

American Winemaking Comes of Age

Over the past three decades, a wine revolution has been taking place across the country, as Americans increasingly enjoy a glass of wine with their meals, vacation in “wine country,” and take immense pride in their regions’ vineyards and wineries. There are now more than 7,000 wine producers in the United States—up from 440 in 1970—and the boom has been heard around the world. America’s best bottles are every bit as good as the finest wines of Europe.

Although the United States is a relative toddler as a winemaking and wine-drinking nation, hitting its stride in the mid-twentieth century while its European counterparts have been at full sprint for hundreds of years, the timeline of this relatively short enological development is surprisingly complex. The fifty states may be united as a nation, but when it comes to winemaking history, culture, and viticulture, each may as well be its own country.

People were making wine here long before the nation even existed. French Huguenots built bases in Florida in the mid-1500s and produced wine from the native Scuppernong grape (an acquired taste even today). Around 1607, English immigrants seeking religious freedom landed on the Eastern seaboard of what would become America. Accustomed to drinking wine with their meals, the Pilgrims were pleased to find native grapevines, *Vitis labrusca* and *Vitis rotundifolia*, growing wild in their new home, but they were dismayed to discover that when fermented, these grapes made musky, unsavory wines—French clarets they were not.

So the settlers sent for *Vitis vinifera* cuttings from Europe—traditional varieties such as Cabernet Sauvignon and Riesling—and planted them in the cold, wet, and often humid conditions of their new home. These noble vines were ill suited to the climate and soils of Virginia, Maryland, New York, Massachusetts, and other early colonies, and most died within a few years of planting.

Around the same time, Spanish missionaries began moving northward from Mexico into New Mexico and later into the



“Queen of the Missions”

Santa Barbara, the tenth of the twenty-one missions established by Spanish monks in California more than two hundred years ago, includes a vineyard from which the missionaries produced wine for sacramental purposes.

On the crowded wine trail

The population of wineries in some regions has become so dense that visitors can spend a week in one area and still not have time to visit all the tasting rooms (opposite).



Missouri winemaking

Stone Hill is the oldest winery in Missouri, founded in 1847 by German immigrants, who were making 1.25 million gallons of wine per year by 1900. Abandoned during Prohibition, the winery was restored by the Held family in 1965 (Betty and Jim Held are shown here), and today it is one of the state's most important producers.

territory that was to be known as California. Between 1769 and 1824, Franciscan monks established twenty-one missions in that territory, planting the Mission grapes they had brought with them from Spain to make wine for communion purposes. California's Mediterranean-like climate proved conducive to successful Mission grape growing and winemaking.

East Coast vintners, however, continued to be destined for failure. Thomas Jefferson, the nation's first secretary of state and third president, was a great admirer and collector of Bordeaux wines. In the mid- to late-1700s, he attempted to grow European varieties at his Monticello estate in Virginia. But he, and other Eastern statesmen with cravings for claret, failed to grow and vinify Cabernet Sauvignon, Merlot, and Cabernet Franc, varieties that were then unsuited to the East Coast climate and soils. In Pennsylvania, German immigrants were experiencing similar disappointments with Riesling and Gewürztraminer plantings. There James Alexander, exasperated by his vinifera-based wines, converted to the native *Vitis labrusca* in the 1730s. Others followed, loading the wines with sugar to offset the musky aromas and flavors inherent in the grapes.

The country's first commercially successful winery was established in Cincinnati, Ohio, in the mid-1800s by banker Nicholas Longworth. Sparkling wines made from the native Catawba grape were his specialty, and the wines were so competently made that they became popular in England as well. But in the 1860s, disease decimated his vines, and Ohio winemakers scattered to New York and Missouri to begin again.

A real turn came in 1849, when Italian and French immigrants began to flood Northern California to seek their fortunes in gold mining. And they began to cultivate wine grapes,

including Zinfandel and Carignane, in the Sierra Foothills to make wines to slake their European thirst.

In the 1850s and '60s, European vintners faced a crippling crisis. Phylloxera, a root louse that saps the strength from vines, had made its way into Europe, most likely on cuttings from the United States, where native vines tolerated the bug and those planted on St. George rootstock—primarily Zinfandel, Petite Sirah, and Carignane—were resistant to it. When vines from America were propagated in France, the country that would be hardest-hit by phylloxera, the infestation exploded, killing vines at alarming rates.

At the same time, Americans were increasing their plantings of *Vitis vinifera*, using cuttings imported from Europe. These species were not resistant to phylloxera, so they, too, began to die. The remedy—grafting European varieties onto resistant American rootstock—slowly brought the vineyards back to life. (In the 1970s and '80s a rootstock believed to be phylloxera-proof was developed to produce large yields of high-quality grapes consistently. But it, in fact, proved susceptible to phylloxera, and California growers were forced to rip out their vines and replant with other rootstocks.)

While California and Europe struggled, vineyards in the east, planted in *labrusca*, continued to thrive, and researchers realized that by grafting French vinifera onto native *labrusca* rootstock, grape growers could have disease-resistant vines that produced drinkable wines in a more European style. These grafted vines, also planted throughout Europe, became common on the East Coast and in the South—a happy medium between disease-prone vinifera and the funky wines produced from *labrusca*.

When the gold ran out in California in the late 1850s, the miners moved to San Francisco, Sonoma, Napa, Mendocino, Southern California, and other warm areas, planting wine grapes on the sections of their properties that could not sustain such crops as tomatoes, peppers, squashes, orchard fruits, and nuts. These largely Italian and French settlers put wine grapes into ground that would later be deemed as hallowed by winemakers. The existence today of intense, characterful old-vine California red wines can be traced to the immigrants who planted and then maintained those first vines through Prohibition and beyond.

For the next few decades, the wine industry in the United States was largely local; nationally, interest in wine and its consumption was limited, and those who enjoyed wine often chose European bottles. The advent of Prohibition didn't help matters any.

Prohibition was spurred by a decades-long temperance movement, whose advocates held that intoxication led to crime, debauchery, and the ruination of society. Their initial calls for moderation in the consumption of wine, beer, and spirits evolved into demands for a total ban on the production, transportation, and sale of "demon drink," and their wishes were granted by the 1919 ratification of the 18th Amendment to the Constitution and the implementation of the law via the Volstead Act in 1920.

THE LEGACY OF PROHIBITION

Since Colonial times, America has had temperance periods, some national, others limited to specific states or regions within states. Various government, religious, and public health leaders have voiced their concerns about the effects of alcohol on the populace, viewing such drinks as threats to physical and spiritual health.

When Prohibition began in 1920, approximately one-half of the states already had laws prohibiting or limiting alcohol manufacture. Upon Repeal in 1933, several of those states continued to ban booze—some until as late as 1966, when “farm winery acts” began to be put into place, granting farmers the right to produce and sell wines made from their own crops. Not only had alcohol consumption become less objectionable in these straggler states (most of them in the Midwest and South), agricultural economics were also at play, with state officials seeing additional revenues from wine excise and sales taxes,

as well as the money to be made from wine-based tourism.

Kansas was the first state to actively prohibit alcoholic beverage production, in 1881 (at the time, Maine had such a law on its books, but rarely enforced it). Kansas didn’t end its state prohibition until 1948; Oklahoma (1959) and Missouri (1966) were the last to lift such laws and put farm winery regulations in place. One can only imagine the advanced state of the grape growing and winemaking in America today, had Prohibition not stalled progress.

And remnants of Prohibition remain. The 21st Amendment guarantees that states can retain the authority to control alcoholic production, distribution, and sales within their borders. Thus, some states, counties, and even cities have a crazy quilt of regulations specific to them, often contradictory and archaic.

Several counties in the Bible Belt are “dry” to this day, with virtually no alcohol sales

permitted. In 2011, there were nearly two hundred dry counties in Tennessee, Arkansas, Mississippi, and Alabama alone. So-called moist counties allow wine and beer to be sold, but not spirits. Across the country, some regions prohibit alcohol sales on Sundays; others limit the number of hours in a day that alcohol can be sold. In New York State, groceries and higher-strength alcoholic beverages are still strictly separated: grocery stores cannot sell wine or spirits, and liquor stores cannot sell beer or food. And, it is illegal for anyone relocating to Utah from out of state to drive his or her wine collection across the border unless they’ve first paid taxes on the value of the bottles.

Gotham goes dry

Although religious objections to alcohol consumption played a part, Prohibition was largely a result of the belief that a reduction of inebriation would effect a decrease in crime, marital unfaithfulness, and health issues. In actuality, it allowed mobsters to control liquor sales and establish an estimated 100,000 speakeasies in New York City alone.





Judgment of Paris, triumph of American wines

In 1976, the stunning victory of California wines over French in a blind tasting put America on the world winemaking map. The tasting was conducted by, from right, Steven Spurrier and Patricia Gallagher. Visible beyond them are judges Pierre Tari, Pierre Brejoux, and Christian Vanneque of La Tour d'Argent.

For nearly fourteen years, commercial production of wine and other alcoholic beverages was illegal, although wineries could bottle wine for sacramental and medicinal purposes. But drinking didn't stop, and demand increased. Bootleggers flourished, underground speakeasies were packed, and mobsters such as Al Capone controlled the transport and sale of illicit beverages. At the same time, Americans learned to ferment and brew their own in bathtubs or hidden stills.

It is difficult to know exactly how much Prohibition affected the amount of alcohol consumed in the United States, because without taxes collected on the sale of alcohol, the government had no way of tracking the volume produced and consumed. One thing is certain: Prohibition stopped winemaking dead in its tracks throughout the country. By 1933, when President Franklin D. Roosevelt ushered the 21st Amendment repealing Prohibition through Congress, only a handful of farmers had kept their vineyards in production, and few others were eager to plant anew. And some states continued to make alcohol production illegal long after national Prohibition ended (see box p. 3).

Starting in the 1930s, California producers such as Paul Masson, Almaden, and Gallo began aggressively marketing jug wines—one-gallon bottles of slightly sweet, inexpensive wines made from blends of different grape varieties and bearing generic names such as “Chablis” or “Burgundy.” They were distributed nationally in liquor and grocery stores and became popular throughout the country. Other producers, however, such as Beringer Vineyards, Inglenook, and Beaulieu Vineyard, among others, began making high-end wines as well, and with great success. By the early 1970s, a wave of newcomers, including Warren Winiarski at Stag's Leap Wine Cellars and Jim Barrett at Chateau Montelena, both in Napa Valley, had staked their success on the production of fine French-style wines. The problem was that little attention was paid to them on an international level—until they became the unexpected winners of a blind tasting of top-quality wines held in Paris in 1976. Organized by British wine merchant Steven Spurrier and his American colleague Patricia Gallagher, the “Judgment of Paris” invited British and French wine critics to rate a series of French white Burgundies and red Bordeaux against California Chardonnays and Cabernet Sauvignons. The sweep by the Americans in both categories shocked the European wine community and gave U.S. vintners a huge boost of confidence in their abilities and potential.

The 1970s were also marked by the production of inexpensive sweet wines made from California Central Valley grapes and sometimes enhanced with additional flavorings. More adult soda pop than Sancerre, these simple, fruity wines from such brands as Annie Green Springs, Boone's Farm, and Spañada became the gateway to wine for many American consumers. Giant producers based in the Central Valley, such as E. & J. Gallo and United Vintners, churned out tremendous volumes of these easy-drinking wines, using marketing magic to entice Americans to buy a bottle and thereby add a splash of culture to their lives.

Yet no one wine can claim to have won over more U.S. wine lovers than white Zinfandel, created in 1973 by Bob Trinchero of Sutter Home Winery in California's Napa Valley. A “happy mistake” in winemaking produced a pink, slightly sweet Zinfandel that was embraced by Americans unaccustomed to drinking dry wine, and white Zin remains a huge seller today.

Beginning in the 1970s, Champagne producers recognized the potential of California as a premium winegrowing area, with Moët & Chandon, G. H. Mumm, and Louis Roederer establishing vineyards and wineries for the purpose of making sparkling wine. By the early 1990s, there was so much interest in California wines that those made from hybrid and native grapes

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Safeguarding the vines

Vines such as the head-pruned Zinfandel, Carignane, and Alicante Bouschet planted in 1895 on the Saitone Ranch in Russian River Valley are protected by California's Historic Vineyard Society.



GRAPE VARIETIES GROWN IN THE UNITED STATES

Most drinkers of American-made wines identify them by grape variety and not by the region in which the grapes are grown, as is the custom in Europe. In France's Burgundy region, for example, it is understood that Chardonnay is the predominant white grape, so "Chardonnay" doesn't appear on labels; the appellation and vineyard are the most important information, as they indicate the style of wine in the bottle.

Unlike most European wine zones, the American Viticultural Area (AVA) system places no restrictions on which varieties can be grown where, so the name of the predominant grape is what consumers look for on labels. Some vintners assign proprietary names to their wines without designating the grapes used.

While the *Vitis vinifera* wines of Europe have been models for many American makers, vintners planting grapes in climates too challenging for *vinifera* have found success with native American and hybrid varieties. These vines have adapted to or been bred for regions that are too cold, too humid, and/or too prone to disease for *vinifera* to survive. The availability of French-American and American hybrid varieties, and improved methods of growing grapes native to the United States, have led to the boom in American winemaking.

Vitis vinifera

Developed in Europe, these grape varieties need warm summers and moderate winter temperatures. In the United States, the West Coast dominates this category, although a few other states, including Michigan, New York, Texas, and Virginia, have been successful with *vinifera* when it is planted in suitable soil and climate.

WHITES

Chardonnay—The most-planted wine grape in California and also a star performer in Washington, Oregon, Virginia, and parts of New York state, Chardonnay is remarkably malleable and can be grown successfully in cool, warm, and hot climates. Like most *vinifera* varieties, however, it cannot survive Midwest deep freezes nor the rot-inducing humidity of the Deep South. There are two basic Chardonnay styles: rich, sometimes buttery, and with toast, vanillin, and spice notes from oak barrel fermentation and aging; and leaner, crisper wines that see little or no contact with oak.

Pinot Gris—A mutation of the red Pinot Noir grape, Pinot Gris tolerates warm and cold climates and is widely planted in the United States. Its name comes from the gray-ish ("gris") to pinkish-brown color of the grapes, although the juice inside is clear. It ripens early, making it a good choice for farmers in regions where the growing season is short. Some winemakers label their Pinot Gris as Pinot Grigio, which suggests a lighter, crisper, less fruity wine.

Riesling—This noble variety is one of the few *vinifera* types that thrives in cold temperatures during the growing season, although it is susceptible to injury in bitterly cold areas in winter and early spring. Riesling styles range from bone-dry and somewhat austere to semidry, semisweet, late-harvest dessert wines, and ice wines. Crackling acidity and minerality are hallmarks of great Riesling, and in New York's Finger Lakes region and on Michigan's Old Mission and Leelanau peninsulas, the grapes reach full maturity with their natural acidity intact. Washington, the No. 1 Riesling-producing state by volume, is a bit warmer, and its Rieslings tend to be fruitier and slightly richer.

Sauvignon Blanc—Although smatterings of Sauvignon Blanc plantings exist in the United States, California is its ground zero, with more than 15,000 acres planted. It's a vigorous plant that enjoys warm-to-hot summers, and usually produces wines with lemon, lime, grapefruit, and herbal characteristics; when grown in warm zones, Sauvignon Blanc tends to show a melon and tropical-fruit personality. Stainless-steel-fermented versions are lean and crisp; oak-fermented styles are more dense and layered.

REDS

Cabernet Franc—This vine flourishes in many soil types, and in both cool and warm regions. It's the go-to red *vinifera* grape along the Atlantic seaboard, as it ripens earlier than Cabernet Sauvignon and thus dodges fall rainstorms and drops in temperature that force grapevines to shut down before clusters have fully ripened. Cabernet Franc is arguably Virginia's best red grape, as well as New York State's. In the West, winemakers use Cab Franc in their Bordeaux-style blends for its aromas and freshness, and it is increasingly being bottled as a stand-alone varietal.

Cabernet Sauvignon—The variety responsible for the muscular "King of Wine" is a late ripener and is therefore limited to regions that have long, warm, dry growing seasons—California, Washington, Arizona, and Texas, in particular, with Virginia, Maryland, and New York's Long Island also suited when the grape is planted in the right spots.

Merlot—Known for producing red wines that are softer and more drinkable in their youth than Cabernet Sauvignon, Merlot typically ripens a few weeks earlier than Cabernet, and has a better chance of ripening in cool areas. Sunny California and Washington are the nation's Merlot leaders, yet Long Island in New York State is just as adept at producing high-quality Merlots, albeit in a leaner, more European style. The variety is frequently blended with other red grapes, and it's not uncommon to see Merlot in some of Arizona's and Virginia's best red wines.



Cabernet Sauvignon

Pinot Noir—The Burgundian variety prized for its precision, silky tannins, and ethereal qualities is, like Cabernet Sauvignon, a wine many vintners aspire to make, yet few have the opportunity. Pinot Noir is particular about where it is planted—it loves limestone soils and cool but not cold climates—and only Oregon and certain regions in California (Russian River Valley, Sonoma Coast, Santa Cruz Mountains, Santa Barbara County) have proved consistently adept with the grape.

Syrah—Wines made from this variety run the gamut from crisp and restrained to ripe and juicy to meaty and earthy; soils and climate largely determine the style of wine. Often blended with Mourvèdre and Grenache, Syrah wines are produced not only in California and Washington, where they have achieved some fame, but also in other warm growing regions, among them Arizona, New Mexico, Texas, and Virginia.

Zinfandel—California has a virtual monopoly on Zinfandel (although there are a few producers in Oregon and Washington). European immigrants planted Zinfandel and other varieties in California after the 1849 Gold Rush, and because the vines were on phylloxera-resistant rootstock, many have survived to this day.

Also: WHITE—Gewürztraminer, Marsanne, Muscat, Pinot Blanc, Roussanne, Viognier; RED—Alicante Bouschet, Barbera, Carignane, Grenache, Malbec, Mourvèdre, Petite Sirah, Petit Verdot, Sangiovese, Tempranillo (see box p. 157).

Native American varieties

The *Vitis labrusca* and *Vitis rotundifolia* vine species that early settlers found growing wild on the East Coast didn't produce particularly palatable wines. Varieties of these species are now grown for juice, jams, and jellies, but in skilled hands they can be transformed into rewarding wines.

Concord—Grapey and simple, this purple labrusca variety is primarily used to make juices, jams, jellies, and the popular kosher wine Manischewitz. Michigan, Pennsylvania, and New York are the major growers of Concord, with much of their production going to Welch's.

Muscadine—This group of *Vitis rotundifolia* includes the specific varieties Carlos and Scuppernong for white wines, and Noble for reds. Muscadines have a high tolerance for the humidity and fungal diseases typical in the South—in Florida, Kentucky, North Carolina, and Mississippi, to name the most prominent states—and produce mostly sweet, viscous wines that have a candied-fruit, musky aroma.

Niagara—As Concord's white labrusca counterpart, Niagara has a similar "foxy," musky character that tastes foreign to those accustomed to vinifera wines. Production is centered largely in New York State, where the wines are made in semisweet and sweet styles.

Norton—a.k.a. Cynthiana, this native *Vitis aestivalis* grape produces a full-bodied, spicy red wine. Norton is tolerant of humidity and is thus widely cultivated in Missouri and Virginia, with pockets of plantings in the Midwest and Texas. Although it's a native species, Norton/Cynthiana lacks the musky, foxy aroma of other native varieties, and is capable of making high-quality, dry red wines.

Also: Catawba (red).



Niagara



Norton

Hybrid varieties

French-American hybrids are genetic crosses of *Vitis vinifera* and native American species made by French breeders. More recently, American hybrids have been developed by the University of Minnesota and New York's Cornell University, intended to have a higher tolerance for harsh winter conditions than French-American hybrids.

WHITES

Brianna—This relatively new (introduced in 2001), cold-tolerant variety has quickly become a standout white-wine grape in the Midwest, particularly in Iowa, Minnesota, and Nebraska. Brianna can be produced in off-dry and semisweet styles, and displays rich, exotic pineapple, mango, and papaya flavors that are balanced by brisk acidity. Expect more frigid regions to embrace Brianna, as news of its potential spreads.

(continued)

GRAPE VARIETIES GROWN IN THE UNITED STATES *(continued)*

La Crescent—Producing white wines reminiscent of floral Rieslings, this vinifera hybrid was bred at the University of Minnesota to withstand -35°F winter temperatures, and is a popular choice for growers in the frigid Midwest and Great Lakes regions.

Seyval—This French-American hybrid produces dry and semidry, medium-bodied whites that can have an herbal accent. It's a popular grape in New York and Missouri.

Traminette—A white variety bred to withstand harsh winters, Traminette has the floral and spice character of one of its parents, Gewürztraminer. It has become one of Michigan's best white-wine varieties, and Indiana producers created a "Try on Traminette" campaign to promote the wine to consumers.

Vidal Blanc—A cold-hardy French-American hybrid, it makes full-bodied, fruity, and floral whites, and is also excellent for ice wine. New York's Finger Lakes region is the hub for Vidal Blanc production, with small volumes also produced in Missouri, Ohio, and Pennsylvania.

Vignoles—This cold-hardy French-American hybrid is similar to Vidal Blanc in its character and growing regions.

REDS

Chambourcin—This French-American hybrid produces wines with bright red-fruit flavors, herbaceous aromas, firm tannins, and crisp acidity. While it doesn't tolerate the harsh winter temperatures of the Great Lakes region, it is especially suited to the less-challenging climates of Illinois, Indiana, Ohio, and Pennsylvania.

Frontenac—This University of Minnesota hybrid makes robust red wines with palate-refreshing acidity. The vines withstand -30°F temperatures in winter and emerge in spring to pump out grapes with lively cherry and berry character. Frontenac has quickly become a superstar grape in the Midwest and New England.

Marechal Foch—A dark-skinned French-American hybrid, "Foch" makes medium-bodied wines with black cherry flavors, and also flavorful rosés. Popular with Midwest winemakers, it can handle cold winters, yet isn't as cold-hardy as Frontenac and Marquette.

Marquette—Popular with growers in the Midwest and New England, this hybrid is similar to Frontenac.

Also: WHITE—Blanc du Bois, Brianna, Cayuga White, Chardonel, Edelweiss, La Crosse, Melody, St. Pepin, Stover, Valvin Muscat;
RED—Baco Noir, Black Spanish (a.k.a. Lenoir, Jacquez, Blue French), Corot Noir, Léon Millot, Noiret, St. Croix.



La Crescent



Chambourcin

east of the Rockies had taken a backseat. Today, the state is the overwhelming leader in U.S. viticulture, with around 80 percent of American grapevines (many of them for raisin production and the table), followed by Washington, New York, Oregon, Texas, New Jersey, Virginia, Michigan, and Pennsylvania. California's influence, however, is now being countered by the emergence of quality wines from other states, with consumers becoming interested in wines from their own backyards, whether made from native grapes, French-American hybrids, or *Vitis vinifera* or from fruits such as raspberries, cherries, and apples.

In these other regions, vintners are discovering which varieties perform best in their terroir. In Virginia, Viognier and Cabernet Franc stand out. Norton is a star in Missouri. Finger Lakes Rieslings from New York State can be stunning, and Michigan's Rieslings, Gewürztraminers, and Pinot Blancs shine. Cabernet Franc and Merlot from New York's Long Island can be splendid, and Gruet in New Mexico makes serious sparkling wines using Champagne techniques and grapes (Chardonnay and Pinot Noir). Certain American and French-American hybrid grapes such as Seyval, Chambourcin, and Marquette flourish in challenging climates.

Growing the Grapes

It's a cliché much used by vintners, but it's absolutely true: Great wines are made in the vineyard. Without perfectly ripened, high-quality grapes, winemakers have zero chance of producing outstanding wine. To that end, whether with *Vitis vinifera*, native vines, or hybrids, grape growing in America has made tremendous strides in a relatively short period of time. Trial and error, research by university agricultural departments, and advice from international consultants have put American viticulture on the fast track to success. Following the lead of the University of California at Davis, which for decades has been the primary training ground for U.S. winemakers as well as for many foreign vintners, other universities throughout the country have established viticulture and winemaking departments to address the specific needs of their regions and to train future growers and winemakers. The industry has also taken on a greenish hue, as growers increasingly implement sustainable, organic, and biodynamic practices, both to increase wine quality and to reduce environmental impacts.

Each growing region has its own issues, related to climate, soils, elevation, pests, disease, availability of irrigation and frost-protection water, and cultural factors that affect grape growing. For example, while farmers without access to reliable well, river, lake, or stored rainfall water must dry-farm their vines, others with available water choose to dry-farm, believing that it produces more intense fruit character in the grapes and conserves a valuable natural resource.



Pierce's Disease

This Merlot vine shows the effects of Pierce's disease, a bacterium transferred to vines by winged sharpshooter insects. The infection causes blockage of the water-conducting system of the plant; without sufficient water, a vine's leaves dry out and become discolored (called scorching), and grape clusters shrivel or raisin. Although quality wines can be produced from them, affected vines typically die within five years.

In the East, multicolored Asian lady beetles can hitchhike from grapes to fermenters and impart a surprisingly strong, and undesirable, peanut-buttery aroma and taste to wines. In the West, however, the beetle's cousin, the ladybug, is a farmer's friend, devouring aphids and other insects that damage vines and grapes without imparting any foreign flavor.

Growers throughout the United States continue to battle two nasty vine destroyers: phylloxera, the root louse that wiped out European grapevines in the 1860s and many California vineyards in the 1980s and 1990s, and Pierce's disease (PD), a bacterial infection. Phylloxera is a tiny aphid-like insect that feeds on *vinifera* roots, slowly sucking the sap out of them until the vine dies. The PD bacteria are spread by leafhoppers called glassy-winged sharpshooters; infected vines can die within one to five years, and entire vineyards have been lost to PD.

In the case of both pests, there are no cures, only preventive measures. PD- and phylloxera-resistant rootstocks have been developed and continue to evolve. To prevent PD, growers plant vines far away from sharpshooter feeding and breeding areas, such as riverbanks and citrus groves. Because the phylloxera louse has been known to travel on farm equipment and workers' boots, thorough cleaning is mandatory to prevent its spread. Most states have Integrated Pest Management (IPM) programs to educate and assist farmers with these and other vineyard pests.

The increasing availability of grapevine selections, or clones, has had a major impact on the quality gains made in U.S. winemaking. California's Foundation Plant Services and programs such as France's ENTAV (Etablissement National Technique pour l'Amélioration de la Viticulture) and Geisenheim Research Institute in Germany continue to make new clones available, and the benefits are twofold: Growers have much more choice in selecting



UNITED STATES OF AMERICA

The map shows the relative extent of grape growing and wine production as of 2012. Vineyard acreage is given for states with significant plantings.



the best clones for their growing conditions, and winemakers can tweak quality and increase complexity in their wines.

However, there is little doubt that contraband cuttings helped establish some of America’s greatest vineyards. Tales are rife of vintners tucking vine cuttings from Bordeaux and Burgundy into their boxer shorts or suitcases and bringing them into the United States illegally, circumventing five-year quarantines on foreign plant material, in place to prevent the introduction of diseased vines and other plants into the country. (Such illicit efforts are largely impossible today

because of the intense scrutiny passengers and their bags get at airports.)

Mechanical harvesting, pruning, and canopy management have been introduced in areas where hands-on labor is unavailable or unaffordable. Viticulturists continue to learn more about how much water their vines need, and when they need it. Research is ongoing in such areas as trellising and canopy management, crop load, pruning, and cover crop rotations, all part of how vineyard practices are constantly being adapted to improve wine quality.

New York State Ice Wine

Frigid weather conditions in upstate New York in late fall allow Leonard Oakes Estate Winery, in the Niagara Escarpment AVA, to harvest Vidal Blanc after the grapes have frozen on the vines. The frozen grapes will be pressed to make ice wine.

And momentum is building for the practice of sustainable winegrowing, which includes organic and biodynamic methods. By replacing synthetic pesticides, herbicides, and fertilizers with natural alternatives, growers and vintners are being kinder to the

land and their neighbors. Some are erecting owl boxes and raptor perches to host insect- and gopher-hungry birds. Cover crops prevent soil erosion and host beneficial insects. Sheep grazing on weeds between vine rows eliminate the need for chemical herbicides. Compost replaces harsh fertilizers. While the climate in some regions limits growers in their response to fungal disease, the trend across the country is to have as little chemical impact on the land as possible.

By far the most laudable development is the acknowledgment by growers and winemakers that certain grape varieties do well in some places but are unsuited to others. Everyone wants to produce Cabernet Sauvignon and/or Pinot Noir, France's most important wines, but few regions here have the soil and climate to support these grapes. Many have learned this the hard way; savvy growers have done their homework and now plant varieties suited to their climate and soil conditions.

The Letter of the Law

Where a particular vineyard is located greatly influences the style of wine in the bottle. Determining a wine's precise geographical origins is the job of the American Viticultural Area (AVA) system, administered by the U.S. Treasury Department's Alcohol and Tobacco Tax and Trade Bureau (TTB), which does what its name implies—collects taxes on production and sales of alcohol and tobacco and sets federal alcohol policies for wine label certification, varietal and alcohol content of U.S. wines, and more. Winemakers must also adhere to laws within their own states on the production, labeling, and sales of their wines.

AVAs, patterned after France's Appellation d'Origine Contrôlée (AOC) system, recognize specific winegrowing areas for their climate, soil, elevation, exposure, and historical significance. Loosely, an AVA is defined as "a viticultural area for American wine as a delimited grape-growing region distinguishable by geographical features, the boundaries of which have been recognized and defined.... These designations allow vintners and consumers to attribute a given quality, reputation, or other characteristic of a wine made from grapes grown in an area to its geographic origin. The establishment of viticultural areas allows vintners to describe more accurately the origin of their wines to consumers and helps consumers to identify wines they may purchase."

If only this were entirely true. The diversity of varieties planted within any AVA (growers can plant any grape types they choose, not the case in French AOCs), the varied viticultural and winemaking practices conducted within it, the abilities of winemakers to blend several varieties into one wine, and the emergence of sub-AVAs within larger AVAs complicate things so much that consumers have no solid guarantees of quality or character from AVA alone when they purchase a bottle of wine they haven't tried before.



Alexana Winery

Oregon's Dundee Hills AVA, where Alexana is located, was established in part on the basis of its topography and unique soil types.

The AVA system is also very young. Europeans have had centuries to sort out their appellations, but the first AVA was established only in 1980, for the Augusta region of Missouri (California's Napa Valley AVA was approved eight months later). It has been suggested by some that the United States should produce wine for another fifty years, then begin to draw appellational boundaries, but the horses are already out of the barn. Today there are more than two hundred AVAs, plus innumerable state and county political appellations that appear on wine labels.

The AVA approval process is based on petitioners stating their reasons for acceptance; if they're persuasive, their request is opened to public comment on the TTB website. Unless there are strenuous objections, most AVAs pass muster. TTB doesn't inspect the regions, look at the soils, determine the climate, or taste the wines.

The New Winemaking

Old-time U.S. winemakers grew grapes, crushed them with their feet or in buckets, put the juice and skins into redwood tanks, tossed in some yeast, and let nature do the rest. Voilà—wine!

WHAT'S IN A LABEL?

All labels affixed to commercial wines made in the United States must be approved by the Alcohol and Tobacco Tax and Trade Bureau (TTB) and adhere to precise standards. A COLA (Certification of Label Approval) is issued only to labels that meet numerous criteria for specific characteristics, including varietal (or breakdown of grape varieties), appellation, vintage, alcohol percentage, and mandatory health/sulfite warnings.

Varietal makeup of wines varies by AVA and appellation, as well as state to state. In most cases, a wine must be made from a minimum of 75 percent of a particular grape in order to be labeled by that grape variety name (Cabernet Sauvignon, Chardonnay, Riesling, etc.).

A wine must contain at least 85 percent of grapes from the AVA stated on the label, or 100 percent if the wine is estate designated. A minimum 95 percent of the wine must come from a vineyard designated on the label.

Wines with proprietary, rather than varietal, names—such as Opus One in Napa Valley and Col Solare in the Red Mountain AVA of Washington State—typically don't list their varietal content, and when they do, this information is usually on the back label.

TTB requires an alcohol-by-volume (abv) listing on all labels, though such labeling is not always precise. For wines with 14 percent abv or less, TTB allows the percentage stated to vary by as much as 1.5 percent from the actual alcohol content. Thus, a wine labeled "Alcohol 12.5 percent by volume" can have an actual alcohol content of as little as 11 percent or as much as 14 percent. Wines at 14.1 percent and above have a label tolerance of 1 percent. However, once a wine reaches 14.1 percent actual alcohol, the label variance can only go up; it cannot go down. That means that a wine with 14.5 percent abv cannot be labeled 13.5 percent, but it can actually be as high as 15.5 percent.

In 2001, TTB began the lengthy process of updating its rulemaking regarding approved wine grape varietal names for U.S. wines. At the time, fifty-five varieties were approved for use on labels; many others will likely be added as producers experiment with a growing number of grape types in an attempt to match varieties with their soil and climatic conditions. Who would have thought ten years ago that California would produce Grüner Veltliner?

TTB has also sought more precise definitions for such terms as "Estate Bottled," "Reserve," "Barrel Select," and "Old Vine" among others, which have traditionally been marketing terms with little legal clout. One grower's "old vines" may be only ten years old (though they are "older" than the vines he planted five years ago). It's easy to find \$4 bottles of wine with "Reserve" in the brand name, making the term meaningless. TTB has cracked down in recent years on the use of wine names "borrowed" from European wine regions. U.S. winemakers who want to label their fortified red wines as "Port" can no longer do so unless they were grandfathered in before the new regulation became official. "Burgundy," "Chablis," "Sherry," "Champagne," and other terms are prohibited from use unless wineries have a long history of using these terms. Korbels' "California Champagne" will continue to live a long life, even though no wine connoisseur would ever confuse Korbels with Krug. Since 1987, "Contains Sulfites" labels have been required on

alcoholic beverages containing at least 10 parts per million of sulfites, which are used as preservatives. In 1989, the government began requiring all wine bottles to include this statement, in capital letters:

GOVERNMENT WARNING:

(1) ACCORDING TO THE SURGEON GENERAL, WOMEN SHOULD NOT DRINK ALCOHOLIC BEVERAGES DURING PREGNANCY BECAUSE OF THE RISK OF BIRTH DEFECTS.

(2) CONSUMPTION OF ALCOHOLIC BEVERAGES IMPAIRS YOUR ABILITY TO DRIVE A CAR OR OPERATE MACHINERY, AND MAY CAUSE HEALTH PROBLEMS.

There is talk within the U.S. Food and Drug Administration that wines should have two additional labels beyond what is already required: for ingredients (yeast, egg whites used for fining, etc.) and nutritional content (calories, carbohydrates, etc.), so that consumers know exactly what they're getting. Vegans and those with certain allergies might want to know if egg whites or isinglass (fish bladder) were used to filter a wine, for example.

Such regulations have not yet been put into place, but in 2009, renegade Randall Graham, proprietor of Bonny Doon Vineyard in the Santa Cruz Mountains of California, began listing the ingredients of his wines on the back labels. Graham also details the amount of sulfur dioxide (SO₂) used at bottling for consumers concerned about its use. These are noble gestures to be sure, but Graham is also tweaking the noses of those who set wine label policy, by providing information voluntarily before the government tells him he must. A handful of other producers have followed his lead, among them Shinn Estate on Long Island.

*V*in Gris de Cigars is the pink analogue of Le Cigare Volant, our flagship named in honor of the cigar-shaped alien craft banned from landing in the vineyards of Châteauneuf-du-Pape by decree of the village council in 1954. Utilizing prominent Southern French grapes, vin gris is a wine made from the lightest pressings of a noir.

We farm using sustainable practices, with the belief that this discipline is well suited to restoring vital life-forces to our soil and promoting the farm as something akin to a self-sustaining organism. Our winemaking practice is exceptionally light-handed, with minimal intervention and manipulation—unplugged or "aroustic." Equally we are committed to greater transparency. To this end, we append a list of ingredients used in the production of this wine. To learn more, we encourage terrestrial visitations of our Cellar Door in Santa Cruz, and communications with the Mothership telephonically at 833.819.6789 and aetherially at bonnydoonvineyard.com.

**PRODUCED & BOTTLED BY BONNY DOON VINEYARD
SANTA CRUZ, CA • USA • EARTH • 2011 CENTRAL COAST PINK WINE
CONTAINS SULFITES • ALCOHOL 13.5% BY VOLUME • 750 ML**

Ingredients: 75% GRENACHE, 10% MOURVÈDRE, 8% GRENACHE BLANC, 5% ROUSSANNE, 4% CINSAULT grapes, tartaric acid, and sulfur dioxide. In the winemaking process, the following were utilized: Indigenous yeast, yeast nutrients, and bentonite. At the time of bottling, this product contained 60 ppm total SO₂ and 20 ppm free SO₂.

GOVERNMENT WARNING: (1) ACCORDING TO THE SURGEON GENERAL, WOMEN SHOULD NOT DRINK ALCOHOLIC BEVERAGES DURING PREGNANCY BECAUSE OF THE RISK OF BIRTH DEFECTS. (2) CONSUMPTION OF ALCOHOLIC BEVERAGES IMPAIRS YOUR ABILITY TO DRIVE A CAR OR OPERATE MACHINERY, AND MAY CAUSE HEALTH PROBLEMS.

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Bonny Doon label

Proprietor Randall Graham includes ample information on his labels, specifying not only the planet the grapes were grown on but also technical information, such as exact winemaking ingredients, that most other wineries don't provide.

Such rudimentary techniques are long gone, replaced by methods that apply science and technology to the vinous gifts nature provides. Among recent trends: White grapes are no longer crushed, they're gently pressed (some red grapes are too) so that the skins and seeds impart as little harshness as possible. Before the grapes reach the press or crusher, they are meticulously sorted, mechanically and/or by hand, to remove unripe berries and shriveled raisins.

Once the grapes are crushed or pressed, the resulting grape must is inoculated with special yeasts or allowed to ferment on its own with the native yeasts present on the grapes and in the winery. Though red wines meant for long-term cellaring need tannic structure, the tannins should be integrated with the intensity of the fruit and the natural acidity in the grapes. The tannin level can be controlled by adjusting elements of the maceration—soaking the juice with the skins and sometimes stems before and/or after fermentation. In some regions, it's legal to add acid during winemaking; in others, it's prohibited. The same is true for the technique of adding sugar during fermentation, called chaptalization, which can increase a wine's alcohol content and body. In California, it's illegal; in Oregon, it's acceptable.

French oak barrels for the fermentation and aging of wine, which cost upward of \$1,000 each depending on the exchange rate, are fabulous for certain wines, giving them toast and vanilla aromas and flavors and layered texture. American oak barrels from Missouri, Minnesota, and other states cost half as much and are useful for wines for which the winemaker desires stronger characteristics, such as dill or coconut. Inner staves, chips, tea bags, and other “oak products” are available to those who can't afford oak barrels or who make inexpensive wines for which barrels are out of the financial question.

Micro-oxygenation (bubbling air into wine) is a trick to transform high-tannin wines into softer, more accessible ones that can be enjoyed the day they're purchased. Filtration, reverse osmosis, and spinning-cone technology can lower the alcohol content in wines, remove wildfire smoke taint, and reduce volatile acidity.

Yet for all this new technology, the most accomplished winemakers prefer to use as little of it as possible. By sourcing high-quality grapes, picking them at ideal ripeness, handling them carefully, fermenting and/or aging the wine in the appropriate vessels (often with ambient, rather than commercial, yeasts), and keeping a constant watch in the cellar, they save money—and create a finer, more natural wine.

Our Love Affair with Wine

America has become a nation of wine drinkers. In 2011, it moved ahead of Italy and France to become the No. 1 wine-consuming country, purchasing 311.3 million 12-bottle cases (the equivalent of 3.735 billion bottles) that year, according to a

report from VinExpo/International Wine & Spirit Research. The report also predicted that U.S. wine consumption would increase 10 percent between 2011 and 2015.

In the last two decades or so, wine has moved from the fringes of American culture—the drink of elites and immigrants—to the center of the table. Better marketing and wider availability has something to do with it: Globalization has been a friend to the food and wine industry, whetting American appetites for new tastes. But so does improvement in American winemaking. In addition, discount retailers have expanded their selections, making fine wine within reach of more people, and hundreds of Internet wine bloggers have spread their knowledge and passion.

The United States has also become a nation of wine-makers—the world's fourth-largest wine producer, trailing only France, Italy, and Spain. California was once the only state in the game, but in 2002, Pointe of View Winery was established in North Dakota, its first commercial winery, making that state the fiftieth to climb aboard the country's fast-moving wine production train. According to WinesVinesDATA, there were 7,345 wineries in America in 2012, an increase of 450 from the previous year; in 1970, just 440 wineries crushed grapes in this country.

Production has soared in regions outside the traditional California-Oregon-Washington triumvirate, thanks in part to the availability of hybrid grape varieties developed to withstand cold temperatures, humid conditions, and/or certain plant diseases and pests. Every year, new winegrowing areas are being discovered by vineyardists and winemakers who understand that planting specific varieties in specific places can lead to quality wines. Young maverick winemakers without deep pockets can enter the business by purchasing grapes and processing them at custom-crush wineries or co-ops, where they can lease space and equipment. Such facilities have also given rise to small-scale wineries located in the centers of big cities.

Nationally, several major wine and food festivals draw thousands of wine and food lovers to tastings, seminars, and winemaker dinners—among them the *Food & Wine* Classic in Aspen, Colorado; the Sun Valley Center for the Arts Wine Auction in Idaho; and the Naples (Florida) Winter Wine Festival.

Wine tourism is booming, and not just in Napa, Sonoma, Willamette Valley, and Walla Walla. Wineries throughout the United States draw visitors for the chance to taste their wines, as well as for vineyard and cellar tours.

Important changes in the law have also made buying wine easier. A groundbreaking U.S. Supreme Court decision in 2005, *Granholm v. Heald*, struck down laws in Michigan and New York State that made it a crime for out-of-state producers to ship wine to consumers in those two states while



In celebration of food and wine

Americans' booming interest in wine has led to a proliferation of tasting and educational events, such as the venerable *Food & Wine Classic* in Aspen, Colorado, as well as more intimate regional affairs that showcase local wines and foods.

permitting in-state wineries to ship to locals. The Court ruled that such discrimination violated the U.S. Commerce Clause, which serves to ensure a level playing field for businesses throughout the country. But the Court didn't endorse direct shipping per se; it merely said that states had to treat in- and out-of-state producers the same way when it comes to shipping wines to consumers. As a result, a few states that previously allowed their own wineries to ship to state residents have banned such deliveries altogether, while others opened the floodgates to wine shipments.

Today most states allow at least some shipping of wine from producer to consumer, thereby bypassing wholesalers and retailers, although some have restrictions, require special permits, and/or charge fees to wineries and those who order from them. In 2012, seven states had outright bans on shipping wine and other alcoholic beverages: Alabama, Arkansas, Mississippi, Oklahoma, Pennsylvania, South Dakota, and Utah.

The law in this area remains a moving target, but in most states, consumers can now purchase U.S. wine online and have it delivered to their door, circumventing the post-Prohibition model of the "three-tier" system, which requires producers to sell their alcoholic beverages to wholesalers, who sell to retailers/restaurateurs, who sell to consumers.

American wine lovers now have access not only to the locally produced wines of their own regions, but also to those from

other states and around the world. With "local" and "artisanal" the catchwords of a rising cultural movement, the boom in U.S. wine production increasingly offers something for everyone, from collectors of the highest-profile bottlings to visitors who want to sample the specialties of a region and learn more about wine.

A NOTE ON OUR "SNAPSHOTS"

Throughout the book Snapshot boxes present capsule information about major winegrowing regions. AVAs and figures for vineyard acreage and wineries reflect industry information at the time this book went to press. Where states do not separate wine grape acreage from table and juice-grape acreage, this is noted. In regions with low vineyard acreage and/or few wineries, Snapshot categories may vary for practical reasons.

Most-planted varieties are listed in descending order of acreage; where appropriate, best varieties are singled out. For most regions, we have selected key wineries in the categories Trailblazers (historic/early wineries in the region), Steady hands (consistently reliable), Superstars (some of the most sought-after names), and One to watch (up-and-coming, new, or particularly innovative producers). Not all Snapshots have examples in all four categories.

An evolving aspect of winemaking in the United States is the establishment of AVAs, which recognize wine regions for their specific soils, climates, elevations, exposures, and histories. As this book went to press, several AVA petitions filed with the Alcohol and Tobacco Tax and Trade Bureau (TTB) were pending; they are not detailed here, as AVA approval—or rejection—can take two or more years of analysis, followed by a public comment period on petitions.