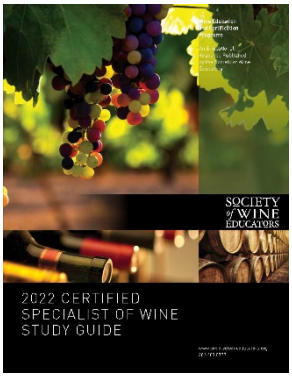
Addendum regarding:

The 2022 Certified Specialist of Wine Study Guide, as published by the Society of Wine Educators



This document outlines the substantive changes to the 2022 Study Guide as compared to the 2021 version of the CSW Study Guide. All page numbers reference the 2021 version.

Note: Many of our regional wine maps have been updated. The new maps are available on the member portal of the SWE website.

Page 12: the entry on vanillin has been updated to read as follows: Vanillin is an aromatic phenolic compound in oak that imparts a vanilla scent to barrel-aged wines. While vanilla aromas are often associated with American oak, the amount of vanillin present in the wood varies according to several factors—including the level of seasoning used in the preparation of the barrel and the age and size of the barrel—as well as species of oak. In general, the level of vanillin increases (as compared to raw oak) with light to medium toast levels and may decrease with the use of heavier levels of toast.

Page 21: the second paragraph on the right-hand side of the page has been updated to read as follows: Beyond vinifera, there are several grape species native to North America that are also important to the wine industry, although not necessarily for wine production. One such example—*Vitis labrusca*—while commercially important, is primarily appreciated for its sweet, flavorful grapes that are used for fresh consumption or unfermented grape juice. Labrusca grapevines were found growing wild in America during the colonial period and were cultivated for winemaking, but these grapes were found to have extremely high acidity and a characteristic flavor component—often described as a *foxy* character—that, while pleasant in fresh grapes, is generally less desirable in wine.

Page 24: the entry under the heading "Chardonnay" has been updated so that it reads as follows: Chardonnay is among the world's most popular white grape varieties, with wide recognition among consumers. It is considered relatively easy to grow and as such, is planted in nearly every major wine-producing area in the world.

The variety is thought to be indigenous to the Burgundy region of France, and many consider it to produce its highest expression when planted in the area's limestone soils. It is also important in nearby Champagne for the region's classic sparkling wines. Hoping to replicate the outstanding wines of Burgundy and Champagne, winegrowers around the world have planted Chardonnay and, in some cooler climates, have produced similarly styled wines.

However, Chardonnay can show markedly distinctive characteristics depending on the climate. Chardonnay planted in warmer climates will generally have ripe, tropical fruit flavors and will produce wines with high alcohol and considerable body. In contrast, grapes grown in cooler climates will tend to have citrus flavors and green fruit aromas and will produce wines with crisp acidity and a light to medium body.

Chardonnay is among the white grape varieties that are most likely to benefit from interaction with wood and is often aged in new oak barrels to allow it to take on flavors from the oak. Oak-aged Chardonnay is often considered to be quite age-worthy and likely to improve with time in the bottle. Many topflight white Burgundies, for example, can continue to evolve toward a more complex and flavorful wine for a decade or more.

However, there are also many examples of Chardonnay that are unaged, as well as those that are briefly aged in used barrels (which impart little, if any, oak flavor) or in stainless steel tanks.
While Chardonnay is rarely made into a truly sweet wine, it is not unusual for winemakers to leave a minimally detectable amount of residual sugar in the wine to round out the body and appeal to a certain type of consumer.

Page 55: the bullet point for "punching down" was revised to read as follows: Punching down: physically pushing the cap down into the juice; also known by the French term *pigéage*

Page 58: the first paragraph under the heading "Rosé Wine Production" was revised to read as follows): Rosé is basically defined as a pink wine—although the actual color may range from pale pink to dusty rose, or even an orange-tinged pink sometimes called *salmon* or *onion skin*. Rosé wines are produced—at least in part—from red grapes, and are made in many styles including still (non-sparkling), sparkling, dry, off-dry, and sweet. While many consumers assume that any pink wine is sweet, in reality, the amount of residual sugar in a rosé depends on when the fermentation is halted—a decision that is purely up to the winemaker.

The amount of color in a rosé wine depends on the grape varieties themselves and the amount of time the juice is allowed to remain in contact with the grape skins. Alternative methods of rosé production include fermenting a portion of white grapes together with a batch of red grapes (co-fermentation) or blending a small amount of red wine with a finished white wine (although this practice most often seen in the production of sparkling wine).

Page 69: the section under the heading "Partial Fermentation Method" was revised to read as follows: The partial fermentation method is used for certain low-alcohol, sweet sparkling wines such as Italy's Moscato d'Asti; as such, it is sometimes referred to as the *Asti method*. Rather than conducting a full fermentation of the base wine followed by a later second fermentation, this method involves a single, incomplete fermentation. In many cases, the initial carbon dioxide produced via fermentation is allowed to escape, after which the tank is sealed and pressurized. When the desired levels of alcohol and carbon dioxide pressure are reached, the wine is chilled to the point that fermentation is halted; later, the wine is sterile-filtered and bottled.

The partial fermentation method results in a low-pressure (around 2.5 atm), low-alcohol wine (often containing just 5% to 6% abv). Such wines typically contain significant residual sugar and—with little to no autolytic character—the fruity, often floral scents inherent in the grapes are retained as primary aroma and flavor components. Due to the low pressure, wine produced using this method may be bottled with a standard cork.

Page 70: the following was added to the content in the section on the Ancestral Method:
Pétillant Naturel: While the term is not officially regulated nor legally defined, sparkling wine produced using the ancestral method (or something similar to it) may be described as *Pétillant Naturel* (a French term that roughly translates as "naturally sparkling"), or *Pét-Nat.* Wine produced in the Pét-Nat style is lightly sparkling and often somewhat rustic. In addition, such wines may be bottled unfiltered, lending a slightly cloudy appearance due to the presence of lees.

Page 82: the information on global wine production was updated to read as follows:
The global volume of wine produced in 2020 is estimated at 260 million hectoliters (mhl), the equivalent of nearly 2.9 billion cases of wine.

According to the International Organization of Vine and Wine (OIV), 2020 represents just a small (1%) increase in wine production over 2019. These two years combined represent something of a return to

typical levels of worldwide wine production after the record high of 2018 (292 mhl) and the record low of 2017 (250 mhl). Aside from these exceptions, the annual global production of wine has remained somewhat stable since 2004, typically amounting to between 260 and 270 million hectoliters per year.

Of the total volume of wine produced throughout the world in 2020, it is approximated that 65% was produced in Europe, 10% in South America, 10% in North America, 6% in Asia, 5% in Oceania, and 4% in Africa.

Page 82: the information on China was updated to read as follows: China has recently joined this rank of world leaders in terms of vineyard acreage; recent statistics show that China is currently in the global top three in terms of total vineyard acreage, following Spain and France.

Page 82: Table 8–1 (Top Ten Countries by leading Wine Indices) has been updated to read as follows:

Table 8–1: Comparison of Top Ten Countries by Leading Industry Indices (2020)

COMPARISON OF TOP TEN COUNTRIES BY LEADING INDUSTRY INDICES (2020)				
Vineyard Acreage	**Wine Production**	**Wine Consumption**	**Wine Exports (by volume)**	**Wine Imports (by volume)**
Spain	Italy	United States	Italy	United Kingdom
France	France	France	Spain	Germany
China	Spain	Italy	France	United States
Italy	United States	Germany	Chile	France
Turkey	Argentina	United Kingdom	Australia	The Netherlands
United States	Australia	China	Argentina	Canada
Argentina	South Africa	Russia	United States	China
Chile	Chile	Spain	South Africa	Russia
Portugal	Germany	Argentina	Germany	Belgium
Romania	China	Australia	Portugal	Portugal

Sources: International Organization of Vine and Wine (OIV), Statistical Report on World Vitiviniculture, 2021

Page 93: the number of IGP appellations in France was updated to read as follows: In recent years, there has been a great deal of change and consolidation in the IGP regions of France, but as of December 2021, there were a total of 77 IGP/vin de pay designations.

Page 95: the information on the grapes of Bordeaux was updated to include the following: In April of 2021, six new grape varieties—including four red grapes (Arinarnoa, Castets, Marselan, and Touriga Nacional), and two white grapes (Albariño and Lilorila)—were approved for limited use in the wines of the Bordeaux and Bordeaux Supérieur AOCs. The inclusion of these grape varieties represents an effort to lessen the long-term effects of climate change on the wine industry of Bordeaux. The new grapes (combined) cannot exceed 10% of the blend in any given wine.

Page 100: the following update was added to the section on the St.-Émilion Grand Cru Classé: In early 2021, several of the leading châteaux of St.-Émilion announced that they would not be submitting applications for the planned renewal of the *St.-Émilion Grand Cru Classé* classification (scheduled for 2022). As a result, the future of this classification is uncertain.

Page 124: the second paragraph under the heading Languedoc-Roussillon was updated to read as follows: The Languedoc AOC (formerly known as the *Coteaux du Languedoc AOC*) covers much of the entire Languedoc-Roussillon area from the Spanish border to the French city of Nîmes. This large appellation allows many growers in the region the opportunity to move up from Pays d'Oc IGP to AOC status for wines based on the grapes traditional to the region. The long list of red grape varieties approved for use in the Languedoc AOC includes Grenache, Syrah, Mourvèdre, Cinsault, and Carignan. White wines are based around the Piquepoul Blanc variety and may include Bourboulenc, Clairette, Grenache Blanc, Marsanne, Roussanne, and Vermentino (among others).

Page 128: the section under the heading "Italian Grape Varieties" was updated to read as follows: The wines of Italy are largely reliant upon the country's assortment of indigenous grape varieties, despite the fact that some international grapes have been well established in certain areas of the country for more than a century. Some of Italy's native grapes—such as Sangiovese and Barbera—can now be found throughout the world, while many others—such as Nebbiolo and Cortese—remain planted *almost* exclusively at home.

Sangiovese is the leading red grape of Italy, and while it is grown in many regions, it is known primarily for its use in the most famous wines of Tuscany. Other leading red grapes of Italy include Montepulciano, Barbera, Nero d'Avola, and Primitivo; Merlot and Cabernet Sauvignon are well-represented as well. Trebbiano Toscano (known elsewhere as Ugni Blanc) and Pinot Grigio (Pinot Gris) are the leading white grapes of the country. Both of these grapes are grown in several regions across the country. Other important white grapes include Glera, Catarratto, Garganega, Moscato (Muscat), and Chardonnay.

Many Italian varieties have been growing in isolated areas for so long that they have diverged into an array of clones or subvarieties with distinct characteristics. Thus, Italian wines made from a given grape variety may vary widely in quality and flavor profile due not only to the differences in terroir, but also to the variations among clones. Some varieties have mutated into red, white, and pink versions. Often, the major subvarieties have names based on locations—such as Trebbiano Toscano—or based on other notable characteristics—such as Sangiovese Grosso (large). There are more than 400 grape varieties allowed for use in the quality wines of Italy; including the subvarieties, the number comes closer to 2,000.

Page 132: the section under the heading "Grape Varieties" was updated to read as follows: The red varieties most closely associated with Veneto are Corvina, Corvinone, and Rondinella, which have traditionally been blended together in several of the region's best-known red wines. Corvina is generally considered to be the quality grape of the three and typically makes up the largest part of the blend. For a long time, it was believed that Corvinone was a clone of Corvina, but new evidence has revealed it to be a distinct (although closely related) variety. As such, regulations regarding its use have been in flux.

The primary white grape of Veneto is Garganega—well known for its use in Soave. Glera, another indigenous white variety, provides the basis for the region's highly successful sparkling wines. International varieties—including Merlot, Cabernet Sauvignon, Cabernet Franc, Pinot Grigio (Pinot Gris), Pinot Bianco (Pinot Blanc), and Chardonnay—are also well represented in Veneto.

Page 138: the section on "Grape Varieties" was updated to include the following: In addition to Sangiovese, there are several indigenous red varieties that are used in small quantities as blending grapes. Canaiolo Nero—prized for its velvety texture—is the most significant, along with Colorino—appreciated for its deep pigment and tannins, which add color and structure to a blend. International red varieties—including Cabernet Sauvignon, Cabernet Franc, Merlot, Syrah, and Pinot Noir (among others)—appear in blends or as varietal wines.

The leading white grapes of Tuscany include Trebbiano Toscano, Malvasia Bianca Lunga, Vermentino, and Vernaccia. International varieties—including Chardonnay, Sauvignon Blanc, and Viognier—are being grown in increasing amounts as well.

Page 143: the section under the heading "Campania" was updated to read as follows: Campania—the region surrounding the city of Naples and Mount Vesuvius—is the most populated region of the southern peninsula. This area is familiar to tourists, and therefore its wines are relatively well-known abroad. One of the best-known wines of Campania is Taurasi DOCG, a red wine with fine aging potential made from the bold, red Aglianico grape. Aglianico is found in many places around the southern peninsula, including the neighboring Basilicata region. The volcanic soil of Campania also produces several white wines of great character, notably Fiano di Avellino DOCG—an elegant white wine based on the Fiano grape—and Greco di Tufo DOCG (made predominantly from the Greco di Tufo variety, believed to be a clone of Greco Bianco).

Page 147: the information regarding Spanish appellations of origin was updated to include the following:

- As of December 2021, there were seven regions that held this classification: Cangas, Valles de Benavente, Valtiendas, Sierra Salamanca, Las Islas Canarias, Cebreros, and Legrija.
- As of December 2021, Spain has 68 DOs; this number has remained relatively stable for several years, but it could change in the future.
- As of December 2021, there were 21 vinos de pago, but this number is likely to increase.

Page 149: the section under the heading "Toro" was updated to read as follows: Named for the town of Toro, the Toro DO is primarily known for powerful red wines based on Tempranillo, locally known as *Tinta de Toro*. The area is also planted to small amounts of Garnacha (used in some red wines, but primarily vinified into rosé), and an even smaller percentage of white grapes, most notably Malvasia Blanca, Verdejo, and Albillo Real. The Toro DO is located on a high plateau between two mountain ranges, with most vineyards planted at altitudes of 2,000 to 2,800 feet (600–800 m) above sea level.

Page 149: the following section was added: Bierzo—The Bierzo DO lies just to the east of the border between Castilla y León and Galicia. Accordingly, its climate can be described as somewhat transitional—between the cooler influences of Green Spain and the warmer, drier areas inland. Bierzo is best known for its flavorful red wines (and some *rosado*) produced from the Mencía grape variety.

Page 152: the following information was updated: As of December 2021, Castilla-La Mancha is home to 12 vinos de pago; this is more than any other region of Spain.

Page 156: the section on CAVA has been updated to read as follows:
Cava is one of Spain's leading, high-quality sparkling wines. The term *Cava* refers to the process by which the wines are made, since these *método tradicional* sparkling wines are aged in a cellar or a cave. Cava may be produced as a white (blanco) or rosé (rosado) sparkling wine.

Geography of the Cava DO: The geography of the Cava designation is unique in that it is scattered across the country. The majority of the vineyards (representing as much as 95% of the total Cava production) are located in Catalonia, within the Comtats de Barcelona Zone. This zone—considered to be the "spiritual heart" of the Cava designation—is centered around the municipality of San Sadurní de Noya (Sant Sadurní d'Anoia), where the first bottles of Cava were produced in 1872.

Other areas that are approved for the production of Cava DO include the Ebro Valley, the Levante (located in the province of Valencia), and the Viñedos de Almendralejo (Almendralejo vineyards), located further south in Extremadura.

Grape Varieties: The three classic grape varieties for Cava are Macabeo, Xarel-lo, and Parellada, all of which are white. Other varieties have been added to the list of approved grapes, including Chardonnay, Malvasia (Subirat Parent), Pinot Noir, Garnacha, Monastrell, and Trepat (a red grape believed to be native to Catalonia).

Cava de Guarda: In 2021, *Cava de Guarda*—a new tier of high-quality wines tied to specific qualitative standards—was introduced. To qualify as a Cava de Guarda, a wine must be traceable from the vineyard to the bottle. To further qualify as a Cava de Guarda Superior, the wine must meet guidelines for maximum yield as well as the following standards: the vines must be at least 10 years of age, the grapes must be grown organically (granted with a five-year period allowed for transition), and the wine must be vintage-dated.

Table 11–3: Cava Production Requirements

CAVA PRODUCTION REQUIREMENTS	
CAVA DESIGNATION	PRODUCTION REQUIREMENTS
Cava	Minimum 9 months of lees aging
Cava de Guarda	Minimum 9 months of lees aging Additional production standards (see above)
Cava Reserva	Minimum 18 months of lees aging
Cava de Guarda Superior	Minimum 18 months of lees aging Additional production standards (see above)
Cava Gran Reserva	Minimum 30 months of lees aging Must be brut-level sweetness or drier
Cava de Paraje Calificado	Minimum 36 months of lees aging Must be sourced from a single, qualified location/ vineyard Must be brut-level sweetness or drier

Page 157-158: the following updates were made to table 11-4: PDO Wines of Spain

- Andalucía: the Granada VCIG was promoted to a DO (Granada DO)
- Castilla y León: the name of the Tierra de León DO was changed to León DO
- Castilla y León: the Vino de Pago Urueña (approved in 2021) was added

Page 166: the section on Lisboa was updated to read as follows: West and north of the city of Lisbon, the Lisboa VR produces a great deal of Portugal's regional wine. White wines—based on the Arinto grape—are fresh and crisp, while reds are fruit-forward with a good value-to-quality ratio. Key red grapes include Bastardo, Trincadeira, and Ramisco, but international varieties (both red and white) are now permitted. The area is also known for its brandy—including those made in the Lourinhã DOC, an appellation for aguardente (brandy) rather than wine.

The small DOC of Colares—located alongside the Atlantic coastline and dangerously in the path of suburban sprawl—is known for its unique vineyards planted among the sand. Due to the strong ocean breezes, many of the vineyards are surrounded by protective windbreaks created out of sand dunes and

wooden fences. Wines produced in Colares include high-acid, high-tannin reds based on the Ramisco grape variety and aromatic whites based on Malvasia.

Page 170: the section on German grape varieties was updated to include the following information: Spätburgunder (Pinot Noir)—the leading red grape variety—is surprisingly widespread; in recent years its acreage has increased such that it is now the country's second most widely planted grape overall (after Riesling).

Page 171: the section on German Wine Laws/Quality levels was updated to include the following: ABELS": The Future of Geographical Indications in Germany: Beginning in 2020, a few new PDO regions were registered in Germany. These regions—which include the *Monzinger Niederberg* PDO in the Nahe and the *Uhlen Blaufüsser Lay* PDO in the Mosel—are small, very specific areas within the larger Anbaugebiete. In addition, their rules dictate the use of approved grape varieties, limits on yield, and certain required methods of production—similar to an *appellation d'origine contrôlée* (AOC) as used in France. These new PDOs represent a departure from the typical label designations previously used in Germany.

Furthermore, in April of 2021, new guidelines were announced regarding the future of geographical indications in Germany. The new regulations—which include an expanded emphasis on village-, commune- and vineyard-specific appellations—are expected to be implemented as of the 2025 vintage.

Page 198: the introduction to the section on Israel was updated to include the following: Israel is a small country located on the eastern edge of the Mediterranean Sea. The region's ancient history of grape growing, wine production, and exportation of wine before the common era (BCE) is well-known and widely documented. Throughout the centuries—and despite the obstacles of desert heat, intermittent drought, and periodic warfare—the area has persisted in the production of high-quality grapes and wine.

The present-day wine industry in the region dates to the late 1800s. In 1855, the Cremisan Wine Estate—along with the Cremisan Monastery of the Salesian Order—was established in the area between Jerusalem and the West Bank. Around this same time, Baron Edmond de Rothschild (1845-1934), one of the owners of Bordeaux's Château Lafite, began to invest in the region. He purchased property in the area around Mount Carmel, imported modern production equipment, and provided vine cuttings from Château Lafite. The enterprise thus founded—Carmel Winery—is now the largest-producing winery in the area.

Page 199: the introduction to the wines of the United States was updated to include the following: According to the American Association of Wine Economists (AAWE), there are now more than 16,000 bonded wineries in the US, with at least one in all fifty states.

Page 200: the section on the history of American wine was expanded to include the following:
It is believed that many Native American tribes produced fermented beverages—including beer, fruit wine, grape wine, and other products—well before contact with European colonists. For instance, the Pueblo peoples produced a type of corn-based beer, as witnessed by pottery fragments dating back to 828 BCE discovered at an archeological dig at Pueblo Bonito (in Chaco Canyon, New Mexico). Likewise, the Apache and Maricopa people produced wine from the fruit of the saguaro cactus, and it is believed that the Zuni people made a range of fermented beverages using aloe, corn, prickly pear, agave, and/or grapes. Other examples—including raspberry wine produced by Native Alaskans and a fermented beverage produced from the roots of Hawaiian ti plant—abound.

European colonists arrived in North American with a taste for—and knowledge of the production of—vinifera-based wine. Upon their arrival on the American East Coast, the colonists discovered native North American grapes growing in the wild. These grapes were used to produce wine as early as the 1560s in Florida and in the Jamestown colony by the 1600s. However, these early attempts at winemaking in the eastern colonies proved difficult, as the native grapes had an unexpected flavor that was considered somewhat unpalatable. Sometime later, when European vines were brought to the colonies, they failed to thrive and eventually died off. It is now known that the imported grapevines had little resistance to the local plant diseases and especially to the root louse phylloxera. However, elsewhere in North America, vinifera grapes were successfully planted—and vinifera-based wine was produced—in Texas and New Mexico by the 1620s, and in California beginning in the 1770s.

Page 204: the information on US wine laws was updated to include the following: As of December 2021, 260 distinct AVAs had been approved in over 30 different states; of these, 142 are in California (and these numbers are sure to increase in the future).

Page 211: the information under the heading "Major Winegrowing Areas of California" was updated to include the following: As of December 2021, California has 142 AVAs.

Page 217: the paragraph on the Cole Ranch AVA was expanded to read as follows: Mendocino County is home to the smallest AVA within the United States—the Cole Ranch AVA. Named after Ohio native John Cole, who planted the first vines in the area in the 1970s, the tiny appellation sits between the Russian River (to the east) and the Anderson Valley (to the west). The AVA's 60 acres (24 ha) of vines are largely planted to Cabernet Sauvignon, Merlot, Pinot Noir, and Riesling.

Page 222: the information on Washington appellations was updated to include the following: As of December 2021, Washington has 19 AVAs—with all but one located in the rain shadow east of the Cascade Mountains.

Page 222: the following was added as a new Washington State AVA—White Bluffs AVA: The White Bluffs AVA—registered in July of 2021—is situated atop an elevated plateau that averages 200 feet (60 m) higher than the surrounding area. This elevation provides a degree of protection against frosts and freezing temperatures. The area is named for a deep layer of lakebed sediment (the Ringold Formation) that is whitish in color and visible in places alongside the Columbia River.

Page 223: The information on the Royal Slope AVA was updated to read as follows: The Royal Slope AVA is almost entirely located on a series of gently rolling, south-facing slopes with elevations ranging from 610 feet (186 m) to 1,756 feet (535 m) above sea level.

Page 223: the following was added as a new Washington State AVA—The Burn of Columbia Valley AVA: The Burn of Columbia Valley AVA, registered in July of 2021, is a triangle-shaped appellation located alongside the north bank of the Columbia River. The topography of the area—comprised mainly of southeast-facing benchland sloping towards the river—makes it a bit warmer than much of the surrounding region. Cabernet Sauvignon is the leading variety.

Page 223: the information regarding the Yakima Valley AVA and its sub-appellations was updated to read as follows**:** The Yakima Valley AVA—with vineyards planted on either side of the winding Yakima River—was the state's first appellation and accounts for over one-third of the vineyards. This is one of the few areas in Washington State planted to a majority of white grapes, and its primary grape is Chardonnay. Other leading grape varieties include Cabernet Sauvignon, Merlot, Riesling, and Syrah. In recent years,

several small sub-appellations have been approved within the confines of the Yakima Valley AVA. These include the following:

- Rattlesnake Hills AVA
- Red Mountain AVA
- Snipes Mountain AVA
- Candy Mountain AVA
- Goose Gap AVA

Page 224: in the information on Oregon's grape varieties was updated to include the following: Oregon's premier grape variety is unquestionably Pinot Noir, which makes up close to 60% of the vineyard acreage. Other leading red grapes include Cabernet Sauvignon and Merlot. The top white variety is Pinot Gris, followed by Chardonnay, Riesling, and Pinot Blanc.

To a lesser extent, some producers are working with Syrah, Viognier, Tempranillo, and other Mediterranean varieties, many of which are sourced from the warmer areas in the southern reaches of the state.

Page 225: the information on Oregon appellations was updated to include the following:

- As of December 2021, there are 22 AVAs in Oregon.
- The number of Willamette Valley sub-appellations was updated to 10, and the Lower Long Tom AVA was added to the list.

Page 229-230: the section on the leading grape varieties of Argentina was updated to include the following information: please revise the section under the heading "Grape Varieties" to read as follows: Historically, the wine industry of Argentina focused on a group of grape varieties—including the light red/pink-skinned grapes Criolla Grande, Criolla Chica, and Cereza—descended from the original vines (known as *País* or *Mission* grapes) brought into South America from Europe in the sixteenth century. As the wine industry of Argentina matured, many of these vines were replaced; however, they still account for nearly a third of all plantings in the country. In decades past, the Criolla family of grapes was used primarily to produce inexpensive bulk wines; nonetheless, this too is evolving as the industry seeks to preserve the heritage of these vines and extend their use in higher-quality wines.

These days, Argentina is best known for two key grape varieties: Malbec and Torrontés. Malbec, a French grape from the area around Bordeaux, has become the country's signature red grape variety. Argentine Malbec tends to be deeply colored—often inky and opaque—and have corresponding fruit flavors of blackberry and plum.

The key white grape, Torrontés, produces a light-bodied wine with pronounced fruity and floral aromas. Torrontés has recently been determined to be at least three distinct varieties: Torrontés Mendocino, Torrontés Riojano, and Torrontés Sanjuanino. Of these, Torrontés Riojano is by far the most widely grown.

The remaining inventory of grape varieties planted in Argentina is long and diverse, with international varieties well represented. The leading reds include Bonarda Argentina (recently proven to be genetically identical to the grape known as *Douce Noire* in France and *Charbono* in California), Cabernet Sauvignon, and Syrah. Leading white grapes include Chardonnay, Moscatel de Alejandria, Sauvignon Blanc, Chenin Blanc, and Viognier. Pedro Giménez, while widely grown, is used primarily in the production of bulk wine, fortified wine, and blends.

Page 242: the information on the leading grapes of Australia has been updated to include the following: Australia's white wines have also been in great demand in export markets. Chardonnay is the most

prevalent white grape, accounting for more than half of all white wine production. Other leading white grape varieties include Sauvignon Blanc, Riesling, Semillon (an important product of the Hunter Valley), Viognier, and Pinot Gris.

Other varieties with significant plantings include Pinot Noir, Chenin Blanc, Gordo Blanco (Muscat of Alexandria) and Muscat Blanc à Petits Grains. In line with Australia's emphasis on innovation and diversity, a range of alternative varieties—including Vermentino, Fiano, Sangiovese, Barbera, Cabernet Franc, Touriga Nacional, and Grüner Veltliner (among others)—are being planted across the country.

Page 259: the introductory material under the heading "China" was updated to read as follows: While China has a long history of wine production reaching back several thousand years, it is only recently that the consumption of fine wine has become widespread among portions of the population. Beginning with the economic reforms of the 1980s and a more recent influx of investors from international wine- and spirit-producing powerhouses, domestic wine production increased steadily until 2016; since then, growth has leveled off or even slowed in some parts of the industry.

However, the numbers remain impressive, and with approximately 1,940,000 acres (785,000 ha) under vine, China is now considered one of the world leaders in grape and wine production. The country has over 500 wineries along with an estimated 52 million wine drinkers (Wine Intelligence). Domestically-produced wine—including a large majority made by Changyu Pioneer Wine Company and the China Great Wall Wine Company, the country's largest producers—accounts for nearly half of the wine consumed in the country. Dry red wines are the dominant style produced in China, comprising four-fifths of the total volume.

Page 271: the discussion of wine aromas was revised to include the following: Wine is known to contain a complex range of aromas that may be categorized as primary, secondary, and tertiary aromas (although not all wines will contain all three types). These aroma categories are defined as follows:

- Primary aromas: Primary aromas are derived from the grape variety (or varieties)—as influenced by terroir, climate, and other factors in the vineyard—and the initial fermentation. Fruity and floral notes are often considered to be primary aromas.
- Secondary aromas: Secondary aromas are created via post-fermentation winemaking processes and procedures, such as lees contact, oak aging, post-fermentation oxidation, and/or malolactic fermentation. Some examples of (possible) secondary aromas include buttery notes, vanilla, clove, wood-derived aromas, and the scent of "bread dough" often detected in Champagne.
- Tertiary aromas: Tertiary aromas are the result of the aging process. Examples of tertiary aromas that may arise as a result of extensive bottle aging include leather, mushroom, toffee, or forest floor (among others); sweet white wines may also develop aromas of honey or dried fruit. Wine that undergoes extensive barrel aging, such as Tawny Port, may also develop tertiary aromas (including coffee, toffee, or caramel). Tertiary aromas may be referred to as a wine's *bouquet.*

Page 272-273: the information under the heading of "touch" (now updated to read "Tactile Sensation/Touch") has been expanded to include the following: Astringency is a tasting term most often associated with young, powerful red wines. Often related to tannins, astringency is a textural, drying sensation felt on the palate as a result of the shrinking, puckering, or contraction of the tissues of the mouth. Moderate astringency can nicely offset the richness of a fatty meal, but higher levels can make a wine seem unpalatable, and may signal that a wine could benefit from further aging.

Page 276: the information on bitterness taste sensation has been expanded to include the following: Bitter tastes in red wines are often the result of tannins. This statement, however, must be viewed with caution as a variety of different tannins (such as those derived from grapes and those derived from oak)

may be found in red wine, and tannins obviously evolve in character over the life of the wine. White wines—even those without any perceptible tannin or oak contact—may also contain bitter taste components. White wines that are typically low-acid—such as certain examples of Viognier and Gewürztraminer—are likely to demonstrate some degree of bitterness. Bitter tastes in wine that are derived from phenolic compounds are often referred to as *phenolic bitterness.*

The following glossary items were added or revised:

- **Astringency:** A textural, drying sensation felt on the palate resulting from the shrinking, puckering, or contraction of the tissues of the mouth; often related to tannins
- **Complexity:** Complexity is one of the most subjective descriptions used in wine evaluation. Complexity in wine typically comes from "layers" of scents and flavors, and is often derived from a mix of primary, secondary, and (sometimes) tertiary characteristics—many of which may be revealed only as the wine evolves in the glass. Complexity—along with its ability to hold one's interest—is a desirable component of many high-quality wines.
- **Martinotti method:** An Italian term for the Charmat (bulk) method of sparkling wine production; named in honor of Federico Martinotti (1860-1924)
- **Pétillant Naturel:** French. 1. Literally, sparkling natural/naturally sparkling; 2. Unofficial term used to describe certain lightly sparkling wines produced using some version of the ancestral method; often abbreviated as "Pét-Nat"
- **Pigéage:** French. The form of cap management known as "punching down"