

THE RIGHT STUFF: GRAPE GROWING AND GRAPE TYPES

HOW DO WE KNOW when a wine is good? Such a question may appear daunting, but at some point any student of wine confronts this issue. Certainly the people who make the wines that we enjoy grapple with the question on an ongoing basis. While this is not the only answer, the grape variety, where those grapes come from, and the grape grower's and winemaker's commitment to quality make a difference to what we experience in the mouth.

Questions about quality are certainly relevant. In the past twenty to thirty years or so, the dominant trend has been toward decreased production of **JUG WINES**, or poor-quality table wines, and an increased emphasis on high-quality wines. In the Old World winemaking countries (especially France, Italy, Spain, Portugal, and Germany), this means that more wines are being produced within strict government regulatory systems, often referred to as appellation (or naming) systems. At the same time, some Old World grape growers and wine producers are working together to produce nontraditional wines made from "international" varieties to serve the world wine market—Cabernet Sauvignon in Italy, Chardonnay in Spain, Syrah in Greece.

In the New World countries, where appellation systems are not so meticulously detailed, the move to higher-quality wines means a greater concentration on wines made from single grape varieties or from blends of certain varieties known to complement each other. In all cases, higher quality means that more wines are produced for

retail in **BOTTLE** and **MAGNUM** (two-bottle) sizes with a **CORK**, screwcap, or synthetic-material closure, with decreased marketing of gallon jugs or five-**LITER** boxes of "**GENERIC**" or "semi-generic" wines (such as "Crackling Chablis" or "Hearty Burgundy," both made from high-yielding **VINEYARDS** of mostly cheaper-by-the-ton grape types in California's Central Valley).

Here are some of the ways in which we might objectively establish consideration of a wine's quality:

- The wine should offer **VARIETAL CHARACTER**: distinct **TASTE** and flavor characteristics that are typical of the grape variety or varieties used to make the wine.
- The wine's style, taste, and flavors should reflect the place of origin of the grapes. A Merlot wine produced from the vineyards of Napa Valley, California, *should* taste different from a Merlot wine produced from the vineyards of the Pomerol district of Bordeaux, France.
- There should be no unpleasant or **OFF** aromas or flavors.

To begin understanding grape flavors and regional influences, in this chapter we will survey the general environmental issues to be considered before planting a vineyard. We will then go on to describe the overall life of a vineyard and its annual cycle, with particular emphasis on vineyard management. Lastly, we will profile some of the major grape varieties and the characteristics of the wines made from each, and offer short descriptions of several "minor" grapes.

CLIMATE

THE STANDARD USED to determine the suitability of any area for wine grapes is a minimum annual average temperature of 50°F/10°C. Below that figure, summers are probably too cool to sufficiently ripen the grapes, or winters may be so severe that the **VINES** would suffer serious damage from the cold.

To grow grapes that will make good wine, a moderate, temperate climate is best, and the areas around the globe that are most suitable are usually found between the 30th and 50th parallels north and south of the equator. Within these broad bands, there are both **MARITIME CLIMATES**, such as Oregon in the United States or Médoc in Bordeaux, and **CONTINENTAL CLIMATES**, such as the Columbia Valley of Washington State or the northern Rhône Valley in France. Maritime climates exhibit a narrow range of mean temperatures, while Continental climates experience greater extremes from summer to winter, and even from day to night.

Within that broad climatic picture, there are many dif-



Steeply inclined vineyard slopes in the cool growing region of the Saar Valley in Germany

ferent influences, such as exposure to the sun, airflow, and temperature swings, resulting in some areas that are considered cool and other areas considered hot. Generally speaking, the climate of an overall region might be defined as the macroclimate, while the mesoclimate would represent the climatic influence over a whole vineyard, and the **MICROCLIMATE** would be specific to a small plot of that vineyard. Using this general model, we can find cool microclimates in an otherwise warm macroclimate. Cool climates make distinctly different wines than do warmer climates, since the grapes retain higher levels of acidity during the growing season in a cool climate. That **ACIDITY** becomes part of the wine, resulting in a profile that is often described as clean, crisp, and **PALATE**-cleansing. Like any high-acid beverage, acidic wines make the mouth salivate and leave it feeling refreshed. The lower acid profile of warm-climate wines results in bigger, mouth-filling flavors and **SOFTER** textures that seem to coat the palate and can feel somehow **RICHER** and more satisfying. This is not to suggest that one style is better than the other; they are simply different.

Regional climates and latitude also influence the length of the growing season: Higher latitudes enjoy longer daylight hours into the fall months, providing a long, gradual, cooler maturation period for the grapes and longer “hang time” on the vine; in the warmer lower latitudes, where the days vary less in length, there is usually quicker ripening.

Because of these climatic effects, most grape growers consider certain grape types to be more suitable to local conditions. The more delicate characteristics found in the white grape Riesling or the red grape **PINOT** Noir make them more suited to cooler climates, while the more forceful character of the white grape Viognier or the red grape Syrah make them more at home in warmer areas.

SOIL

WHILE IT IS NOT TRUE that vines need poor soil to produce good grapes, many recognized wine areas around the world attribute at least part of their success to low-fertility soils that seem to produce more interesting wines. For some reason, rocky soils with high mineral content, which would have difficulty producing most other crops, deliver wines that show complexity of **AROMAS** and layers of flavors, with a firm but appealing **TEXTURE** and a length

of flavor that is deeply satisfying. Some of the important considerations in assessing the effect of soil on a wine are fertility, minerality, drainage, and heat retention.

The major soil types for growing wine grapes include:

ALLUVIAL A combination of **CLAY**, silt, sand, and gravel.

The soil is formed over long periods of time—sometimes many thousands of years—from successive layers of mineral deposits left by bodies of water, including rivers and oceans.

CALCAREOUS Composed of calcium carbonate and significant levels of limestone and seashell fossils.

CHALK Soft types of porous limestone composed mostly of seashell fossils.

CLAY A mineral-rich soil of small particles that retains water.

GRANITE A hard, granular rock rich in crystal content, especially quartz.

GRAVEL Composed of separate pebbles or rocks.

JORY Volcanic soil composed primarily of basalt, a gray-black, fine-grained volcanic rock. The soil is relatively solid and dense.

LOAM Composed of sand, silt, and clay. The soil is crumbly and has better drainage than clay.

MARL Composed of clay, calcium carbonate, magnesium carbonate, and seashell fossils. The soil is crumbly.

SANDSTONE Sedimentary rock composed of sand, principally quartz. The rock is bound together with minerals, feldspar, mica, and stone fragments by time and pressure.

SCHIST Metamorphic, rocky soil derived from clay and mud, first forming shale and slate, but over time becoming mineral-rich soil that can easily break and shatter.

SHALE The most common sedimentary rock, shale is formed from clay and mud and can break easily, forming sharp chips of rock. Shale exposed to heat and pressure over time becomes slate.

SLATE A rocky soil that retains moisture and heat.

VOLCANIC Rock produced over time from pressurized, hardened volcanic ash.

FERTILITY

LIKE MOST CROPS, grapes will grow very well in fertile soil—sometimes too well, resulting in large quantities of grapes and leaves. While this appears desirable, the opposite is often true, based on the premise of lower **YIELDS**: Fewer grapes on the vine mean higher-quality grapes



overall, because the finite amount of resources available to the vine will be distributed among fewer grapes. It is also possible that the vine will put so much energy into producing leaves that less energy goes to the grapes, or the grapes are shielded from sunlight by too many leaves and do not ripen fully. If the vineyard has fertile soil, such as nutrient-rich clay, marl, or loam, the grape grower can use specific vineyard management techniques that will help reduce the vigor of the vine or dissipate the energy of the plant so that grape quality remains high. For example, the specific **ROOTSTOCK** (see page 10) used to plant the vine can reduce vigor in the plant; pulling off excess leaves during the growing season can concentrate the vine's energy on grapes; and a trellis system that divides the vine's upper portion into two sections will make the plant use its excess energy to produce up to twice as many grapes, but in a controlled situation. (See the section on vineyard management, "Viticulture," on page 13.)

MINERALITY

EXPERIENCE SUGGESTS that soils with high mineral content produce grapes and wines with more **COMPLEX** aromas and flavors. This appears to be due in part to an inverse relationship: High-**PH** soils (above 6.0) result in low-pH wines (under 3.5 for white wines and under 4.0 for reds), enhancing the primary fruit aromas and flavors of the grape with a **STRUCTURE** of acidity that somehow "frames" the wine. A wine with a pH of 3.0 is actually *ten times* more acidic than a wine with a pH of 4.0. This makes

The slate soils of the Juffer Sonnenuhr vineyard in the Mosel region of Germany give a distinctly mineral edge to the wines.



the wine leaner and less obvious, more subtle. In addition, tasting after tasting demonstrates that soils with high levels of rock such as slate, shale, and gravel seem to infuse the wines with an aroma and taste of wet rocks, similar to the smell of gravel after a rainstorm or the aroma of small pebbles in a shallow stream. Again, this provides an extra dimension of aroma and flavor that is reflected in the glass. We will make specific references to soil composition and its effect on wines in the chapters on various regions.

If the soil contains metallic compounds, such as iron, the general pattern is that red grapes are better suited to such soils, and the wines that are produced from iron-rich soils show a greater density of fruit and a firmer structure of acidity and **TANNINS**. (For more information on acidity and tannins, see pages 19 and 65.)

DRAINAGE

THE RATE of water runoff and water absorption by the soil structure can be a crucial factor in the health of the vine and the quality of the grapes. Soils that are compacted and do not allow for drainage to lower levels can easily leave the vine starved of water, which in the short term might give emphasis to fruit character in the grape but in the long term will lead to weakened stems and possible loss of grapes. Soil structures that are loose on the surface but compacted at a short depth below the surface will cause a vine to spread its roots laterally rather than vertically, which may be a problem in cooler climates, where a severe frost could easily penetrate the soil and kill the root system.

Again, experience suggests that the more desirable soil



structure is of a friable (crumbly) nature, which allows water to seep far into the soil and encourages the roots to grow down to where they can find sufficient water. A vine that has deep roots is generally healthy and unlikely to suffer in extremes of dry or cold weather. While **IRRIGATION** systems have helped alleviate concerns about water supply for vines in many areas, considerations of soil structure are still relevant, especially in warmer regions where water shortages have been or may become an important factor.

HEAT RETENTION

ONE FURTHER ADVANTAGE of soils with high rock content is that they reflect heat back to the vine. They also absorb heat from the sun during the day; that stored heat can then be used by the plant at night to continue to ripen the grapes or to keep the root system warmer even though the air temperature may drop. In contrast, richer clay and loamy soils can remain cool and moist, even in warm weather, and this seems to retard the maturation of the fruit.

HISTORY

GRAPE GROWERS TODAY are faced with a dizzying array of grape varieties, from the ubiquitous Chardonnay to the obscure Madeleine Angevine. In general, there are two distinct groups of grapes for winemaking: the **VITIS VINIFERA** species, which originally developed in Asia and Europe, and the very large group of native North American species.

LEFT: Deep limestone soils provide good drainage and mineral content for these vines. **RIGHT:** Heat-retentive rocky soil in a vineyard in Chinchón, near Madrid, Spain

EASTERN ORIGINS

ALTHOUGH THERE IS archeological evidence of grapes and vine leaves from before the Ice Age, most historians of wine agree that the modern grape used for wine production probably evolved as the species *Vitis vinifera* in what is now Iran around 2000 B.C. *Vitis* is the genus for many vine plants; **VINIFERA** comes from two Latin words meaning “to bear or carry wine.” Recognized as a plant that could be easily transplanted and as an economically stable crop, grapevines were often introduced by successive waves of invading tribes into newly dominated territory. In this way, the vine made its way out of the Middle East into the eastern Mediterranean. Starting around 500 B.C., the Greeks introduced grapevines into North Africa and southern Italy, and the Romans took the vines along in their occupation of the western part of Europe as early as the first century B.C.

As the vine was transplanted into different climates, different varieties developed through mutations and deliberate crossbreeding. Subsequently, growers began to categorize the varieties and even cloned new varieties by vegetative propagation, using cuttings or **BUDS** taken from a mother vine. Over time, some ancient varieties have been lost, and new varieties have emerged.

The spread of the vinifera grape varieties continued with the European colonization of other continents, and today hundreds of different varieties of vinifera grapes are grown throughout the world. The major wine grape varieties, grown around the world and widely recognized by wine consumers and professionals, are shown in the table on major wine grapes above.

THE WESTERN PARALLEL

THROUGHOUT ALL THIS PERIOD of time, vines were probably also growing on the North American continent. Certainly in the twelfth century, the Norwegian explorer Leif Eriksson saw enough evidence of vines on the coastal stretches of North America to name the region Vinland. But these vines were, and remain, a completely different family from the vinifera species, with very different characteristics of aroma, flavor, and balance of fruit to acid. In fact, the North American continent is home to several different

MAJOR WINE GRAPE VARIETIES

WHITE	RED
Chardonnay	Cabernet Franc
Chenin Blanc	Cabernet Sauvignon
Gewürztraminer	Gamay
Muscat	Grenache
Müller-Thurgau	Merlot
Pinot Blanc	Nebbiolo
Pinot Gris/Pinot Grigio	Pinot Noir
Riesling	Sangiovese
Sauvignon Blanc	Syrah
Sémillon	Tempranillo
Viognier	Zinfandel

nonvinifera species, with many varieties within each species. The principal species in North America are **VITIS LABRUSCA**, **VITIS RIPARIA**, *Vitis aestivalis*, and **VITIS ROTUNDIFOLIA**. All these native American species grow wild east of the Rocky Mountains, but there were no vinifera vines growing in North America until they were imported from Europe.

It is reasonable to assume that Native Americans used these native grapes as food and perhaps even made a beverage from them. There is certainly ample evidence to suggest that early European settlers made wines from these grapes, though they quickly realized how different they tasted when compared to the wines made from the grape varieties they had known in Europe. Early attempts by European settlers to grow vinifera vines in the eastern United States were thwarted by cold temperatures and diseases that killed the relatively delicate vines.

It was not until the mid-nineteenth century that the two distinct groupings of European vinifera grapes and North American grapes came together as the solution to the pest **PHYLLOXERA**, which had decimated most of France’s vineyards starting in the 1860s and destroyed most of the world’s vineyards by just after the turn of the century.

PHYLLOXERA

THE MID-NINETEENTH CENTURY was an age of tremendous discovery, including the realization that science could be put to the service of humans. In the rush to learn and explore, American vines were shipped to Europe as part of a general program of plant material exchange. It was not realized at the time that various plant diseases and insects could be shipped along with the plant material.

Thus, when the American vines were shipped to Europe, either an adult live form or the larval form of some insects went along with the vine, and among those insects was phylloxera, a plant louse then unknown in Europe. Having evolved with the diseases and insects, the American vines had developed immunity to them, but when these vines were planted in French soil, phylloxera rapidly multiplied and spread into existing European vinifera vineyards.

The phylloxera bug has a very complex life cycle and in the different stages of its life, attacks different parts of the vine. In its earlier, aphid stage of development, phylloxera lives on the root system of the vine, sustaining itself by sucking sap from the roots. The bug copes with its waste by injecting it back into the vine's roots. The phylloxera's waste is poisonous to the vinifera family, and any vinifera vine infected by phylloxera will die within a couple of years.

GRAFTING

ALTHOUGH AMERICAN VINES are immune to the effects of phylloxera, European grape growers and winemakers did not want to plant American vines in their vineyards, because they could not accept the very different flavor profile of wine made from American vines. The solution was to **GRAFT** the desirable fruit character of vinifera onto the root system of sturdy, phylloxera-resistant American species. This is done by cutting a healthy fruit cane from the desired vinifera variety so it will fit into an accommodating notch cut into the selected American rootstock.

Just as grape varieties differ in flavor, vine rootstocks also exhibit different characteristics, and the prospective grape grower must select the correct root type for a particular grape variety and for the soil type and climate. There are hundreds of rootstocks available today for grape growers to choose from, each one developed by crossbreeding or genetic splicing to create a rootstock with a specific set of characteristics. Some rootstocks push the vine plant to be more vigorous, while others promote slower development of the plant. Certain rootstocks are bred to be resistant to extremes of cold or to various viruses or diseases. There are even rootstocks that are not totally resistant to phylloxera, for those areas where growers feel that the louse is not a significant threat.

The development and perfection of grafting techniques took several years, by which time the phylloxera bug had spread throughout the vineyards of France and into

Germany and Italy. With grafting, French grape growers could begin to reestablish their vineyards, but that was not the end of phylloxera, which went on to conquer almost every vineyard area in the world.

There are areas that have remained phylloxera-free, either because the soil composition does not allow phylloxera to thrive (for example, the sandy soils of Chile) or because of strict laws governing the movement of machinery, people, and certified-disease-free cuttings (such as in South Australia). There are also regions of relatively new plantings, such as Oregon and Washington State, where growers decided to risk growing vinifera vines on their own root systems. While this may have simplified planting procedures and possibly reduced planting costs, the threat of phylloxera still remains. Beginning in August of 1990, growers in the Willamette Valley in Oregon had to face the reality that phylloxera had begun to appear in their vineyards and had to replant vines using phylloxera-resistant American rootstocks.

Wherever anybody wants to grow vinifera grapes, the only practical solution to phylloxera is to graft the vinifera grape varieties onto American rootstock. Even then, the grape grower may not be safe, as many California grape growers discovered in the late 1980s. Though they had followed recommendations from the University of California, Davis to use a rootstock called AxR1, many vineyards in Napa Valley became infected with phylloxera and vines began to die. It seems that phylloxera has mu-



This newly grafted vine, produced at Lorane Grapevines, King Estate Winery, in Eugene, Oregon, clearly shows the join of the small piece of lighter-colored fruitwood and the darker-colored rootstock.

tated into what is referred to as biotype B, to which AxR1 rootstocks are not resistant. The only solution was to replant the vineyards using more-resistant rootstocks and to hope that the phylloxera bug will not mutate in any significant way for many human generations.

With the AxR1 rootstock discredited, growers and wine-makers began to research several other rootstocks and focused even more on selecting specific rootstocks for particular climatic and soil conditions. Among the hundreds of available, the current favorites include 3309, because of its moderate vigor and its ability to do well in cooler climates and thrive in deep but less fertile soils, and 110, with higher vigor and the ability to develop a deep root system in rocky soils. Two old standbys in California are 5C, which does well in deep, loamy clay soils (though there are fears that it too may be susceptible to phylloxera), and St. George, known for its high vigor and ability to do well in dry soils. As with all other vineyard issues, the key to rootstock selection is suitability to the vineyard site.

A NEW FAMILY GROUPING

THE PHYSICAL COMBINATION of an American rootstock grafted to vinifera budding stock was only the beginning. Even in the late 1800s, scientists, particularly in France, had begun experimenting with the cross-pollination of different vine varieties and families. Botanists theorized, quite rightly, that it should be possible to create a phylloxera-resistant vine by **CROSSING** a vinifera plant with a North American plant. (See the section “Hybrid Grapes,” on page 12.)

From these crossings emerged a third group of grape vines called *direct producers*, or French-American **HYBRIDS**. At one time hybrid vines accounted for several million acres of vineyards in various parts of France. Today that acreage is drastically reduced, though there are still pockets of hybrid vineyards to be found. These vines have, to varying degrees of success, combined the winter-hardiness and phylloxera resistance of American vines with the fruit and flavor characteristics of the vinifera family. New hybrid grape varieties are still being developed in North America, most notably at the Cornell Viticultural Research Station in Geneva, New York.

In North America, hybrid varieties are found mostly in cool growing regions of the United States and in east-

ern Canada. A few areas in South America, particularly Brazil, also grow hybrid varieties. With one exception, hybrid grapes are not used to produce any *vins de qualité* in France, the exception being the white grape Baco 22A, which is widely used in the production of the base wine that is subsequently distilled into Armagnac **BRANDY**.

The science of cross-pollinating to create new grape varieties is not restricted to the creation of hybrids by cross-breeding between two vine species. The practice has been very successfully applied *within* the vinifera species to create new vinifera varieties. This is especially true of the work done at Geisenheim in Germany, where new grape varieties are being developed to better cope with the cool climate and growing season of some of Germany’s vineyard areas. (See the section on grape types on page 491 in Chapter 11.)

VARIETIES AND CLONES

LONG BEFORE HUMANS started using science to develop new crossings and new varieties, nature had already been hard at work, with new grape types resulting from natural selection, mutation, and cross-pollination. From the work done by Carole Meredith, Ph.D., at the University of California, Davis (Dr. Meredith is now retired), we know that some of today’s most famous grapes have somewhat obscure and surprising origins. The Chardonnay grape is a result of a natural cross between the noble and highly respected Pinot Noir (a red grape) and the all but unknown Gouais Blanc (a white grape). We also know that the Cabernet Sauvignon boasts its parentage as Cabernet Franc (red) and Sauvignon Blanc (white), and that Pinot Gris (white) is a mutation of Pinot Noir (red).

Not only is it clear that natural developments led to the emergence of new varieties, but we also find that there are often slight variations *within* a variety, since vines often adapt to new surroundings and climates, taking on slightly different characteristics from the parent plant. The differences are visible on the vine in terms of leaf formation or bud position, and occasionally minor variations in the finished wine become apparent. These slight variations have resulted in what grape growers refer to as different **CLONES** of the same grape variety. To take a classic example: Chardonnay is the grape used to make white wines in the region of Burgundy in France, but not exactly the same type of Chardonnay is being grown throughout Burgundy. Though all the various

HYBRID GRAPES

Hybrid grape types were first developed in the late 1800s, when scientists realized that they could select specific varieties within different vine species and crossbreed them so that the positive qualities of the selected parent grape types would be emphasized in the new offspring.

The impetus for this hybridization was to create a new family of vines that would be resistant to the phylloxera bug but produce grapes and wines of cleaner, purer fruit character than the native North American varieties. Thus the starting point was to breed vinifera varieties with native North American varieties. From there, it soon became apparent that the resulting hybrid vines could be crossbred with each other to produce new vine types that were resistant to other diseases and problems such as mold and **MILDEW**, or were more winter-hardy and able to withstand extremely cold temperatures.

Crossbreeding of grape types continues today, both between North American and vinifera species, creating hybrids, and within the vinifera species, creating new vinifera varieties. Two of the primary research centers in the world for grape development are the research center at Geisenheim, in the Rheingau region of Germany, and Cornell University's Agricultural Experiment Station at Geneva, in the Finger Lakes region of New York.

In terms of worldwide use, hybrid plantings are relatively small, with almost all commercial vineyards using them located in cooler growing regions, especially in the eastern United States and eastern Canada. In these cool climate regions, the hybrid vines are appreciated for their resistance to harsh winters. Among the hybrid varieties, white grapes are generally far more visible than reds,

especially if the wine is to be marketed as a single-variety wine, though there is still a large market for blended hybrid reds.

Some of the more favored hybrid grapes grown for wine production are:

WHITE	RED
Seyval	De Chaunac
Vidal	Baco Noir
Vignoles	Maréchal Foch
Traminette	Noiret
Chardonnell	Frontenac

Of the whites, the Seyval (also known as Seyval Blanc) is appreciated for its ability to produce **LIGHT**, clean, fruity wine when **COLD-FERMENTED** in stainless steel, or a heavier, richer wine that is more intense and more complex when given oak-barrel treatment. The Vidal and Vignoles are also capable of making simple, refreshing, fruity wines, but the grapes really shine when they are left on the vine to be affected by **BOTRYTIS** or allowed to freeze for making Icewine. The varieties then create rich, **SWEET**, **LUSCIOUS** wines with a honeyed aroma and **RIPE** flavors of peaches, **APRICOTS**, and citrus fruits.

Recently, wines made from red hybrids have improved, especially wines made from De Chaunac, Baco Noir, Maréchal Foch, and Frontenac. These wines are mostly vinified as **DRY** wines with moderate levels of alcohol, acidity, tannin, and **BODY**. They rarely achieve the complexity of vinifera-based red wines and are generally not meant for long **AGING**.

clones taste of Chardonnay, there are differences in the way the vines grow, and there may be slightly different emphases in the flavor profile of each one. The same pattern is repeated with Pinot Noir within Burgundy or indeed with any grape variety wherever it is grown.

Knowledge of **CLONAL VARIATION** is essential to successful grape growing and winemaking. In the United States, the original plantings of Chardonnay in Oregon were the same clone as grown in California. The California clone prefers a warm climate and short growing season so it turned out to be unsuited to Oregon's cooler and lon-

ger growing season. Not until Oregon growers switched to Burgundian clones did Oregon winemakers begin to produce Chardonnays that matched the region's potential. (For further discussion of Oregon Chardonnay, see page 195.) The same problem occurred in New York's Finger Lakes region, where a clone known locally as the Champagne clone of Pinot Noir was widely planted and produced lightly **FRUITY** but unstructured wines. Only after growers planted Burgundy clones of Pinot Noir have winemakers been able to produce fuller and denser wines, with riper fruit and **DEPTH** of flavor.

Grape growers and winemakers have now embraced the general practice of planting several clones of the same variety, providing the winemaker with several different lots of wine. The winemaker can then use the different nuances of expression of each lot of wine to create a blend that is far more complex but eventually creates a more balanced wine, rather than having an excess of one characteristic over all the others. The overriding consideration, however, would always be whether the clone is suited to the climatic and soil conditions of the vineyard.

VITICULTURE

LIFE OF A VINEYARD

THE RAW MATERIAL that is put in the ground to start a new vineyard most often comes from a nursery that provides certified virus-free and disease-free plants up to one



New plantings in nursery boxes

year old. Even then there is a choice of buying **BENCH-GRAFTED** vines, which have already been grafted at the nursery and then grown for at least a season to produce a root system, or buying American rootstock vines to be planted in the vineyard for one season and then field-grafting vinifera cuttings onto the rooted American vines. Field grafting is a dying art and a skill that few people possess these days, so most commercial vineyards opt for bench-grafted vines.

At this point, a crucial decision has to be made about how wide apart the vines should be spaced. In the past, the question of vine density was influenced by the practical consideration of how much room was needed for maneuvering machinery in the vineyard. In older vineyards, areas that used to be tilled by horse and plow have much narrower spacing than more recently planted vineyards, which may be planted to accommodate motorized tractors. Vine density will determine how many plants there are per acre, influencing the quantity of grapes that each vine will produce.

In deep, fertile soils, wider vine spacing is usually used so that each individual vine can use its natural vigor to produce a greater number of high-quality grapes. In poorer soils, where fertility is lower and each vine will produce fewer grapes, vines are usually spaced closer together. In addition, the spacing will help determine the kind of trellis system that will be used to support the vines, which in turn has a major impact on the cost of the posts and wires that need to be installed to set up the trellis.

With all the replanting because of phylloxera problems, grape growers have used the opportunity to increase the density of plantings, sometimes increasing the number of vines per acre twofold or even threefold. Proponents of close spacing argue that by making vines compete for nutrients, they produce fewer bunches, but the grapes are of higher quality in terms of fruit flavor and balance of components overall. Closer vine density has become a given in many of the best vineyards throughout the world, as the enhanced quality of the fruit (and the finished wine) is palpable.

The grape grower will use the first two or three years after planting to develop the young vine's root system and to train the trunk up toward the trellising system. Fruit that can be harvested for wine will not be available until the vine is three or four years old, and the vine will go on producing usable fruit for as long as it is maintained in a healthy condition, sometimes as long as a hundred years or more. As a vine grows older, the quantity of fruit that it can be relied on to produce will decrease, though the quality will remain very high.

Most commercial vineyards, even at the highest quality level, pursue a replanting program, attempting to have the majority of their vines within an age range of fifteen to forty years old, with some older vines scheduled for replacement by younger vines that are coming into their prime. There are many wine producers throughout the world who specialize in making wines from “old vines.” Although there is no universally accepted definition for “old vines,” there are several producers (some California Zinfandel winemakers, for example) that pride themselves on making wines from vines that are between sixty and a hundred years old.

If a vine is left untrained, it will grow in an abundant but very random manner. The practice of **TRAINING** the vines on a trellis provides a support for the weight of the leaves and fruit and makes it easier for the vines to be tended throughout the year. It also allows the grape grower to control the quantity of leaves and grapes that the vine produces, and to place the leaves and grape bunches in specific locations to gain optimal sun exposure or shade. Most of the trellis systems used are variations on three main types: the vertical trellis system, the Geneva double curtain system, and the lyre system.

Different trellising systems are favored in different regions, since soil and climate help determine what kind of trellis to use. The gradient of the slope and the soil’s water retention are important considerations, as is the number of daylight hours, since light is vital to the plant’s natural chlorophyll to start the process by which the vine converts carbon dioxide and water into sugar and oxygen, with the sugar being stored in the grapes. The natural vigor of the grape type and rootstock and the soil’s fertility help determine what kind of trellis system is most desirable.

Whether the grapes are harvested by hand or by machine is another determining factor.

The grape grower also needs to consider exposure to or shading from the sun, air circulation, and optimal growth of foliage. The science and practice of trellising, which includes this element of canopy management, is now so far advanced that for any given grape type, growers know how many leaves are needed for each bunch of grapes to be provided with the right amount of carbohydrates through photosynthesis. In all of the trellising systems, the vines are trained to grow onto a network of wires that are supported by posts along the vine rows. Very often, the wires are movable so that they can be raised as the vine’s **SHOOTS** get longer.



Vertical Trellis System

The vertical trellis system is common in many winemaking countries around the world. Stationary wires near the top of the vine trunk act as the support to train permanent cordons or annual canes horizontally away from the trunk, and movable wires are strung in pairs along the vine rows at different

heights. The new shoots are trained upward within the wires, creating a hedgelike effect.

Geneva Double Curtain System

The Geneva double curtain system is typified by a horizontal set of wires on which the pruned canes are trained. A secondary wire is located above this, and when the shoots reach this higher wire, they can be turned outward and downward, forcing the foliage to cascade down from the top wire of the trellis in a curtain effect on both sides.

TOP: The upright positioning of the new shoots is clearly visible on this vertical trellis. **BOTTOM:** This variation on the lyre trellis system creates a divided canopy with two vertical planes of shoots and leaves.

This has the effect of opening up the canopy and allowing more sunlight into the center of the vine row, discouraging mold. The downward slope of the vine's shoots also seems to inhibit any new shoot growth, putting more of the vine's energy into fruit development. This trellis system was developed at Cornell University's Agricultural Experiment Station in Geneva, New York, and it is particularly useful for vines planted on fertile soils in cooler climates.

Lyre System

The lyre system is really a double vertical trellis. The vine is trained from the trunk onto two separate, small trellis systems with the new shoots growing upward. The movement of air through the foliage helps reduce moisture buildup among the leaves and grape bunches, reducing the chances of various molds developing on the grapes.

There are many patented variations on these three basic systems. No single trellising system is right for any one place or any one grape type, and grape growers must experiment with many different systems before they find the best combination for any particular site.

AGRICULTURAL PRACTICES: ORGANIC VITICULTURE AND BIODYNAMICS

ALONG WITH SELECTING a trellising system that will work for their site, many grape growers enthusiastically practice and promote various farming practices that they believe are beneficial to the overall health of the planet. Increasingly, grape growers are embracing sustainable and organic agriculture, biodynamics, and **INTEGRATED PEST MANAGEMENT** to grow grapes, and some winemakers are producing totally **ORGANIC WINE**.

While organic viticulture has long been practiced without fanfare in many vineyards in France, in the past twenty years it seems to have taken hold in much of the western United States as well, where it is part of a nationwide movement toward **SUSTAINABLE AGRICULTURE** and healthier food and wine choices. Organic growers do not rely on inorganic **PESTICIDES** and **FUNGICIDES** but use traditional, tried-and-true agricultural techniques that produce fine grapes without polluting the water and land.

As of 2008, about 9,000 acres/3,642 **HECTARES** of California's vineyards have been certified as organic by California Certified Organic Farmers (CCOF) or other certifying agencies. In addition, about ninety growers of nearly 4,000 acres/1,619 hectares of vineyard in Oregon are part of a program called Low Input Viticulture and Enology (LIVE) that promotes a "whole vineyard" philosophy, discourages chemical use in the vineyard, and encourages biodiversity. Such groups abound throughout the United States and the rest of the wine world. This is in addition to a large group of growers and **WINERIES** that employ organic and sustainable practices but have either chosen not to become certified or are in a transitional phase that will result in organic certification.

The major goals of organic growers are:

- To create a sustainable system that addresses the health of the environment, social responsibility, and economic viability.
- To produce grapes and finished wines that express not only varietal character but the unique characteristics of vineyard sites—that is what the French call **TERROIR**.
- To protect the soil for generations to come, as well as the water supply used in the vineyards, both in the soil and on its surface, by severely restricting toxic chemical use, increasing organic matter to improve soils, nourishing the soil with natural material that thrives in the soil (e.g., earthworms), protecting the soil from erosion, and eliminating any imbalance in the soil that might inhibit strong root growth and the absorption of nutrients.
- To enhance energy efficiency in the vineyard by using **COVER CROPS** and compost, and in the wineries by increasing use of energy-efficient mechanisms (several wineries in California, for example, run on solar power).
- To protect and enhance the health of vineyard and winery workers and those communities surrounding vineyards and wineries.
- To recognize and embrace practices that will encourage biodiversity and conservation.
- To serve the growing public demand for wines made from **ORGANICALLY GROWN** or sustainably grown grapes.

Since wine grapes do not have to have the same pristine appearance as table grapes, **SPRAYING** has always been moderate in the vineyards. Now many producers recognize

that spraying with synthetic chemicals may not be needed at all, although many of those who have to contend with high-moisture climates feel that spraying against mold and mildew is and will always be necessary.

Major producers who have embraced organic viticulture now use cover crops (such as alfalfa and clover) to diminish weeds in the vineyard, increase soil nutrients, and provide a home for beneficial insects, such as ladybugs, that thrive on unwelcome pests. Integrated pest management also includes the introduction or reintroduction of natural predators such as owls and falcons to control rodent populations that can damage vine trunks and roots. Cover crops can have an effect on water use, too, either competing with the vines for excess water or acting as a mulch to retain more water in the soil. To control fungi and plant diseases, some growers are using elemental sulfur (which is allowed in organic vineyards) instead of spraying dangerous chemicals that, in some cases, can cause cancer among grape pickers and have resulted in birth defects in their children.

Some producers not only grow organic grapes but also make certified organic wine. Unlike the fairly easy transition to organics in the vineyard, organic winemaking is tough going. Wine producers have historically used small to moderate amounts of chemical **STABILIZERS**, and making wines without them can be difficult. It is particularly difficult to make organic white wines, as white grapes do not contain the natural **ANTIOXIDANTS**, such as resveratrol and quercetin, found in red wine grapes, so organic white wines can be prone to **OXIDATION**.

Biodynamics views farms or vineyards as self-sustaining organisms that thrive within the larger surrounding ecosystem. Moving the concept of organics to the next level, biodynamics demands the best holistic farming practices, but coupled with a strong focus on the vibrant seasonal rhythms of the earth and cosmos. All synthetic fertilizers, pesticides, and **HERBICIDES** are prohibited and replaced with homeopathic concoctions that feature cow and horse manure, hay and vegetable compost, and seasonally specific mixtures of medicinal herbs, roots, and tree bark. The idea is that such an approach to agriculture will result in healthy plants and animals while enhancing soil fertility.

While most practitioners of biodynamics are found in Europe, Australia, and New Zealand, there is growing interest in this approach in the United States. Biodynamic farms and vineyard sites are certified by the Demeter Association, founded in Europe in 1928, whose domestic

outpost is in Oregon's Willamette Valley. Biodynamic certification standards are stricter than organic certification, especially when it comes to soil additives and treatments. Unique aspects of Demeter certification include:

- Maintenance of a healthy, diverse ecosystem on the farm or vineyard site.
- Use of biodynamic preparations to build soil health.
- Integration of livestock into the farming system, with a requirement that at least 80 percent of livestock feed be produced from farm soils.
- Prohibition of genetically engineered plant materials and organisms.

The “father” of biodynamics in viticulture is Nicolas Joly, who grows grapes and produces wines in the Loire Valley of France (see page 265). Joly and his family own Coulée de Serrant, in the village of Savennières, planted exclusively to Chenin Blanc grapes. First planted by Cistercian monks in 1130, their ancient monastery still stands on the grounds of the estate.

In the mid-1970s, French agricultural agents told Joly (now in his seventies) that his family's approach to viticulture was archaic and that they should adopt the use of chemical fertilizers and insecticides. Joly, a former banker who felt that his family must join the modern age, embraced this high-tech approach to growing grapes, a decision that he soon regretted.

Joly noticed that the color of the soils changed and that the birds, animals, and beneficial insects abandoned Coulée de Serrant. The vineyard had lost its life, and Nicolas Joly began his search for alternatives to compacting the soil with chemicals. In 1984, after much research



Grasses and wildflowers act as nutrient-rich and moisture-holding cover crops between the rows of vines.

and vineyard trials, he found what he was looking for in biodynamics, a holistic approach to sustainable agriculture developed by Austrian philosopher Rudolf Steiner in the 1920s. After just five years of growing vines on his 30-acre estate using a biodynamic regimen, Joly says he “began to see nature reborn.” The practices included crop rotation, **PRUNING**, composting, and preparing site- and season-specific soil and photosynthesis-enriching herbal infusions. In 1999, Nicolas Joly published *Wine from Sky to Earth: Growing and Appreciating Biodynamic Wine*, and in 2008 he published *Biodynamic Wine, Demystified*. Both books describe his personal journey with biodynamic viticulture in an inspiring and honest way.

In the United States, the most visible biodynamics activist is Mike Benziger of the Demeter-certified Benziger Family Winery in Sonoma County, California. Other California certified-biodynamic wine producers include Frey Vineyards, McNab Ranch, and Ceago Vineyards. In Oregon, Cooper Mountain Vineyards was the first producer in the Pacific Northwest to be certified as biodynamic. Throughout the world, there are now many vineyards and wineries—certified and uncertified—that have adopted biodynamic practices.

THE VINE CYCLE

THE FOLLOWING DESCRIPTION is necessarily general, and the months mentioned apply only to vineyards in the Northern Hemisphere. Add six months for the Southern Hemisphere; for example, March becomes September. Since grape growing is a never-ending cycle, it is difficult to choose a starting point. This description begins at the point immediately after harvest, as the plant goes into dormancy, and then follows the vine’s developments through the subsequent year’s harvest.

In many of the classic grape-growing regions of Europe, such as Bordeaux, France, or Piedmont, Italy, the harvest is completed by the end of September or the beginning of October, and once the fruit has been picked, the plant goes into a dormant stage as the leaves turn color and drop. At the same time, the sap falls back toward the trunk and the root system, where it will be protected from cold temperatures, and the canes (branches) that bore fruit during the summer become more brittle.



There are two major tasks to be accomplished in the vineyard during the winter months: to protect the vine from severe cold and to prune it in preparation for fruit production the following spring and summer. If cold weather is a significant factor, some vineyard managers mound earth around the base of each vine to provide an extra layer of insulation for the trunk and root system. In even colder climates, grape growers have been known to untie the vines from the wire support system, lay them on the ground, and cover the entire plant with earth.

Pruning

In most grape-growing areas, pruning is done during the two to three months following harvest. In climates where cold weather sets in very quickly, pruning is delayed until late winter or early spring. This helps delay the bursting of the buds in spring so that they will not be affected by frost. It is the buds at the end of the fruiting cane that break open first, so if the canes are left unpruned in cold climates, the buds at the very tip of the previous year’s long canes will develop first and be hit by any damaging frost, while the buds left after pruning will remain undamaged.

Pruning is really a controlling process, since it dictates how many buds will open the next spring, and therefore how many flowers and grapes will develop. Left to its own devices, a vine will produce an abundance of foliage and fruit, but

After harvest and leaf drop, the vines still have all of the cane wood from the previous growing season.

the grape grower tends to follow the old axiom that lower quantity brings higher quality. So pruning is a balancing act between producing a small number of high-quality bunches and producing enough grapes to be profitable.

As the vine is pruned, the vine canes are trained to grow in a certain manner. The three main types of pruning are head-spur pruning, **CANE PRUNING**, and **CORDON-SPUR PRUNING**.

HEAD-SPUR PRUNING

This system, which leaves the vine in a small bush shape, is particularly favored by grape growers who want to keep the grape bunches close to the ground, where they can benefit from heat reflected from the soil during the day and from radiated heat given off by the earth in the evening as the air temperature cools. It has traditionally been used in places such as Beaujolais and the Rhône Valley in France. The disadvantage of such a system is that grapes developing close to the ground can be more easily hit by late spring frosts, so it is generally not used in cool climates.

CANE PRUNING

There are many variations on this system, but essentially one, two, or four fruiting canes will be left after pruning. Each cane will have a predetermined number of buds left on it, as decided by the grape grower; each bud will produce new shoots. Throughout the world, the most common type of pruning has been the two-cane system.

CORDON-SPUR PRUNING

This is a combination of the other two methods, with established canes extended along the support system. The vine is then pruned to short spurs, usually having two buds each, along the cordon. The cordon-spur system is particularly suited to mechanical pruning and harvesting and so it is becoming increasingly popular.

Spring Growth and Flowering

After pruning, a vineyard looks its tidiest, with the neatly trimmed vines standing in an orderly array against the stark winter earth. With the warm temperatures of spring, the sap rises, and the buds left by the pruners break open

to produce leaves and new cane growth. This generally happens in April or May, depending on the climate, and by the beginning of June the vine's flowers are visible.

The months of March, April, and May can be hazardous for grape growers anywhere, as the vines are often subjected to sudden late frosts, battering winds, or even hailstorms. Assuming that the vine escapes these hazards and produces flowers, tradition holds that the fruit will be harvested one hundred days after flowering.

Fruit Development

After the flower petals drop, the grape berries are visible, though at this stage the grapes look like tiny green ball bearings. Regardless of whether the vine is a red or white grape type, the grapes stay green until they have reached full size, around the middle of August. At this point the grapes go through **VERAISON**, or color change, so that the grower begins to see the more familiar yellow-green of white grapes or the deep purple of red grapes.

From June to August, the vineyard manager will continue to monitor the new cane growth, adjusting the trellis wires to support the shoots and removing excess leaves if necessary, either to limit the energy spent on leaf development or to expose the fruit to more sun. At *veraison* many grape growers will also make qualitative decisions about the upcoming harvest and drop the smaller and less developed bunches of grapes onto the ground. This quality-driven practice is known as a "green harvest," and it allows the vine to put its resources into fewer grapes to produce more concentrated flavors.

Though the actual harvest is not far off at this stage, the grapes still taste very sour, since they contain high levels of **TARTARIC** and **MALIC ACIDS** and a small amount of **CITRIC ACID**, as well as energy in the form of sugar. As the sugar continues to reach higher levels in the grapes, the berries take on more and more sweetness and develop their own **VARIETAL** flavor characteristics.

Harvest

To predict a harvest date, the grape grower begins taking readings of sugar levels and acidity levels (see page 6). It is important to monitor these levels regularly, as they change rapidly depending on the weather. In good years, the weather will stay warm into September, allowing the

sugar to build and acidity level to drop. Any rain at this point may be drawn up from the soil by the vine and distributed to the grapes, resulting in a diluted sugar level. Cold temperatures close to harvest will keep the acidity level high and the sugar level low. However, high temperatures at this time can be just as damaging, resulting in either a low acid level in the grapes (which translate into a flat, **DULL** character in the wine) or an elevated sugar level (which will give the wine too much alcohol or too much sweetness). Prolonged hot temperatures also tend to “bake

out” or weaken some of the flavor components, leaving less complex flavor and aroma.

Although the levels of sugar and acidity are important, they are not the most significant factor. What is much more important is that the grapes reach a point of ripeness where they show true varietal characteristics, so that Merlot grapes taste like Merlot fruit and Riesling grapes taste like Riesling. This can be a harrowing time. While it is easy to grow any fruit in a warmer climate, growing wine grapes in a warm climate can often result in elevated sugar



TOP LEFT: In hot, dry areas such as southern France, vines are typically head-pruned to grow as bushes low to the ground. **TOP MIDDLE:** The buds on this shoot have opened to produce new leaves. **TOP RIGHT:** This vine has been cane-pruned to leave only two canes from the previous season; each cane will be tied to the bottom horizontal wire, and each of the buds left on the cane will produce new shoots next growing season. **BOTTOM LEFT:** Newly set grapes after flowering **BOTTOM MIDDLE:** Pinot Noir grapes at veraison, when they change color from green to purple **BOTTOM RIGHT:** The vine flowers at the beginning of June in the Northern Hemisphere.

levels without full varietal character. If the grape grower waits for complete varietal typicity, the alcohol developed during **FERMENTATION** can sometimes be so high that it masks the true flavor of the wine.

For red grapes, there is also the issue of tannin development and tannin ripeness. Picking red grapes by sugar levels alone will often result in a wine that is plagued by severe **ASTRINGENCY**, or a drying sensation in the mouth, caused by unresolved tannins that were still green and unripe when the grapes were picked. It is this balancing act that is at the very heart of the need to match the vineyard site to the appropriate grape type, so that full ripeness can be achieved during the growing season that nature controls. For this reason, Riesling, a variety that needs a long, cool season with gradual ripening to reach its best expression, is well suited to sites in Germany's northern vineyards, while the faster-ripening Grenache is very much at home in France's warm southern Rhône Valley.

Assuming that the gods smile on the farmers, the harvest of any agricultural product is a joyous time for all involved, as another season's work comes to a close and the fruits of everyone's labor can be seen, touched, and tasted. In the case of wine, as the grape harvest moves into the winery to be transformed into juice and then wine, work in the vineyard continues as the vines move into the dormancy stage, ready for pruning again.

MAJOR WHITE GRAPE VARIETIES

CHARDONNAY

CHARDONNAY BECAME the darling of the worldwide wine industry in the late 1980s, when consumers began to feel comfortable requesting wines by specific grape type. Chardonnay caught on in a big way, and more and more grape growers planted it so that more and more winemakers could produce it. Chardonnay grows just about everywhere in the modern wine world. Unless forbidden by law to appear in the vineyards of a particular wine region of the Old World (such as in Bordeaux, France), Chardonnay vines show up in both cool and warm climates and in both the Northern and Southern hemispheres.



Many people believe that Chardonnay is “the grape that tastes like **OAK**,” and that’s understandable, because more often than not, Chardonnay is fermented or aged in oak **BARRELS**, or in countries where it is legal, exposed to **OAK CHIPS** or oak essences. Unfortunately, some of the wines made from Chardonnay, including some expensive ones, are over-oaked, which throws off the **BALANCE** of flavors in the wine. Thankfully, these days we taste far fewer wines that taste like lumber and more that taste like fruit.

A well-made Chardonnay should contain flavors of **APPLES** and citrus. Its profile can be anywhere from light, crisp, and **GREEN** or underripe when the grapes are grown in a cool climate, to rich in tropical fruit notes, like pineapple and mango, when the grapes are grown in warmer growing regions. When oak is added to the equation, the wine takes on both sweet **VANILLA** and buttered **TOAST** flavors. Note that not all Chardonnay-based wines are oak-aged or oak-fermented, especially those from cooler climates, and some of these wines, produced in stainless steel and featuring refreshing acidity, are gaining in popularity.

Grape growers and winemakers like to work with Chardonnay for several reasons. First, the vine grows in varied climates and soils, and even though classic Chardonnay-based wines are made from cool-climate grapes, like those that grow in Burgundy, France, or the Russian River Valley of California, acceptable wine is produced from grapes that grow in warm wine regions, such

Chardonnay grapes

as Australia's Hunter Valley. Chardonnay grapes grow best in stony soil that is rich in calcium, but will produce marketable fruit in far more fertile soils.

Second, Chardonnay's yield in the vineyard is pretty flexible. As usual, the best wines begin with low-yielding vines, but quite drinkable Chardonnay can be produced from ripe grapes grown in relative abundance.

Third, Chardonnay grapes produce a base wine that is fairly neutral and needs the signature of the winemaker to create a style for the finished wine. Unlike other fine wines that are highly regarded for their raw materials (grapes) and "noninterventionist" winemaking techniques, successful Chardonnay needs the hand of the winemaker to define its style.

There are artisan Chardonnay winemakers whose signature is unique and whose wines can be quite rare and expensive. More often, however, Chardonnay is the cash cow for a wine producer, and in order to meet consumer expectation, the signature of that producer becomes more of a rubber stamp than an autograph. While the best Chardonnay producers achieve balance and quality in their wines through a delicate touch and restraint, far too many Chardonnay producers pull out all the technical stops and end up with a wine geared to please the palates of a mass audience.

Nevertheless, Chardonnay does deserve its prominent place in the wine world because, at its best, it is responsible for some of the best dry white wines made in both the Old World and the New World; it is also an important component in fine sparkling wines. When grown in a cool climate, Chardonnay will retain enough acidity to keep the wine tasting **FRESH** and to balance the ripe apple flavors that are the benchmark of this grape. The very best examples of cool-climate Chardonnay wines can develop a depth and length of flavor that will make for truly memorable experiences.

Where Chardonnay Grows

FRANCE

Burgundy (see page 311) is considered the ancestral home of fine Old World Chardonnay. The finest white wines of Burgundy are 100 percent Chardonnay, and some of them—even the most affordable ones—can be delicious, even memorable. The three most important major subregions within Burgundy for fine Chardonnay are Chablis

(see page 316), for crisp, green fruit, high-acid, mineral-laden, often unoaked Chardonnay grown in a very cool climate and chalk and limestone soils; Côte de Beaune (see page 322), for rich, complex, balanced, oaked (but restrained) Chardonnay; and Mâconnais (see page 327), which can produce warmer-climate, medium-bodied Chardonnay, some of them simple, several of them with pleasing mineral flavors and complexity.

Chardonnay is one of only three legal grapes in the Champagne region (see page 277)—and the only white grape allowed in this famous sparkling wine. The only other grapes allowed in Champagne are Pinot Noir and Pinot Meunier, both red varieties. What Chardonnay does for Champagne is provide lightness and delicacy, as well as bracing acidity, especially because Champagne is the coldest grape-growing region in all of France.

Although Burgundy and Champagne account for at least 60 percent of the Chardonnay plantings in France, Chardonnay grows in many other wine regions of France, particularly in southern France, where high yields in the vineyards most often result in drinkable, affordable wines.

NORTH AMERICA: THE UNITED STATES AND CANADA

With about 100,000 acres/40,000 hectares planted, more than any other variety in California, Chardonnay grows throughout the vineyards of the state, from the coolest sites to the warmest. There is more Chardonnay planted in the state of California than in any *country* outside the United States. California has adopted the rich, **OAKY**, vanilla style of Chardonnay as its signature, though there are some "leaner" exceptions that strive to bring out the grape's varietal character and the sense of place expressed by the vineyard site.

Wines whose labels read simply "California" Chardonnay can be produced from grapes grown anywhere in the state, and most often the source of the fruit in these wines is the warm Central Valley or, increasingly, the somewhat cooler areas of Monterey County. These wines tend to be full-blown, rich, oaky, with **MATURE**, ripe fruits in the background. If the grapes are sourced in warm climates, these wines can lack the refreshing acidity that cool weather brings. You can easily buy a wine labeled "California" Chardonnay for under \$15 in a local wine shop or supermarket.

If you are looking for Chardonnay from California of higher quality (at a higher price), wines produced from grapes grown in the cooler growing regions of California

can be good to exquisite. Very fine Chardonnay is produced in places like Napa Valley, Carneros, Sonoma Coast, Russian River Valley, Edna Valley, Santa Maria Valley, and Santa Ynez Valley.

New York State (see page 185) produces fine Chardonnay in both the Finger Lakes and Long Island, which are cooler climates than the vast majority of California's cooler growing regions. Chardonnay from the Finger Lakes does not rely on oak to define its style, as the ripe grapes maintain their refreshing fruit acids, and the finished wines can display a lovely balance of flavors. Chardonnay from cool-climate Long Island can also be impressive, the style a bit oakier than the Finger Lakes, but with balance and zesty fruit. A small amount of very good, high-acid, cool-climate Chardonnay is also produced in New York State's Hudson River Region vineyards and wineries.

In the Pacific Northwest, Washington State (see page 190) produces a wide variety of Chardonnay styles, but Washington concentrates on its red wines as flagships for the state. In Oregon (see page 194), some very good cool-weather Chardonnay is grown and produced, but Chardonnay takes a back seat to Oregon's premier red varietal, Pinot Noir, and its premier white, Pinot Gris. Idaho makes some fine Chardonnay in small amounts.

Chardonnay, from drinkable to extraordinarily good, is made in many other states, from Texas to Rhode Island, from Virginia to Michigan. In addition, Canada (see page 202) produces some fine Chardonnay wines, some of them from single vineyards. Canada's primary Chardonnay region is the Niagara Peninsula in Ontario and secondarily, the Okanagan Valley in British Columbia.

THE SOUTHERN HEMISPHERE: CHILE, ARGENTINA, AUSTRALIA, NEW ZEALAND, SOUTH AFRICA

In South America, Chile (see page 208) shows some promise in producing high-quality Chardonnay, especially from grapes grown in the cool-climate Casablanca region. These wines are inexpensive to moderately expensive and deliver delicious, ripe, balanced flavors, without a preponderance of oak.

Argentina (see page 219) makes a small amount of fine Chardonnay, but the majority of the wines that have reached the United States have so far been driven by the market and price points. Still, each year the small selection of fine wines has expanded and improved.

Australia (see page 224) produces rivers of Chardonnay, where the variety is second only to the red grape Shiraz in acres planted. Much of Australia's Chardonnay is produced from grapes grown in the gigantic Southeastern Australia megaregion, which takes up more than 95 percent of the vineyards in the entire country. These wines are relatively inexpensive and easily drinkable, featuring lots of tropical fruit flavors, the vanilla and caramel flavors of oak, high alcohol, and maybe a touch of **RESIDUAL SUGAR**. These mostly warm-climate wines have more or less defined an "international style" of Chardonnay and are successful in the marketplace.

In addition to mass-produced Chardonnay, Australia also produces some very **ELEGANT** Chardonnay wines from smaller wine districts, such as the Limestone Coast, Orange, Clare Valley, and the Adelaide Hills.

Australia produces quite a few Chardonnay wines in the unoaked style. These wines are beginning to garner both popular and critical attention, and several wines are **FLINTY** and mineral-rich, with refreshing green apple acidity.

New Zealand (see page 241) has made its reputation in the export market for its popular Sauvignon Blanc, but actually grows almost as much Chardonnay. Chardonnay from the wine regions of Gisborne and Hawkes Bay, both located on the North Island of the country, can be excellent. Gisborne Chardonnay features flavors akin to peaches and melon while Hawkes Bay Chardonnay displays more citrus flavors—grapefruit and lime. Chardonnay produced from South Island fruit often comes from the Marlborough wine region, which produces juicy, tropical-fruit-driven wines, with fresh, crisp flavors.

As with so many of the wines of South Africa (see page 245), Chardonnay, depending on the producer, can be pleasantly drinkable or deep and complex. The best growers and winemakers in South Africa are making fine wines at fairly affordable prices.

THE REST OF THE WORLD

Chardonnay grows in just about any country that makes wine on a commercial basis. Italy has grown Chardonnay successfully for several decades, especially in its northeastern provinces of Veneto, Friuli–Venezia Giulia, and Trentino–Alto Adige. Tuscany and Piedmont also grow and produce Chardonnay. Spain, Portugal, Germany, Austria (where it is called Morillon), Switzerland, Greece, and England each grow a bit of Chardonnay in selected

regions, as do cooler-climate regions of Israel and Lebanon. Eastern Europe grows quite a bit of Chardonnay, and the new wine regions of China and India do, too. Chardonnay seems to be everywhere.

SAUVIGNON BLANC

LIKE THE REST of the white varieties in the wine universe, Sauvignon Blanc lives in the shadow of Chardonnay. But Sauvignon Blanc seems poised, if not to dethrone Chardonnay, at least to lay claim to the respect it deserves as a strong supporting player on the world wine stage.

Think “green.” Sauvignon Blanc at its best exhibits high acidity, with flavors and aromas of green apples, green grapes, green herbs, and perhaps just a bit of green **BELL PEPPER**. Sauvignon Blanc is the principal grape of many of the great white wines of Bordeaux and the only grape in some of the Loire Valley’s fine white wines. In the coolness of the Loire Valley in France, wines made from Sauvignon



Sauvignon Blanc grapes

Blanc show the character of only-just-ripe green fruit, such as gooseberry or green plums, with very high, piercing acidity. In the warmer areas of Bordeaux (or California), the fruit may be closer to apricots.

Lime, kiwi, green honeydew melon, and tropical fruits such as guava, papaya, and passion fruit make some Sauvignon Blanc wines, especially those from New Zealand and South Africa, smell and taste like a fruit salad in a glass that’s been poured over calcium-rich stones. The flavors of Sauvignon Blanc can shift in both subtle and dramatic ways, depending on where the grapes are grown.

In the past, some wines made from Sauvignon Blanc have been criticized for having too much of a grassy, hay-like character. At its worst, Sauvignon Blanc does seem to develop an aroma of cat urine. However, the days of such wines seem to be in the past. Winemakers all over the world are now sensitive to the demands of Sauvignon Blanc and realize that it needs careful nurturing as a grape and as a wine.

In the Loire Valley, local grape growers generally refer to Sauvignon Blanc as “Blanc Fumé,” while growers in California, Australia, New Zealand, South Africa, and several other countries refer to wines made from the grape as Sauvignon Blanc or “Fumé Blanc.” Either name may appear on the label.

Where Sauvignon Blanc Grows

FRANCE

Classic Old World Sauvignon Blanc, from the Loire Valley, is chiefly represented by the wines Sancerre and Pouilly-Fumé (see page 272). These wines exhibit a high degree of minerality—chalk, limestone, and the brininess of the sea and seashells. The flavors and aromas of citrus fruits, especially lemon and grapefruit, are prominent in Loire Valley Sauvignon Blanc.

In Bordeaux, Sauvignon Blanc is often blended with another grape, Sémillon (see page 290), to produce a distinctive style of white wine (see page 296). These wines tend to be medium- to **FULL-BODIED** and more restrained in their acidity and fruit flavors, as Sémillon is nuttier and more honeyed than the greener-quality Sauvignon Blanc. The classic versions of these Bordeaux blends come from the districts of Pessac-Léognan and Graves (see pages 296 and 297). White wines from Bordeaux labeled as Entre-Deux-Mers (see page 297) or simply Bordeaux tend to be

more about the straightforward, crisp flavors of Sauvignon Blanc and are meant for early drinking.

In the Bordeaux district of Sauternes, Sauvignon Blanc is often blended with Sémillon to make one of the most famous sweet wines in the world. Sauternes is based on a heavy percentage (most often 75 percent to 95 percent) of botrytis-affected Sémillon, with just a bit of Sauvignon Blanc added for its refreshing acidity (see page 297).

THE UNITED STATES: CALIFORNIA

In California, Sauvignon Blanc is an important white variety that is sometimes labeled as “Fumé Blanc.” In the late 1960s, Robert Mondavi coined this name for a style of Sauvignon Blanc that is fermented and aged in oak barrels. The resulting wine is far richer—and far less “green”—than classic Sauvignon Blanc produced in stainless steel. Today, Fumé Blanc need not be oaked, but the name often connotes wine that is richer and fuller than a wine labeled as Sauvignon Blanc. Some people prefer the more “sophisticated” Fumé Blanc style, while others much prefer the “wild” style of Sauvignon Blanc, and some wine drinkers enjoy both styles, depending on the food they are pairing with the wine.

Sauvignon Blanc from the North Coast of California—especially Napa, Sonoma, and Mendocino counties—is the antithesis of the Chardonnay produced in the same region. Rather than the rich, oaky, vanilla flavors of Chardonnay that can overwhelm simpler foods, the refreshing, straightforward, fruity flavors of Sauvignon Blanc are just the thing for lighter, simpler, spicier foods. California Sauvignon Blanc has emerged as a food-friendly wine, gaining more space on restaurant wine lists and more adherents among American consumers.

Sauvignon Blanc can also make a sweet wine when produced from **LATE-HARVEST** grapes. Late Harvest Sauvignon Blanc is a fairly rare wine, but several California winemakers produce this style.

THE SOUTHERN HEMISPHERE: NEW ZEALAND, AUSTRALIA, SOUTH AFRICA, AND CHILE

For years, and until quite recently, classic Sauvignon Blanc was defined by the wines from the villages of the eastern Loire Valley of France, such as Sancerre. Today, things have changed. New Zealand Sauvignon Blanc has become, espe-

cially for many younger wine drinkers, the classic expression of this variety. Full of tart lime and tropical aromas and flavors, with grace notes of minerals, grass, and herbs, the best examples of New Zealand Sauvignon Blanc, especially those sourced from the Marlborough region on the northern tip of New Zealand’s South Island, are wines to enjoy with a myriad of tasty dishes. A great accompaniment to spicy foods, especially Asian and Latin American flavors, this wine is like a squeeze of fresh lime juice, awakening and brightening flavors throughout the meal.

Australia produces a wide range of Sauvignon Blanc wines, from simple summer sippers to more complex wines, with rich, jammy fruit balanced by a vein of mouthwatering acidity. Australian wine producers, unlike their neighbors in New Zealand, do not generally specialize in Sauvignon Blanc.

One of South Africa’s best white wines is its Sauvignon Blanc. When sourced from low-yielding vineyards in the cooler regions, particularly the Stellenbosch area, the wines can be incomparable. Though wines from South Africa can be uneven in quality—the reputation of the producer is paramount in choosing the wines—Sauvignon Blanc seems to be among the most successful varietals exported to foreign markets. With thirst-quenching acidity, a healthy dose of minerality, and green, tropical fruits in the mix, the wines are more fruit-driven than the wines of the Loire Valley, but a bit more restrained in their exuberance and slightly fuller-bodied than the wines of New Zealand.

Chile produces some delightful Sauvignon Blanc, very much in the California style, but with a bit more forward fruit on the palate, especially from grapes grown in the cool Casablanca and Leyda regions.

THE REST OF THE WORLD

Sauvignon Blanc grows all over the world, but without much of the attention that Chardonnay receives. One country that produces fine Sauvignon Blanc is Italy, particularly in the Friuli–Venezia Giulia region. Although perhaps a bit hard to find, Sauvignon Blanc from Friuli is worth the search. Often just labeled as “Sauvignon,” these wines are some of the most elegant examples of Sauvignon Blanc produced anywhere in the world, with a grassy background and subtle fruit acids that refresh the palate. Tuscany also produces some well-made Sauvignon Blanc wines.

RIESLING

RIESLING, WHICH IS ENJOYING a renewed popularity in wine markets around the world, is an often-misunderstood variety, because so many people believe that Riesling wines must be sweet. The truth is that Riesling can produce extraordinary wines in every style, from bone-dry to incredibly sweet.

Riesling can be difficult to grow, as it really needs a long, cool growing season to come to perfect ripeness. Riesling ripens late in the growing season, leaving it at the mercy of both spring and fall frosts. Riesling is also extremely sensitive to the soil types of vineyard sites; slate-based soils are best for this variety. When the climate and soil are in harmony, Riesling is perhaps the most *terroir*-expressive of all white varieties.

Depending on where Riesling is grown, the flavor profile of the grape can be as varied as its many vineyard sites. High acid is a hallmark of Riesling, along with citrus—lemon, lime, grapefruit—and peach and pear flavors. On the nose and on the palate, Riesling is rich with



Riesling grapes

minerals—from slate to quartz—and even the smell (though certainly not the flavor) of gasoline or diesel fuel. To make a general statement about Riesling’s flavor profile is difficult, as there are so many styles of Riesling in the bottle, and those “same” styles change from vineyard to vineyard, region to region, country to country.

Dramatically high acidity is the benchmark of fine Riesling. The vein of acidity that runs through fine Riesling wines will emphasize the green fruit flavors in the drier styles and cut the **UNCTUOUS**, syrupy qualities of the sweeter wines. In all styles, fine Riesling is mouthwatering and refreshing because of the acidity that defines the variety.

While most Riesling wines, especially drier versions, are drunk relatively young to celebrate their fresh, green flavors, the high level of acidity that refreshes these young wines also helps preserve the wine; it is not uncommon to drink Rieslings that are more than ten years old. Sweeter versions, in which the residual sugar in the wine conspires with the acidity to preserve the wine even longer, can deliver pleasure twenty or thirty years past the original **VINTAGE**.

Where Riesling Grows

GERMANY

In Germany (see page 487), Riesling is the most important variety, the grape by which overall German wine quality is judged. German Riesling, taking advantage of a cool-to-cold climate, ripens slowly and is able to develop complex flavors that are partially based on minerals in the soil.

One of the classic growing regions for Riesling in Germany is the Mosel region (formerly Mosel-Saar-Ruwer, named for the Mosel River and its two tributaries). Mosel features dramatically steep vineyards on south-facing slopes covered in slate stones, within a cold climate moderated by the mirror-effect of the sun’s rays on the rivers. Mosel Rieslings are very high in acid, with citrus or green fruit flavors, and tend to be light- to medium-bodied.

The other classic Riesling regions in Germany are located near or within the confines of the Rhine River and are represented by the Rheingau, Rheinhessen, and Pfalz zones. Of the three regions, the Rheingau is best known for the quality of its Riesling wines, with Pfalz Riesling a close second. The three Rhine regions are considerably warmer than the Mosel and so produce wines that are richer, riper, fuller-bodied, and somewhat lower in acidity.

FRANCE

Alsace (see page 274), which borders Germany, is home to a particularly French style of Riesling—full-bodied, dry, and higher in alcohol than most German Rieslings. Alsace Riesling enjoys weather cool enough to ramp up acidity in the grapes, but also many days of sunshine along the eastern side of the Vosges Mountains so that the grapes ripen fully. Alsace Riesling at its best can age well for years in the bottle, while the simpler wines are enjoyable in their youth—within two to five years of vintage.

There are sweet versions of Riesling produced in Alsace. Look for the label terms **VENDANGE TARDIVE** (late harvest, which can be anywhere from semisweet to quite sweet) or **SÉLECTION DE GRAINS NOBLES** (botrytis-affected, which produces lusciously sweet wines). As with the best Rieslings of Germany, Alsace wines, even when produced in a sweet style, feature a serious vein of acidity that refreshes the palate.

AUSTRIA

Close by the riverbanks of the Danube, Austria grows Riesling grapes that translate into some very elegant wines. One of the best wine regions in Austria for Riesling is Wachau, west of Vienna, which owes its cooling breezes to the Danube River, and where the vineyards are planted on steep slopes.

Austria produces Riesling in as many styles and quality levels as Germany. The best Austrian Rieslings, especially those labeled *Smaragd*—the highest-quality wines from the Wachau region—are fruit- and mineral-driven wines that, like the best wines of Germany and Alsace, can pair with hearty, rich foods and are certainly ageworthy.

NORTH AMERICA: THE UNITED STATES AND CANADA

With the exception of high-quality Riesling made by a literal handful of artisan winemakers in cooler pockets of the state, California is not known for quality Riesling. Overall, the state is just too warm to produce fine Riesling wines, especially when the coolest regions are wed to the far more profitable Chardonnay.

Washington State (see page 190) produces more Riesling than any state in the United States, but many of the vines are planted in areas that are relatively warm. The wines are mostly semidry to semisweet and can sometimes lack both

the acidity and minerality of classic Riesling. The wines are fine as picnic wines with simple foods and are usually priced as easy-to-sip bargains. Some Washington producers see Riesling as an achievable challenge and are working hard to produce better wines.

The Finger Lakes region of New York State (see page 187) produces a small amount of fine Riesling wines, made from grapes grown on the stony banks of the Cayuga, Keuka, and Seneca lakes. The weather is cold and snowy, with just enough sunshine and reflected warmth from the lakes to produce high-acid wines that are similar to the style of Germany's Mosel.

A minuscule amount of fresh, crisp, fruit-driven Riesling is produced in the state of Idaho from vineyards planted along the Snake River, and it is very good.

Canada, with its cold climate, produces some fine Riesling wines in several styles, from bone-dry to sweet to its specialty, Icewine, especially from Riesling grapes grown on the Niagara Peninsula of Ontario and in the Okanagan Valley of British Columbia. Canada is the largest producer of Icewine in the world.

AUSTRALIA

Australia is interpreting Riesling for the New World audience: acid- and fruit-driven dry to semidry food-friendly wines with crisp, refreshing flavors at inexpensive to moderate prices. Many of the wines are bottled with easy-to-use screwcaps. Most Australian Riesling is produced for early consumption and immediate enjoyment, with a select few able to improve over time in the bottle.

Riesling from Australia tends to be lighter on the palate, with lime, ripe peaches, and tropical fruits in the background. Many of the wines have a bit of spice—nutmeg and ginger—that balances the luscious fruit flavors.

GEWÜRZTRAMINER

GEWÜRZTRAMINER PRODUCES very attractive wines, offering everything that Riesling does, but with more emphatic fruit character and an unmistakable touch of cinnamon spice, scents of honeysuckle and rose petal, and the distinctive aroma of lychee fruit. Gewürztraminer is traditionally linked to the vineyards of Alsace, France, where, along with Riesling, Gewürztraminer is one of the jewels in the crown of Alsace wines.



The best Gewürztraminer vineyard sites are located in cool-weather regions and rely on low yields in those vineyards to amplify the natural, appealing gifts that nature has bestowed upon the Gewürztraminer grape. If grape yields in the vineyard are too high, the finished wine will lack the **PERFUME** and power that define the best wines. If the soils—limestone and chalk are the preferred soil types—are not mineral-rich, then the wine will lack the all-important **SPICY** aromas and flavors; *gewürz* means both “spicy” and “perfumed” in German. If the weather is too warm, the grapes will lack acidity, so the wine will taste flat, flabby, and **UNBALANCED**. However, if the growing region is not sunny, then ripening of the grape will suffer. A cool and sunny climate does not guarantee success, however, as this finicky grape is renowned as a variety that ripens unevenly, even in the best conditions. That makes picking the grapes at the right time—not too early or too late—difficult.

Classic Old World Gewürztraminer is a dry wine, with forward flavors of heady fruit and spice, intermingled and in balance. Alsace is considered the definitive growing region for this style of Gewürztraminer. Other styles seen less frequently include Late Harvest Gewürztraminer, which is produced from extremely ripe grapes, and the extremely rare and lusciously sweet botrytis-affected Gewürztraminer.

New World Gewürztraminer is made in several different styles. It is a hard-to-find wine when made as dry as the Gewürztraminer produced in Alsace, though a grow-

Gewürztraminer grapes

ing number of producers make a classic style. Much of the Gewürztraminer produced in the New World lacks the depth of mineral and spice of the Alsace style, but these fruitier versions can be quite attractive.

Where Gewürztraminer Grows

FRANCE

Alsace is home to the classic Gewürztraminer and has the ideal growing conditions for the Gewürztraminer grape: cool weather and lots of sunshine (see page 274). The wine is full-bodied, intensely **AROMATIC**, and most often dry. The Alsace style tends to be full-blown and full-bodied, with very ripe fruit character and a richly textured fullness in the mouth, but with a tendency toward a slight bitterness at the back of the palate.

Fine Alsace Gewürztraminer can age well for years. The simpler wines can be enjoyed in their youth, about three to five years after the vintage date. There are also sweet versions of Gewürztraminer produced in Alsace. As with Rieslings from Alsace, look for the label terms *Vendange Tardive* or *Sélection de Grains Nobles*.

GERMANY

Gewürztraminer grows mostly in the **ANBAUGEBIETE** (wine regions) of Pfalz (see page 504) and Baden (see page 507). Pfalz Gewürztraminer is rarely as dramatic a wine as its Alsatian counterpart; it is fruitier but less spicy. Baden, which is separated from Alsace by the Rhine River, produces some very elegant, full-bodied Gewürztraminer wines.

AUSTRIA

Here the grape is more likely to be called Traminer, and the wines tend to be less *gewürz* (spicy), except perhaps in the wine region of Steiermark, where the wines are both floral and full of spice. Other wine regions produce mostly sweet versions.

ITALY

The Alto Adige region is a bilingual area—Italian and German, as it was formerly part of Austria (see page 411). Alto Adige (Südtirol in German) is the birthplace of this grape. Here it is called either Traminer Aromatico (Italian)

or Gewürztraminer (German). Most of it grows around the town of Tramin, and the wines tend to be medium-bodied, floral, but not very spicy in the nose and on the palate. We rarely see Gewürztraminer from Italy in the U.S. market.

THE UNITED STATES AND CANADA

In 1986, there were about 4,000 acres/1,600 hectares of Gewürztraminer in the United States, but today there are less than 2,000 acres/800 hectares cultivated. The reason? Gewürztraminer, which needs a cool climate, is expensive and labor-intensive to grow and will not bring nearly as much money per ton as cool-climate Chardonnay or Sauvignon Blanc. In California, Gewürztraminer is planted in the cooler parts of Mendocino, the Russian River, and Monterey County. The wines are mostly off-dry, with a few truly dry wines, especially from the Anderson Valley in Mendocino County. The Finger Lakes region of New York State produces a small amount of Gewürztraminer, as do Washington State and Oregon.

Canada does not specialize in Gewürztraminer, but there are several good examples produced in the Okanagan Valley of British Columbia, including a small selection of some fine Icewines, for which grapes are picked in late December or early January.

PINOT GRIS/PINOT GRIGIO

PINOT GRIGIO IS NOT really an Italian grape. The grape is Pinot Gris (the “Gray” Pinot), found most prominently in Alsace, France. In the vineyard, it is hard to tell if the grape is Pinot Gris or Pinot Noir until after color-changing *veraison*, as the leaves and grape shapes are identical. Pinot Gris is a variant of the Pinot Noir grape (as is Pinot Blanc). Although Alsations think of it as a white grape, most Italians think of Pinot Gris as red, but in the end this may be a difference without a distinction, as the grape is treated as a white grape in the winemaking process. With just a little bit of **SKIN CONTACT** during fermentation, Pinot Gris can show a bit of pleasantly bronze to almost-pink **COLOR** in the wine.

Depending on their origins, wines made from Pinot Gris can be light- to medium-bodied and refreshing, as in Italy, or medium- to full-bodied with more emphatic flavor, as in Alsace. The fuller-bodied versions also exhibit a telltale

richness of texture that is almost agreeably oily on the palate. At its best, Pinot Gris should exhibit spice, honey, honeysuckle, and nuttiness on the nose and tropical flavors on the palate, with just a touch of mineral. To achieve such concentration of flavor, fine Pinot Gris relies on low yields in the vineyard. If conditions are right at the end of the growing season, Pinot Gris grapes can be left on the vine to develop botrytis mold for the production of sweet wines.



TOP: Pinot Gris (Pinot Grigio) grapes BOTTOM: Pinot Gris grapes with botrytis mold

While Pinot Gris will always have its small number of admirers, it was not until the introduction of wines labeled “Pinot Grigio” that this grape found its place in the sun and on so many dining tables around the world, especially in the United States.

Where Pinot Gris/ Pinot Grigio Grows

FRANCE

Pinot Gris from Alsace defines the wine made from this variety, a full-bodied, assertive white wine that exhibits the classic aromatics and flavor profile of the grape, without a lot of oak overtones but with a medium-to-full body.

GERMANY

In the southern region of Baden, the wine is produced in a style similar to that of neighboring Alsace. The wine is most often labeled as Grauburgunder for dry wines, or Ruländer for sweet versions.

ITALY

There are several quality-driven producers in northeastern Italy, particularly in the province of Alto Adige, which borders Austria, that make clean, Alpine-crisp wines. In the Friuli-Venezia Giulia province of Italy, which borders Slovenia, Pinot Grigio tends to be richer and fuller-bodied. Tuscany produces Pinot Grigio in a fruit-driven, fairly simple style.

THE UNITED STATES: OREGON AND CALIFORNIA

Oregon, where the wine is most often labeled as “Pinot Gris,” sets the benchmark for this varietal in the New World. At their best, the wines are complex, luscious, and full-bodied, with mineral- and fruit-driven flavors, without the intrusion of oak, that create a great marriage with a wide range of foods.

The most important Cal-Italian white grape in the Golden State, California produces quite a bit of Pinot Grigio (and a bit of “Pinot Gris”). Quality ranges from drinkable to excellent.

AUSTRALIA AND NEW ZEALAND

Artisan wine producers in both Australia and New Zealand are focusing on Pinot Grigio as a quality varietal, and the wines are beginning to appear in the American market. At the same time, there are many producers of market-driven Pinot Grigio in both countries.

VIOGNIER

The number of acres planted to this grape around the world has risen dramatically as a result of increased interest in Rhône grape varieties in general, and it is no surprise that Viognier wines have become so popular, since they positively explode with ripe, exotic fruit and floral aromas and flavors such as peach, mango, and papaya. The grape’s natural acidity levels are rather low, a factor that simply means that the wines are best enjoyed fairly soon after bottling.

To thrive, the Viognier grape needs a warm climate. Yields in the vineyard should be low, otherwise the complex flavors of the wine will turn simple. The best Viognier wines are not oak-and-alcohol bombs but subtle wines with several layers of aroma and flavor.

Where Viognier Grows

FRANCE

The northern Rhône Valley produces Viognier wines of wondrous depth and structure, particularly Condrieu and



Viognier grapes

Château Grillet (see page 334). With an almost lanolin-like oiliness that coats the palate, it is not all that unusual to age these whites for four to seven years, but they are especially good to drink when young and fresh. In the southern Rhône Valley, Viognier is used mostly in blended wines.

Wine producers in southern France are making lots of varietal-labeled Viognier. These are good entry-level Viognier wines and are relatively inexpensive.

THE NEW WORLD

New World Viognier is characterized by luscious fruit and an appealing, rich viscosity and a silky texture.

Some of the best American Viogniers have a perfumed apricot and peach **NOSE** and a background of tropical fruit flavors. Good Viognier wines are produced from grapes grown in Washington, Texas, and Virginia, as well as California, where vineyards devoted to Viognier now exceed 1,500 acres/600 hectares.

Australia, New Zealand, and South Africa all produce varietal-labeled Viognier, but these are rarities in the export market. Consumers are more likely to find a blended white wine, usually comprised of Viognier, Marsanne, and Roussanne. A small amount of single-varietal Viognier is produced in Chile.

OTHER IMPORTANT WHITE GRAPE VARIETIES

CHENIN BLANC

CHENIN BLANC SEEMS to find its best expression in the Loire Valley of France, where the cool climate seems to provide perfect growing conditions. Wines made from Chenin Blanc are usually light in body, with **DELICATE** flavors and just a hint of implicit sweetness; they may exhibit aromas of melons or honey with a **NUTTY** overtone, and some smell a bit like beeswax. The tendency of the grape to maintain high acid levels keeps the wines fresh

and clean, especially when made semisweet to sweet, as they sometimes are in the Loire Valley.

In the United States, there are a handful of Chenin Blanc producers, but the grape has been largely relegated to a **BLENDING** role, mostly in inexpensive wines. Chenin Blanc is grown and produced widely in South Africa, where, particularly in its drier versions, it is often known as “Steen.”

PINOT BLANC/ PINOT BIANCO

WINES MADE FROM PINOT BLANC often come across as light- to medium-bodied, with characteristics similar to those of Chardonnay, but they are simpler wines, much less obvious in flavor and elegance. The classic growing area for Pinot Blanc is Alsace, France. Good Pinot Blanc wines are produced in the Trentino–Alto Adige region of Italy (where it is called Pinot Bianco), as well as in Baden and Württemberg in Germany (where it is called Weissburgunder). A bit of Pinot Blanc, some of it quite good, is produced in California.



TOP: Chenin Blanc grapes BOTTOM: Pinot Blanc grapes



MUSCAT/MOSCATO

THERE ARE MANY CLONES of the Muscat grape, and most of them are associated with sweet wines. While Muscat is made as a fine sweet wine in places around the Mediterranean basin and California, dry versions of Muscat can be found in Alsace and Portugal. The grape is called Moscato in Italy and is used to make Asti (formerly Asti Spumante), a very fruity, light, sparkling wine in northern Italy. Sweet Greek wines made from Muscat, especially Muscat of Samos, are enjoyed internationally.

In all cases, the fruity character of the Muscat grape shines through, grapey and delicate in the lighter versions of northern Italy and California, full and luscious in the bigger, dry versions from Alsace. The sweeter wines usually display a greater richness in the glass and on the palate.

SÉMILLON

SÉMILLON IS a much-overlooked grape that produces some truly outstanding wines. As a dry wine, it has medium to full body and flavor intensity, with aromas of lanolin and peaches or ripe apricots. The sweet versions are more **viscous** and more concentrated in their fruit character.



Sémillon is grown throughout the Graves region in Bordeaux, France, where it is blended with Sauvignon Blanc to make dry white wines. In Sauternes and Barsac, it is often affected by botrytis and is a major component in the sweet white wines of those areas. Depending on the vintage, it is sometimes the only grape used to make the glorious sweet Sauternes wine Château d'Yquem. It has been produced for decades as a dry wine in Australia, particularly in the Hunter Valley, often resulting in a wine of great depth and exceptional aging ability. Sweet wines are also produced in Australia, and the Australians popularized the dry "SemChard," a blend with Chardonnay.

Sémillon is also produced in California and Washington State as a single-varietal wine, as part of a blend with Sauvignon Blanc, or in a "SemChard" blend.

MÜLLER-THURGAU

DEVELOPED BY Professor Hermann Müller at the Geisenheim research station in Germany from a cross between Riesling and Chasselas, the Müller-Thurgau grape provides growers with an early-ripening, very fruity

LEFT: Sémillon grapes RIGHT: Sémillon grapes with botrytis

variety. It is a grape variety that offers many of the attractive, delicate aromas and flavors of the Riesling variety but with a shorter growing season, making it a more dependable ripener in cooler climates. It produces wines with attractive fruitiness and a hint of sweetness, but without the depth and breeding of the Riesling grape.

Until the early to mid-1990s, Müller-Thurgau was the most planted grape in Germany, but it has since been eclipsed by Riesling. Likewise, it was the most planted grape in New Zealand, until it was overtaken by Chardonnay and Sauvignon Blanc. Müller-Thurgau is still an important grape in these countries, as well as in the Trentino–Alto Adige region of Italy and in England.

ALBARIÑO/ALVARINHO

THIS GRAPE is known as Albariño in the Galicia region of northwestern Spain and as Alvarinho in the Vinho Verde appellation in Minho, a region of northern Portugal. In both countries, this cool-climate grape thrives, producing fresh, fruity wines with very high acidity. In Galicia in particular, where Albariño is often produced as a single-varietal wine with a varietal label, this grape has brought recognition to Spain as a producer of fine white wines, since the best versions offer vibrant fruit character of apricot and peach with attractive orange blossom aromas.

GRÜNER VELTLINER

ALONGSIDE RIESLING, this grape has brought fully deserved recognition to Austria as a producer of elegant and well-structured white wines. Grüner Veltliner is grown principally in the Kamptal, Kremstal, and Wachau regions and occupies a far greater percentage of all vine plantings in Austria than does Riesling, so we will continue to see many more of these wines in the future. Grüner Veltliner wines have a smooth texture and medium weight, a ripe stone fruit character, and an oddly attractive white pepper and cooked lentil aroma.

MARSANNE AND ROUSSANNE

MARSANNE IS MOSTLY associated with warmer climates, in which it can produce fruity, medium-bodied wines, but

generally with lower acidity, a hint of an **EARTHY**, nutty, or truffle aroma, and a distinct note of orange peel or even marmalade when aged. It has most often been supported by the Roussanne grape in blends but is increasingly proving that it can make fine wines as a varietal on its own.

Roussanne can produce fine wines, typified by moderate to high acidity and an aromatic stone fruit character, but because of its low yields, it has too often been relegated to the role of adding fresh, clean fruit qualities to the great red wines of the Rhône Valley. When it is used as the primary grape for a white wine, most Roussanne wines achieve balance when blended with a bit of Marsanne.

The classic growing region for Marsanne and Roussanne is France's Rhône Valley, but the grapes also grow in other wine regions of southern France, Switzerland, Australia (particularly in Victoria), and in California.

MELON DE BOURGOGNE

BETTER KNOWN by its nickname, Muscadet, this grape has long been the mainstay of the vineyards in northwest France, especially the western end of the Loire Valley, where the grape's nickname has become the name of the region's most famous wine. Muscadet is usually a simple, straightforward, high-acid wine with green fruit characteristics, an excellent accompaniment to the wide array of simply prepared seafood of the region. It also responds well to prolonged contact with the **LEES** (YEAST sediment) after fermentation, which gives the wine a little more weight and smoothness. These wines are called Muscadet **SUR LIE**.

In addition to plantings in northwest France, some Melon is planted in California (where it was misidentified as Pinot Blanc for quite some time).

SECONDARY WHITE GRAPE VARIETIES

ALIGOTÉ Used in Burgundy in France for lesser-quality wines.

ANSONICA Also known as Inzolia, an important white grape in Sicily's white wines, as well as a component of the fortified wine Marsala.

ARINTO Also known as Pedernã, a high-acid grape from Portugal; often the anchor in blended white wines from warm climates.

ARNEIS An important grape, brought back from near extinction in Piedmont, Italy, where it makes a delicious medium-bodied wine. Also planted in California and the Pacific Northwest.

ASSYRTIKO The most important grape on the island of Santorini, Greece, producing acidic fruit-driven wines with good minerality.

BOAL One of the grapes used to make sweet Madeira wines (also spelled “Bual”).

CHASSELAS In Switzerland, the short growing season of this grape makes it attractive to many grape growers, though the wines produced from it are generally simple, light wines, bordering on neutral.

COLOMBARD Fairly neutral in flavor, but a high-acid grape, grown in Western France mostly for brandy production. Very large acreage in California for bulk wine production and for inexpensive sparkling wines.

CORTESE Grown in northern Italy to make light, refreshing wines, especially Gavi in Piedmont.

FALANGHINA From Campania, Italy, it produces fruit-driven, light- to medium-bodied wines that are increasingly appreciated in export markets.

FIANO Mostly found in Campania; best known for producing the full-bodied, floral, almost spicy wine Fiano di Avellino.

FOLLE BLANCHE In the western Loire Valley of France, where it is known as Gros Plant, this grape makes fresh, **TART**, simple wines. It is also a staple in making the base wines for distillation into brandies such as Cognac and Armagnac.

FURMINT Used in the Tokaji region of Hungary to produce dry as well as sweet, botrytis-affected wines.

GARGANEGA The major grape in Soave from northern Italy.

GARNACHA BLANCA/GRENACHE BLANC Used for wines produced in Catalonia, Spain, and the southern Rhône Valley in France.

GODELLO The most important grape in the Valdeorras region of Spain. Known as Gouveio in Portugal. It produces aromatic, medium-bodied, fruit-driven wines.

GRECO BIANCO Grown in southern Italy, transplanted from Greece more than 2,500 years ago. It is best known for Greco di Tufo from Campania.

HONDARRIBI ZURI Used for the light, refreshing Spanish Basque wine Chacolí (Txacoli in the Basque language, Euskara), from Guetaria or Vizcaya.

MACABEO One of the grapes used in most blends to make Spanish sparkling wines (Cava), and part of the blend

for some Roussillon whites in southern France, where it is called Maccabéo. It is the same grape as Viura, used in the production of white wines of Rioja in northern Spain.

MALVASIA Used to make the sweet versions of Madeira, and also planted widely in Italy to make fragrant dry and sweet wines. Widely planted in California to add fruitiness to jug wines.

MUSCADELLE Planted in the Entre-Deux-Mers and Graves regions of Bordeaux to add grapey fruitiness to the dry and sweet wines produced there. Also used to make sweet fortified wines in Victoria, Australia.

PALOMINO FINO The most widely used grape in the production of **SHERRY** in southern Spain.

PARELLADA Used in Catalonia, Spain, as a blending grape for sparkling Cava, but also on its own or in a blend as a fresh, delicate white.

PETITE ARVINE Grown in the Valais region of Switzerland and Valle d’Aosta, Italy, producing both fine dry and sweet wines.

PROSECCO Grown primarily in the Veneto region of Italy, the grape gives its name to the refreshing, dry to off-dry, mostly sparkling wine.

RKATSITELI Planted widely in Russia to produce fragrant, light wines with a hint of sweetness. Small amount of acreage in the Finger Lakes of New York State.

SCHEUREBE One of the most successful vinifera crossings from Germany, producing soft, fruit-forward, usually simple wines.

SERCIAL Most famous for the driest, lightest versions of Madeira, a Portuguese fortified wine, which, at its best, can age for many years.

THOMPSON SEEDLESS Widely planted in California and Australia for producing neutral base wines for blending in jug-wine production. Also used for table grapes and raisin production.

TORRONTÉS Produces Argentina’s intensely aromatic, floral, spicy, medium-bodied dry wines.

TREBBIANO This is Italy’s most widely planted white grape, though its wines are generally fairly neutral. It is the same grape known as Ugni Blanc in France, where it is primarily used to make the base wines for distillation into brandies such as Cognac and Armagnac.

VERDEJO The most important grape in the Rueda region of Spain, where it produces fragrant, fruity, very pleasant wines.

VERDELHO Used to make the off-dry version of Madeira.

Also grown in Australia, where it produces a fresh and fruity but simple dry or off-dry wine.

VERDICCHIO A grape of central Italy's Marche region that, handled well, can produce fresh, exciting, and fruity wines, as well as wines of some substance with a little wood treatment or yeast contact.

VERMENTINO A grape found throughout Italy. The best wines made from Vermentino are usually produced in Sardinia and Tuscany.

VERNACCIA There are actually several Italian grapes called by this name, but best known is the Vernaccia of Tuscany, used in Vernaccia di San Gimignano, a medium-bodied, fruity white with good acidity.

XAREL-LO One of the grapes used for blending to make most Spanish sparkling Cava and fine still wines.

MAJOR RED GRAPE VARIETIES

CABERNET SAUVIGNON

IT SEEMS THAT Cabernet Sauvignon grows everywhere, and that perception is not far from wrong. Almost any recognized wine region that is moderately warm to hot grows Cabernet Sauvignon, and red wine drinkers can't seem to get enough of this varietal. Why is it that Cabernet Sauvignon has captured the hearts, minds, and palates of millions of wine consumers and taken over hundreds of thousands of vineyard acres?

For one thing, wherever you grow it, Cabernet Sauvignon makes a wine that is recognizable, true to its varietal character. With vibrant aromas of black cherries, black currants, black plums, black olives, and **EUCALYPTUS** in a young wine, and hints of cedar and cigar box **BOUQUET** as it ages, Cabernet Sauvignon produces reliable, even predictable, full-bodied wine, with high degrees of both tannins and acidity.

The popularity of Cabernet Sauvignon is both its strength and its weakness. Without the commanding presence of this varietal, there simply would not be a successful wine industry and wine culture in Bordeaux, France, or the Napa Valley of California, or the Maipo Valley of Chile. Cabernet Sauvignon has put these regions on the world's wine map, but it has also diminished the impor-

tant traditional varieties of countries such as Italy and Spain, among others. Why is Cabernet Sauvignon so successful in the vineyards and wineries of so many of the world's wine regions and so popular with wine consumers, from the neophyte to the auction-conscious collector?

For grape growers, Cabernet Sauvignon is a smart choice; it grows in almost every wine-producing country of the world and adapts well to a wide variety of climates and soils. As a grape, Cabernet Sauvignon is very small, with one of the highest ratios of **SKIN** to juice, medium to high acidity, and intense black currant aromas and flavors that can be masked by high levels of tannin. The grape has a thick skin and is resistant to many of the plant viruses and diseases that plague less hardy varieties. For winemakers, the variety is also pliable. Depending on the desired style of the finished wine, Cabernet Sauvignon does well with either short or long maceration—exposure of the juice to



Cabernet Sauvignon grapes

the tannin-laden skins—anywhere from three days to longer than three weeks. The longer the maceration, the more tannins are evident in the young wine, which adds to the structure and potential longevity of the wine; a short maceration most often produces soft, easy-to-drink wines.

And Cabernet Sauvignon seems to have an affinity for oak, especially the assertive spicy vanilla flavors of new oak barrels. The **BARRIQUES** used to age Cabernet Sauvignon are most often 60 gallons/225 liters, and if all of the barrels are new, the result can be a dramatic, over-the-top, overtly alcoholic but smooth, sweet black cherry–like wine. Some of the best Cabernet Sauvignon wines are made using a regimen of new and used barrels to tone down the oak flavors in the finished wine, but the producers of these wines often do so at their own peril. Why? Because many of the most influential wine writers and critics who assign numerical scores (like 92 out of a possible 100 points, or heaven forbid, 82 out of 100) seem to favor wines that feature the overwhelming flavors of new oak. These writers and critics are powerful, not only because their opinions are published in the wine press, but also because their scores and their direct quotes about a wine often accompany a “neck hanger”—an in-store mini-ad that promotes the wine in a retail environment and influences the wine consumer.

Yet another reason for Cabernet Sauvignon’s worldwide success is its ability to blend with other grapes that usually make softer, more approachable wines, diminishing Cabernet Sauvignon’s aggressive qualities, its hard edges. With Cabernet Sauvignon as its anchor, a wine blended with, for example, 15 to 25 percent Merlot, Cabernet Franc, or both (and maybe an even smaller percentage of wines made from Malbec and Petit Verdot grapes) is a classic mix that started in Bordeaux and found its way around the world. Many esteemed Napa Valley Cabernet Sauvignons contain between 5 percent and 25 percent Merlot or Cabernet Franc (for a varietal name to grace a label in the United States, the wine in the bottle must be made from at least 75 percent of that named varietal; see page 116).

Cabernet Sauvignon’s ability to blend with other wines takes the creative handcuffs off the winemaker, who can create his or her own style of Cabernet Sauvignon partially based on the chosen blend. And winemakers are not limited to the classic Bordeaux blending model. Just some examples: In Tuscany, Italy, literally hundreds of Super Tuscan wines (see page 390) are based on blends of Cabernet Sauvignon and Sangiovese, the most important traditional grape of the region. In several wine regions of

Spain (see page 415), blends of Cabernet Sauvignon and Tempranillo are increasingly common. Australia (see page 224) is well-known for making a wide range of blended wines from Cabernet Sauvignon and Shiraz.

When produced as a single-variety red wine, Cabernet Sauvignon can be everything that white wine drinkers hate about red wine. At its worst, it may appear to be harsh and astringent (from the tannins), sour (from the acidity), very dry and drying on the palate, and too strongly flavored (if you can get beyond the tannins to taste anything). However, for those who enjoy red wines, it is important to note that there are also some fine examples of 100 percent Cabernet Sauvignon wines, some offering distinctive cassis fruit character with a background of **MINT** or eucalyptus and notes of cedar and thyme.

Because Cabernet Sauvignon is so flexible, there are almost as many styles of wine as there are winemakers. However, even though the wines vary stylistically, Cabernet Sauvignon is still one of the easiest wines to identify, as it exhibits its varietal character, whether it is a \$10 Cabernet Sauvignon or a \$200 Cabernet Sauvignon. Then what makes that \$200 wine so special? The reason is that the best wines made primarily from the Cabernet Sauvignon grape display a sense of place, not just varietal character. What you are paying for is the “address” of the wine—its *terroir*—not only the grape that appears on the label.

In Bordeaux, you can pay a lot for the character of the soil and the heralded history of the estate (the “château”) on which the grape is grown. In the New World, a “California Cabernet Sauvignon” should taste decidedly different from a “Napa Valley Cabernet Sauvignon,” which should taste different from a “Rutherford Cabernet Sauvignon” (Rutherford is a town within the Napa Valley), and a single-vineyard “Rutherford Cabernet Sauvignon” should taste even more special than a wine made from grapes grown on more than one Rutherford vineyard or vineyard block. At each heightened level of perceived quality, the price goes up, and the difference between the California Cabernet Sauvignon and the single-vineyard Rutherford Cabernet Sauvignon can easily be more than \$100.

Cabernet Sauvignon is bold and brawny and powerful, and its dark, brooding color and complex nature make a statement that may appeal to those looking for a definition of what a “**BIG** red wine” should be. While other red wines may have their adherents and boosters, the preeminent position of Cabernet Sauvignon remains unchallenged, at least for the immediate future.

Where Cabernet Sauvignon Grows

FRANCE

The Left Bank of Bordeaux is the quintessential classic region for both Cabernet Sauvignon vineyards and some world-famous Cabernet Sauvignon-based wines (see page 292). Specifically, most well-known are the subregions (and some of the most famous Cabernet Sauvignon-based wines) Haut-Médoc (Château Latour, Château Lafite-Rothschild, Château Mouton Rothschild, Château Margaux) and Graves/Pessac-Léognan (Château Haut-Brion).

Wines made from the vineyards in these Bordeaux subregions are most often judicious blends of Cabernet Sauvignon, Merlot, and Cabernet Franc, with grace notes sometimes provided by Malbec and Petit Verdot.

Outside Bordeaux, Southwest France grows a lot of Cabernet Sauvignon grapes and produces quite a bit of pretty good wine dominated by the variety. The Mediterranean provinces of Languedoc-Roussillon (see page 343) in south central France are awash in high-yielding Cabernet Sauvignon vineyards, where a huge volume of drinkable, mostly varietal-labeled Cabernet Sauvignon is produced.

ITALY

Cabernet Sauvignon has been planted sporadically in the vineyards of Italy for hundreds of years, but today the variety is purposefully planted in the majority of Italy's twenty provinces. In the cooler regions of the northeast—Veneto, Friuli-Venezia Giulia and Trentino-Alto Adige—there is a lot of wine produced. In Italy's other wine regions, Cabernet Sauvignon is sometimes produced as a single-varietal wine or as a Cabernet Sauvignon–Merlot blend. Often it is blended with wines made from indigenous varietals.

The most heralded blend is Cabernet Sauvignon and Sangiovese, made famous by the much sought-after and often expensive Super Tuscans. Sangiovese is the backbone of virtually all the traditional wines of Tuscany—most famously Chianti and Brunello di Montalcino—and Cabernet Sauvignon turns out to be a successful partner in many of the region's nontraditional blended wines. Some of the best-known examples in which Cabernet Sauvignon dominates the blend include Solaia, Sassicaia, Ornellaia, Excelsus, and Tinsciv.

In Lombardy and Emilia-Romagna, it is easy to find Cabernet Sauvignon-based wines, often blended with Merlot and Cabernet Franc. Some interesting, often delicious, wines are now being produced in southern Italy, where Cabernet Sauvignon may be blended with indigenous varietals, such as Aglianico, Nero d'Avola, and Gaglioppo. On the island of Sardinia, successful blends of Cabernet Sauvignon and Cannonau (the local name for the Grenache grape) are produced.

SPAIN

Cabernet Sauvignon is making its presence known in Spain, often blended with Tempranillo, in the wine regions Ribera del Duero and Rioja, among others. In the Penedès region of Catalonia, anchored by Barcelona, the historic and cultural influence of France is expressed in the choice of grapes to make wine, and Cabernet Sauvignon is one of the most important red grapes of the region. It is not uncommon to find varietal Cabernet Sauvignon or a Cabernet Sauvignon–Merlot blend produced in Penedès or neighboring wine regions, but it is just as common to find a Tempranillo–Cabernet Sauvignon blend. Also in Catalonia, the small but prestigious region of Priorato produces Cabernet Sauvignon-based wines as either single-varietal wines or blended with the indigenous varietals Cariñena (Carignan) or Garnacha (Grenache).

THE REST OF THE OLD WORLD

Cabernet Sauvignon grows in just about every wine-producing nation of the Old World, including Portugal, Greece, Bulgaria, Hungary, Romania, and even the warmer parts of Switzerland, Austria, and Germany. Cabernet Sauvignon is the most important red variety in the wines of Israel and high-quality wines from Lebanon, especially the esteemed Château Musar. Cabernet Sauvignon also grows in both India and China.

THE UNITED STATES: CALIFORNIA

Cabernet Sauvignon is the most widely planted red wine grape in the vineyards of California (see page 111). Due to a near-perfect match of climate and variety, Cabernet Sauvignon has become the signature grape for both the best “artisan” single-vineyard wines of the Napa Valley and the “industrial” vineyards of the Central Valley, as

well as every peak and valley in between these extremes. Whichever Cabernet Sauvignon you choose, and at whatever price point, it still captures “sunshine in a bottle” and shows off its varietal character, a jammy, sweet attack of voluptuous black fruit, with a dry **FINISH**.

As in Bordeaux, varietal-labeled Cabernet Sauvignon from California will often contain a healthy dose of Merlot or Cabernet Franc or both in the finished blend, allowing the individual wine producer to tweak the wine to meet his or her own standards of balance and quality. Or just as often, the winemaker can anticipate taste preferences of the American wine consumer with such tweaks.

Cabernet Sauvignon has defined California’s red wine industry, just as Chardonnay has defined it for white wine. The public has embraced California’s Cabernet Sauvignon wines, whether from the shelves of supermarkets or the wine lists of the world’s most expensive restaurants.

OTHER STATES AND THE REST OF NORTH AMERICA

Cabernet Sauvignon maintains a serious presence in the warmer parts of Washington State’s Columbia Valley, such as the Red Mountain and Yakima Valley regions. Although the Merlot grape is the most planted red varietal in this moderately cool–climate state, Cabernet Sauvignon’s ability to tough it out in cool weather allows producers to make some attractive wines.

In Oregon, there are about 600 acres/240 hectares of Cabernet Sauvignon planted mostly in the Rogue Valley and Umpqua Valley, but Oregon Cabernet Sauvignon lives in the shadow thrown by the state’s premier red varietal, Pinot Noir.

New York State’s Long Island wine regions grow and produce some very fine Cabernet Sauvignon, but in such small amounts that they rarely leave the New York metro area. Colorado, Idaho, New Mexico, Texas, and Virginia are among the many other Cabernet Sauvignon–producing states.

Canada, because of its cold temperatures, produces a lot more Cabernet Franc than Cabernet Sauvignon, but Mexico can produce some drinkable-to-very-good Cabernet Sauvignon, especially in the Baja Peninsula.

SOUTH AMERICA: CHILE AND ARGENTINA

Without Cabernet Sauvignon, there probably would be no Chilean wine industry. Chile produces a lot of Cabernet Sauvignon for the export market, and in the 1990s developed a reputation for true-to-varietal-type wines at bargain prices. You can still buy inexpensive Chilean Cabernet Sauvignon produced from mostly high-yielding vineyards, but you can also find *terroir*-driven, single-vineyard wines from the Maipo, Colchagua, Aconcagua, and Curicó wine regions, with high prices to match their pedigree.

In the Mendoza region of Argentina, there is some varietal Cabernet Sauvignon produced, but Cabernet Sauvignon is most often reserved for blending with the nation’s premier red wine, Malbec. At their best, Argentine Cabernet Sauvignon and blends can exhibit assertive aromatics and complex flavors that make for some age-worthy wines.

AUSTRALIA, NEW ZEALAND, AND SOUTH AFRICA

Although Shiraz (Syrah) is the most important grape in the vineyards of Australia, the nation’s wine regions produce a lot of full-bodied, jammy Cabernet Sauvignon too, and just like Shiraz, do so at every conceivable price. Cabernet Sauvignon–Shiraz blends are also quite popular and can be delicious.

Some of the best Australian Cabernet Sauvignon originates in the vineyards of South Australia, Victoria, and Western Australia.

New Zealand produces some fine Cabernet Sauvignon as well as Cabernet Sauvignon–Merlot blends, mostly from vineyards in the Hawkes Bay region, located on the southern tip of the nation’s North Island.

Several wine producers in the Stellenbosch region of South Africa make some very fine Cabernet Sauvignon, sometimes blended with Merlot.

MERLOT

MANY WINE CONSUMERS have turned to Merlot as their preferred single-variety red wine (although they also seem to fall in and out of love with the grape on a regular basis). The Merlot grape is bigger than the Cabernet Sauvignon grape and has a lot more juice in proportion to its skin surface area. It is a thinner-skinned grape, with lower tannin levels and lower acid levels. Measure for measure,

Merlot almost always produces a softer, smoother, fruitier, more accessible wine than Cabernet Sauvignon.

Until the 1980s, Merlot, especially in the New World, was viewed primarily as a blender, most often used to soften the tannins and acidity of Cabernet Sauvignon. Today, although Merlot is still a fine blending wine for Cabernet Sauvignon, Merlot, as its own varietal, is successful around the world, pleasing wine consumers in the Old World, but especially in the New World, and specifically in the United States.

These days, Merlot wines feature aromas and flavors of ripe, sweet chocolate-covered black cherries tinged with oaky vanilla overtones, complete with a silky, voluptuous texture. Most wines made from Merlot are predictable fun and don't require a lot of thought and analysis to enjoy. The exceptions are some of the best wines produced in the classic Merlot grape-growing region Pomerol, on the cooler Right Bank of Bordeaux (the famous Château Pétrus is often 95 percent Merlot). There are a select group of Merlot producers in California and Washington State that also produce some memorable, even powerful, wines.

Aside from the small amount of exceptional Merlot wines that can age gracefully for years, most Merlot is best consumed within a few years of its vintage date. Unless it is a great wine from a great estate, it is not only unnecessary to age Merlot, in most cases it's a bad idea. Merlot usually lacks the tannins, acids, and overall structure that allow a wine to seriously improve with time.

Because Merlot is so popular, and because it ripens in cooler climates more readily than Cabernet Sauvignon, it is planted in almost all of the wine regions of the world, except in the absolute coldest places. Merlot grows in vineyards from Switzerland to Slovenia, from New Zealand to New York, from Austria to Australia, from Croatia to China, from South America to South Africa.

Where Merlot Grows

FRANCE

Merlot is the most planted grape in the Bordeaux region of France, and as the world clamors for soft, easy-to-drink reds, its varietal star is ascending here. While it plays a supporting role in the wines from the Left Bank of Bordeaux (including the Haut-Médoc and Graves regions), it is the star varietal on the Right Bank (including Pomerol and St-Émilion) and in the satellite appellations that produce accessible, less-expensive Bordeaux wines.

Merlot is the third-most-planted red grape in all of France, and its popularity is growing every year. It is grown throughout Provence and the southwest, and in the southern province of Languedoc, among many others. It may be used as the main grape or as a blender in these regions. There are many relatively inexpensive French wines made from 100 percent Merlot.

ITALY

Merlot is an important grape in Italy, with plantings growing exponentially over the last decade or so. The northeastern regions of Veneto and Trentino-Alto Adige mostly produce wines from vineyards with high yields, but they are easy to drink and affordable. In the same area, Friuli produces its share of workhorse wine but also some elegant examples of Merlot.

In the vineyards of Tuscany, Merlot has become an important grape for producing dozens of Super Tuscans, both varietal-labeled wines and blends, usually with the



Merlot grapes

Sangiovese grape as either the anchor or the seasoning for the finished wine. Sometimes Cabernet Sauvignon is blended with Merlot or with Merlot and Sangiovese to create these very popular—and often very expensive—Super Tuscans.

THE REST OF EUROPE

Merlot is planted in the warmer vineyard sites of Austria, Hungary, Romania, Bulgaria, and Moldova. In these countries the wines produced from the Merlot grape or from Merlot–Cabernet Sauvignon blends are drinkable and affordable. But it is in Switzerland’s Italian-speaking Ticino region where Merlot positively dominates, producing some predictable quaffs and a few glorious wines.

THE UNITED STATES: CALIFORNIA AND WASHINGTON STATE

California produces wines that are fruit-forward with sweet blackberry flavors, and most often low in acids and tannins. Styles range from light and fruity to massive and complex, but almost always silky, satiny, and smooth on the palate.

A lot of Merlot is planted in the warm Central Valley, known these days for producing near-unlimited amounts of “fighting varieties”—relatively inexpensive California wines that “fight” for shelf space in supermarkets and high-volume wine retailers. These are simple, easy-to-drink, affordable wines that work well with a burger, a sandwich, or a slice of pizza; they are not meant to impress connoisseurs.

Merlot with more character is derived from the vineyards of California’s cooler North Coast wine district, especially Napa, Sonoma, and Mendocino counties. These wines are darker in color, more concentrated in flavor, and feature ripe-to-overripe fruit flavors in an often full-bodied to massive high-alcohol wine. Some of these wines, especially those from Oakville, Rutherford, Stags Leap District, and Howell Mountain, all within the Napa Valley appellation, can be very expensive and hard to find. In Sonoma County, the vineyards and wineries of Sonoma Valley, Alexander Valley, Bennett Valley, and Knights Valley also produce some fine Merlot wines.

Washington State has developed quite a reputation for the quality of its Merlot wines, both on the small-producer “boutique” level and the grand scale. Growers in the Columbia Valley and Walla Walla Valley have to work hard to make sure all is right in the vineyard and have to hope

for winters that are not too frigid. In Washington, Merlot is second only to Chardonnay in total acres planted, and it is the most important red grape in the entire Pacific Northwest wine industry.

AUSTRALIA AND NEW ZEALAND

Although plantings of Merlot are increasing every year in Australia, it is a grape that has yet to really catch on as the basis for varietal-labeled wines (only 4 to 5 percent of its vineyards are planted with Merlot). Add to this the tradition of blending Shiraz—not Merlot—with Cabernet Sauvignon, and Australia has a bit of a learning curve to get over when it comes to producing Merlot on a large scale.

Most of Australia is quite warm, ideal for Cabernet Sauvignon but not cool enough for Merlot, so **SITE SELECTION** will become a very important issue if this variety is to have a happy future.

New Zealand is cooler than Australia, and the southern tip of the North Island may be an ideal climate to grow Merlot. Indeed, Merlot is New Zealand’s third most planted grape (Sauvignon Blanc and Chardonnay are first and second, respectively, making Merlot the most-planted red grape in the nation). About half of the Merlot plantings are in Hawkes Bay, with about 30 percent in the Auckland wine district. On the northern tip of the South Island, Merlot appears to have a serious future in the warmer spots in the Marlborough wine region, currently known only for its white wines, particularly Sauvignon Blanc.

PINOT NOIR

PINOT NOIR is a difficult grape to grow successfully. It is a thin-skinned grape that traditionally needs a long, cool growing season. Cool weather allows Pinot Noir to develop attractively high levels of acidity, although it can make ideal ripening difficult. Because the grape is light-colored and thin-skinned, tannins are usually soft and subtle. When all of the elements of nature collide successfully, Pinot Noir vineyards can provide the raw material for glorious medium-bodied wines. But these elements strike a delicate balance that, when things go wrong in the vineyard, can just as easily create wines that are unpleasant, sometimes with green, unripe flavors, sometimes with flavors of cooked and stewed fruits, overripe and foul.

There is no real consensus about what kind of soil is best

for growing Pinot Noir, but most growers point to soils rich in either limestone or clay. The soils of Champagne are rich in chalk, but in most growing years the grapes ripen just enough for use in sparkling wine and would be considered “green,” or underripe, for still wines. What almost all growers do agree on is that the soil must be well drained and not overly fertile, to keep yields low.

Growing Pinot Noir is not for everybody. Indeed, people who happily grow Chardonnay, Cabernet Sauvignon, and other less-tricky varieties are often intimidated by the idea of growing Pinot Noir. It isn’t so much that these growers are incapable of doing a good job in the vineyards and in the winery, it’s that everybody has their own opinions on what “a good job” is when it comes to judging wines made from this grape.

Pinot Noir is a very finicky grape that defies definition when it comes to style and expectation in the finished wine. Pinot Noir celebrates both its sense of place and the human touch; depending on where it is grown and who is growing it, this variety may produce a wine very unlike its nearest neighbor or the most distant vineyards. Pinot



Pinot Noir grapes

Noir is probably the most *terroir*-driven of all red wines (it’s Riesling for whites).

Fine Pinot Noir is a wine of medium-intense fruitiness, just enough tannin to give it structure, high acidity for delicacy and freshness, a floral and herbal aroma, red berry or **CHERRY** flavors, and a silky texture that is truly beguiling. At its worst, the floral aroma will decay into the euphemistically named barnyard aroma (an unattractive feral animal smell), the wine’s delicacy becomes lightness, the fruitiness just is not there, and the acidity only provides a sour taste.

With Pinot Noir you usually get what you pay for—an axiom that is perhaps truer for this variety than for any other. Bargain-priced Pinot Noir made for early drinking can be charming in its simplicity, tasting of strawberries and, to a lesser extent, cranberries and red raspberries. Moving up the quality ladder, the wines take on more complexity, with a mix of spiced strawberries and black cherries, and noticeably higher acidity on the palate. The most complex examples of fine Pinot Noir will demonstrate aromas and tastes of both red and black fruits, with earthbound aromas of mushroom, **LEATHER**, **CHARRED** wood, **SMOKE**, and moist soil. These wines can age from five to ten years and even longer, and are usually rare and expensive.

More a cliché than a statement of certifiable fact is that the best wines made from Pinot Noir should mimic wines from Burgundy, France, where the grape has been cultivated for at least six hundred years and possibly more than sixteen hundred. Pinot Noir is celebrated in Burgundy and is by law the only red grape allowed to be grown on its best vineyard sites. It may be a good idea that good Pinot Noir should taste like fine Burgundy, but it is also an idea that is nearly impossible to put into practice because the beauty of great red Burgundy is that each one tastes different. So, to define good Pinot Noir based on “the Burgundy model” is an almost meaningless generalization. When it comes to Pinot Noir, one size does not fit all.

Where Pinot Noir Grows

FRANCE: BURGUNDY AND CHAMPAGNE

In Burgundy, the only red grape planted in the northern subregions of Côte de Nuits and Côte de Beaune (collectively known as “Côte d’Or”; see page 318) is Pinot Noir. The Côte d’Or, especially the Côte de Nuits, is home to some of the most famous and sought-after Pinot Noir

vineyards in the world. Here, *terroir* carries the day, as wines produced from a small vineyard, or a small part of a larger vineyard, will taste noticeably different—not necessarily better or worse, but different—from a vineyard site less than a thousand feet down the road or up a hill.

There is also a lot of good Pinot Noir from Burgundy at more affordable prices than the most-prized reds from the Côte d’Or, produced a bit farther south in the Côte Chalonnaise subregion (see page 326).

In the Champagne region (see page 277), Pinot Noir is one of only three grapes; the other two are the red Pinot Meunier and the white Chardonnay. These are the only legal grapes in Champagne, and most Champagnes are made from a blend of wines made from varying percentages of these grapes. Champagne is the coldest wine region in all of France, and Pinot Noir usually ripens just enough to produce a wine that is high in acidity that meshes beautifully with bubbles to refresh the palate. Since most Champagne is a white sparkling wine, there is very little skin contact—the skin is where all the color is—when Pinot Noir grapes are fermented. Some fine **ROSÉ** Champagnes rely on skin contact with Pinot Noir or Pinot Meunier to produce a pink sparkling wine.

THE REST OF EUROPE

Pinot Noir also grows in Germany (see page 487), where it is known as Spätburgunder, and in Austria (see page 508), where the grape is often called Blauburgunder. In Italy (see page 351), where it is most often called Pinot Nero, the variety is grown in Lombardy as an essential constituent of the excellent sparkler, Franciacorta. Pinot Noir is also widely planted in the Alto Adige region, where it produces fine still wine, and there is some good Pinot Noir produced in Tuscany. Switzerland (see page 512) grows the grape and makes some light versions of the wine, but mostly Pinot Noir is blended with Gamay to make the country’s most famous red, Dôle.

THE UNITED STATES: CALIFORNIA, OREGON, AND NEW YORK STATE

California (see page 111) had to navigate a massive learning curve to succeed with Pinot Noir, and even today, great California Pinot Noir is a rarity, but a sublime one. The coolest regions are some of the premier growing regions for Pinot Noir: Carneros, which is a shared appellation between

Napa and Sonoma counties, the Russian River Valley (and especially its subregion, Green Valley) in Sonoma County, the Anderson Valley in Mendocino, the Santa Maria Valley in Santa Barbara, Santa Ynez Valley in San Luis Obispo, and Mount Harlan in San Benito.

The complaint against California’s Pinot Noir has been that the wines lack balance, are too jammy, too alcoholic, too “big,” too Cabernet-like. California winemakers still produce some of these wines, but more and more Pinot Noir is being made with a gentle touch, made with restraint. The future of high-quality, carefully selected California Pinot Noir seems assured. Over the medium-to-long term, the prospect of climate change and global warming in California may have a negative impact on growing high-quality Pinot Noir grapes.

Oregon (see page 194) is on the same latitude as Burgundy, and although the entire state produces a bit more than 1 percent of the nation’s wine, it has developed a well-earned reputation for its Pinot Noir. In particular, the Willamette Valley is considered one of the best places in the New World for growing this grape. The finest of these wines are delicate but substantive, and beautifully balanced. The overwhelming majority of Oregon Pinot Noir winemakers are artisans, producing small amounts of very fine wines. As in California, prices run the gamut from bargains to very expensive, and quality runs from good basic varietal character to very special and rare, true to vineyard *terroir* and vintage conditions.

New York State grows a small amount of Pinot Noir, most of it in the cool Finger Lakes and Hudson River regions. In the Finger Lakes, the grape is an important component in sparkling wines, and little by little good varietal Pinot Noir is being produced on a small scale. In the Hudson River Region, a tiny amount of high quality Pinot Noir is produced.

THE SOUTHERN HEMISPHERE: CHILE, NEW ZEALAND, AUSTRALIA

Pinot Noir seems to have a bright future in the Southern Hemisphere. Chile’s coastal Casablanca Valley (see page 216), which is best-known for nurturing Chardonnay and Sauvignon Blanc, also provides a good home for Pinot Noir, producing wines that strike a balance between delicacy and juicy ripeness and are very appealing.

Pinot Noir looks promising in New Zealand (see page 241). In the Martinborough region, on the southern tip of its North Island, and in Central Otago, on the southern tip

of its South Island, cool-climate New Zealand is growing and producing some very exciting and delicious Pinot Noir. Central Otago is actually the coldest place in the Southern Hemisphere to grow this varietal, and the results are highly encouraging.

Australia (see page 224) produces a handful of good Pinot Noir wines, with the Yarra Valley, located on the outskirts of Melbourne in the state of Victoria, showing real promise. Only about 2 percent of vineyard plantings in Australia are Pinot Noir, and much of the fruit is utilized quite successfully as part of the blend for **MÉTHODE CHAMPENOISE** sparkling wines.

SYRAH/SHIRAZ

SYRAH AND SHIRAZ are actually the same grape, but with different names. “Syrah” is the Old World name for the grape, while “Shiraz” is definitely a New World name, closely identified with, but not limited to, Australia. Grape growers, winemakers, and wine consumers have embraced this varietal with enthusiasm.

There is more Syrah planted in France than anywhere on earth (about 100,000 acres/40,000 hectares), and Australia plants at least 70,000 acres/28,000 hectares of Shiraz, securing second place. The United States and



Syrah (Shiraz) grapes

Argentina—both use “Syrah” or “Shiraz” on their wine labels—are in a virtual tie for third place with about 12,000 acres/4,800 hectares planted in each country. The popularity of Syrah or Shiraz is growing, however it’s labeled, and plantings are increasing dramatically worldwide.

In Europe, the classic growing region for Syrah is the northern Rhône Valley of France. The Rhône Valley is the coolest place in the world for growing Syrah, but its heat-retaining slopes composed of granite soils help make ripening of the grape possible.

In the New World, Shiraz and Australia have become nearly synonymous. Original vine cuttings for Shiraz were brought from the Rhône Valley to Australia in the nineteenth century, and vineyards are located in various parts of the states of South Australia and New South Wales, with fewer plantings in the cooler states of Victoria and Western Australia. Overall, Australia’s vineyards are the warmest sites in the world for growing Shiraz.

There are many different styles of Syrah/Shiraz wines in the marketplace. The wine can be fashioned as a light-to medium-bodied easy sipper or as a massive red wine. In between these two extremes, a full gamut of Syrah/Shiraz styles, from sunny simplicity to extraordinarily earthy elegance, abound. As a bonus, add to these multiple personalities of Syrah/Shiraz the fact that it is an excellent blending grape with numerous other varietals, especially Grenache, Mourvèdre, and Cabernet Sauvignon.

Where Syrah/Shiraz Grows

FRANCE: THE RHÔNE VALLEY AND LANGUEDOC-ROUSSILLON

As we mentioned earlier, the northern Rhône Valley defines classic Old World Syrah. The steep slopes, rich in granite soil, provide just enough sunshine and warmth for full ripening, but not too much. So, at their best, the Rhône wines made from Syrah are redolent of black fruits, complex earthy aromas, a lovely tannin-acid balance, and a kick of black pepper in the nose and on the palate. Depending on what district the grapes are grown in, the wines can be lighter or darker in color, medium or full in body, with flavors that span from jammy to roasted fruits.

Wines from the Hermitage and Côte-Rôtie districts are perhaps the most famous Syrah wines in the world, producing strong, sturdy wines of deep purple color, capable of aging for many years. Syrah thrives here, providing a lot

of tannins but retaining enough acidity to keep the wines tasting fresh. The best examples offer dark plum aromas and flavors, a **PEPPERY** spiciness on the palate, and a hint of the aroma and flavor of smoked or cured meats.

The Languedoc-Roussillon area (see page 343), the “Midi” of the south of France, actually has twice as many Syrah vines planted as the Rhône Valley. Here an endless stream of drinkable and affordable varietal-labeled Syrah and Syrah blends are produced from very warm vineyard sites.

THE REST OF EUROPE

Syrah is planted in the Valais region of Switzerland; Swiss Syrah can be very tasty, but is virtually invisible in the U.S. market. We do find small patches of Syrah planted all over Italy, where there are some producers making 100 percent Syrah wines, but most blend with Italian varietals, especially Sangiovese in Tuscany and Nero d’Avola in Sicily. Several of these Italian wines are sold in the United States.

There is quite a bit of Syrah planted in the Catalonia region of Spain, as well as significant plantings in Greece.

THE UNITED STATES: CALIFORNIA AND WASHINGTON STATE

In the United States, the grape is grown and the wine is made under either name, Syrah or Shiraz. California has been planting Syrah in earnest since the 1970s. California Syrah is now much sought-after by wine consumers, and some of them enjoy Syrah as an alternative to the more predictable Merlot and Cabernet Sauvignon.

Today, Syrah is being planted in California’s best wine-growing regions; the challenge is to find vineyard sites that are not too warm so that the finished wine is not a high-alcohol, full-bodied heady fruit bomb. The best California Syrah wines, made from vineyards located in cooler coastal regions, can be excellent and tend to follow the Rhône model of Syrah. Wines of restrained earthy power, they are great with hearty foods.

Washington State has enthusiastically embraced Syrah. Here, Syrah thrives in the cooler climes of the Columbia Valley, Walla Walla Valley, and especially the Yakima Valley. The best wines are deceptively soft and **SUPPLE**, with ripe, even sweet fruit flavors, but with balanced tannins and acidity—wines that are enjoyable now or ten years from now.

AUSTRALIA

Australia has been growing Shiraz since the early 1800s, and for most of that time it was considered to be a reliable but undistinguished varietal; the future was all about Cabernet Sauvignon and Chardonnay. Starting in about 1990, Shiraz came out of its shell, and successfully. With an international marketing push and with some very good wines that fit in perfectly with the New World wine drinker’s shift from delicate wines to big, brawny reds, people began to enjoy drinking Shiraz. Shiraz also fits the new, less-formal bistro-style dining that is permeating New World cultures. Australian wine producers even produce sparkling Shiraz, some of it very good.

Australian Shiraz continues its success in the international market and has spurred interest in the Shiraz category in general. A possible problem on the horizon for Australia and its premier grape is the issue of climate change and global warming. At the time of this writing, much of Australia’s vineyards were suffering the effects of five consecutive years of drought and a serious problem with obtaining enough water for irrigation.

ZINFANDEL

ZINFANDEL IS OFTEN thought of as *the* California grape. While Zinfandel grapes grow in several American states, and Italy, Australia, Chile, Mexico, and South Africa also produce small amounts of Zinfandel, it is California that defines Zinfandel for wine drinkers.

Zinfandel is an adaptable grape for winemakers. Decades ago, Zinfandel was a mainstay of many inexpensive blended jug wines produced in California, since it was recognized as providing huge amounts of ripe **BERRY** flavors and lots of sugar for sweetness and alcohol. Later, Zinfandel became famous in the production of the light **BLUSH** or pink wines called White Zinfandel, which are fruity, simple, but honest wines.

Bob Trinchero of Sutter Home Winery introduced White Zinfandel in 1972, and much of the American wine-drinking public, including many new wine consumers, responded en masse to the concept and the flavor of the wine. From 1975 to 1994, off-dry to semisweet White Zinfandel was the most popular varietal-labeled wine in the world. White Zinfandel is no longer quite so popular, having been eclipsed by Chardonnay and other varietals, but Sutter Home still sells more White Zinfandel than any other California winery.

Today, Zinfandel grapes are respected for their ability to produce classic, full-bodied red wines with a woody, wild-berry character and a distinctive spicy quality, particularly from the Sierra Foothills and North Coast areas of California. The best examples of Zinfandel—deep, dark, rich, earthy red wine—begin in warmer vineyard sites. Zinfandel thrives on heat, and this is one of the few varieties that can actually benefit from a bit of over-ripening. The best climate combination for Zinfandel is a summer filled with really hot days (from 90°F/32°C and up) and pretty cool nights (a drop to as low as 40°F/4°C), enabling the grower to preserve both high degrees of ripeness and sufficient acidity in the grapes. California has at least 50,000 acres/20,000 hectares of Zinfandel vines planted, and the best vineyards fit this ideal climate profile.

In California, there are quite a few acres of “old vines.” Old-vine Zinfandel, made from grapevines planted in poorer soil, sometimes dry-farmed (no **DRIP IRRIGATION**), often organically grown, and with naturally lower yields, produce wines of compelling complexity and depth. Sometimes the term “Old Vines” (or “Old Vine”) will appear on a label; there is no legal meaning for the term.

Depending on the style of the finished wine, Zinfandel



Zinfandel grapes

can exhibit a wide variety of aromas: red fruits in a lighter wine, dried black fruits in a full-bodied version; a hint of black pepper in a young Zinfandel, with dark chocolate in a mature, Port-style Zinfandel. Basically, what you want to look for in any good glass of Zinfandel is the assertive aromas of fruits—red raspberries, cranberries, strawberries in the lightest versions; black cherries, black plums, even raisins and black figs in the brooding, big Zinfandels. A pleasant smattering of herbs provides some grace notes, as do oak-barrel inspired spice and vanilla.

Internationally, Italy is by far the most important producer of Zinfandel, but under its Italian name, Primitivo. Researchers using DNA analysis have identified Zinfandel as being the same as the Primitivo grape of southern Italy. No matter its patrimony, it is California that has focused on Zinfandel and has placed Zinfandel on the world’s current wine map.

Where Zinfandel Grows

THE UNITED STATES: CALIFORNIA

Zinfandel is the second-most-planted red grape in California (Cabernet Sauvignon is first), and depending on where and when it was planted, results in the grapes and finished wines can be dramatically different.

Sonoma County grows a lot of Zinfandel and producers here make some excellent wines, especially in the Dry Creek Valley wine district. Warm days and cool nights give Dry Creek Zinfandel a perfect platform to excel. The slightly warmer Alexander Valley is also a fine place to grow the grape. Sonoma is home to several single-vineyard Zinfandel wines, which display their sense of place with delicious dignity.

The Napa Valley can produce some extraordinary Zinfandel, but here Zinfandel lives in the shadow of Cabernet Sauvignon. Old-vine Zinfandel from the vineyards of the Redwood Valley of Mendocino County make some of the state’s best wines. Paso Robles has some old vines, too, and has made quite a reputation for itself with artisan Zinfandel from the boulder-strewn Paso Robles soils. In Santa Cruz, Paul Draper of Ridge Vineyards makes what many consider to be the finest Zinfandel wines produced in California, and these wines really are singular and remarkable.

The Sierra Foothills wine region is synonymous with Zinfandel; more than 80 percent of the vineyards are dedi-

cated to the grape. There is quite a bit of old-vine Zinfandel here, and the wines from both the small and larger producers can be earthy, complex, and memorable.

In the very warm Central Valley, quite a bit of Zinfandel is grown, and some of it ends up in White Zinfandel or in bargain-brand Zinfandels; some is used for blending into other varietal-labeled wines. But the Lodi district in this area, where the breezes from the delta cool things off, produces some very fine Zinfandel, some of it from old vines.

ITALY

In Italy, the grape is called Primitivo, and the wine world never took notice of it until 1994, when researchers at the University of California, Davis proved that Primitivo and Zinfandel have the same DNA. Prior to this, Primitivo, grown in southern Italy, was used by the Italian wine industry to “bulk up” inferior wines produced in northern Italy. Since the DNA discovery, the southern province of Puglia has begun to specialize in Primitivo, and most of these wines are quite satisfying.

GRENACHE

GRENACHE (called Garnacha in Spain) is one of the most widely planted red varieties in the world, with most of those grapes growing in Spain (at least 225,000 acres/90,000 hectares) and France (about 125,000 acres/50,000 hectares). There is quite a bit planted in Italy (where it is sometimes known as Cannonau), and substantial amounts are found in Australia and California.

A grape that thrives in warmer climates, Grenache produces soft, smooth, round wines with mouthfuls of ripe, sweet, red plum flavors. Like Syrah, with which it is often blended in the Rhône Valley of France, it can attain high sugar levels when ripe, providing the wines with alcohol levels in the 13, 14, even 15 percent range. A major disadvantage is that some clones are prone to oxidation as a grape, as juice, and as wine, which often means that the wines turn out with a distinct orange-brown note in the color. The advantage of wines that oxidize quickly is that they are usually softer and more accessible when young.

In order for Grenache to achieve greatness, it must be treated well in the vineyard. Low yields are key, and avoiding over-ripeness and too-high sugar levels is very important if the grapes are to make a fine wine. When best

practices are followed in the vineyard and in the winery, Grenache, either on its own or in a blend, can create a fine, fruit-forward wine with a unique, earthy elegance.

Where Grenache Grows

Until fairly recently, the only place that Grenache has received anything close to a full measure of respect is in the southern Rhône Valley of France, where it is the dominant grape and the anchor of the famous blended wine Châteauneuf-du-Pape (see page 340), among many others. But lately, things have been looking up for Grenache.



Some very good varietal-label Grenache and blends are being produced from grapes grown in Australia and in California. The New World has copied the Old World, blending Grenache with Syrah and another important red grape of the Rhône Valley, Mourvèdre. It is not uncommon to see New World wines, especially from Australia, labeled as “GSM,” a blend of Grenache, Syrah, and Mourvèdre.

In Spain, where it has always been taken for granted as a workhorse, old-vine Garnacha grapes are producing magnificent wines in the Priorato region (see page 434), even as it continues to be an important constituent in the red wines of Rioja (see page 431), but subservient to the more esteemed Tempranillo grape. In the Navarra region (see page 430), Garnacha makes some of the loveliest dry rosé wines in the world, just as Grenache does in the Tavel

Grenache grapes

region (see page 342) of the southern Rhône valley. On the Italian island of Sardinia (see page 375), Cannonau can produce some delicious, earthy red wines.

OTHER IMPORTANT RED GRAPE VARIETIES

CABERNET FRANC

RELATED TO CABERNET SAUVIGNON, Cabernet Franc is also a small grape with high acidity, but it has a less intense flavor profile and a distinctive mineral, ashlike aroma. With the exception of the Loire Valley in France, where for decades it has been the dominant grape in the red wines Chinon, Bourgueil, and Saumur-Champigny, Cabernet Franc is more often used to blend with Cabernet Sauvignon and Merlot, as in Bordeaux. Quite a few producers in California, the Pacific Northwest, and the eastern United States have had good success making varietal wines from Cabernet Franc.

As a blending grape, Cabernet Franc is prized for its acidity, distinctive aroma, and strawberry-like fruit qualities. As a single-variety wine, it is usually medium-bodied, with fresh acidity and moderate-to-high intensity of flavor, balanced tannins, and bright red berry characteristics with a mineral, gravelly streak.

GAMAY

IN THE WINE LEXICON, the Gamay grape and wine from the Beaujolais region of France are almost synonymous. Once vilified by Philip the Bold as “that filthy grape” and banished by him from the northern stretches of Burgundy forever, Gamay now thrives in the Beaujolais region. The wines made from Gamay vary in intensity, but most of them are low in tannin, light, fresh, and fruity, with a sort of fruit-punch flavor. Were it not for the fresh, **BRIGHT** ruby color, they would be more in the style of many white wines than red, making them the perfect red wine for outdoor barbecues, picnics, and summertime drinking.

Gamay is the only red grape planted in the Beaujolais region of France. There is quite a bit of Gamay planted in Switzerland, and a small amount of acreage is dedicated to Gamay in California, New York State, and Canada.

MOURVÈDRE

THIS DARK PURPLE GRAPE thrives in warmer climates as in Spain, southern France, California, and Australia, and it is used in all those regions to add rich, plummy fruit character, color, and extra tannin structure to blended red wines. In Spain, where it is an important grape in the wine regions of Catalonia and the Jumilla *denominación* in southern Spain, it is usually called Monastrell (Mourvèdre used to be referred to as Mataro in Australia). With the strong revival of interest in Mediterranean grape types, many Australian



TOP: Gamay grapes BOTTOM: Pinot Meunier grapes

and Californian wine producers are marketing single-variety wines, or offering blends of Mourvèdre along with its usual partners, Syrah and Grenache.

PINOT MEUNIER

THIS GRAPE IS often thought of as the other red grape permitted in the blend to make Champagne in France, although it is the most widely planted of all the Champagne varieties. It is very useful in providing the softer red berry fruit aromas and flavors that round out the whole blend. As sparkling wine production has increased in parts of the New World, more and more growers have planted Pinot Meunier as a complement to their Pinot Noir and Chardonnay to emulate the classic true Champagne blend. A handful of sparkling wine producers in California and Australia also produce Pinot Meunier as a red varietal wine.

BARBERA

THE MOST-PLANTED GRAPE in Piedmont, Italy, and the second-most-planted red grape in that nation, Barbera produces medium- to full-bodied wines with a dark ruby color, vibrant red and dark berry characteristics, and very, very pleasing acidity. A few producers have also produced much more substantial wines from specific vineyard plots and by using oak aging. Barbera also once occupied significant acreage in California for jug wine production but is now enjoying a bit of a new lease on life as a single-variety wine. It is also found in Argentina.

NEBBIOLO

THE GRAPE RESPONSIBLE for producing the “king and queen” of Italian wines, Barolo and Barbaresco, the most esteemed red wines from the Piedmont region of Italy (see page 363), Nebbiolo is truly a noble grape. It is capable, in good vintages, of producing big, full-bodied wines that, when young, have high tannin levels but are likely to evolve into elegant, velvety-smooth wines with flavors of ripe and dried fruit, overtones of tea, and a distinct aroma of tar and leather. Some Nebbiolo wines have a more noticeable **WOOD** and vanilla character if they are aged in small oak barrels as opposed to the more traditional large oak casks.

Aside from the Piedmont, where it also provides the

base for Ghemme, Gattinara, and Roero wines, Nebbiolo is widely planted in the Valtellina region of Lombardy, Italy, where it is known as Chiavennasca. There is also a bit of Nebbiolo planted in California.

SANGIOVESE

FOR MANY YEARS, this grape remained relatively obscure, since its reputation was mainly based on its role as the majority grape in the blend used to make Chianti. Both within Italy and elsewhere, it is now recognized as capable of producing very fine wines that are prized for their distinctive floral and herbal aromas and sour cherry flavors.

Sangiovese, although the most-planted red grape in all of Italy, defines the classic red wines of Tuscany, Italy; the most famous example is Brunello di Montalcino, which must be 100 percent Sangiovese. Other famous Sangiovese-based Tuscan reds include Chianti and Chianti Classico, Vino Nobile di Montepulciano, Carmignano, and Morellino di Scansano. Many of the modern, nontraditional wines of Tuscany—the Super Tuscan—feature Sangiovese on its own or in a blend with international varieties. As with all grape varieties, there are numerous clones of Sangiovese, including Sangiovese, Brunello, Prugnolo, and Morellino.

In the 1980s and 1990s, a fair amount of Sangiovese was planted in California, but although the wines produced from those grapes were pleasant, they lacked traditional Sangiovese character. Based on the California experience, it appears that Sangiovese is at home in Italy but does not travel well.

TEMPRANILLO

OVER THE PAST several years, Tempranillo has received the recognition it has long deserved as the key to some of the finest wines produced in northern Spain, where it produces wines with sturdiness, a **BACKBONE** of acidity and tannin, and a depth of dark fruit flavors, such as plum and blackberry.

The most important growing areas for Tempranillo in Spain are Rioja, Ribera del Duero, and Catalonia. In Portugal, where it is known as Tinto Roriz, the grape is an important constituent in both dry red wines and the famous fortified wine Porto. There is a small amount of acreage dedicated to Tempranillo in California and in Australia.

TOURIGA NACIONAL

THIS IS THE MOST PRIZED and highly respected of all the grapes used in the production of Porto wines from the hot, baked Douro region of Portugal. Touriga Nacional is particularly admired for the dense, ripe, dark fruit qualities, high sugar content, and ripe tannin structure that ensure long, slow development in the bottle over ten years at least, if not twenty, thirty, or more. It is also used on a regular basis in the production of dry red wines from Douro and from the Dão region, also in Portugal.

MALBEC

IN THE RIGHT (that is, fairly warm) climate, this grape has long been prized for its ability to produce wines with a rich, ripe plum character, solid structure, and overtones of dried leaves and potpourri. The most-prized versions continue to come from Cahors in France and especially from the Mendoza region of Argentina, where it has become that nation's most important varietal. There is more Malbec planted in Argentina than in any other country.

In cooler climates, Malbec is appreciated for its ability to add color, dense fruit, and acidity to the basic Bordeaux-style blend of Cabernet Sauvignon and Merlot. As such, it has been increasingly adopted for blending by Cabernet Sauvignon winemakers in California and Australia.

Some French regions use the names Cot, Pressac, or Auxerrois for this grape.

PINOTAGE

THIS GRAPE TYPE was developed in South Africa as a vinifera cross between the hot-climate Cinsaut and the cooler-climate Pinot Noir in the hope of creating a more elegant and acidic grape still capable of offering plenty of ripe fruit as a wine. Overall the cross has been successful, but it produces good wine only when harvested at low yields and handling with extreme care in the winery. The best Pinotage wines show deep purple color, ripe dark berry fruit, and high, cleansing acidity.

SECONDARY RED GRAPE VARIETIES

AGIORGITIKO An important grape of Greece, grown chiefly on the peninsula of Peloponnese, producing the fine red wine Nemea.

AGLIANICO Native to Greece, this grape is planted throughout southern Italy, where it produces full-bodied wines; its best regions are Basilicata and Campania. There are some plantings in California.

ALICANTE BOUSCHET Widely grown in Spain for lesser-quality wine production. Once widely grown in California for the same purpose, but has decreased in acreage. Some renewed interest in California for producing Rhône-style wines.

BAGA Important in Portugal as a single-variety wine from Bairrada, or in a blend from the Beiras or Dão regions. High in tannins and acidity.

BLAUFRÄNKISCH Austria's leading quality red variety, it produces varietal wines and blends with good structure, forward fruit, and medium body. Known as Lemberger in Germany and Washington State.

BONARDA A very popular grape in Argentina, produced as a varietal wine and in blends. Needs a warm climate and ripens late in the season.

BRACHETTO This Italian grape produces pale red wines, usually sweet, sparkling or semi-sparkling style. The best come from the Acqui district of Piedmont.

CARIGNAN A grape that thrives in warmer climates such as California or southern France, where it is mostly used in blended wines. Known as Cariñena or Mazuelo in Spain.

CARMENÈRE A popular red grape of Chile, both on its own and in blended wines, providing color and soft, ripe berry fruit. Originally a blending grape of Bordeaux, where today very little Carmenère remains.

CINSAUT One of the grapes used in blends in the southern Rhône Valley of France. Some acreage in California. Widely planted in South Africa. (Sometimes spelled "Cinsault.")

CORVINA The most aromatic and acidic grape in the blend (with Rondinella or Molinara) to make Valpolicella and Bardolino in Veneto, Italy. When dried, the grape is the most important component in Amarone.

DOLCETTO Produces a delightful medium-bodied wine with black cherry and red fruit flavors in the Piedmont

region of Italy. Also grown in California, where it was, and sometimes still is, labeled as Charbono.

GROLLEAU Grown mostly in the Loire Valley for rosé wines or sparkling wines.

LAGREIN Grown in Trentino-Alto Adige, Italy, Lagrein produces a medium-bodied, fruit-driven wine that is enjoyably drinkable in its youth.

LAMBRUSCO Grown in the Emilia-Romagna region of Italy for the production of gently sparkling red wines, dry or sweet. Widely exported.

MENCIA A grape attracting notice primarily for the fresh, black fruit-driven wines produced in Spain's Bierzo region. Known as Jaen in Portugal.

NEGROAMARO An important grape for the wines of both Puglia and Sardinia, Italy. The wine is dark in color, tannic, and usually full-bodied.

NERO D'AVOLA From Sicily, producing medium- to full-bodied red wines of deep color and flavors of black fruits. Some plantings in Australia.

PETITE SIRAH Found mostly in California, this grape was often confused with Syrah, but it is a distinct variety in its own right: Durif, a natural cross of Syrah with Peloursin. Petite Sirah wines are quite full-bodied.

PETIT VERDOT One of the grapes authorized for use in the blends of red Bordeaux wines. Also being planted in California and Australia for blending.

PRIMITIVO Widely grown in southern Italy, and acknowledged to have the same genetic makeup as Zinfandel.

SAGRANTINO From Umbria, Italy, Sagrantino produces powerful wines with assertive fruit and tannins. The best examples come from the commune Montefalco.

TANNAT In the Basque region of France, Tannat is the dominant grape in the wine Madiran. A high-tannin grape, it is the single most important variety in Uruguay, where it has attracted international attention.

XINOMAVRO From Greece, meaning "acidic and black." Wines made from Xinomavro include the full-bodied Naoussa from Greek Macedonia.

ZWEIFELT Austria's most-planted grape, it produces moderately complex, fruit-driven wines that are gaining in international popularity.

SUMMARY

GRAPES COME IN MANY different varieties, far too numerous to list in this book. The grape varieties listed and described here are many of those that have received the most attention from grape growers, winemakers, and wine consumers around the world. Grape varieties are chosen by growers for their suitability to local growing conditions, for the flavors they offer, and for the marketability of the wines they produce. As with most plants, grapevines need to be tended, and growers will select the most appropriate pruning method and trellising system to obtain optimal flavor and yield.

RÉMUAGE

DOSAGE

botrytis

vinification

OAK

PRESSING

HARVEST

YEAST

TANNIN

VAT

malolactic

FERMENTATION

barrel

VINTAGE

AGING

FINING