itself (as with oak casks). Most wines are aged after fermentation, usually by being placed in casks and then stored in a cold area. Caves, which are quite cold in the winter, were adequate cold storage areas for the more northerly wine-growing regions. (The advent of refrigeration greatly enhanced winemaking, especially in the warmer growing regions.)

During the aging period, flocculent (suspended) material in the wine settles to the bottom of the cask or vat as sediment or lees (which includes some tannins, and some tartrates). At various times after the settling out of the above substances, the wine is carefully run off the lees into another container, a process called **racking**. Racking removes some acidity; the color of the wine becomes more brilliant; the fermented wine becomes less astringent due to the reduction of tannins. During aging, flavors also blend together and smooth out. Glycerine develops, giving additional smoothness and more body.

Aging wine in small oak casks is favored for some wines because the wood encourages certain desirable changes in taste and texture. Some aging specifies *new* casks, because new wood imparts stronger wood flavor to the wine; some vintners scrape the insides of the casks after many years of use to achieve “new wood” effect. Wood may actually add tannins, but these tannins are described as “soft” while the tannins in grapes (which partly settle out) are called “hard” and give a harshness to wine. The end result of aging in casks is usually a smoother, softer wine.

Aging today may not always occur in small oak casks. Instead, huge oak vats may be used. Also, concrete, glass-lined, or stainless steel vats may be used. These may be sealed so there is little oxidation or other changes from the air. Whites and roses are often aged in vats which are lined with inert materials. Some wine is lost during aging from evaporation and, to keep casks filled, additional wine is added—called *topping off*—to fill the cask and prevent excessive oxidation.

It is important to prevent excessive oxidation since it can destroy the wine. Another undesirable oxidative change is caused by the fruit fly. It carries a bacterium which, in combination with oxygen, changes alcohol into acetic acid (vinegar). During fermentation and subsequent handling—even through bottling—it is important to keep fruit flies away from the wine.

Aging can develop quality up to a certain point and after that the wine may not improve and may even deteriorate. Most wine is aged just over the winter, and bottling takes place in the spring after the harvest. Other wines are aged several or more years, just as they may be left to ferment over a long period. Some others, like the robust and more stable reds, may be aged in casks for a long time. Aging, in this case, encourages more and more development. In some cases, specific aging times are required by law if certain terms are used on the label.

After a wine is aged, it is possible for wine experts to make a final judgment as to what the quality of the wine will be. Up to this point all indications may point to a great or a good year, but it is only after the wine is aged that the experts make their final determination. In some years, the aged wines may only be described as *ordinary*; in a slightly better year, the wine may be said to be *medium*; in a better year,

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described as *good*; if still better, the wine is described as *great*, and the very best is said to be *exceptional*. Thus the vintage year shown on a label of such wines is important, because a buyer will have a basis for judging the value of the wine. Exhibit 3 shows a vintage chart for wines of France. Note that the wine qualities do not stay the same in the same year between different areas. Thus in 1982, the reds of Bordeaux were the only ones called "exceptional," while other areas obtained only a "medium" rating.

Fining

Fining is a process that removes certain microscopic solids still remaining suspended in the wine after racking. Fining gives the wine more clarity and brilliance; it also removes materials that might give undesirable properties to the wine. Filtering the wine through very fine filters is one way of doing this, and can be very effective since only pure liquid remains. In fact, filters may remove too much, including colloidal suspensions that give a wine special character and taste. For this reason, a vintner may use a fining agent to remove only some suspended particles.

Some fining agents work by carrying negative electrical charges to attract positively charged suspended particles that are undesirable. Others are gels to which flocculent materials attach themselves, causing the combined mass to sink to the bottom. Egg white, colloidal silica, bentonite, gelatin, and even animal blood are some of the products used for fining. Centrifuging can also be used for such clarification.

Blending

Many wines are blends. **Blending** refers to the use of different grape varieties in making one wine, but more often describes the practice of blending different wines (wines from different years or with different taste characteristics) to create one brand of wine. True Champagne (from France) is always made from a blend of wines, sometimes from different growers/wine makers, often from different years, almost always from more than one of three specified grape varieties. Many clarets (dry, red Bordeaux wines) are the result of wines purchased at different wineries by *negociants* (wine merchants) and blended by them for a consistent taste.

Traditionally, American wines are blends of different grape varieties. As we noted earlier in this chapter, U.S. regulations allow wines to be labeled as a varietal with up to 25% from other grapes. (However, the best varietals are 95% to 100% of the grape specified.) Vintners in the eastern part of the United States may purchase California *vinifera* wines and blend them with their *labrusca* wines to reduce the grapy flavor.

Blending allows the bringing together of desirable components in different wines to make a better product; it is seldom a dilution of a good wine by a poorer one. One wine may lack the necessary tannins for good taste and keeping qualities, while another wine may have an excess of tannins and be too astringent. By blending the two together, a vintner may produce a very good wine.

Bottling and Corking

By the spring following the fall harvest, most wines are ready for bottling (the fine red wines being a notable exception). Traditionally, this is the time that wine merchants will visit the wineries, sample the wines, and make their purchases. The casks will then be shipped to the bottler's establishment for bottling. More and more wineries, however, are bottling their own wines.

Exhibit 3 Comparison of Vintages from the Wine-Growing Regions of France

★ EXCEPTIONAL VINTAGES: 1921, 1928, 1929, 1945 ★										
VINTAGE	Red Bordeaux	White Bordeaux	Red Burgundy	White Burgundy	Côtes du Rhone Growths	Alsace	Pouilly-Loire Sancerre	Anjou Touraine	Beaujolais	Champagne
1947	★	••••	••••		★			★		
1949	★	••••	★		••••			••••		
1955	★	••••	••••	•••	••••			••••		
1959	••••	••••	★	•••	•••	★		★		
1961	★	★	★	••••	••••	••••		•••		
1962	••••	••••	•••	•••	••••	••		•••		
1964	•••	••	••••	•••	•••	•••				
1966	••••	•••	••••	•••	••••	••••				
1967	•••	★	•••	•••	••••	••••				
1969	•	••	••••	••••	•••	•••		••••		
1970	★	•••	•••	★	★	•••		••••		
1971	••••	•••	••••	••••	••••	★		•••		
1973	•••	•••	••	••••		••••		••		
1974	••	•••	•••	•••		••		••		
1975	••••	••••	•	•••	••••	•••		•••		
1976	•••	••••	••••	••••	••••	★		••••		
1977	••	••	••	•••		••		••		
1978	••••	•••	★	••••	★	••		•••		
1979	••••	•••	•••	★	••••	••••		•••		
1980	••	••	•••	•••	•••	••	•••	••	•	
1981	••••	•••	••	•••	•••	••••	••	•••	•••	
1982	★	•••	•••	••••	••	•••	••••	••••	•••	
1983	••••	••••	••••	••••	•••	★	••••	••••	★	
1984	••	••	•••	•••	••	••	••••	•••	••	
1985	Abundant harvest of very fine quality									
Average vintage	•	••	•••	••••	••••	••••	••••	••••	••••	★
These appreciations are based on averages; the exception proves the rule.										

Courtesy of Wines of France

14 Wine Fundamentals

"Estate bottled" has a certain cachet because the wine grower can usually be expected to protect his or her reputation with a high-quality wine. In France, growers who bottle their own wines have a legal right to put "*mis en bouteille au chateau*" or "*mis en bouteille au domaine*" on their labels. In former years only the very rich vineyards and prominent vintners such as the Rothschild family could afford to have their own bottling plant. Today, portable bottling operations in large vans can service many less affluent vineyards; the *mis en bouteille* label is no longer synonymous with quality.

Glass is by far the preferred container for holding wine and is often colored to keep the wine from being affected by light. Different shapes are traditionally used for different kinds of wines and especially to signify the wine-growing region (see Exhibit 4). From the bottle shape and color, one can often tell at a glance where the wine comes from and what type it is.

Some sparkling wines of many nations are marketed in standard French bottles and bottle sizes for sparkling wines. Exhibit 5 gives the metric and ounce sizes and the name of the container used for sparkling wines. Most of these bottles must be made of heavy, dark glass and be specially built to withstand the heavy pressures built up by the carbon dioxide gas inside. After bottling, many wines must be left to rest for a time to recover from what is called *bottle sickness*. During this period, the wine stabilizes and regains its full flavor and character.

Cork has been found to be one of the best materials with which to seal a bottle of wine, although some of the new plastic materials do just as well—they probably would be used more if it were not for the fact that cork seems to have some romance attached to it as well as a long tradition in winemaking.

The cork tree is an oak which develops a thick, spongy, semi-hard bark several inches thick. The tree does not start to produce cork until it is about 40 years old; and then only about every nine years can the bark be removed. Portugal produces the best and the most cork; Spain produces some and Italy a little.

A high-quality cork can last about 50 or more years, but many experts suggest re-corking after 25 years. Crumbly, porous cork allows air to penetrate into the bottle. On rare occasions, a cork containing fungus cells can deteriorate and give the wine a "corky" flavor.

Corks often have imprinted on them a logo or some information about the wine such as place of bottling, kind of wine, vintage date, place of production, and so forth.

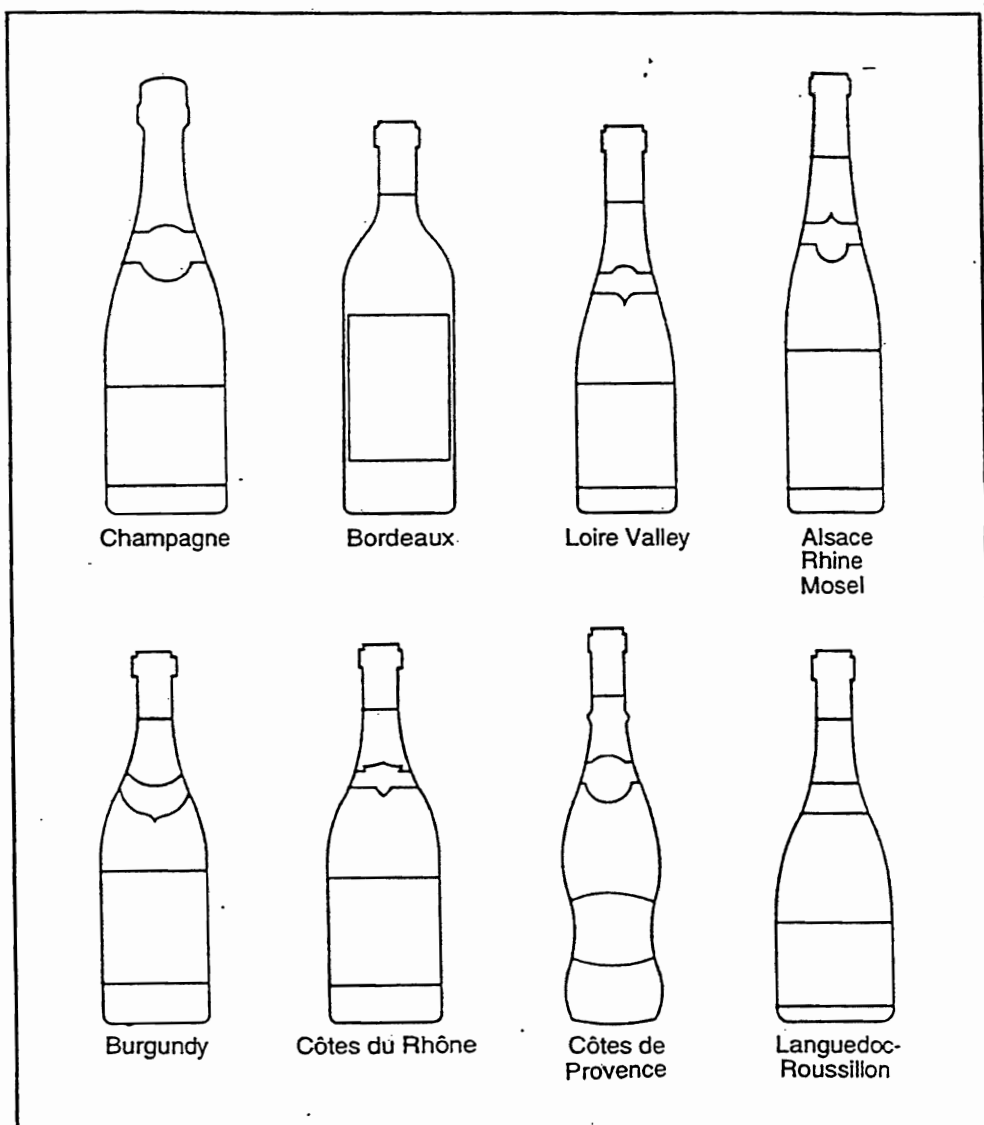
Special corks must be made for sparkling wines and these must be quite thick with broad bases so the inside pressure does not force them out. In addition, the cork is wired down to the bottle by a helmet called a *muselet*.

Screw-top caps are often used instead of cork or plastic for some wines that do not have to rest on their side, such as sweet dessert and fortified wines. Screw-top caps are sometimes used for sparkling wines. They seem to do quite well.

Maturing

It is often said, "Wines age in the cask, but mature in the bottle." Wine is the only alcoholic product that matures in the bottle. **Maturing** is the term used for aging in the bottle; it is usually associated with complex, full-bodied reds such as a good red Bordeaux or Burgundy, or a wine primarily from a Cabernet Sauvignon or Pinot Noir grape. However, young white wines can improve with some degree of bottle maturing. Champagne and vintage port are matured almost entirely in the bottle, but tawny port and sherry are fully matured in casks.

Exhibit 4 Different Bottle Shapes for Different Regions



Note that the French Alsace bottle is the same size and shape as that used for the German Rhine and Mosel wines; the Alsace was formerly part of Germany and many of its best wines are made from traditionally German grapes. However, Rhine wine bottles are brown, while Alsace and Mosel bottles are green. (Courtesy of Wines of France)

Different wines mature differently in the bottle. Some mature fast and after that, lose quality. Others can improve up to 50 or more years. We say of a wine that is old, but still improving, that "it is still going uphill."

A good acid-tannin balance is needed for a wine to continue to improve over a number of years, as one of the finer Bordeaux or Burgundy reds might do. Young reds of good promise start out quite fresh but somewhat harsh and raw in flavor due largely to an overabundance of tannins and acid. They lack smoothness and finesse. Gradually, however, they lose this character and begin to develop a soft

Exhibit 5 The Bottle Capacity of Various Champagne Containers

Bottle Name	Bottle Capacity	
	Metric Measure	U.S. Equivalent (oz.)
Nebuchadnezzar	15 L	540.93 (4.23 gal.)
Balthazar	12 L	432.74 (3.38 gal.)
Salmanazar	9 L	324.46 (2.53 gal.)
Methuselah	6 L	216.37 (1.69 gal.)
Rehoboam	4.5 L	156.00 (1.22 gal.)
Jeroboam	3 L	108.19 (3.38 qt.)
Magnum	1.5 L	54.09 (1.69 qt.)
Bottle	750 ml	25.4
Half-bottle	375 ml	12.7
Split	187 ml	6.76

Source: U.S. Bureau of Alcohol, Tobacco, and Firearms

mellowness and depth of flavor that begins to approach the characteristics of what might be called "a great wine."

Some wines are not meant to mature for a long time in the bottle. Many German whites lack the staying power to last much over eight years. An ordinary Beaujolais red is a wine that also does not take aging too well. Thus, one must know which wines take age and which ones do not, and to move inventories when one sees that the wines in one's cellar are beginning to reach a point at which they might begin to go downhill.

During maturing, it is possible that a wine will cast a lot of lees. These usually are on the side of the bottle, if it is properly stored on its side. Before such wine is consumed, the bottle should be *carefully* put upright so the lees slide down into the bottom. Careful pouring may make it unnecessary to decant the wine. However, in some cases, the wine may have to be decanted to remove it from its sediment. Allowing the sediment to mix with the wine spoils not only the wine's appearance but also its flavor.

Wine—particularly white wine—may form a crust at the place where the wine surfaces in the bottle or around the lip of the bottle. This is a harmless and natural consequence of tartrate crystallization; with careful pouring it should not cause problems.

Storage

The storage area for wine should not be too dry nor too moist. If too dry, the corks dry out and the wine oxidizes. If too moist, the labels deteriorate and mold may appear. The temperature should be about 55° F (12.8° C) for reds and slightly lower for whites, if possible. Where both reds and whites are stored together 50° F (10° C) should be ideal. Temperatures above 65° F (18° C) can be harmful to wines as are widely and frequently fluctuating temperatures. A steady, cool temperature is best.

The storage area should only be lit when one needs to see. Light is harmful to wine. This is the reason that many wines are put into green, brown, or other colored glass bottles.

Most table wines should be stored on their sides so the wine is always against the cork, preventing it from drying out. Fortified and sparkling wines do not have to be stored on their sides, although some feel sparkling wines have less chance of a dry cork if stored on their sides.

Once stored, a wine should be moved as little as possible. Remove bottles carefully and avoid shaking them. Some wines are best moved some time before service and allowed to rest. One needs to be aware that wine is fragile and must receive proper care to be a good product.

After a shipment of wine is received, it should be carefully stored and allowed to rest. Shipment can cause wines to get "shipping sickness," losing flavor and other quality characteristics. They usually recover after a short rest.

Regulation and Labeling

In the material that follows, the major features of laws controlling the wine industries of some of the leading wine-producing nations are presented. For the sake of brevity, many details of these laws are not covered, but the factors important for those who work in the alcoholic beverage industry are included. Special attention has been given to those factors which govern information given on labels, since it is from labels that information essential to good purchasing, good merchandising, good menu planning, and good pricing and other factors covered in beverage management is derived.

Until the nineteenth century, the wine industry in Europe operated for the most part on a *laissez faire* system. There were no general standards covering the entire industry; standards were the province of individual vineyards and winemakers. As a result, buyers of wines were never sure of the source of the wine, its purity, sanitation, quality, or other factors that might indicate what they were purchasing. Buyer approval or rejection of some wines and pressure from retailers and even some producers brought about some attempts to regulate wine production. Gradually, governments began to set up regulations to bring about a more stable and reliable industry.

France

In 1854, Emperor Napoleon III of France set up a committee of experts and wine brokers to officially rank the wines of the major chateaux of two great Bordeaux districts—the Haut-Medoc and Sauternes. The purpose was to give special distinction to these wines at the Exposition Universelle to be held in Paris in 1855. This committee tried to establish their ratings based on the opinions of experts, but disagreement was so furious that the committee had to base its choices on those wines which had historically commanded the highest prices. The wines were given one of five *cru* (growth) classifications: Premier Cru, Deuxieme Cru, Troisieme Cru, etc. Collectively, all five are referred to as the Grand Crus and, today, a wine in any of the five classifications will likely bear *Grand Cru Classe* on its label (see Exhibit 6). Only 60 wines of the Medoc and 22 of the Sauternes were included in the classification; one outside these areas (Graves) was also rated.

Since that time the 1855 rankings have remained much the same (Chateau Mouton-Rothschild was added to the original four Premier Crus—Chateaux Lafite, Latour, Margaux and Haut Brion—in 1973). Since then other regions have been similarly rated, giving prospective purchasers a reliable, but not infallible certification of quality.

Exhibit 6 The Grand Cru Classe Designation



This classification, ranking the chateaux of the Haut-Medoc among France's greatest wines, comes from a decree issued in 1855 by Napoleon III. (Courtesy of Wines of France)

The problem with the 1855 classification is that it left the erroneous impression that Premier Cru wine was first in quality and all the other *crus* second rate. This was not the case, since all the wines of the original classification came from the top class, the elite wines of the region. Another problem was that many fine wines were omitted. Most of these "orphans" were identified by the label *Cru Exceptionnel*, *Cru Bourgeois*, or *Cru Bourgeois Superieure*.

Nevertheless, the classification of 1855 was a beginning of some sort of recognition and ranking of quality. During the ensuing years as more and more regions were classified, the need for more regulation became apparent. In 1936, France was first to establish and enforce a strict and broad set of regulations covering its alcoholic beverage industry. It worked so well that many other nations followed suit.

Today, France and the rest of Europe are beginning to feel the effects of European Economic Community (EEC—commonly known as the "Common Market") regulations on their respective wine industries. The EEC regulations, designed to establish uniform quality standards for all member nations, have already caused some European governments to change their national standards in order to compete. However, long-standing national standards still predominate, although the future may see EEC regulations supersede them.

The Appellation Controlee Label. The laws passed in 1936 in France to regulate its alcoholic beverage industry were given to the *Institut National des Appellations d'Origine* (INAO) for administration. The laws are known under the collective name *Appellation d'Origine Controlee*, and the short form stands for *appellation controlee*, which means, literally, "name controlled." In effect, *appellation controlee* (AC) on a label means that the wine is among the highest classification of French wines and that whatever appears on the label is strictly regulated by the INAO. Requirements for AC labeling are complex and standards differ from one major wine region to the next. Nevertheless, one or more of the quality control standards listed below must be met to receive the coveted AC label.

Production area. Geography is fundamental to AC classification. The most important geographic areas are still the designated *cru* or growth areas established in 1855. However, since that time the INAO has raised some wines to a higher *cru* rank while dropping others. It has also added some wines while eliminating others. In 1954 it completed a ranking for the St. Emilion district in Bordeaux, dividing the 76 most famous vineyards into two classes: *premier grand cru* and *grand cru*. Where the wine comes from is the main point of *appellation d'origine controlee*: the more narrowly defined the origin of the wine, the higher the quality is a good "rule of thumb" in selecting quality wines (but is far from foolproof).

- The most precise name in indicating location is the name of a chateau or vineyard. Thus, a wine bearing the label *Chateau Margaux* accompanied by the term *appellation controlee* means that the grapes were grown at that specific location and the wine is bottled there.
- Labels can state location as that of a defined growing district such as *Appellation Pomerol Controlee*. Pomerol is a small area in the Bordeaux region which has a limited number of recognized high-quality vineyards; in any given year such a wine *might* be better than that from a specific chateau but should definitely be better than the next, broader designation.
- A broader area would be a limited general growing area defined by AC within a wine region such as Bordeaux, and the designation on the label might be *Appellation Bordeaux Superieur Controlee* or *Appellation Premieres Cotes de Bordeaux Controlee*. In Burgundy, such a designation might be *Beaujolais Villages*, which includes some 39 villages and is more likely than not to indicate indifferent quality in comparison to a wine from a single town or village.
- The least knowledge of where the grapes were grown and wine was produced under an AC classification is indicated by a label which identifies the wine only by the major wine region it comes from, such as Bordeaux (generally with the *appellation controlee* designation directly underneath). Some of these wines can be undistinguished or even poor in quality. However, a number of excellent wines come under this last category. Champagne, for instance, is made from grapes grown anywhere in the Champagne region.

Grape variety. Certain wines can only be made from specific grapes. Thus Champagne can only be made from a mixture of Pinot Noir, Pinot Meunier, and Chardonnay grapes. The best Burgundy reds must come from a Pinot Noir, a Beaujolais from the Gamay grape, and a Chablis from the Chardonnay.

Viticulture standards. The grapes must be grown in a manner specified by the law. Only certain kinds of fertilizers and pesticides can be used. Irrigation is prohibited in the *cru* areas. The number of vines per hectare (2.471 acres), pruning, and time of harvest are controlled. In fact, very little from the planting of the grapes to the harvest and care of the vines in the winter is not regulated.

Yield. Only a given amount of wine per hectare can be produced in various locations. In most AC areas, the limit is 40 hectoliters (4,000 liters) per hectare. However, a complicated system of annual re-assessment can allow considerably more production in certain areas. Yield is most strictly controlled in the *Grand Cru* areas.

and in the Sauternes area, the yield is limited to 25 hectoliters per hectare for AC designated wines. These restrictions on the amount of wine produced per hectare are rigidly enforced. Thus, if one produces more wine than allowed under the AC certification, the AC rating may be denied. One cannot even bottle the legalized amount under an AC label and the remainder under a different label.

Production methods. The manner in which the wine is made is also strictly controlled. Thus, Champagne must be made in a specified manner and labeled accordingly. Sauternes must come from a grape that has developed the "noble rot." Fermenting procedures are precisely prescribed for different kinds of wine and for different regions. Such things as adding or taking away acidity depending on how ripe the grapes are at harvest are also controlled.

Bottling. Some appellations, like Alsace and Champagne, stipulate that bottling must take place in the region of production. Even the kind and shape of the bottle may be regulated (see Exhibit 4). Thus, wine from Alsace must be bottled in Alsace and bottled in tall, fluted, greenish glass bottles.

Alcohol content. The minimum alcohol content by volume for different kinds of wine is strictly controlled and specified on the label. Certain wines cannot be made unless the grapes contain at harvest sufficient sugar to produce wine of a specified alcohol content. Some addition of sugar before fermentation to increase alcohol content (chaptalization) is permitted in some cases, but is strictly regulated. Thus, a chablis can be chaptalized but not above a specified naturally fermented alcohol content.

Analysis. All appellation wines since 1979 have to be submitted to a tasting panel which rejects wines it considers faulty or unrepresentative of the "typical" or historic standard of a particular AC designation. Appellation growers/bottlers can present samples two times and if they fail both times, they lose their right to AC designation for that year. (In a "bad" year, many great chateaux will voluntarily forgo bottling part or all of that year's crop under their AC label, opting instead to sell their grapes to bottlers who will use them in the production of generic or other blended wines.)

The VDQS Label. In 1945 France instituted a second rank of appellations under the designation *Vins Delimites de Qualite Superieure* (VDQS)—literally, "wines from a specifically defined region of superior quality." While generally ranked below AC wines in quality and consistency of quality, some VDQS wines are superior to some AC wines. Sometimes the reason for a particular wine not getting an AC rating is that it is made from the wrong grape in the right place; for example, Sauvignon de St-Bris is VDQS because it is made from the Sauvignon Blanc grape grown in the AC-designated Chardonnay- and Aligote-only Burgundy area.⁴ It is possible, over time, for a particular VDQS wine to move up to AC ranking or vice versa; some consider VDQS as a "training ground" for AC status.

The Vin de Pays Label. The label *vin de pays* means, literally, "country wine" and such wines must come from the region of production claimed; one or more classic grape varieties are required; yield is controlled and alcohol levels prescribed and on the label. Again, it is possible for a wine in this group to move up or down in rank. This category was created by the government in 1968 and 1973 in order to

recognize the quality of large, anonymous areas of table wine production and give them some geographical identity. Consequently, there are three levels of *vin de pays*:

- *Vins de Pays Regionaux*—Regional classification covering wide areas, such as the Loire valley (*Vins de Pays du Jardin de la France*)
- *Vins de Pays Departementaux*—Classification restricted to smaller areas (*departements* or “counties”)
- *Vins de Pays de Zone*—Classification covers wines from single communes or small areas within a *departement*

Vins de pays do have AC-type limits but are the laxest of the three major designations. Below the *vin de pays* designation is the *vin ordinaire* or *vin de table* (ordinary or table wines), which are very basic wines virtually unregulated by the government. About 70% of France’s wines are *vins de pays* or *vins de table*.

Other Labeling Regulations. Exhibit 7 indicates how to interpret information on a label of French wine. As noted in this exhibit, both the French and U.S. governments have strict labeling rules. Seven items *must* be a French label to meet labeling requirements; three are optional:

Bottler. There are four kinds of bottlers in France:

- One is a vineyard of no special note bottling its own wines.
- Another kind is a group of growers and/or vintners (*caves cooperatives*) that band together to bottle and even ship their wine.
- A third is known as a *negociant* or *negociant-eleveur* (merchant or merchant-breeder). The *negociant-eleveur* creates the wine by blending different wines for a distinctive and consistent taste which he (or she) will offer under the firm’s label. He or she may also age the wine before bottling it. Many Bordeaux reds are bottled this way and may carry on the label *mis en bouteille dans nos chais* (put into the bottle in our place or warehouse) or *mis en bouteille par negociant* (bottled by the merchant or firm). These wines can be quite good, but the only guarantee of quality is a merchant’s long-standing reputation.
- The fourth kind of bottler is one who wants the world to know that the wine was produced and bottled on the place where grapes were grown. The bottle will usually state *mis en bouteille au chateau*, (bottled at the manor house), *mis en bouteille au domaine* (put into the bottle at the place), or *mis en bouteille a la propriete* (put into the bottle at the property). Many wine drinkers, especially Americans, have taken the *mis en bouteille au chateau* as a sign of quality. It’s not. Since the advent of mobile bottling “plants” (semi-sterile bottling facilities in large vans or lorries) in the 1960s, many small and undistinguished growers can claim that their wine was bottled at their chateau or place.

Vintage. Although the vintage year is optional as far as labeling is concerned, it is a crucial factor when considering wine purchases. It is particularly crucial for the high-quality red Bordeaux wines and some of finer red Burgundies made from the

Exhibit 7 How to Read a French Wine Label

The exhibit displays four French wine labels with numbered callouts (1-10) indicating key information:

- Label 1 (Top Left):** Clos des Bluets. Callouts point to: 1. Importer (C.W. Smith & Sons, Inc.), 2. Net contents (750 ml), 3. Appellation (A.O.C.), 4. Brand name (Clos des Bluets), 5. Vintage (1978), 6. Region (Bordeaux), 7. Product of France, 8. Shipper (Dupont & Fils), 9. Net contents (750 ml), 10. Net contents (750 ml).
- Label 2 (Top Right):** André Massol. Callouts point to: 1. Importer (C.W. Smith & Sons, Inc.), 2. Net contents (750 ml), 3. Appellation (A.O.C.), 4. Brand name (André Massol), 5. Vintage (1978), 6. Region (Bordeaux), 7. Product of France, 8. Shipper (Dupont & Fils), 9. Net contents (750 ml), 10. Net contents (750 ml).
- Label 3 (Bottom Left):** Domaine de la Salle. Callouts point to: 1. Importer (C.W. Smith & Sons, Inc.), 2. Net contents (750 ml), 3. Appellation (A.O.C.), 4. Brand name (Domaine de la Salle), 5. Vintage (1978), 6. Region (Bordeaux), 7. Product of France, 8. Shipper (Dupont & Fils), 9. Net contents (750 ml), 10. Net contents (750 ml).
- Label 4 (Bottom Right):** Chateau Lafite Rothschild. Callouts point to: 1. Importer (C.W. Smith & Sons, Inc.), 2. Net contents (750 ml), 3. Appellation (A.O.C.), 4. Brand name (Chateau Lafite Rothschild), 5. Vintage (1975), 6. Region (Bordeaux), 7. Product of France, 8. Shipper (Dupont & Fils), 9. Net contents (750 ml), 10. Net contents (750 ml).

How to Read a Wine Label

Both the American and the French governments have very strict labeling rules to govern the information given on a bottle of wine.

These sample labels are number coded to show you the information that, by law, must be included on a label:

1. The wine is a product of France.
2. The region in which the wine was produced—for example, Burgundy, Bordeaux, Champagne.
3. The appellation for which the wine qualifies: A.O.C. (Appellation d'Origine Contrôlée), V.D.Q.S. (Vins Délimités de Qualité Supérieure), Vin de Pays, or Vin de Table.
4. The name and address of the shipper, except in the case of Champagne where, usually, the Champagne house (brand) is also the shipper.
5. The name and address of the importer.
6. The alcoholic percentage by volume.
7. The net contents of the bottle.

The following is optional information which may appear on the label:

8. Vintage.
9. Brand name or château name.
10. "Estate bottled," "Château bottled" or similar phrase.

Courtesy of Wines of France

Pinot Noir grape. Such wines mature in the bottle; some are not ready to drink until 7 to 12 years after bottling. Thus, the vintage year is a decisive purchasing factor. The **vintage year** is the year in which the grapes were grown, and a great or good year for a particular type of wine will be celebrated by including the vintage year on the label. Consumers will decide whether it lives up to its promise.

Brand or chateau name. Although the brand or chateau name is legally optional, one or the other will always be present on French wine labels.

Germany

In 1971 Germany revised its wine regulations, making them stricter and broader in application. They covered many factors which related not only to general German viticulture conditions but also to specific local conditions. Labeling was strictly controlled and considerable information was required on the label so consumers could know what they were getting. The major points of the 1971 wine regulations are in effect today—along with subsequent revisions—and are discussed in the sections which follow.

Producing Regions. Eleven major wine-producing regions (*bestimmte Anbauggebiete*) were defined: Ahr, Baden, Hessische-Bergstrasse, Franconia (Franken), Mittelrhein, Mosel-Saar-Ruwer, Nahe, Rheingau, Rheinhessen, Rheinpfalz (Palatinate), and Wurtemberg.

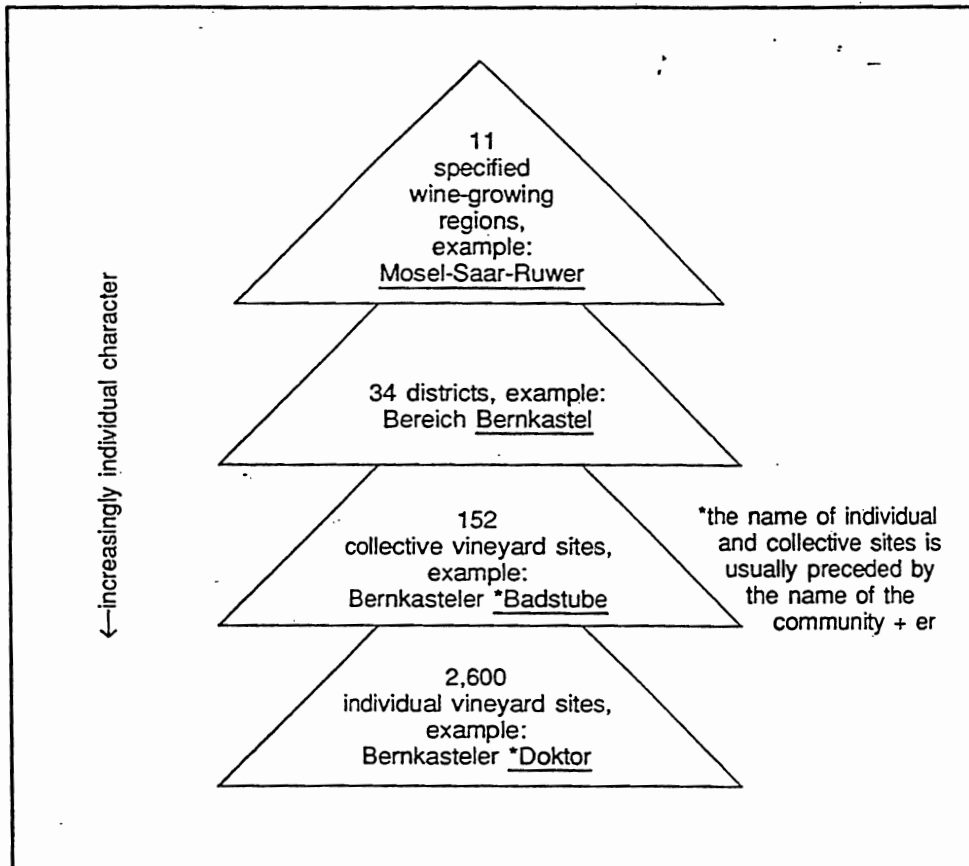
Within these regions 34 districts (*Bereichen*) were established. The *Bereichen* are divided into *Gemeinden* (villages) and the villages, in turn, are divided into some 2,600 recognized *Einzellagen* (single sites, or vineyards). Villages and single sites sometimes join together in cooperative units called *Grosslagen*. As with the chateau designation in French labeling, the smaller the unit, the higher the quality is likely to be. *Einzellagen* corresponds to the French *chateaux* (see Exhibit 8).

Quality Levels. Three levels of quality were established in 1971, with a fourth, *Landswein*, created in 1982.

Qualitätswein mit Prädikat (QmP). Stiffly translated as "quality wine with special attributes," QmP wines are the highest quality German wines. The quality of QmP wines is largely rated by the amount of natural sugar in the grape at harvest. Accordingly, QmP wines are further classified into four categories of quality and natural sweetness:

- *Kabinett*—a wine made from simply ripe grapes picked at the normal harvest time.
- *Spätlese*—literally, "late picking," which means the grapes are picked about three weeks later than the official harvest opening and are riper and, consequently, sweeter.
- *Auslese*—literally, "late selected picking," this category uses selected bunches of the very ripest late harvest grapes. (At this point, the wine will retain some of its natural sweetness after full fermentation.)
- *Beerenauslese*—literally, "selected overripe picking," this category uses individual grapes selected for extreme ripeness and concentration, most

Exhibit 8 German "Appellation of Origin"



German wine laws do not classify quality or vineyards as the French do; nevertheless, the best German wines are more likely than not from individual vineyards. (Courtesy of the German Wine Institute)

often grapes which have been infected by the "noble rot" (*Edelfaule* in German).

- *Trockenbeerenauslese*—literally, "dry grape, special late picking," this is the rarest of the categories. The grapes are left in the field until the *Edelfaule* dries up the grape to an almost raisin-like state after which the berries are picked individually. Much less juice is obtained, and the harvest conditions are very rare (about one every ten years), so the wine is costly.

Eiswein (ice wine) is a rare and costly QmP wine made in some years by leaving ripe grapes on the vine until they freeze, then crushing and removing the ice which leaves a heavy concentration of sugar and acid.

Qualitätswein bestimmter Anbaugebiete (QbA). Literally, "quality wine from designated regions," QbA wines are in the second quality ranking. The basic legal difference between QbA and QmP wines is that sugar may be added to the must to help the QbA wines ferment to required alcohol levels.

Landwein. This “wine of the land” was re-classified from common table wine to recognize some qualitative differences in large regional areas. It corresponds nicely with the French *vins de pays* classification.

Tafelwein. *Tafelwein* (table wine) is a blended wine that compares with *vin ordinaire* of France and is usually consumed young and domestically. It is prohibited from claiming any vineyard origin; it may or may not indicate its origin by giving a township name. It is relatively uncontrolled, often using grapes from Italy. Look for *Deutsche Tafelwein* on the label if you want a good German table wine; it means all of the grapes have been grown in Germany. *Tafelwein* may also be called *Weinstube* (wine of the pub).

Quality dry wines. In 1977 the Germans received approval from the EEC to market two types of wines with a designated standard of sugar content; one was *trocken* (dry) with a maximum residual sugar content of 0.9% (9 g/L) and the other was *halbtrocken* (half-dry) with a maximum residual sugar content of 1.8% (18 g/L). Limits of the acid-sugar ratio in these wines were also set. German producers asked for these classifications because many consumers of German wines have expressed a preference for a wine drier than the quality sweet wines—something similar to the wines of Alsace—wines which would more appropriately accompany food.

Origin. Labels of QmP wines must show either region, district, cooperative, or vineyard. In some cases the village or township (*Gemeinde*) is given and may be combined with the vineyard: Niersteiner-Auflagen, for example. (Nierstein is the township where the Auflagen vineyard is located. Note the addition of “er” to Nierstein, indicating the wine is from that place, just as one would say “Londoner” for a person living in London.) QbA wines *may* show on the label their origin as region, district, township, cooperative, or vineyard. QmP wines must show vineyard (or *grosslagen*), township, and region, such as

Bernkasteler-Doktor
Mosel-Saar-Ruwer

The grower, producer, and bottler is not always the same person. There are about 100,000 grape growers in Germany, yet only about a fourth as many producers. If the label indicates *Erzeugerabfüllung* (estate-bottled), it assures you that the grapes were grown and the wine was produced by one and the same grower or cooperative of growers (*Winzergenossenschaft*). The grower or collective group of growers is responsible for and guarantees the quality of the wine. The bottler or shipper whose name is on the label assumes responsibility for the wine’s quality, and this fact is identified on the label by the term, *abfüllung*. (See Exhibit 9: “How to Read a German Wine Label.”)

Wine Name. Many wines, as we have discussed above, are named for their place of origin. However, in Germany as in France, many wines are blends and bear a brand or proprietary name. Proprietary names may be used, such as Moselblumchen (now called Moselthaler), Liebfraumilch (Milk of the Blessed Mother), Schwarze Katz (Black Cat), or Hock, after the township of Hochheim in the Rheingau region.

Vintage Year. The vintage year is generally considered optional for German wines. However, *Tafelwein* and *Deutsche Tafelwein* may not include any quality designation on their labels, including vintage year. Although vintage date on a label is no

Exhibit 9 How to Read a German Wine Label



- 1) The wine-growing region; one of 11 regions designated by law.
- 2) The vintage date is the year in which the grapes were harvested. Although different vintages may exhibit subtle differences in taste and style, the German classification system, based on ripeness of the grape at harvest, assures consumers of the quality of each bottle, regardless of whether vintage year is given on the label.
- 3) The town (first) and the vineyard (sometimes cooperative) from which the grapes came (both, in this example, fictitious).
- 4) The grape variety. German law controls which grape varieties may be grown in various areas if the grower/wine maker is to receive its quality designations.
- 5) The taste or style of the wine. In this case, *halbtrocken* (literally "half-dry") means that the wine maker added a small amount of *Sussreserve* (sweetener) to the wine according to German regulations approved by the EEC. This is not to be confused with ripeness or the classification of sugar content at harvest. *Trocken* means "dry"—all the sugar is fermented into alcohol and little, if any, *Sussreserve* is added.
- 6) The quality level of the wine (QbA) indicating that the grapes used had a specified ripeness at harvest.
- 7) The A.P. number is proof that German government inspectors have tested and approved the wine for the quality designation given.
- 8) Wines grown, produced and bottled by the grower or a cooperative of growers may be labeled *Erzeugerabfüllung*. Other wineries and bottlers are identified as *Abfüller*. (Again, a fictitious name.)

(Courtesy of the German Wine Information Bureau)

guarantee of quality, certain vintage years are better than others, particularly among wines of QmP designation.

Sugar Content. Often the growing season in Germany is such that the grapes ripen without adequate sugar to make the amount of alcohol prescribed by German regulations for various kinds of wine. Accordingly, the regulations allow limited sugar-*ing* (*anreichern*) of the must prior to fermentation in QbA wine, Landwein, and Tafelwein, but not in QmP wine. *Anreichern* is, in effect, the same as the French *chaptalization* process.

However, sweetening *after* fermentation is not only allowed but is more the rule than not in Germany; the result, when done properly, is an exceptional fruitiness characteristic of the best German wines. The finished wine is sweetened by adding some unfermented grape must (*Sussreserve*). Only a small quantity is

usually added. The addition of *Sussreserve* is permitted in QmP as well as other *Qualitätswein*.

It is the sugar content of the grapes at harvest time which is strictly regulated for QmP wines. The legally required sugar content, expressed in degrés Oeschle,⁵ is different for the different regions: a *Kabinett* from Ahr must be 67° Oeschle, but 73° Oeschle from Rheingau. The sugar present in the grape at fermentation usually means a higher alcohol content, which is also prescribed for most QmP wines. However, the sweetest (and rarest) of all German wines, the *Trockenbeerenauslese*, requires a grape sweetness of 150°—a degree of sweetness which actually inhibits fermentation to about 6% alcohol.

Grape Varieties. The labels for all wines except *Tafelwein* must give the grape name. If the label for one of the quality level wines indicates the wine is a varietal wine, 85% of the grapes used to make the wine must be that grape. It is possible to indicate two kinds of grapes as a varietal combination; in this case both grapes must make up 85% of the grapes used, but no ratio of the combination is set. If the label gives a subregion, a village, or vineyard name, 85% of the grapes must come from there. These grape sources may be indicated as from five defined regions: Rhein, Mosel, Oberrhein, Neckar, and Main.

The Riesling grape is the premier grape of Germany—it is the great grape for the great German wines and no hybrids or other variety has yet surpassed it. However, its slow (and thus late) ripening characteristics which undoubtedly bring about its great taste characteristics are also, sometimes, its downfall. Many German wines are made from grapes which ripen earlier and thus avoid being wiped out by killing frosts in the fall. Among the other popular grape varieties are the Sylvaner, Muller-Thurgau, Weissburgunder (French Pinot Noir), Kerner, and Gutedel.

Testing. To be sure a wine meets the QmP or QbA standard, three bottles of the wine must be submitted to regulatory authorities for testing. If approved, the wine is given a certified number called *Amtliche Prüfungsnummer* (AP number). If a wine does not meet a particular standard, it may be put into a lower classification—a QmP wine dropped to a QbA classification, for instance, or an *auslese* re-classified as a *spatlese*.

Italy

In terms of sheer volume, Italy is the greatest wine producer in the world. However, it only exports about a fourth of its output and a great deal of that goes into cheap French and German wine blends. Italy has been relatively slow in establishing standards and regulations to protect and enhance the reputation of its great wines. It was not until 1963 that Italy established new regulations for its wine industry.

Some 220 wine-growing districts and 20 regions are defined and a grading system to note wines of "particular reputation and worth" is established by these new regulations known collectively as the *Denominazione di Origine Controllata* (DOC) (see Exhibit 10). The name parallels the French *Appellation d'Origine Contrôlée*, but the DOC is at once more complex and less indicative of quality than the AOC. It controls claims of geographical origin, permissible grape types, permitted yields, pruning methods, alcoholic strength, and aging requirements. Chaptalization is not permitted; the growing season throughout Italy is long enough and warm enough to provide sufficient ripening for sugar content. Even the weight of the grapes that may be harvested and the percentage of that weight which may be

Exhibit 10 The 20 DOC Regions of Italy



(Courtesy of the Italian Trade Commission)

processed into wine is regulated. A description of the requirements for Chianti serves as an illustration of the detail covered by a typical DOC regulation:

It is a red wine from Tuscany, the provinces of Siena, Florence, Arezzo, Pistoia, and Pisa. As for villages, a huge portion of central Tuscany is subdivided into Classico, Colli Aretini, Colli Fiorentini, Colli Pisane, Colli Senesi, Montalbano, and Rufina. The grapes are a blend of Sangiovese (50 to 80%), Canaiolo Nero (10 to 30%), Trebbiano Toscano and Malvasia del Chianti (10 to 30%), and other grapes up to a maximum of 5%. The yield maximum is 87.5 hectoliters per hectare for Chianti and 80.5 hectoliters per hectare for Chianti Classico. The alcohol minimum is 11.5% (Chianti) and 12.0% (Chianti Classico). A *vecchio* (literally, "old") requires aging for two years, and a *riserva* requires three years in wood.⁶

Some of the defined districts are large, covering an entire province, while others are only small local communities or just choice vineyards in an area. Over 800 wines were identified as qualified for DOC ratings. By 1989, 206 wines applied for

and received DOC rating while only 5 wines had qualified for the DOCG—the “G” standing for “Garantita” (guaranteed). DOCG wines have to undergo a series of tastings by experts in addition to meeting DOC standards. Both DOC and DOCG ratings have to be renewed every year.

Below the DOC and DOCG classifications are the wines called *vini tipici*—wines considered of good quality and typical of the wine of the regions from which they came. *Vini tipici* constitutes a category much like the *vin de pays* of France or the *Landwein* of Germany.

The next category below *vini tipici* is *vino da tavola* (wine of the table) or *vino ordinario* (corresponding to the French *vin ordinaire* or German *Tafelwein*). As in France and Germany, it is that massive category of virtually unregulated wines. It may also be known as *vino da pasto*, indicating its appropriateness as an everyday wine for drinking with pasta. At times a *vino da tavola* may be distinguished by the label term *vino da tavola con indicazione geograficos* which is a *tavola* with an indication of where the grapes were grown and the wine produced. This classification is generally regarded as a slightly better wine than the common table wine. The DOCG, DOC, and *vini tipici* wines meet EEC wine standards. The DOC and DOCG wines, numbered at 211 in 1989, make up about 12% of Italy’s wines; the other 88% are from the lower classifications. In France, AC wines total about 20% of production, and EEC regulations require that Italy bring her production of DOC wines up to that level.

Wines with a DOC or DOCG rating indicate this on the label. The lack of such a rating does not necessarily indicate lack of quality; many modern Italian winemakers feel impelled to produce a wine by modern methods not approved by some restrictive DOC regulations which are based on historical methods.

Italian wine names may be classified as generic (place of origin), such as *Ciro Rosso* (red); a DOC red wine from *Ciro* of the province of Calabria, or varietal (grape variety), such as *Riesling Italico*, a DOC wine from Lombardy. They may be proprietary (special distinctive name), such as *Lacrima Christi* (literally, “Tears of Christ”). At times one may see a wine with a generic and varietal name such as *Lambrusco Grasparossa di Castelvetro* which bears the name of the grape, *Lambrusco Grasparossa*, and the place of origin, *Castel Vetro* (not a “castle” actually, but the name of the 14 communes in the Morela district of the Emilia region which grow and produce this popular wine). (See Exhibit 11: “How to Read an Italian Wine Label.”)

The United States

The United States has been a bit more lenient than European countries in its regulation of the wine industry. The wine producer can decide which particular grape to grow in an area, the time of harvest, the time of aging, the aging process, the kind of fining, and other factors often controlled in other countries. Chaptalization is permitted except in California. The relative lack of regulations has given the industry the liberty to experiment and to conduct extensive research and development which has brought about a highly scientific, modern wine industry. Thus the United States can better control the kind of wine produced as well as its quality.

United States regulations require that American wine labels give the name of the wine and area of production. These defined regions are called **American Viticulture Areas (AVAs)** and are the beginning of an AC-type system for the United States. The region may be a county, a state, or any geographical area, such as a lake shore. Only one vineyard has been designated an AVA—the *Guenoc Winery* in Lake County, California.

Exhibit 11 How to Read an Italian Wine Label



Courtesy of the Italian Trade Commission

If an AVA is indicated on the label, the major grape in the wine must come from there. If two or three places of origin are given, all the wine must be made from grapes grown in these areas, and the percentage coming from each must be given. If a wine is estate-bottled, 100% of the grapes used must come from there. If a wine bears the name of New York State as the AVA, 75% of grapes used to make it must be grown in the state.

Wine names may be based on grape variety (varietal) or on the type of wine (generic) or be a proprietary name such as "Rancho Yerba Buena," "Royal Occasion," or "Premium Red." A wine with a varietal name such as "Cabernet Sauvignon" must be made from grapes of which 75% must be Cabernet Sauvignon. A wine made from a *Vitis labrusca* variety is made from grapes of which only 51% needs to be from that variety.

A vintage date may be given, but there is no requirement that it must be on the label. A wine carrying a vintage date must be made from grapes of which 95% came from the harvest of that year; the 5% allowance is for wines used for topping and blending.

Generic wines such as "Burgundy" or "Chablis" can be made from any grape or grape mixture, but must state origin as in "California Burgundy." Proprietary wines need not meet any specific grape percentage requirements.

Alcohol content by volume must be stated and a 1.5% variation from the stated content is allowed. If a wine is between 7% and 14% alcohol, the label may omit the percentage and just say "table wine" or "light wine."

Labels must also state the amount of wine in the container and the presence of sulfites. (See the discussion on sulfites later in this chapter.) Exhibit 12 indicates how to read a label on a bottle of wine produced in the United States.

Labels on wine imported into the United States must meet certain standards. The label must indicate that it is the product of the country where it originated and must show the importer's name and location. The percentage by volume of alcohol, net contents, and name of the wine with some kind of description indicating what it is must be given. The presence of sulfites must be noted. Some specific requirements are required of some nations. For instance, all Italian wines must have a strip label on the back of the bottle bearing "TNE," the seal of the agency that approves wines for export.

Spain

In 1972, Spain established new regulations to control its alcoholic beverage industry; they are called, collectively, *Denominaciones de Origen* or *DO*. The *Consejo Regulador* (Control Board) was set up to be the enforcement agency. The law and its enforcement were modeled after the French AC system. Twenty-eight regions were established and each was given the privilege of having specific regulations for the region. The *Instituto Nacional de Denominaciones de Origen* (INDO) was set up to provide regions with assistance in producing and marketing their products and in conforming to the regulations.

Regulatory councils in each region collect wine samples every year from winemakers (*bodegas*) and send them in to the *Consejo Regulador* for analysis and classification. If a wine passes the examination, a special number is assigned which can be placed on the back of every bottle of that lot. All wine exports must be sent to the *Consejo* to be examined; the cases are then wax sealed to assure they remain authentic.

To meet the EEC codes, Spain established in 1979 two wine categories: *Vino de calidad* (quality wine) and *Vino de cosecha* or *vendimia* (wine of special vintage year). (See Exhibit 13: "How to Read a Spanish Wine Label.")

Other Countries

Other nations of Europe, such as Portugal, Austria, Hungary, and Yugoslavia, and other nations of the world, such as New Zealand, Australia, Argentina, and Chile, have regulations governing their wine industries. In many respects they resemble the laws discussed above, with special provisions to take care of conditions as they exist in their own regions. For the most part, they serve to protect the consumer and to standardize and stabilize the industry in that nation.

Recent Trends in Regulation and Labeling

Organic Wines. As it has in foods, the use of chemicals and other substances in wines has come under scrutiny. The U.S. federal government's GRAS (generally regarded as safe) list permits 75 different additives to be used in wine. Some additives—such as ascorbic acid (vitamin C), egg white, oak chips, carbon dioxide gas, and activated charcoal—are probably harmless. Others may be questionable, running the gamut from acidifiers such as acetic, fumaric, sulfuric and tartaric acids, through bentonite clay and many other fining (clarifying) agents, stabilizers,

Exhibit 12 Decoding a (U.S.) Wine Label: What It Means

Grape Variety. If a wine is labeled as a varietal (Chardonnay, for example), 75% of the wine in the bottle must come from the stated grape variety. This percentage may seem low, but it is actually a marked improvement to the law prior to 1983, when only a surprising 51% had to be of the designated varietal.

Vintage. At least 95% of the wine must be produced from grapes harvested in the vintage indicated. And the other 5%? For wines aged in small oak barrels, for example, "topping up" or adding wine from another vintage is sometimes necessary, given that oak is porous and evaporation occurs within the barrel.

Viticultural Area. In California there are 60-plus geographically-designated viticultural areas; exemplary names include Napa Valley, Sonoma Valley, Santa Cruz Mountains, Cameros, etc. At least 85% of the grapes used to produce the wine must have been grown within the specified area. The other 15% can come from outside sources.

Produced and Bottled By. 75% of the grapes must be fermented, cellared and bottled by the listed producer. The other 25% can come from outside sources and, in this respect, the winery is a form of negotiant.

Bonded Winery. All of California's wineries are federally bonded, insuring that taxes will be paid on the wine produced. Federal taxes per gallon are: \$0.17 for still wines, \$0.67 for dessert wines and \$3.40 for sparkling wines.

Contains Sulfites. All wine contains naturally-occurring sulfites. Sulphur dioxide is also sprayed on grapes in the vineyards to protect against bacteria and mold, on grapes prior to crushing, and on wine prior to barrel-aging and bottling to control oxidation. Wines produced without SO₂ tend to be oxidized and "dirty." Although sulfites may cause an allergic reaction in some wine drinkers, most people need not fear a wine's sulfite level. Many foods (dark leafy vegetables, broccoli, dried apricots, for example) contain 2-3 times more sulfite than wine.

Estate Bottled. This means that 100% of the wine is from the property name given on the label. Neither the grapes nor the wine may leave the estate between the harvest and the time of bottling.

Barrel Fermented. This term means that after the grapes were crushed, the juice was fermented in oak barrels instead of stainless steel. The resulting wines are often rounder, smoother and more elegant. The term doesn't necessarily mean that the wine

No matter how many reviews and recommendations you may have at your disposal in selecting a wine, the wine label itself in many cases still remains a major factor in many buying decisions. But a fully descriptive label can be less than helpful if you don't understand the terms used. This brief guide should help clarify the matter.

Chateau Bay Food

Chardonnay

1988

Napa Valley



Produced and Bottled by
Bay Food Vintners, Berkeley, California
Bonded Winery 9999
Contains Sulfites

This Estate Bottled Chardonnay was Barrel Fermented in French oak Barrels. It has undergone malolactic fermentation and had extended barrel aging to create a complex and unforgettable wine.



Alcohol 12.5% by volume
Total Acidity 0.73 gm/100ml
Ph 3.2
Residual Sugar 0.1

Government warning: (1) According to the Surgeon General, women should not drink alcoholic beverages during pregnancy. (2) Your ability to drive a car or operate machinery may be impaired, and may cause health problems.

has been 100% barrel-fermented. There are currently no laws governing the term.

Malolactic Fermentation. This is a biochemical process that converts the "sour" malic acid of unripe grapes into 2 parts "soft" lactic acid and 1 part carbonic acid. Considered by some as a secondary fermentation, malolactic fermentation reduces the wine's acidity, making the wine smoother and creamier on the palate. As in the case of barrel fermentation, the wine may not have undergone 100% malolactic fermentation. There are no set laws concerning the term.

Barrel-Aging. This means that the fermented wine has been aged in wood to give a "lift" to the flavor. As a general rule, red wines are barrel-aged longer than whites. During barrel-aging, different flavors are imparted to the wine (there are over 100 compounds in wood that can influence the wine's flavor), and slow oxidation allows for earlier maturation.

Alcohol. The alcohol in wine is ethyl alcohol, a colorless, flammable liquid. By law, the stated alcohol percentage must be within a 1.5% margin of error. Thus a wine described as "12.5% Alcohol By Volume" can actually be anywhere between 11-14%.

Total Acidity (TA). TA is the total amount of acidity in a

wine. Sound, healthy grapes contain natural acidity. Too little natural fruit acid makes a wine dull, flat and short; too much makes it "hot" and sharp. While some agree that .7-.75 gm total acidity is desirable, other factors can make this number meaningless out of context.

Residual Sugar (RS). RS is the grapes' sugar that remains unconverted into alcohol in a finished wine. If too much, the wine may seem cloying and sweet. Anything under .5% is considered reasonably dry. Wines between .5% and 1% are considered "offdry." These numbers are difficult to interpret out of context. A higher acidity level will, theoretically, balance higher R.S. levels to make a "balanced" wine.

Ph. Ph is the commonly used chemical abbreviation of potential hydrogen-ion concentration. After hearing and reading several explanations, I have concluded that it is of interest only to biochemists.

Government Warning Label. As of November 18, 1989, every bottle on your wine merchant's shelf has to carry the 41 word Alcohol Beverage Labeling Act warning. An insult to common sense and intelligence, this new labeling law makes a societal statement: that we are living in a risk-obsessed age of neo-prohibitionism.

Source: Kay Steffey, "Decoding a (U.S.) Wine Label: What It Means," *Bayfood* (Berkeley, California, May, 1990). Reprinted by permission.

de-foamers, adjuncts to aid or control fermentation, and precipitators, to bleaching agents and odor removers. The amounts and ways such additives are used are controlled, but those who feel that we are getting too many chemicals in our food and beverages question their use and advocate a more naturally made, organic wine.

Exhibit 13 How to Read a Spanish Wine Label

Type of wine: Red table wine Area/DO: Navarra, Ribera del Duero, Rioja, etc. Registered Brand Name: Marqués de Madrid, Castillo de Olite, Viña Dorada, etc. Location of the Bodega: Haro (Rioja Alta), (Town, province, etc.) Rueda (Valladolid) Produced & Bottled, Shipped by: Bodegas Pérez García, S.A. Country: Product of Spain Vintage Date: 1978 (Sometimes accompanied by <i>Reserva</i>, <i>Cosecha</i>, <i>Vendimia</i>, etc.)		Bottlers Registration No.: R.E.1550/LO DO symbol (sometimes on front label): Rueda, La Mancha, etc. Alcohol by Volume: 11.5% Net Contents: 750 ml. Importers Name: International Wine Imports, New York, NY BACK LABEL (Not required for all wines, but DO wines use a numbered back label registered with the Consejo Regulador.) Ageing information: <i>Vino de crianza</i>, <i>Gran Reserva</i>, etc.
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Most of the information given on the label of a Spanish bottle of wine will be found in the fictitious label above. (Courtesy of *Wines of Spain*)

Some wine producers have seen a growing and loyal market for these organic wines, and a number of wineries in the United States and several hundred in Europe now produce them. In France, the procedure followed is one advocated by the Nature and Progress Association, which obtained approval for their recommended method for organic wine production from the French Ministry of Agriculture. In general, the method calls for the grapes to be grown and the wine made in the traditional manner without the use of synthetic chemicals, pesticides, herbicides, fungicides, chemical fertilizers, metabisulfites, hormones, and other additives. The method does allow controlled amounts of "mined sulfur" to be added to help preserve the wine. Otherwise, it is a totally natural process. The vineyards and wineries in France subscribing to this method are inspected regularly to see that they follow the regulations.

Sulfur and Sulfites. One of the main concerns about chemical additives in wine is the use of sulfur as a spray on grape vines to control *oidium*—a powdery, destructive mildew. Sulfur, burned to form sulfur dioxide gas, is also widely used to destroy wild yeasts in the must and bacteria in casks and other equipment. All these processes add to the sulfur or sulfite content of the wine.

Sulfites in wine are objectionable for two reasons: they can give a sulfurous flavor to wine, a flavor associated with putrefaction. More importantly, a small percentage of the population is seriously allergic to sulfites, with some cases of death reported. Because of this latter consideration, the U.S. federal government now requires that the presence of sulfites in excess of 100 ppm (parts per million) in foods and beverages be noted on the label.

This means that almost every white wine label today will note that sulfites have been added because most wines, even without the addition of any sulfur, produce at least six ppm of sulfites as a natural part of the fermentation process. In addition, the sulfur used in most processing methods produce an end sulfite content of 80 to 200 ppm—some wines go as high as 350 ppm (with a noticeable sulfur flavor). The French do not permit sulfites in red wines to exceed 90 ppm and in whites, 100 ppm.

Because sulfites are a problem for relatively few people and because almost all wines contain sulfur and sulfites, some wine producers have objected to the labeling requirement. They say it means little. However, the rule is on the books and labels for wine sold today in the United States must adhere to it.

Non-Alcoholic Wine. With the continuing trend toward moderation in drinking, more and more individuals are selecting non-alcoholic beverages as their drink of choice. Today one can find a wide range of whites and reds, as well as roses and sparkling wines, that are labeled "non-alcoholic." (It must be noted, however, that "non-alcoholic" beverages are not entirely alcohol-free—the legal requirement in the United States is for the label of non-alcoholic beverages to read "contains less than 1/2 of 1% alcohol by volume.") Many of the currently popular non-alcoholic wines are made from a variety of *Vitis labrusca* grape and so have a slight "grapy" flavor. However, a number of the new non-alcoholic wines are being made from *Vitis vinifera* varieties and thus resemble more closely their European counterparts. We can expect to see more wines of this type on the market and an increase in their consumption.

Tasting and Judging Wine

Not only is a knowledge of the quality of a wine needed to purchase and merchandise wine properly, but service personnel need to know about the quality of the wines on the wine list to sell them. It goes back to the old adage about selling: "If you wanna sell, you gotta know."

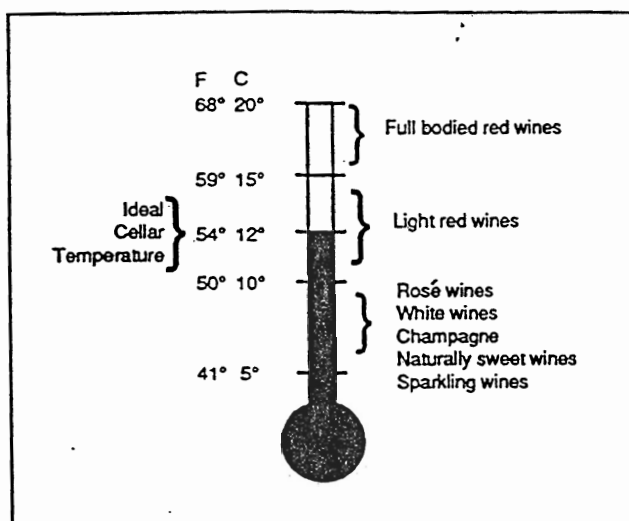
There are two essential parts to judging a wine. The first is the basic preparation and the second is the judging itself. In addition, the judge should also understand a few things about judging wine.

Judging is a matter of obtaining sensory stimuli that give a clue as to what the wine is. The most important stimuli come from sight, taste, and smell. Tactile stimuli or feeling sensations are less in number but are often extremely important. The senses of taste and smell are most acute when one is hungry. Thus, about 11:30 a.m. and 4:30 p.m. are often desirable times to judge wine. Smoking, alcohol, a cold, fatigue, emotional upset, or other reasons can dull the senses and make a good judge a poor one. As one gets older, there is a loss of sense acuity, but this may be compensated for through the acuity gained by experience. In judging, one must have a memory which recalls typical flavor and other sensations with which to compare those received from the wine being judged.

While there are only four tastes—sweet, acid, salt and bitter—there are thousands of odors; identifying even several hundred and evaluating them properly when combined with the four tastes can be a challenge. Judging wines relies on experience, because, as one tastes wines one learns to identify various aromatic and taste components and to decide their value. Almost everyone senses the same thing in tasting a wine. It is the experienced judge who knows how to identify the various sensations and to properly interpret their meaning.

Preparing to Judge

Proper preparation is needed if a wine is to be judged properly. Not more than three to five wines should be judged at one time—more will result in tasting fatigue. Usually, low-alcohol and the most delicate wines are selected for judging first. Water and low-salt crackers or bread may be provided to cleanse the palate

Exhibit 14 Temperature Chart for Serving Wines

between judgments. The judging should be in a quiet and well-lighted room. Set a plain, white cloth on the table or surface to be used by the judge, so the wine can be viewed through the glass with the white cloth as backdrop. Use a plain, clear, bell-shaped glass with the top rim smaller than the bowl to help concentrate the bouquet as it rises from the wine. The opening of the glass should be large enough to allow the nose to get into the glass to smell the wine at close quarters. The glass should be large enough to adequately hold the wine and allow it to be swirled.

The amount of wine poured may vary. Some judges feel a small amount—an ounce or two—is enough, while others may desire more because they feel that they are better able to judge the depth of color and also have enough wine to build up a proper aroma in the glass. The wine should be served at a proper temperature. Exhibit 14 shows the temperatures recommended for wines to be served at the table.

Judging the Wine

Water makes up from 83% to 90% of unfortified wine. The next component in quantity is alcohol, which can vary from about 6% minimum to 24% in fortified wines. Sugar is next in quantity and may run 2% in some sweet wines; a dry wine will have little sugar. The remainder—about one percent—is acids, glycerine, tannins, color pigments, and some flavoring ingredients and minerals. These components (other than water) have much to do with what we call **body**—the degree of consistency, texture, firmness, or viscosity of the liquid.

In judging a sparkling wine, one can get a sense of the effervescence or zest of the wine from its bubbles by holding the glass up and listening to the click of the tiny bubbles as they break. A wine with fine, lively bubbles will have bubbles that click when they reach the surface. A wine that is not as lively or has coarse bubbles will give off less of a clicking sound.

Much information about wine can be gained by just looking at it. It is important in judging wines to have the same kind of glass for each wine and to pour the same amount. Otherwise the color, odor, and other characteristics of the wines may differ not because of the wine but because of the difference in the glass or wine.

amount. Watch the wine as it is poured into the glass. As it hits the curved sides of the glass, it should curl up and turn over like a wave and one should note a flash of brilliance in a wine of good clarity and clear color. Next, tip the glass so a thin layer of wine is at the edge of the glass; now look at the color as it shows up over the white cloth. The true color of the wine will stand out.

Look at the wine next as it stands level in the middle of the glass. The wine here will have a deeper color than at the edge, but the clarity of the wine will be shown. Swirl the wine and also note the clarity. If the wine has been handled or poured poorly, sediment may harm an otherwise excellent wine. Clarity in wine is an important factor in judging quality. Poor wines are often muddy.

Certain wines should have a specific color at a specific stage of their maturity. White wines when young or with a full body and flavor may have a yellowish-green tinge instead of the typical straw color. As these whites age, they may turn to a light brown, but this color also may indicate that the wine is not up to standard. When a white becomes brown or amber it is probably overage and a poor wine. Sweet whites will usually be somewhat golden in color. Young or immature reds will be somewhat purple but will change on aging to a ruby red or just a rich red; such a wine has had several years of aging. A red that has taken on an amber or brown color has aged prematurely or is just too old. Rose wines range from a pink to light red to a slightly orange-red. Again, an amber color is an indication that perhaps the wine has "gone over the hill."

Besides denoting clarity, the color of a wine is also an indicator of body. A wine of heavier components will have a deeper color than one of light body. Experts know wines have a typical color governed by the kind of grape, the making of the wine, the age of the wine, and perhaps its care. A wine that doesn't show such color characteristics may be down-graded.

Judges frequently swirl a wine to note the color. They also look to see how the wine clings to the sides of the glass. Small rivulets may show. Called *legs*, these indicate the presence of glycerine and other body-making components which contribute to the texture and smoothness in the wine. As the wine is swirled, the judge can also note the density of the wine, again giving a clue as to body.

The next step in judging a wine is to smell it. Every kind of wine has a typical odor and, depending upon its age, the odor should be typical of that wine. The nose is several thousand times as sensitive as the taste buds and so odors of even the faintest kind are picked up. Off odors should be quickly detected. Defects in wines which the nose can detect are:

<u>Odor Factor</u>	<u>Related Smell</u>
Sulfur dioxide	burnt matches
Acetic acid	vinegar
Acetaldehyde	apple or sherry odor
Ethyl acetate	finger nail polish
Hydrogen sulfide	hot-spring water—rotten eggs
Diacetyl	cheesy or buttery
Yeast (<i>Brettanomyces</i>)	horsey or barnyard odor
Mercaptans	skunky or onion or garlic odor

One can often tell the age of a wine by its odor. Some whites five or more years in the bottle develop a sweetish, honey odor and then later take on a flat, dull, coffee-like odor. A fresh apple smell is usually characteristic of a young wine with excess malic acid and perhaps a poor vintage. Young wines should have the kind of

good, solid, fruity smell associated with the smell of ripe fruit in a fruit market. Wine odors mellow with age, becoming more soft and harmonious.

Wine odors can be said to be light, deep, nondescript, superficial, full, or rounded. Such terms describe the degree of development of the wine. A wine that has not developed its odors, but has the potential to do so, may be called *dumb*, a just designation.

Some wine experts like to differentiate between the odors of a young and an old wine by calling the former an "aroma" and the latter a "bouquet." Young wine odors are simple and not too difficult to describe, while an older wine develops a much more complex set of odors.

To smell a wine, if it is cold, warm the glass with your hands. Then swirl it vigorously to build up as much odor as possible in the glass. Put the nose deep down into the glass and sniff hard, drawing in as much air as possible. The judge should know what to expect from various wines, and this expectation is gained through experience. For instance, many fine wines are aged in small oak casks; an experienced judge will note a smell of wood among the other smells of such a wine.

By the time the judge is ready to taste the wine, much is known about it, but it is in the tasting that the flavor components of the wine are finally realized. Odor sensations are almost instantly recorded, but there is a time lag in obtaining taste, especially with the bitter taste. Therefore, judges must wait for a time for taste sensations to be fully registered.

All judges should have specific standards by which they judge a specific wine. Each standard may have different elements appropriate to the wine. These elements are judged and their balance evaluated. If there are variations from the standard, these are recorded in the judge's evaluation and a final judgment obtained.

To taste a wine, suck it up with some aggressiveness so there is a spray that pervades the entire mouth. Before swallowing or spitting the wine out, most judges will draw a sharp intake of breath through the mouth over the surface of the wine. This important routine is practiced because, as we have noted, the taste buds provide very limited sensations by themselves; the taste sensations combined simultaneously with the far more complex odors will offer a more precise record of a wine's "taste."

Some wine experts describe tasting as first an attack, then an evolution or development, and finally a finish. Sweet sensations are evident in the attack, acid and salt in the evolution, and bitter in the finish. In tasting, the judge is looking for a balance between the sweet, the acid, and the bitter components. If they are there in balance, along with proper odor, the wine is apt to be scored high. Variations from what the judge considers a desirable balance can downgrade the wine.

In addition to obtaining wine flavor, the tasting sensation will reveal the wine's texture or **body**. Wine contains a number of solids which give it viscosity and body, and often add to the flavor. Some light whites have few solids; their flavor is built up by aromatics which have little density. Some reds are heavy with solids and thus have a very definite body. Wines with body tend to fill the mouth and last, while wines with a light body seem to disappear in the mouth quickly. White wines should be lighter in body than reds, but some whites—Chablis, for instance—will have body equal to that of a light red such as Beaujolais. Judges roll wines around in their mouths to check for body.

It is not necessary to take a lot of wine to obtain the proper taste sensations. A small amount is adequate. Many judges do not swallow; they spit the wine out after tasting. If the judge consumes some, he or she is doing so to get the throat sensations which can provide a clue to aftertaste.

Exhibit 15 Sample Scoring Sheet for Wine Judging

WINE TASTING SCORE SHEET															Date: —		
WINE	APPEARANCE:				SMELL:				TASTE:				QUALITY:			COMMENTS:	
Name:	Color-Clarity				Aroma-Bouquet				Flavors > Finish				(relative)				
Region:																	
Year:	1	2	3	4	1	2	3	4	1	3	5	7	9	1	2	3	Total/
WINE	APPEARANCE:				SMELL:				TASTE:				QUALITY:			COMMENTS:	
Name:	Color-Clarity				Aroma-Bouquet				Flavors > Finish				(relative)				
Region:																	
Year:	1	2	3	4	1	2	3	4	1	3	5	7	9	1	2	3	Total/
WINE	APPEARANCE:				SMELL:				TASTE:				QUALITY:			COMMENTS:	
Name:	Color-Clarity				Aroma-Bouquet				Flavors > Finish				(relative)				
Region:																	
Year:	1	2	3	4	1	2	3	4	1	3	5	7	9	1	2	3	Total/

The last set of sensations comes in the aftertaste. The weakest and more quickly dissipated factors have now disappeared, and the most prominent and longest lasting remain. The aftertaste is a blend of final flavors and is, perhaps, one of the biggest contributing factors in a final judgment of a wine's value. The aftertaste can change in time; it can be just sweet at first, then change to cloyingly sweet. The acidity can give an initial "zing" but then become slightly unpleasant. The most interesting wines have a complex aftertaste: the taste lingers on in the mouth and offers a complex variety of taste sensations. Such a wine is said to have length.

In some judging, wines are scored. Exhibit 15 is a sample sheet that could be used in such a scoring.

Endnotes

1. Hugh Johnson, *Modern Encyclopedia of Wine*, 2d ed. (New York: Simon & Schuster, 1987) 17.
2. Johnson, 13.
3. Sulfur dioxide has also been used to stop fermentation in order to leave some natural sweetness in a wine. However, this practice has been largely replaced by sterile filtration and the addition of unfermented sweet grape juice to make a wine sweet.
4. Oz Clarke, *The Essential Wine Book* (New York: Simon & Schuster, 1988), 30.
5. One degree Oeschle is each gram by which a liter of grape juice is heavier than a liter of water. Thus, a reading of 73° Oeschle means that a liter of the must is 73 grams heavier than a liter of water. The additional weight is sugar ripeness.

6. Donald A. Bell, *Wine and Beverage Standards* (New York: Van Nostrand Reinhold, 1989), 115.

Discussion Questions

1. What are the basic wine classifications? How is each defined?
2. Why are some wines red?
3. How are most rose wines made?
4. Why are most European vines grafted to American rootstock?
5. What are the requirements for the labeling of a varietal wine in France? In the United States?
6. What is "noble rot"? What is its significance in wine production?
7. What is the significance of adding sugar before fermentation and what is this process called?
8. Discuss blending—the blending of grapes to make various wines, and the blending of wines to make Champagne, Bordeaux reds, and other wines.
9. What is fortification?
10. Discuss aging—in the cask and in the bottle (maturing). Name some types of wine which definitely improve with age; some wines which are better consumed while young.
11. Discuss the elements of the *appellation controlee* system: What is regulated and why?
12. What is the single most important element in conferring the highest quality designation (QmP) to German wines? How is this element regulated?
13. What is the "vintage" year and what is its importance on a wine label? What percentage of grapes must be from the vintage for the vintage date to be shown on a bottle of U.S. wine?
14. Explain the significance of sulfur compounds in winemaking. Why do most labels of U.S. wines contain a sulfite warning?
15. Discuss the importance of odor in tasting a wine. What is the best method to combine taste and odor in judging a wine?