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July 16, 2019 | Woodinville, WA

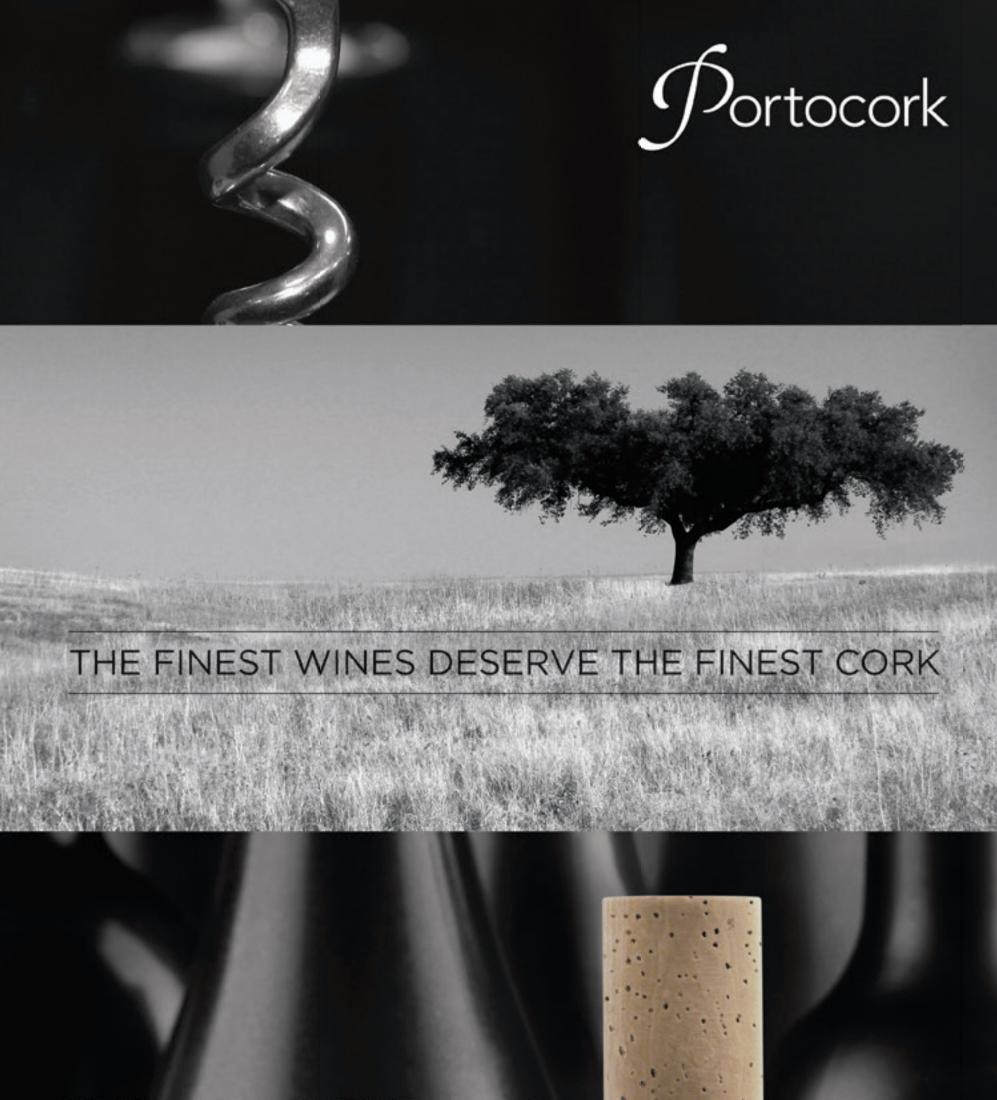


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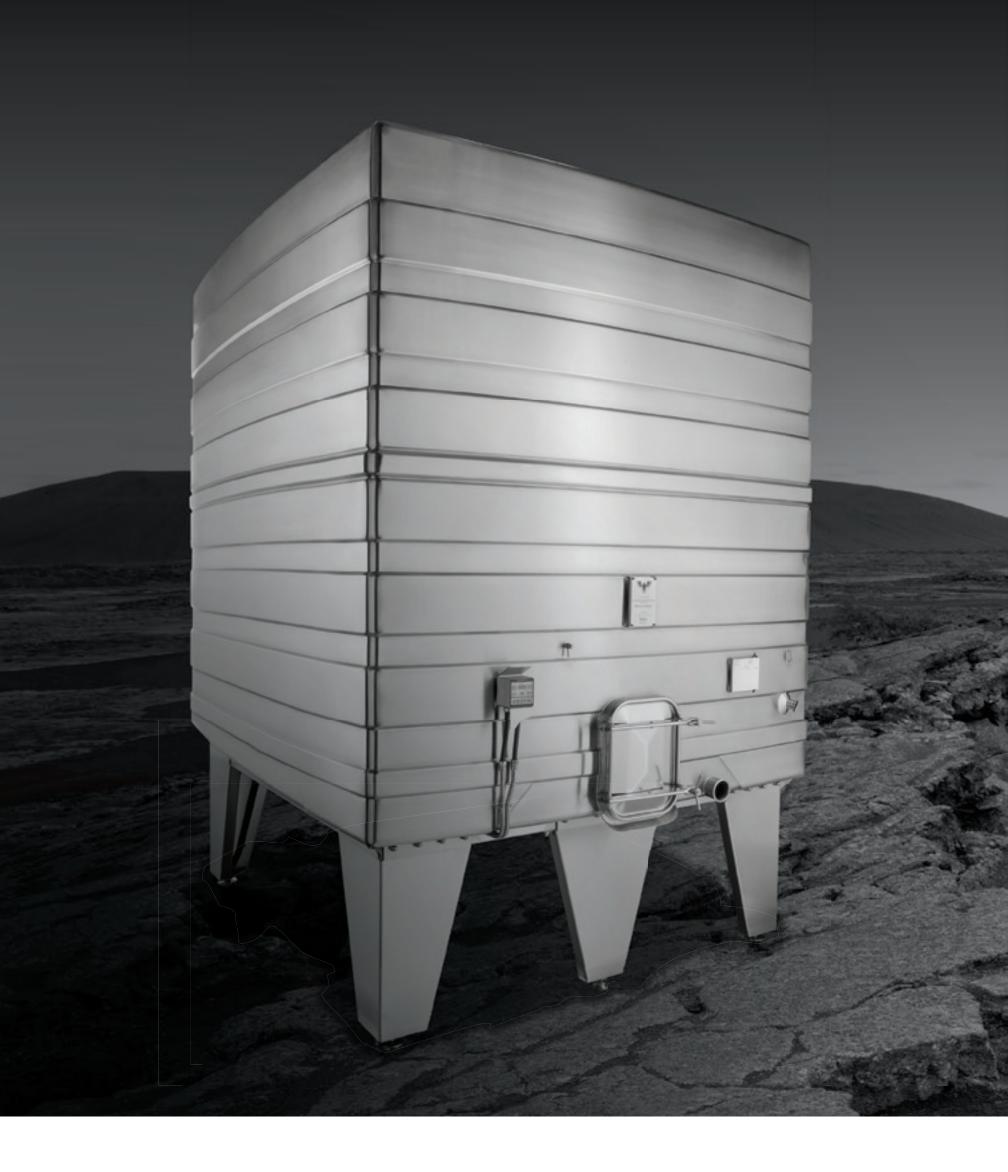
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#### **SCOTT PELLETIER**

scott@lagardeinox.com 408 500.8797

Coastal California, Washington, Oregon

#### **JASON PEPPER**

jason@lagardeinox.com 707 312.1123

Napa, Lodi

### PAUL MAGDER

paul@lagardeinox.com 647 671.2417

Canada, Eastern US



AS THIS ISSUE OF Wine Business Monthly heads to the printer and into the mail, we're are anticipating a U.S. Supreme Court decision in Tennessee Wine & Spirits vs. Byrd Clayton, a case involving residency requirements for retailers. The court will probably have issued a decision by the time this issue arrives in the mail—one that could have implications for retail-to-consumer wine direct shipping, maybe even for the three-tier system.

Whether the decision is wide ranging or turns out to be quite narrowly focused, the world of direct-to-consumer wine shipping, which now accounts for an estimated 65 percent of winery revenue, continues to get more competitive. Just this month, for instance, Florida, one of the nation's largest wine markets, opened the door for retail-to-consumer direct shipping. Consumers continue to have more and more choices.

The July issue includes the 2019 Tasting Room Survey Report, produced in partnership with Silicon Valley Bank. The growth of the direct to consumer channel has accelerated over the last five years, driven by tasting rooms and clubs but the "tasting room" model is maturing.

The survey drew nearly 1,000 usable responses. We want to thank each and every winery that participated. It is very much appreciated. It can't be stressed enough: having a high level of participation allows for statistically significant data by region, making the resulting information useful throughout the industry. Check out the survey report for detailed findings.

The survey indicates wine sales via e-commerce, i.e. via winery websites, represents a very small percentage of DTC sales. That means there's potential for growth.

And speaking of winery websites, did you know that they need to be ADA compliant? Check out this month's article for best practices on that front.

**WINE BUSINESS MONTHLY** 

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WINES&VINES



This is one of those issues that's packed with information, some of it involving winemaking equipment. Bill Pregler is back with his What's Cool column, having recently attended the 2019 Eastern Winery Exposition. Richard Carey reviews clarification techniques any size winery can implement to improve the laboratory's effectiveness for making blending decisions. We also share new information about seismic safety for wine barrels and review new optical sorters wineries are deploying.

Mark Greenspan shares a healthy dose of skepticism about products meant to improve vineyard yields, encouraging readers to be skeptical about "snake oils" but open-minded about products that may actually work.

There sure seems to be a lot going on with wine packaging these days. This month we a look at some of the new glass bottle designs. Wineries are continually looking for ways to differentiate themselves, and customizing glass packaging is one way to do it.

That's just some of what you'll find inside this month. We've also got a deep dive into the wine microbiome, results from trials testing effects of vineyard management practices on Red Blotch-infected vines, a list of the top 100 vineyard owners in Sonoma County and much more.

Cyril Penn, editor

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#### WINE BUSINESS MONTHLY

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Jim Gordon

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Erin Kirschenmann

Staff Writer/News Editor

Kerana Todorov

**Assistant Editor** 

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Copy editor

Paula Whiteside

**Editorial Intern** Cristina Bell

Contributors

Richard Carey, Lance Cutler, Mark Greenspan, Molly Kelly, Michael S. Lasky, Dr. Alexander Levin, Bill Pregler, Andy Starr, Wines Vines Analytics

**Design & Production** Rebecca Arnn, Scott Summers

**Director, Analytics Group** Alan Talbot

**Editor, Wine Analytics Report** 

Andrew Adams

**Web Developers** 

Burke Pedersen, Peter Scarborough

**President & Publisher** 

Eric Jorgensen

Senior Vice President, Operations

Chet Klingensmith

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**ADVERTISING** 

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Vice President - Data Management Lynne Skinner

Circulation

Liesl Stevenson

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Jacki Kardum

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# winemaking





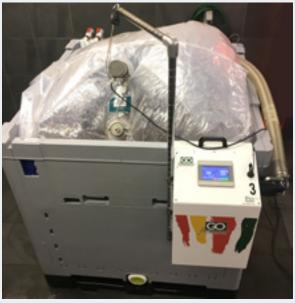
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### **Winemaker Trials**

Sauvignon Blanc is an uncommon variety in Oregon's Willamette Valley—so the wine studies program chair of Chemeketa Community College decided to lead his students in a study to discover how, if at all, leaf pull at fruit set can increase the fruit's aromatic compounds.

Stacy Briscoe

### what's cool







# 2019 Closure Survey Report You Can't Fix What You Don't Measure . . . . . . 48 Curtis Phillips





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A review of microbial ecology throughout the fermentation process
Molly Kelly



# Innovation station

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# grape growing





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Can the Effects of **Grapevine Red Blotch Disease** Be Mitigated with Cultural Practices? . . . . . . . . . . . . 82 Dr. Alexander Levin

innovations from machinery

to must!

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	winemaker of the month 129 Holly Turner, winemaker, Three Rivers Winery, Walla Walla, WA
	Wine Business Monthly is a must-read for me. It's the all-in-one easiest and most comprehensive way to keep in touch with industry

# sales & marketing

WINE BUSINESS MONTHLY SVb >



# Tasting Room

Visitor Counts Increase in Emerging Regions, Decline in Napa .....

Results of the 2019 Wine Business Monthly/Silicon Valley Bank Insights to Successful Consumer Wine Sales Survey Report indicate the tasting room model is maturing with the rate of growth slowing in more established regions while increasing in emerging destinations.

Cyril Penn



#### Message in a Bottle:

Innovations in Glass are Born by Marketing and Aesthetic Needs . . . . 98

Most innovations in glass bottles are a direct result of glass vendors pushing the envelope and moving beyond their existing stock line to serve a previously untapped market need. More and more frequently it's the wineries that are looking for ways to differentiate their products by customizing their glass packaging. Michael S. Lasky

#### **Retail Sales Analysis:**

Wine Sales Increase as Volume, Packaging Shrink .....

Wines Vines Analytics

# technology & business



Top Growers in Sonoma County........... 110 Kerana Todorov



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Winery owners share how their families made it to the second generation and beyond.

Jim Gordon

#### Is Your Winery's Website ADA Compliant? . . 122

As a series of lawsuits hit East Coast wineries, the industry pushes for best practices and education on accessible sites.

Stacy Briscoe



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\*releasable TCA content below the 0.5 ng/L quantification limit; analysis performed in accordance to ISO 20752

# Daniel Lonnberg, winemaker, Adobe Guadalupe, "Wine Blends in Valle de Guadalupe, Mexico," page 18

"There are many reasons to blend, but for us consistency is important. Consistency can be easier to achieve with blends, using different varietals for aroma, body or finish, especially here in Mexico where there are no rules."

## Victor Segura, winemaker, Las Nubes, "Wine Blends in Valle de Guadalupe, Mexico," page 18

"We are open to different ways of blending because we have no experience with the traditional wines of Europe. We need to use what we have to make wine."

# Mark Greenspan, author, "Grape Berry Ripening: How Can We Help You?" page 76

"Are there some products that could be something greater than snake oil? I think so, but nothing beats good viticultural practices."

# **Rob McMillan**, wine division founder and EVP, Silicon Valley Bank, "Visitor Counts Increase in Emerging Regions, Decline in Napa," page 86

"We've done a pretty good job with tasting rooms, but now the growth options for the tasting room are probably more limited than they used to be."

# Christine Wente, fifth-generation winegrower, Wente Vineyards, "Succession Planning Starts With Communication," page 116

"We have, in this generation, really tried to formalize governance. Our philosophy has been to put things in place before we need them, to make sure that we have structures in place before we have to make a dramatic decision."

## Scott Osborn, president and co-owner, Fox Run Vineyards, "Is Your Winery's Website ADA Compliant?" page 122

"What was surprising to me is that I'm responsible for the third-party software as well. The shopping cart needs to be compliant; and if it's not, I can be sued for that."



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# Top Stories from WINE BUSINESS.com - In Case You Missed It



#### \$1.7 Billion Agreement Between Constellation Brands and E&J Gallo Delayed

The \$1.7 billion agreement between **Constellation Brands** and **E&J Gallo Winery** may not be completed until the second half of calendar year 2019, according to regulatory documents. The deal, announced April 3, would sell more than 30 brands and **Clos du Bois**, plus five winemaking facilities. The transaction was supposed to conclude by the end of May.

**Federal Trade Commission** regulators reviewing the \$1.7 billion transaction requested additional information and documents from both companies, according to a filing Constellation Brands filed in May with the U.S. Securities and Exchange Commission.



#### Wine Critic Robert M. Parker Retires

The Wine Advocate announced in May the retirement of wine critic **Robert M. Parker Jr.** The creator of the 100-point wine rating system worked as an attorney in 1978 when he first published *The Baltimore-Washington Wine Advocate*. The magazine became *The Wine Advocate* a year later. Its success allowed him to leave his law career behind in 1984 to concentrate on the magazine, according to *The Wine Advocate*. Ten writers took over the wine reviews two years ago. Parker has received two of France's most prestigious awards.



#### **TTB Administrator Dies**

The Alcohol and Tobacco Tax and Trade Bureau Administrator John J. Manfreda died on May 25. He was 73. Manfreda served as TTB's deputy administrator and became the federal agency's top administrator in 2005. He is credited for having played a key role in TTB's founding, according to the TTB. Manfreda served as counsel for the Bureau of Alcohol, Tobacco, and Firearms from 1999 to 2003. Survivors include his wife and nine grandchildren.



#### 39th Napa Valley Wine Auction Raises Nearly \$12 Million

The Napa Valley Vintners' annual auction raised nearly \$12 million to help non-profit organizations focusing on education and children's health in Napa County. The highlight was the live auction on June 1 at Meadowood Napa Valley, featuring the singer Katy Perry. The event auctioned 30 lots, including Continuum Estate, Opus One, Cliff Lede Vineyards among other regional wines. The four-day event also held the annual Barrel Auction and its second-ever E-auction, hosted at the newly renovated Louis M. Martini Winery near St. Helena.



#### Vineyard Prices in California Either Flat or Down

Vineyard pricing in Lodi, the Central Coast and the North Coast are either flat or down, **Joe Ciatti**, partner at **Zepponi & Co**, said during *Wine Business Monthly*'s **Vineyard Economics Symposium** in May. Exceptions include Napa and Sonoma, where vineyard prices are either flat or up. Oregon's vineyard market is also solid. However, growers have overplanted in the state of Washington, he said. **Tony Correia**, president of **The Correia Co**, agreed that the market is tough, but reminded the audience that consumers continue to buy wine and that good quality grapes do sell.



#### **Huneeus Pleads Guilty in College Exam Scam**

Napa Valley vintner, **Agustin Francisco Huneeus Jr.**, pleaded guilty in May in federal court in Boston in connection to the nationwide college admission cheating scandal involving nearly three dozen wealthy parents, according to Massachusetts prosecutors. Huneeus, 53, of San Francisco, faces 15 months in prison under the terms of the plea agreement, according to the written statement from the **U.S. Attorney's Office for the District of Massachusetts**. Sentencing is scheduled for Oct. 4 in Boston. Prosecutors will also recommend to the court that Huneeus spend one additional year of supervised release and pay a \$55,000 fine. **WBM** 



# news

## INNOVATION+QUALITY 2019



For the first time, Innovation+Quality offered winemaker salons; informal discussions between experts and attendees. Here, Zelma Long (left) and Elaine Chukan Brown (right) combine their knowledge to talk about the future of winegrowing.



Matt Crafton, winemaker for Chateau Montelena, talked about the way in which the winery's oak use has changed over the years.

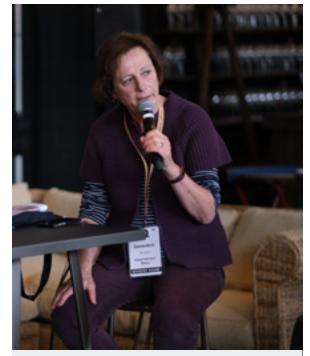


David Block held a salon to discuss how his latest research led to the development of tools to predict and optimize phenolic extraction in red wines.

This work is some of the most advanced in the field.



Peter Salamone (left) and Bryan Avila (right) walk attendees through winemaking trials: how to set them up, why they're important and how to share the results.



Genevieve Janssens, director of winemaking at Robert Mondavi Winery, explains the most recent developments in barrel technologies, and how that affects her winemaking each year.



In a truly unique session, Elaine Chukan Brown (left) moderated a panel of celebrated winemakers in a global tasting and discussion of methods, philosophies, challenges and more. From second to left (Celia Welch, Corra Wines; Dr. Laura Catena, Bodega Catena Zapata; Jenny Dobson, Winetrust; Zelma Long, Vilafonté).



Cara Morrison, white winemaker for Sonoma-Cutrer Vineyards moderated the Advances in White Winemaking session, which featured Gina Hennen of Adelsheim Vineyards, Cheryl Francis of A to Z Wineworks, Kristen Barnhisel of J. Lohr Vineyards & Wines and Donald Wirz of Delicato Family Wines.



Zelma Long was awarded the Lifetime Innovator Award for her relentless pursuit of quality, passion for research and outstanding mentorship to some of the country's greatest winemakers.



Winemakers taste the results of a trial, looking for sensorial differences between the two lots.



Aimée Sunseri, winemaker at Nichelini Family Winery, pours lots of one of her winemaking trials for attendees.



Hundreds gathered for a session dedicated to the most pressing recent research at Silverado Resort & Spa.



Winemaker Trials Tastings are an important feature of Innovation + Quality. They are designed to be a forum to share lab trials or full-scale production experiments with fellow winemakers and colleagues in a relaxed setting.

# Wine Blends in Valle de Guadalupe, Mexico

Lance Cutler

**EDITOR'S NOTE:** The author would like to thank **Marisa Segovia-Nieblas** from **Scott Laboratories** for setting up appointments, driving us in El Valle and for brightening our trip with her ebullient personality and observations.



**THE FIRST THING YOU** need to know about Mexican wine is that culturally there is no wine tradition. There is plenty of history (more than 500 years), and Mexico is the site of North America's oldest winery, **Casa Madero**, established in 1597, but there is no tradition of wine in Mexican culture.

Secondly, Mexico is a unique place, and the people think and act differently than we do. Addressing the fact that most visitors to wineries in Valle de Guadalupe come from Mexico, not the United States, one winemaker used a plausible metaphor. When the economy slows down in the United States, it is like traffic: All the cars stop until the vehicles at the very front start up. Then slowly, little by little, the cars in line move forward until the economy is flowing again. That is very different from Argentina, where their economy acts like race car drivers: They go as fast as they can until there is a big crash. Then they deal with the crash before resuming their high-speed driving. In Mexico, they have an idea of where they want to go, but they know that there are many alternate routes. Sometimes even alternate routes won't work, so they just end up going someplace else.

Case in point, Hernán Cortez planted the first grapes in Mexico in 1521, using cuttings from Spain. Soon, he had the locals producing wine from those grapes, but the wine was good enough that the sale of Spanish wine dropped precipitously. The Spanish king, Phillip II, prohibited New World wine production, except for church wine, but there were hundreds of hectares of grapes planted throughout Mexico. The Mexicans took an alternate route. They used those grapes to make brandy. Today, Mexico is the third largest producer of brandy in the world, and brandy is the most popular distilled spirit in Mexico—more popular than tequila and rum.





MONTE XANIC

Winery production at Monte Xanic

For years the missions produced most of the wine in Mexico, but by the 1970s commercial wine production was in full bloom. Within 10 years, wineries like **Pedro Domecq**, **LA Cetto** and **Santo Tomás** were producing 4 million cases of undistinguished, jug-quality wine annually. In the early 1980s the Mexican government removed tariffs for foreign products, including wine. Mexican wineries couldn't compete with the wines of Europe and Chile, and domestic wine production crashed. At about the same time, **Hans Backhoff** started his **Monte Xanic** winery. The focus was on high-quality, premium wines, and the wine boom was on.

Today, there are several wine-producing regions in Mexico, but 90 percent of Mexico's domestic wine comes from northern Baja California, and almost all of that is from the Valle de Guadalupe. Most of the wineries and vineyards are relatively new, and production methods are modern. French oak barrels, stainless steel tanks and foreign consultants are common. Wine quality is steadily improving. Single varietal wines are available, but blends are much more popular.

Mexican wine blends are unique in the world of wine. There seems to be no rhyme or reason for the grapes included in a particular mix. A good example is the 2012 Pavo Real Red Wine. It is a mélange of French, Californian and Italian varieties composed of 50 percent Grenache, 20 percent Cabernet Sauvignon, 20 percent Ruby Cabernet and 10 percent Barbera. It's as if the winemakers got tipsy on a load of tequila and then said, "I know, let's try this. What have we got to lose?"

Perhaps winemakers in the Valle de Guadalupe blend disparate varietals together because there is no winemaking tradition in their culture. Why should they adhere to Bordeaux blend standards or those of the Rhône? Maybe they make these blends because they are fearless or artistic. For sure, one reason has to do with the fact that there are no rules in the Valle de Guadalupe. Locals liken it to the "wild west." The Mexican government has no regulations when it comes to winemaking. There are no legislated standards, no appellations, no label laws and certainly no rules about blending. Whatever the reason for their imaginative blends, *Wine Business Monthly* thought it would be interesting to find out the reasoning behind them.

Monte Xanic (pronounced Sha-neek) started making premium wines in Valle de Guadalupe 31 years ago. Dr. Hans Backhoff and his partners chose a

blend of 60 percent Chenin Blanc and 40 percent French Colombard because those were the highest quality grapes he could find. (To this day Monte Xanic still honors that blend although it is now 98 percent Chenin Blanc.) The winery has grown to 80,000 cases in annual production, making it the third largest winery in Mexico. Monte Xanic was the first winery to plant Bordeaux varietals in Valle de Guadalupe. Their most famous wine, Gran Ricardo, honors those Bordeaux varietals by blending Cabernet Sauvignon, Merlot and Petit Verdot.

Ana Maria Ceseña, export sales manager for Monte Xanic, explained the winery's unique approach, "Most of our wines are sold as single varietals, but we have developed an idea, and it is working. Many wineries in the Valle blend based on what they have or what they can get. We perform blending experiments to develop blends that can expand our portfolio and reach new markets."

That experimentation has led to the newer Calixa line, meant to be entry-level wines that are approachable and food-friendly. Included in the line is a blend of Cabernet Sauvignon and Syrah and another of Tempranillo, Cabernet Sauvignon and Merlot. Another line, called Selección, was designed as a mid-range brand and includes a blend of Malbec, Merlot and Cabernet Sauvignon.

Adobe Guadalupe exudes a quiet elegance, much like its owner Tru Miller, who found her way to Mexico from the Netherlands. Her winery dates to 2001. Winemaker Daniel Lonnberg hails from Chile and revels in the freedom to blend varietals to make great wine. "There are many reasons to blend, but for us consistency is important," said Lonnberg. "Consistency can be easier to achieve with blends, using different varietals for aroma, body or finish, especially here in Mexico where there are no rules."

Almost all of Lonnberg's wines at Adobe Guadalupe are blends, and the reasoning behind those blends is different for each wine. The Uriel Rosé blends five red varietals, along with Sauvignon Blanc, which allows him to make use of all his grapes while improving concentration in his red wines. Typically, the red wines are fermented separately and then moved to barrels. After five months, he works out the blends and returns the blended wines to barrel. His Kerubiel is fashioned after typical Rhône blends, with Syrah, Cinsault, Grenache and Mourvèdre. The Serafiel is a blend of Cabernet



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#### Wine Blends in Valle de Guadalupe, Mexico

Sauvignon and Syrah, which Lonnberg claims allows for the consistency he is after. For the Rafael blend, he chose Cabernet Sauvignon for its great aging potential and Nebbiolo to add complexity in the mouth.

Villa Montefiori is a beautiful winery that sits atop a hill overlooking a gorgeous expanse of vineyard. Born in Italy as part of a wine family, owner and winemaker Paolo Paoloni exudes Italian grace and charm even though he has been working in Mexico since 1985. With a degree in agronomy and a specialization in ecology, he worked for 12 years in Aguascalientes on a major winery project. He moved to Valle de Guadalupe in 1997, where he imported grapevines from Italy and France, planted 45 acres of grapes in 1998 and started his own winery.

Paoloni sees many advantages to growing grapes in the Valle de Guadalupe. "It is so dry, even nematodes can't survive. There is virtually no Botrytis, and what little there is can be easily controlled with sulfur. The only downside is a general lack of water and the fact that some of the salinity in the water here is difficult for certain grape varieties."

Unlike many Mexican winemakers, Paoloni comes from a strong European wine tradition. His blends tend to follow those traditions. He breaks his wine selection into tiers. The top tier Paoloni wines are 100 percent single Italian varietals: Sangiovese Grosso, Nebbiolo and Aglianico. The Villa Montefiori wines are classic blends, like Cabernet Sangiovese, Cabernet Montepulciano and Cabernet Shiraz, but there is one unique blend called Selezionato. Paoloni explained that one year he had a big harvest with extra grapes. He was down to one tank, so he jammed in the extra Nebbiolo, Montepulciano and Aglianico grapes and let them co-ferment. The wine was great, and he decided to produce the blend every year. Paoloni calls it, "My happy accident."

There is a story to Vinisterra Winery. Guillermo Rodriguez Macouzet sought out wines from local wineries to share with his friends when they played dominos. He got so enamored of the wines that in 2000 he purchased 50,000 certified vines and planted them in San Antonio de las Minas. He formed a partnership with his Swiss friend, Christoph Gaertner, who became winemaker. Gaertner reminisced, "It was a challenge. We started from nothing. Mexicans knew nothing about fine wine, and there was no wine consumption to speak of. We knew it would take time, but we saw a big potential for quality, and the opportunity to write our own book on wine was enticing."

Pouring his 2017 Domino Blend, made of Chenin Blanc, Chardonnay and Viognier, Gaertner admitted that part of the blend was determined by which grapes he could get. His Pies de Tierra is a blend of Syrah and Tempranillo made to honor the field workers and the vineyard land. But Gaertner insisted the reason he blends is to make better quality wine with the proper balance. Gaertner produces two aged red blends: Cascabel, a blend of Tempranillo and Grenache, and Pedregal, a combination of Syrah and Mourvèdre.

Gaertner thinks the future is bright for Mexican wines. "This is a dynamic country. Mexico City is a vibrant place, like New York, and this new generation wants to learn, likes to travel and they are open to wine."

**Jorge Maciel** is from Ensenada, which makes him a local. **Cava Maciel** is a seat-of-the-pants type of operation that finds Maciel locating the grapes, making the wine and constructing the winery. Starting in 2009 with just 500 cases of wine, he has grown to 2,000 cases in 2018. He produces wines based on what grapes are available. Therefore, not all his wines are presented year to year.

He makes single varietals as well as blends, but has a decidedly laissez-faire attitude when it comes to blending. His reasons for blending vary. He has a blend that is 80 percent Tempranillo and 20 percent Petite Sirah "because that's what was available." "I was just playing around," he said, when asked



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Todd Graff, Winemaker & GM at Frank Family Vineyards

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Richie Allen, Winemaker at Rombauer Winery



about his Merlot, Cabernet, Nebbiolo blend. Another of his blends came about because he "had to fill the tank."

When **Hector Corona** was interested in getting into the wine business in 2000, he made four barrels of wine—one each of Cabernet Sauvignon, Merlot, Tempranillo and Nebbiolo. He stored the barrels in his office so they could receive the benefits of air conditioning. He consulted with local winemakers, who advised he bottle the varieties separately. He bottled the Merlot and Cabernet Sauvignon as separate varietals, but he loved the way the Tempranillo tasted when blended with the Nebbiolo. He called it his "crazy blend" because his winemaker friends told him he was crazy to blend those two wines.

Corona planted vineyards, built a simple, modern winery and included a world class restaurant at Corona del Valle. He hired Jake Cole (Krug, Stag's Leap, Staglin) as his consultant, and Cole advised him to continue making single varietals because he felt the grape quality was excellent. Wines are fermented in stainless steel tanks, and only the free run juice is sent to their French and Acacia oak barrels. Today, Corona del Valle makes six single varietal wines, but Corona still insists on producing his "crazy blend." The blend turned out to be his bestselling wine and the favorite of his customers.

Victor Segura at Las Nubes had a different approach. He admitted that at first, a lot of his blending decisions were based on what grapes he could get, but he's also enamored with co-fermenting several of his wines. He has a white wine called Kuiiy, which involves co-fermented Sauvignon Blanc and Chardonnay. His Jaak Rosé is a co-fermented blend of Grenache and Carignan that he blended with 10 percent old-vine Zinfandel.

Segura doesn't just blend different varietals. He produces two blends of young red wines: one a blend of different varietals from selected barrels, the other a blend of varietals from different parcels in his vineyard. The Selección de Barricas is a barrel-selected mash-up of Carignan, Grenache, Petite Sirah and Zinfandel. The Selección de Parcelas mixes young vine selections of Tempranillo, Cabernet Sauvignon, Merlot and Nebbiolo.

Segura makes several aged wine blends. Even bottles labeled as single varietals are blends. He bottles a Nebbiolo but includes 15 percent Grenache. He also puts 15 percent Grenache into his Petite Sirah and 10 percent Cabernet Sauvignon into his Syrah. "We are open to different ways of blending because we have no experience with the traditional wines of Europe," Segura said. "We need to use what we have to make wine."

Juan Pedro Mendivil is a wine consultant who helped Hector Corona when he was starting up and currently advises Jorge Maciel. Working for Vinos LT, Mendivil came up with a value-based, everyday wine that mixes the dark richness of Nebbiolo with the spice of Syrah. The wine has dark color, a full body, and classic blueberry and spice notes. Another blend is made from wines that have been aging in oak for two years called Mezcla de Tintos. It combines Sangiovese, Nebbiolo, Syrah, Cabernet Sauvignon, Merlot and Tempranillo. Mendivil says he tried to maintain the concept of body, texture and balance. He used Cabernet Sauvignon for some of the pyrazine, Merlot for the blackberry, Syrah for spice and Nebbiolo for power and body.

Mendivil is thoughtful and passionate about winemaking with an almost spiritual concept of developing blends. One of his clients is **Humberto Vasquez**. "Señor Vasquez is almost bigger than life. He is a strong, proud man who lives life with gusto. He likes spicy chili and meats like wild boar."



When Mendivil worked out the blend for Vasquez's **Cinco de Mayo** winery, he sought out smaller sized berries for added intensity and fermented to maximize extraction. The Nebbiolo and Cabernet Sauvignon were aged in 100 percent new barrels. "I try to make wines that put the owner's personality into the bottle."

Clearly, the Valle de Guadalupe has attracted an eclectic international contingent of winemakers, and they, like their Mexican counterparts, have embraced wine blends. Maybe Mexicans have a predilection for blends. Their food appears simple but is often a very complex blend of flavors and ingredients. Mole, a traditional sauce made all over Mexico, but best known in Oaxaca and Puebla, starts with various chiles but will often be composed of 20 to 30 different ingredients. These ingredients get roasted, ground to powder, then mixed with stock or water until it cooks down into a lush, thick sauce bursting with flavor. One would think, a culture going through all these steps, using all these ingredients to make a sauce should have an affinity for wine blends.

Wine is a new phenomenon in Mexico. A few years ago, per capita consumption of wine was stuck at just two glasses per year. In the last five years that amount has doubled to almost a liter annually, and consumption continues to grow steadily. Foreign wines account for 70 percent of wine sales, but domestic wine sales are exploding, and the quality of Mexican wines is improving dramatically. There are now over 100 wineries in Valle de Guadalupe that produce close to 2 million cases per year.

And the Mexican economy is booming. Already the second largest economy in Latin America, Mexico enjoys an annual growth rate of close to 4 percent. This means jobs and opportunity for Mexicans and has created a growing middle class with ever-increasing spending power. Innovative restaurants are popping up all over the country, and the new middle class loves dining on cutting-edge food. Every new fine dining restaurant has a wine list, and the customers are drinking wine with their meals. Wine has become trendy.

Blending has been a useful tool for winemakers since the very beginning. If you are dealing with high pH, low-acid Tempranillo, then some high-acid Graciano could be the perfect blending partner. Nervous about your late ripening, big-tannin Cabernet Sauvignon? Loading up on Merlot or Cabernet Franc may let you sleep better at night. Even winemakers who produce single-vineyard wines will keep different blocks separate or make some lots with native yeast and others with commercial yeast so they can blend them into a finished wine to add complexity.

Blending is so pervasive that some regions have regulated it. Most famously Bordeaux blends are restricted to just six grape varieties. In Mexico, winemakers blend for many reasons, but there are no rules. You can plant whatever varieties you like wherever you wish and mix grape varieties in any configuration. Mexican winemakers are passionate about their wines, but they are pragmatists as well. Quality grapes are limited, and the scarcity of water makes that unlikely to change. Winemakers will use what they have, and if that means blending grape varieties in non-traditional ways, so be it.

The Mexican wine explosion is powered by blends—incongruous blends that are fun, reek of personal expression and are loved by Mexican consumers.

Perhaps Mexico has something to teach the United States. There is no legal reason for us to follow European standards when it comes to winemaking. Maybe we should throw out tradition, take a chance and put some imagination into our own blending practices. **WBM** 

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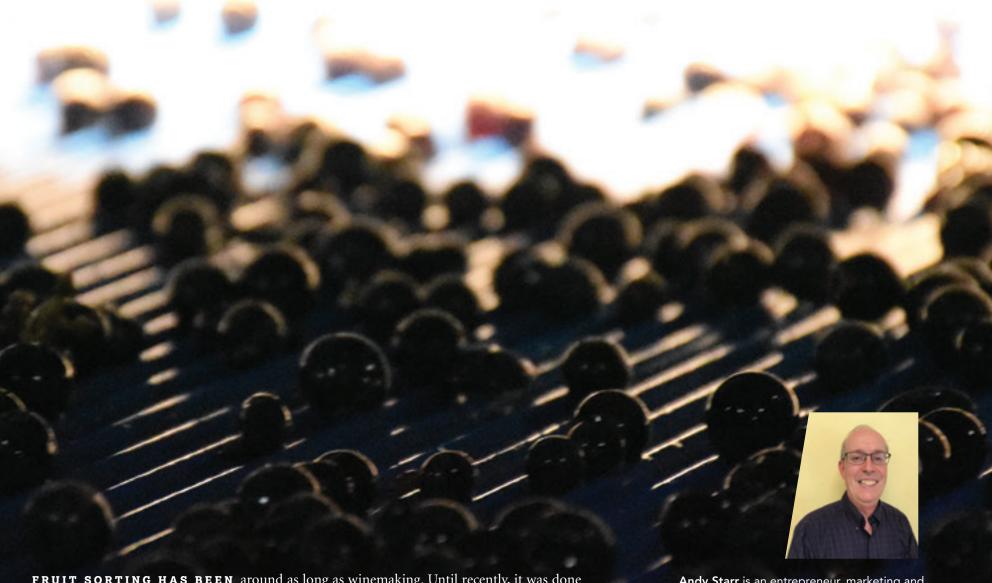


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# Product Review: Optical Grape Sorters for 2019 Harvest

Andy Starr



**FRUIT SORTING HAS BEEN** around as long as winemaking. Until recently, it was done by a crew of humans using their eyes to sort clusters or berries moving along a conveyor belt. It's slow, expensive, tedious work that doesn't remove all of the undesired fruit, often discarding good grapes attached to partially damaged clusters. As it is usually done only when the value from sorted grapes exceeds the cost of sorting (roughly \$200 per ton or \$3.00 per case), a winery will only hand-sort to produce its best reserve wines or to salvage problem lots.

In addition, labor shortages have made staffing during the busy harvest season impossible at times, eliminating hand sorting as an option. You'll just hope for the best from the grower, knowing full well that hope is not a strategy.

For those who focus on tradition or "that's the way they do it in France" (sometimes they'll say Italy, but it's usually France), be aware that labor shortages are an even bigger issue in Europe, with mechanization of sorting and other processes now commonplace. So if you automate your sorting, you can honestly say "it's the new tradition" or "it's what the French do," sparing yourself any potential "innovation shaming" from your peers.

Andy Starr is an entrepreneur, marketing and strategy consultant, and winemaker with over 30 years experience in new technology and new market development, and in building organizations. His company, StarrGreen LLC (www.starrgreen.com) assists clients in the wine, beverage alcohol, and greentech industries. Best known as the Founder of Neocork Technologies, the synthetic cork pioneer, Andy built the company from an unfunded business plan through R&D, manufacturing and marketing, ultimately shipping Neocorks to 19 countries. He has six years of winemaking experience, highlighted by two years as the award-winning head winemaker for Yarden, Israel's first super-premium winery.

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## **Product Review: Optical Grape Sorters for 2019 Harvest**



Automated optical sorters can process up to 10 to 12 tons per hour, depending on the model and incoming grape quality, driving sorting costs down to as little as \$20 per ton or \$0.30 per case. At that cost, a winery could sort most or all of its fruit, increasing the quality of every wine it makes.

All optical grape sorters reviewed in this article use a similar approach, using cameras to analyze each item (grape, leaf, insect, etc.) passing through a conveyor belt. The sorter's central processing unit (CPU) makes an evaluation of each item based on the winemaker's desired parameters, e.g., color range, raisins, material other than grapes (MOG), and then directs a brush or arm to keep or reject that item. No machine is perfect. You will lose some "good" fruit with the bad and retain some "rejects" with the good fruit, but the loss rates are quite low.

In assessing an optical sorter, you are likely to look at speed, programma-bility, ease of use and cleaning, but it's critical to know what happens prior to the sorting step. Are you getting primarily machine- or hand-harvested fruit? Does your destemmer do a good job of removing MOG and raisins? If not, the sorter has to run more slowly to achieve the desired sort level.

Six sorting machines are reviewed, of which I observed three during the 2018 harvest: **Pellenc** Vision 2, **Bucher Vaslin** Delta Vistalys and **CITF**'s Alien.

#### Vision 2

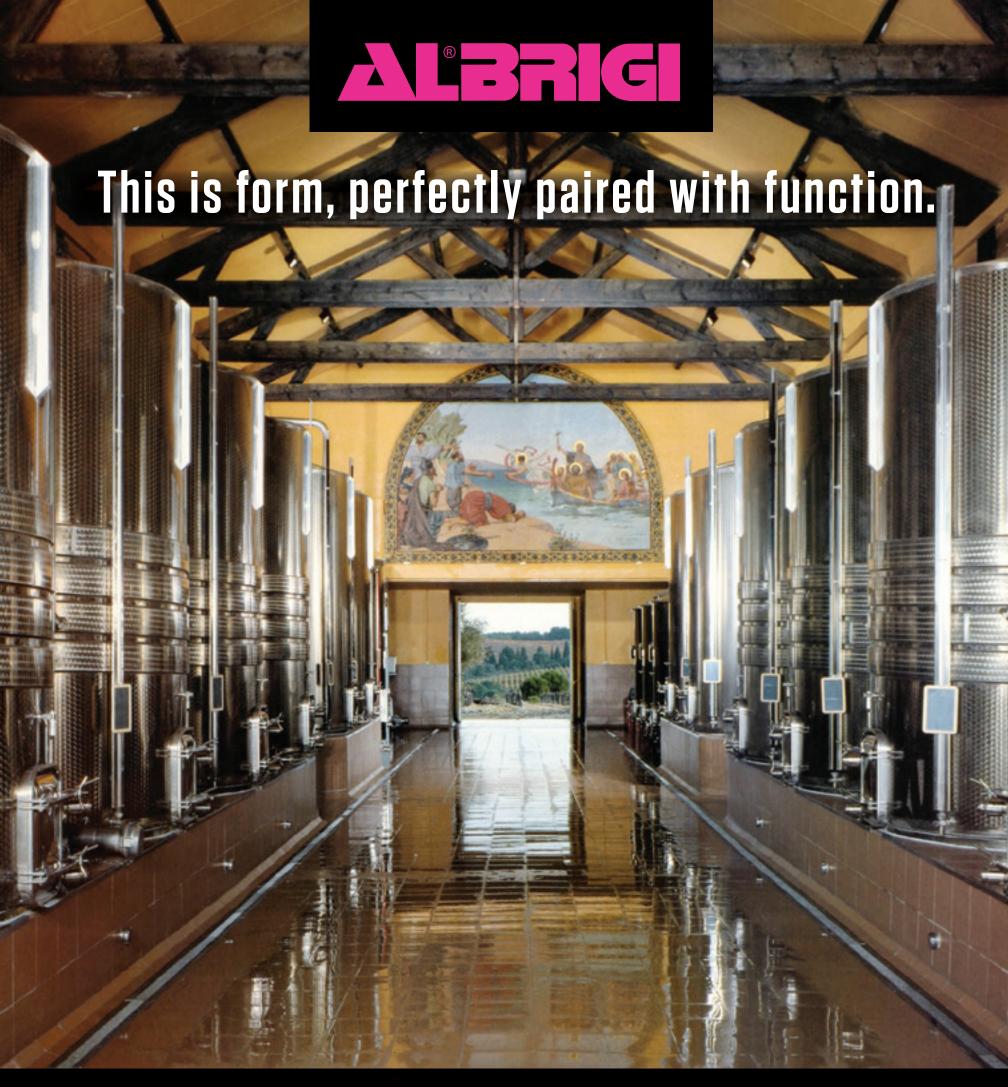
#### **PELLENC USA**

John Felice, sales representative for Pellenc USA, explained that their Pellenc Vision 2 optical sorter uses intensely bright light to "see into the grape" and make more specific color, shape, size and "raisin" decisions. The Vision 2 evaluates, decides good or bad and, if needed, gives an instruction to 96 individual air nozzles to turn on and remove the item. It operates at a rate of up to 2,000 items per second, or up to 10 tons per hour. All daily data, such as rejected material rates, average berry size, etc., are logged on screen.



When integrated with additional Pellenc receiving equipment, the Vision 2 optical sorter can control a sequenced/timed start-and-stop of up to six other crush-pad machines.

Krupp Brothers Winery, an ultra-premium red producer in Napa, recently installed entirely new crushpad equipment and tanks in an existing winery, including the Pellenc Vision 2 sorter, as part of a complete Pellenc grape receiving system. Associate winemaker Desiree O'Donovan uses it to remove raisins, insects and other MOG. O'Donovan is impressed with Pellenc's precision, noting that it "won't blow off the wrong grape." She runs it at 5 tons per hour, the same speed as their destemmer/mechanical sorter, giving Krupp sorted fruit in the same time as unsorted, without needing any extra staff. O'Donovan added that it made sense to her to have an all Pellenc line. Their Pellenc Selectiv' Process Winery M (M means 'medium sized') destemmer/mechanical sorter does an excellent job of retaining most raisins on the cluster, making the optical sorter run more efficiently to remove the remaining ones.



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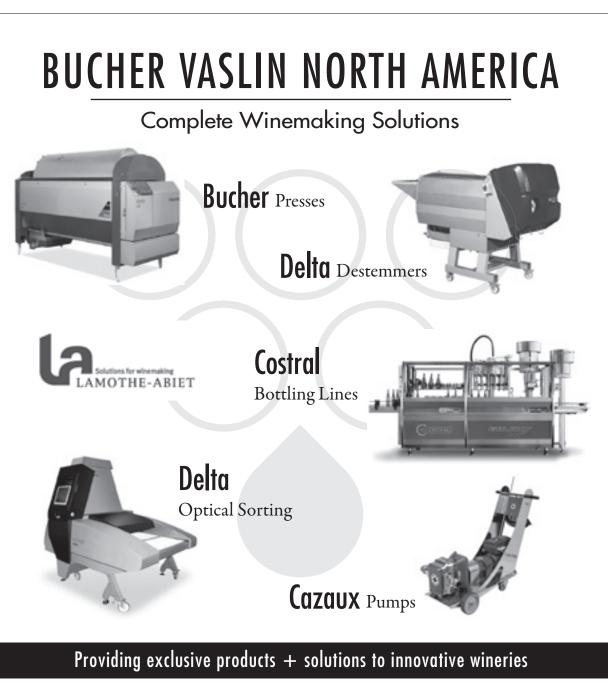
**Italics Winegrowers** in Napa also has a Pellenc Vision 2 optical sorter. For much of his career, owner **Ken Martin** used optical sorting for his premium ruby red grapefruit and other citrus in Texas, so he welcomed optical sorting for grapes. Martin likes the Pellenc sorter's ability to "get deep into the parameters" of color, raisins and split berries. He likes the sorted fruit quality he is getting, noting that the Pellenc Vision 2 "doesn't take lunch breaks."

Martin estimated that hand sorting would cost him \$33,600 annually (\$20 per labor hour multiplied by 10 people for eight hours a day with 21 harvest days) or roughly \$200 per ton, giving the sorter about a five-year payback for a machine he expects to own for at least 15 years. Even more important, Martin explained that labor shortages are making hand sorting much less

of an option. The Pellenc is relatively easy to clean as part of a 45-minute crushpad process. Italics also has a Pellenc destemmer/mechanical sorter and receiving line.

Martin gave an example of how a custom crush client used the optical sorter to save a small mildew-infected lot of Pinot Noir that would have been rejected. They brought in the grapes, set the optical sorter to keep only good berries, and it kicked out about 20 percent of the lot. So, 80 percent was saved and turned into top quality Pinot Noir, helping both the winemaker and the grower. This capability would be a significant benefit for wineries in rainy climates.

Both Martin at Italics and O'Donovan at Krupp praised Pellenc for their service and training, noting that they even have a spare machine available if needed.





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## **Delta Vistalys HD**

#### **BUCHER VASLIN**

Bucher Vaslin has been making and improving optical grape sorters since 2010. What started as the Delta Vistalys R2 has become the Delta Vistalys HD (high definition) in 2019. The Vistalys HD has the same body and footprint as the R2 but with significant changes in software and peripherals that now look at actual colors instead of a pixelated representation, so 10 billion pixels are now 32,000 colors. Also new for 2019 is a user-friendly 15-inch touchscreen. Mea Leeman, director of sales and marketing for Bucher Vaslin North America, notes that Bucher continuously provides upgrades to their optical sorters in the field, having provided 24 software updates over 11 years, and are now adding touchscreens and an internal viewing camera to them.

The Vistalys HD was extensively tested in 2018, with reduced waste showing up in the good berries and fewer good berries in the waste. Leeman explained that the biggest improvements are a "self-learning process that learns and stores color preferences while the machine is running," so no stopping to recalibrate is necessary. Improved data collection and feedback now tell the user if rejection is by color or shape, where previously one had to manually inspect for shape (raisins or cracked berries) or color. Leeman states that the Vistalys HD can run up to 10 tons per hour for hand-picked fruit and up to 12 tons per hour for mechanically harvested.

Additional updates include Wi-Fi connectivity that allows simplified,



yet detailed, data collection of the machine's process history right down to a date and time stamp for every button pushed, plus an interior camera to allow the user to see the output in real time.

Jim Roblee is the winemaker and Rebecca Jain is the enologist for Trinchero Family Estate's "small-lot winery within a winery" at the Sutter

Home site in St. Helena, California. (This state-of-the-art facility is worthy of its own story as walking through the sprawling industrial winery site and then entering the glowing interior are reminiscent of opening the door to Narnia.) Roblee explained that Bucher Vaslin's high definition camera works well in finding raisins and undesired colors, while Jain loved the sorter's versatility, explaining that "you can program anything you want on it." Roblee experiences anywhere from 0.5 to 10 percent scrap, depending on fruit quality and winemaker criteria and has the ability to put those rejected berries into lower-value wines.

I also observed Bucher's Vistalys R2 model sorting Cabernet Franc at **St. Supery** in Rutherford, California, where the entire red wine production is from estate grapes, sorted either optically or by hand. Winemaker **Brooke Shenk** explained that in 2019, Bucher will upgrade their 2013 vintage machine to HD level. Shenk was very happy with the Vistalys' ability to keep only the most pristine berries, kicking out raisins and color variances. She explained that St. Supery can process 3 to 4 tons per hour through the sorter, and it meets their high quality standards.

Bucher's Leeman emphasized that their team sees themselves as knowledge consultants where "our job as supplier is to know the best way to optimize equipment and transfer the knowledge to our customers." They are doubling the size of their Santa Rosa service site in 2019 for more user-friendly training programs and to increase spare parts inventory. Bucher commits to having spare parts for 20 years for all their equipment.



### **WineGrapeTEK**

#### WECC

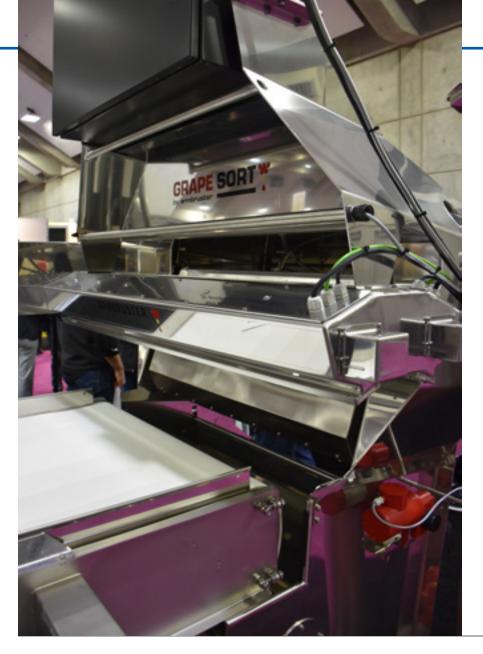
WECO (Woodside Electronics Corporation) has been building optical sorters for 35 years. **Bryan Chambers**, winegrape manager, explains that they started with tomatoes, then moved on to walnuts and blueberries, and finally to grape sorters starting in 2010. Chambers explained that "WECO has a laser focus on optical sorting" across a wide range of fruits and nuts with more than 2,000 sorters in use worldwide.

The WECO WineGrapeTEK sorter is equipped with four proprietary cameras. The cameras are closer to the fruit and the light source which, in turn, provide brighter lighting and a more accurate sort. WECO designs and manufactures its camera/illuminator systems in-house to be optimized for high speed sorting and greater flexibility in choosing desired color. WECO's sorters are "full spectrum," operating over the entire visible and infra-red spectrum. Chambers noted that WECO often installs units at other than "ultra-premium" wineries, such as those in challenging climates where rain-damaged lots can now be salvaged.

WECO's sorter is touchscreen programmed, with memory settings for different varieties or vineyard blocks. "You can set it to 'Zinfandel' and then fine-tune afterward," Chambers explained. WECO provides training and a 24/7 service program where their vehicles are stocked with spare parts. The machine typically takes 30 minutes to clean and can process about 6 tons per hour.







## **GrapeSort**

#### **ARMBRUSTER**

Armbruster, based in Germany, has been building integrated crushpad equipment dedicated to the wine industry since 1938 and is distributed exclusively by **Scott Laboratories** in North America. Their GrapeSort optical sorter was introduced in 2013. **Dillon Coughtry**, Scott Labs' equipment sales specialist, explained that "the GrapeSort has a high resolution four-channel camera with near infrared (NIR) and red, blue, green (RBG) at 7,500 images per second that provide extremely accurate imaging of each grape." The GrapeSort runs optimally at 3 to 5 tons per hour or up to 8 tons per hour with very clean fruit.

The GrapeSort is optimized when run in line with Armbruster's double roller destemmer, which removes MOG very well, allowing the GrapeSort to focus on sorting individual berries. Armbruster crushpads can be set up with a centralized panel that controls the entire receiving line. It is designed for easy cleaning with the ability to completely remove the belt from the frame in a matter of minutes.

"Scott Labs is deeply focused on training," Coughtry said. "While the user may need only one hour to learn the basics, Scott's service technicians will spend additional time with the customer during harvest to optimize the sorter to their facility. This service is included with the machine."



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#### **Vitisort**

#### **KEY TECHNOLOGY**

Vitisort is manufactured by Key Technology, an optical sorting specialist in Walla Walla, Washington. **Marco Azzaretti**, their product manager for **Advanced Inspection Systems**, explains that Key has been building optical sorters for the food and agriculture industries for 30-plus years, with more than 5,000 machines in use from frozen french fry potato inspection to nuts, sliced apples, salad greens and winegrapes. Key manufactures in Europe and the USA

Key launched Vitisort in 2014, the product of two years of ground-up design and development to handle winegrape-specific needs, while drawing on Key's sorting experience for many applications. The result is a reliable machine with an intuitive user experience that is compatible with all major destemmer brands. There are now 30 to 40 Vitisort machines in operation, including **Canoe Ridge** in Washington and **Chappellet** in Napa Valley.

Vitisort first puts the grapes through a vibratory sorter, which then feeds the optical sorter. Azzaretti explained that "our philosophy is to remove whatever you can mechanically to maximize efficiency of the optical sorter. You really want to have the optical sorter focused on the hard part—color, shot berries, raisins and whatever MOG remains."

Azzaretti pointed out that the Vitisort allows for a predictable MOG level as "you may not want 100 percent MOG-free grapes." Their system also allows for juice recovery during the mechanical separation process.

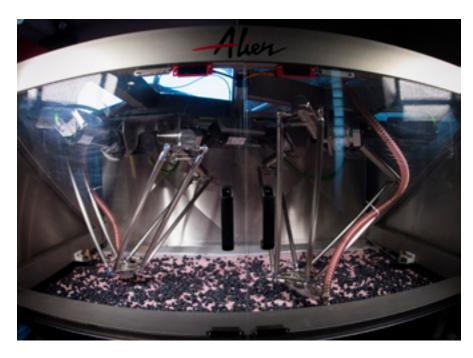




### **Alien**

#### **CITF GROUP**

CITF Group produced a next-generation prototype Alien M18 optical sorter that uses robotic arms to vacuum up MOG, raisins and other waste, which received a Silver Award for Innovation at the Vinitech Exhibition in Bordeaux. In 2018, Alpha Omega was the first American winery to use the Alien M18. Winemaker Jean Hoefliger strives for perfection in red wines that retail for \$100 to \$650 per bottle, so he wanted the Alien as a secondary optical sorter, after a Pellenc Vision 2 performed the primary sort. It's essentially an optical sorter for sorting sorted grapes. Think of it in the way you might choose to use 400 grit sandpaper after using 220 grit. I personally observed the Alien's two robotic arms that removed every last bit of undesired material at 4 to 5 tons per hour. Each arm measurably can remove 200 pieces per minute for a total of 400 pieces per minute. "If you want perfection, you still need Alien or people," said Hoefliger. Bucher Vaslin is the exclusive dealer for CITF's Alien in North America.



# **Talk to Your Neighbors**

In summary, winegrape optical sorting technology has improved significantly since its introduction 11 years ago. The machines have become more accurate, cost-effective and much more user-friendly while, at the same time, finding hand sorting staff is much more difficult. Optical sorters are a big investment, but you may not have to own one to get the benefits: Talk to a winery friend who owns one—they may have excess capacity to destem and sort your fruit on a per-ton basis. **WBM** 



# Filtering Wine in the Lab for Wine Quality Evaluation

Richard Carey

**FROM THE FIRST TASTING** of the grapes in the vineyard to the time when a wine is almost ready for bottling, winemakers frequently sample, test and evaluate their wines. Their goal is to understand how the wine will change over time and be transformed into the finished product. To understand that evolution, winemakers go to the laboratory to get a glimpse of where that wine currently is and what it can be going forward.

Over the years, new tools and techniques have been developed that allow wine laboratories to do a better job of clarifying wine samples brought into the lab. There are now tools that can produce small-volume wine samples for lab trials that the winemaker can use to analyze and then project accurately the scaling of the wine to commercial volumes.

In this column I will review several clarification techniques that any size winery can implement to improve the laboratory's ability to make blending decisions for current wines or to develop new products. The clarification of a wine should give the assurance that the wine will meet the standards for either analytical or organoleptic tests. Color balance and flavors are the basic parameters that must be on track for the desired end result.

#### **Small Volume Clarification**

Heat stability is one of the critical laboratory tests for small-volume clarification. I have heard from many small-to mid-sized wineries that they just add some predetermined amount of bentonite because it "seems" to work. There is a simple pass/fail test that can determine if a given wine is heat-stable or not. The test identified here will show gross heat instabilities, but unfortunately, the marginal samples are more likely to present a problem. That is why any size wine lab ideally should invest in a turbidimeter, such as the **Hanna Instruments** HI98713-01 ISO Turbidity Portable Meter or HI88713-01 ISO Compliant Benchtop Turbity Meter.

To run the pass/fail test, a sample needs to get to  $0.45\mu$  clarity. In the past, the most common piece of equipment wine laboratories used to prepare a sample was a vacuum filtration system, which uses an initial pad filtration to provide a first stage level of clarity. This process is also useful for coarse organoleptic analysis or for producing small quantities of wine for a series of wine analyses.

The vacuum filtration system uses a funnel that contains a filtration medium and a vacuum flask to receive the wine. The pad medium, however, influences the aromatics and flavors of the wine by absorption of critical



Richard Carey is a wine consultant based in Lancaster, PA.

compounds in much larger proportion of the volume when compared to commercial volumes of wine. This type of filtration can be tedious to do in that cloudy wines plug the filters frequently and washing the filters in small quantities may dilute the flavor profiles so that the wine samples will not be as similar to the final product after commercial processing.

A simpler method for small-volume clarification of wine samples for critical organoleptic evaluation uses a 25 mm in-line filter. This system can produce wine samples of about 100 ml for evaluation. Lab supply houses will often suggest that winemakers purchase pre-configured disposable in-line syringe filters. These are much more expensive over time than if the lab acquires an in-line housing from either **Sterilitech** or **Pall** (**FIGURE 1**). Just one bag of 100 pre-formed filters costs approximately the same amount as one of these housings.

The easiest filter media to use are pre-punched 25 mm filters that come in a range of maximum particle size retention from 1.5 $\mu$  glass fiber to 0.45 $\mu$  polyether sulfone. When the in-line housing is attached to a 30 or 60 ml syringe, the winemaker or lab technician can filter a wine sample for analysis or tasting. For the DIY lab people, the cost of sample prep can be cut from about \$1 per sample to less than a quarter by buying a 25 mm hammer punch and 9 to 11 cm diameter filter media and then punching your own filter discs. For marginally more than the cost of one 25 mm disc, you can get seven to 10 25 mm discs. The easiest way to get what you need is to contact **Agapi Lab Solutions** in Pennsylvania, and they can supply a kit that has all the necessary items.







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FIGURE 1. The elements needed to punch your own filter discs and filter wine to 0.45μ. The kit would include: Punch, one 30 or 60 ml syringe, and one in line filter housing. Kits are available in any combination at Agapi Lab Solutions. Filter media sold separately.

To make a final determination of the heat stability of a sample, place the wine filtered to  $0.45\mu$  in a test tube and put the tube in a water bath at boiling point. After 30 minutes, remove the tube from the water bath and allow it to cool to room temperature for at least 30 minutes. Then hold a flashlight at a 90-degree angle to the viewing plane. The beam of light in an untreated sample should show a very narrow beam, traversing the test tube used for the test volume. Then compare that to the heat-treated sample. If heat-stable, the beam should be close to the untreated sample. To the degree that the beam is more scattered, the wine is not heat-stable. Using a Hanna Turbidimeter would provide reproduceable numerical values.

A more powerful application of these heat-stability tools is to use them for clarification of 100 ml wine samples when creating blends or new products. Since the filter media available have a wide choice of particle size clarification, simply selecting the correct media will give the same clarity as the production wines. However, when you want to add amendments to wines, one will need access to milligram scales and micro pipettes. The micro pipettes have been falling in price to the point where variable-capacity pipettes are less than \$100. By accurately measuring amendments in small quantities, you can be very precise in projecting what 5,000 gallons of wine will look and taste like from a 100 ml sample in the lab. There are inexpensive scales that purport to weigh milligram weights, and they will drive you crazy, primarily because they lack precision and drift. It is worth the investment to get a quality scale from a company such as **Sartorius** or **Millipore**. There are many others that will work.

# **Testing for Microbiological Stability**

Another place where lab filtration is important is in testing for the microbiological stability of a wine post-bottling. Here is another place where your laboratory will benefit from vacuum filtration. There are pitfalls that one must be aware of to avoid unnecessary expenses. There are two basic principles for generating a vacuum for filtration. The first is a water jet venturi that passes water through a narrow opening and creates a vacuum when water rapidly increases speed and sucks the gas from an enclosed space, such as a vacuum flask through a side arm into the stream. The second method uses an electric vacuum pump that mechanically extracts the gas from an enclosed space.

If water is unlimited and cheap, the water jet venturi is the easiest and least expensive. For less than \$100 you can get a water jet vacuum that can be hooked up to a hose or a sink faucet, and you can have a vacuum. The higher the pressure of the water and the colder the water temperature, the better your vacuum will be. The other benefit of this type of vacuum is having no worries about whether the liquid being filtered will come in contact with the vacuum-generating system because all contact parts are wet.

If a winery is located in an area where water is at a premium, then the water jet venturi will not work without significant expense. If your winery needs a significant vacuum and doesn't want to deal with the measures needed to protect electric vacuum pumps, contact me through this publication.

The more normal method of generating a vacuum is to use an electric vacuum pump. The biggest barrier here is the water/wine that is being filtered. In all cases, one needs to protect the pump from water contamination. Most electric vacuum pumps use an oil-based system to create the seal necessary to create the vacuum. Any water that gets to the pump will eventually destroy the pump or at least increase maintenance problems. A novel vacuum pump called **e.jet** was developed by Sartorius. This pump begins by creating a vacuum in the filter housing manifold where the wine liquid is above the filter media. The wine passes through the filter and the manifold, continuing to the e.jet. Whereas other vacuum pumps are damaged by the vacuum, this pump can also pump the wine liquid without damage. Any Sartorius distributor, including Agapi Lab Solutions, can help you with this decision.

One place where a winery needs more than an incidental amount of vacuum is for testing their bottled wines for microbiological integrity. Fortunately, Sartorius, Millipore and others have developed a manifold system with simple sterilized filtration funnels that already have  $0.45\mu$  filter media in them. These funnels come in 100 to 250 ml aliquots per sample. The wine is drawn through the filter; and then just as the wine passes through, an ampoule of growth media is added to the funnel. A simple small petri dish is created, utilizing the base of the funnel and the top that becomes the incubating method for testing for various organisms (FIGURE 2). I have used the Sartorius system for performing bottle integrity checks for my wines and those of my clients for years. This is one of the easiest and best methods for doing in-house microanalysis even if it has been decades, or never, since you micro-plated anything.





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FIGURE 2. The parts needed for testing a bottled wine's microbiological integrity include a manifold supporting one to six Biosart Filter flasks, protective gloves, E-Jet vacuum pump, torch for sanitizing bottle top and prepared media ampules.

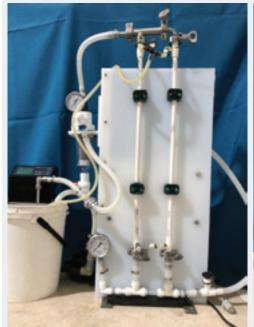
An important part of any vacuum filtration system is the vacuum system. Most lab vacuum systems do not like water intrusion into the vacuum. They rely on fans to pull the atmosphere out of the contained vacuum vessel. Droplets of water that are in the atmosphere that pass to the vacuum can seriously harm the pump. For the micro-testing systems by Sartorius, their e.jet pump is in-line with the manifold liquid line. The vacuum created by the pump pulls the wine through the filter to the pump head, and then liquid follows, draining the liquid through the pump head to waste. If you are creative in setting up your system, it is possible to recover this wine. It is important to note that this vacuum pump is not made for filtering large volumes of wine.

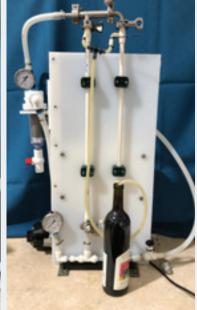
# **Small-Volume Sample Preparation**

When it comes to developing wine blends or creating new products, larger volumes of sample wine are needed, and those samples should be as close as possible to what the commercial product will be. In this arena the equipment available on the market is either too big and expensive for small-scale production, or the systems are too cumbersome to use, and the product produced does not match closely with what the winemaker knows can be done commercially.

One way to produce small volume samples is to take advantage of the simple 20 cm plate and frame filter that holds five to 30 filters and is used to process wines in the traditional way. However, this filter is not useful in a laboratory setting because it requires the infrastructure of the cellar, and it also takes a long time to step through the various levels of filtration to get to the final point. As a result of being frustrated by this problem in my lab, I created my own bench-top cross-flow filter system that can take cellar-racked and-settled wine and filter it to 0.2µ in the laboratory.

This setup is shown in FIGURE 3A AND 3B. It is composed of two principal parts, the filter system and the cleaning support system. The filter system, as designed, can be scaled to provide filtered wines that range from 1 or 2 liters of wine to more than 10 liters. It operates in exactly the same way as the commercial-scale cross-flow filters, which ensures that what you do in the lab will be transferable to the cellar and larger volumes of wine. This system does not need the higher pressures of the commercial systems. It will





FIGURES 3A AND 3B. The filter shown in FIGURE 3A is designed for bench-top operation. It measures 16" wide, 30" tall and 12" deep without the cleaning unit attached. FIGURE 3B shows the addition of the cleaning unit for the filter. It connects into the system pump and can be purchased separately. The cleaning unit measures about 12" square.

also allow for concentration factors that will approximate what is done in the cellar.

The bench footprint for the main filter is 24 inches by 18 inches, with a vertical space of 30 inches. The cleaning system requires a space of 12 square inches. The system has a feed tank reservoir that holds slightly over 10 L. The standard arrangement of the system provides for one filter element, but there is expansion space to add an additional element if the original sizing turns out not to provide the volume of wine needed in the time required.

To run this mini-cross-flow filter, wine is added to the feed tank, and the pump is turned on to feed wine to the membrane. The wine first passes through a pre-filter that has a screened mesh. This piece is required since lab filters have a problem with insoluble material that can lodge in the membrane's hollow fibers, which have a very small lumen. Unlike a commercial cross-flow filter, losing one blocked hollow fiber has a much larger impact on production. The user then adjusts the pressure on the membrane to a flow rate that does place too high of a pressure differential. The filtered wine, which is called the permeate, passes out of the low pressure side of the membrane and is set aside for evaluation or packaging.

From a wine production standpoint, it is highly unlikely that refrigeration would be needed to keep wine at ambient lab temperatures during the processing stage. However, in order to clean the membrane, the liquids needed for cleaning must be heated to about 40° C. The cleaning system uses a commercial sous vide heating element. This unit is capable of consistently heating the cleaning fluids and keeping the temperature constant so the membrane is not damaged by overheating.

Cleaning the membrane follows the same protocol as full-scale cross-flow systems. Rinsing to get rid of any residual caustic with cold water is followed first by a hot water (40° C) rinse. This is followed by running with a caustic solution for 30 minutes. The caustic solution is then followed by a hot water rinse for a few minutes, a citric acid wash for 20 minutes and then a cool

Constructing this laboratory cross-flow filter system is not difficult. One solution is to purchase a kit that has all the necessary parts from Agapi Lab Solutions. Anyone that would like a listing of the parts needed to make your own system can send me a request through this publication. WBM











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Bill Pregler

Bill Pregler has worked in the winery equipment industry for many years and is a former staff writer for Wine Business Monthly.

# **Cool New Products from Syracuse**

New wine technology knows no borders



GOfermentor

**AFTER 18 CONSECUTIVE YEARS** of prospecting for new products at the **Unified Wine and Grape Symposium** (UWGS), I spent last year (in failed retirement) roaming the Atlantic Coast instead. My search was finished at the **Eastern Winery Exposition in New York**.

Years ago, many in the wine business believed all winery equipment came from three countries: Italy, Italy and Italy. Today, innovation knows no boundaries, and in keeping with that knowledge, I'll be expanding my horizons for What's Cool by offering a look at out-of-the-box producers, updates to existing products and the West Coast tradeshows.



Somec Containers

This month I wanted to focus on two new products I found while in Syracuse, NY. One is a cool, self-contained, programmable fermentor from New Jersey. It is designed for in-house, experimental wine programs or, even better, the upstart winery.

But first, a new aluminum bottle from Japan, which will soon launch in the USA.



# **Somec Containers**

As an advocate of the **Packaging Machinery Manufacturers Institute** (PMMI) world, I am all eyes for anything new in fluid containment. Alternative packaging, particularly wine in aluminum cans, is finally gaining traction, so it was no surprise to find a new aluminum bottle entering the market.

I have known about **Somec Containers** for years—the company has been a player in the glass market—but to see it test-market an aluminum bottle, especially in Napa/Sonoma, is cool. There are several things I like about this new concept, including the fresh packaging and the company's focus on what the market wants and responds to.

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Somec has concentrated its marketing efforts on younger consumers, who appreciate the unbreakable, sustainable, single-serving packaging with the convenience of a screwcap. Aluminum bottles are not necessarily new, but Somec has stepped away from the pack with a new, different marketing visual—the recognizable "wine bottle shape."

I spoke with **Jon Schaudies**, vice president of Somec Containers, in Chicago about the shape. The product release comes after nine years of successful testing in the Japanese market.

They are not necessarily targeting the weekend backpacker or beach volley-ball player, but rather the young professional who wants to come home and relax on the couch with a serving of wine. Somec's thinking is wine-in-can in retail settings can be confused with beer, while a traditional wine bottle shape will trigger more consumers to equate the container with wine. The bottles are available in the 250 ml size with a 500 ml option available soon.

At the show I saw a selection of colors, including gold, rose and burgundy finishes. Custom colors are also available. What is totally cool is a winery can apply its existing paper labels to the aluminum bottles. This maintains the continuity of the wine's market brand, enhances the appearance as a "traditional" wine bottle and, I am told, saves in overall cost. Schaudies also told me that shrink sleeve labeling is available. Wineries now have a wider selection of options for their marketing department to experiment with.

Even more interesting is how Somec modeled its liner technology after such brands as **Coca-Cola**, **Kirin** beer and **Georgia Coffee**. The mere fact that Somec can contain the harshness of cola and coffee with a nod to the craft beer world speaks volumes. This has a lot to say about the integrity of their liners, which is always the first concern of winemakers.

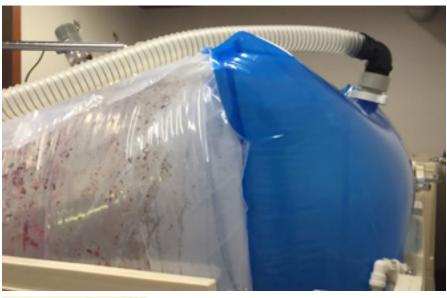
Somec's proprietary liner is not a traditional spray application. Instead, the company uses a laminated film, like an internal "skin," which is designed to maintain freshness for both still and sparkling wines. The film is applied directly to the aluminum, which is then drawn through dies, similar to forming a can. The film offers a strong surface, which is not prone to any leakage or aftertaste.

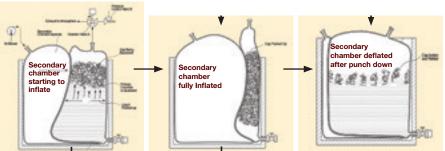
For more information contact: Jon Schaudies at 773-844-7942 or Jon. *Schaudies@someccontainers.com*.

# **GOfermentor**

**Dr. Vijay Singh**, biotech scientist and owner of **Sky Acres Winery** in Bedminster, New Jersey, has an extensive portfolio of patents in the pharmaceutical industry focused on sanitary, polyethylene containment and mixing systems. It is no surprise that, given this background, he's invented something similar for our wine industry.

The **GOfermentor** is a totally self-contained, single-use, hermetically-sealed fermentor which allows no air inside and requires little water for clean-up.





TOP: The first stage in the GOfermentor process, when the secondary chamber starts to inflate.

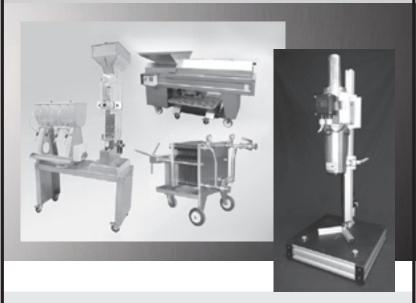
He conjoined poly-nylon "bladders," called **GOLiners**, which are BPA-free and medical-pharma-grade (FDA-CFR-177), to provide a new method for winemakers in cap management (punch-down) and the final pressing of must. All this is achieved by simply inflating and deflating the bladders.

The GOfermentor's second main component is the industrial-strength, plastic **GObase**. The bladders fit inside this base container, measuring 4x4x5 feet. A controller, with options for manual operation or pre-programmed use, operates all functions: setting and logging press cycles, adjusting PSI increments, durations and timing, and temperature alarms (both hot and cold).



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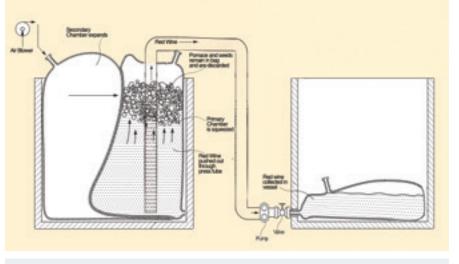
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Red wine is pumped out of the GOfermentor and into another vessel, leaving pomace and seeds behind.

The controller, made in the United States, contains all electrical components, including the inflating blower and valves. It simply hangs on the side of the GObase and attaches to the liners via hoses. The inflation and exhaust ports and sampling tube are again sealed. The temperature sensor is centered in the fermenting must. The list of other features and benefits include:

- A built-in ethernet interface, which enables data to be sent to a computer or mobile devices. According to Singh, the controller will even send text messages for temperature alerts.
- An optional stainless heat exchanger plate, which lies beneath the liner. Wineries will need to supply their own glycol and chiller.
- Since the GOfermentor is totally sealed, there is almost no wash down, implying a huge reduction in water usage and labor. When finished pressing, simply remove the bladders, slit them open for pomace removal and dispose.
- The base is easy to move around the cellar with a pallet jack—it is
   Department of Transportation (DOT) certified. After use, the base,
   manufactured in Germany, can be easily wiped clean then folded into
   an 18-inch high package for convenient storage. Several can be stacked
   on top of each other.
- Set-up takes only 10 minutes and uses 100V power. The company
  maintains a complete inventory of replacement parts, which are easily
  delivered via UPS. If there are any problems with the controller, it can
  simply be removed and replaced.

As said, this is an affordable unit and, as it is designed to accommodate 1 ton of fruit, perfect for experimental wine programs in an established winery or for the beginning home winemaker. Simply add grapes and yeast and GOferment. As a bonus, financing is available.

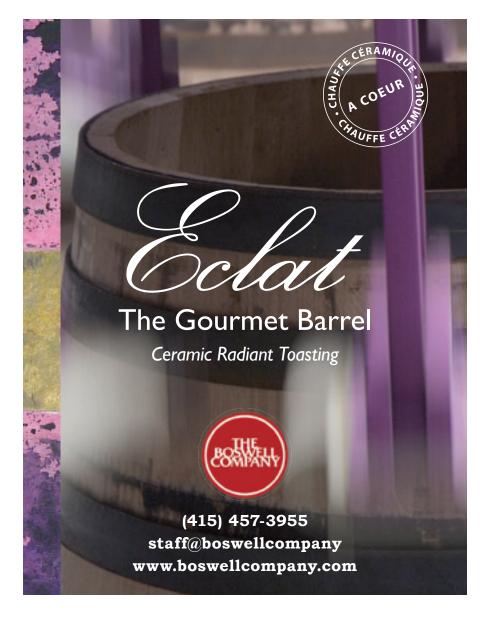
Read more about GOfermentor's small-scale lab version, GOfermentor Jr., in the August 2019 issue of *Wine Business Monthly*.

For more information contact: sales@Gofermentor.com or 908-884-5557.

# The Wrap

Historically (and coincidentally), Syracuse was a hugely pivotal crossroads in the development of early commerce for the United States. In 1812, the Erie Canal was completed and became the first and only major artery of western expansion from New York to the emerging center of the continent.

That said, on my East Coast tour I saw plenty of representation from large companies, like ARS Sanitation, AaquaTools, Clemens Vineyard Equipment, Criveller and Prospero. I also saw a number of vendors with products tailored to the growing craft beers and spirits markets. But I discovered plenty of new companies that, for whatever reason, cannot make it into UWGS. WBM





# You Can't Fix What You Don't Measure

Curtis Phillips

Curtis Phillips, an editor for Wine Business Monthly since 2000, is a graduate of UC Davis, and has been a winemaker since 1984 and an agricultural consultant since 1979.

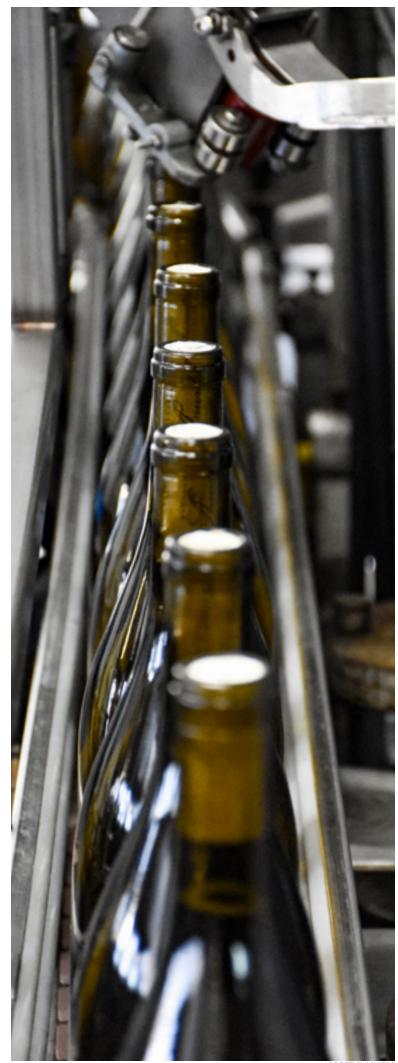


IN THIS YEAR'S WBM Closure Survey, we revisited the issues of oxygen transmission and the calibration of bottling lines for consistent dissolved oxygen in bottled wine. The amount of oxygen in the bottle is a major source of bottle-to-bottle variation in wines. To some extent, the absolute amount of oxygen that wine is exposed to from the filler to the time when the customer opens the bottle is less important than making sure that each bottle is exposed to more or less the same amount of oxygen. The last time a wine is a single unit is when it is in the filler-bowl. It is as important for the winemaker to make sure that the filler-spouts each have comparatively similar amounts of oxygen ingress during filling as it is to make sure that the closures have a consistent oxygen transmission rate (OTR).

### Highlights from the 2019 WBM Closure Survey Report include:

- 70% of wineries use natural cork closures on at least some of their total wine production
- 59% of small wineries do not measure in-bottle oxygen.
- 62% of wineries do nothing to ensure that their bottling equipment is filling bottles with consistent levels of oxygen.

We revisited OTR and bottling line calibration, specifically the filler, this year for a couple reasons. Firstly, this is, and has been, one of the big questions about closures in general. Secondly, while we are beginning to collect enough data to establish a solid current baseline of winemaker perceptions of closure consistency of in-bottle oxygen transmission, and if these perceptions are changing over time, we would like to collect similar data regarding bottling line calibration. Since this was only the second time we asked these questions, we can't really infer any sort pattern to the data. However, we are listing the results even though they are inconclusive because it is important that winemakers continue to discuss the subject of wine oxygenation at the bottling line.





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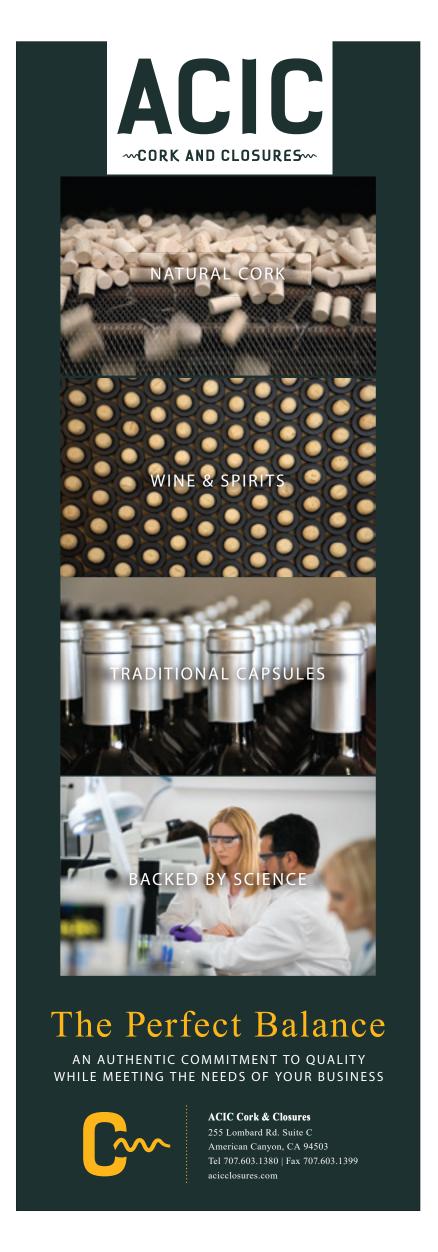
# "EVERYTHING THAT GOES INTO THE BOTTLE SHOULD REFLECT THE GOODNESS WE PUT INTO THE WINE."

Five-time James Beard Award nominee and Food & Wine winemaker of the year Steve Matthiasson uses Green Line closures because they're sustainably made from plant-based materials and carbon neutral to boot. Closures with karma.



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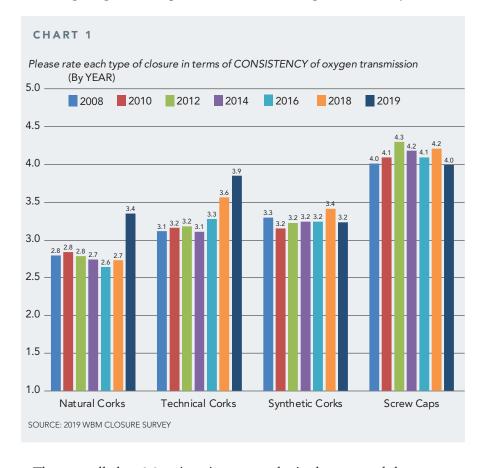


# **Closure Usage**

The responses for the overall distribution of closure usage *by winery* was consistent with previous surveys. (Chart not shown.) Seventy percent of the respondents reported that they are using natural cork closures. Forty percent are using technical corks—a category that includes pretty much any closure made from cork granules including all agglomerated, composite and engineered closures ranging from 1+1s to **DIAM**. Thirty-four percent of the respondents reported that they are using screwcaps. Only 10 percent of the respondents said that they were using synthetic (plastic) closures. It should be noted, however, that these respondents included those from the largest wineries and should *not* be taken as an indicator of synthetic closure usage in terms of the total volume of wine produced.

# **Oxygen Transmission Redux**

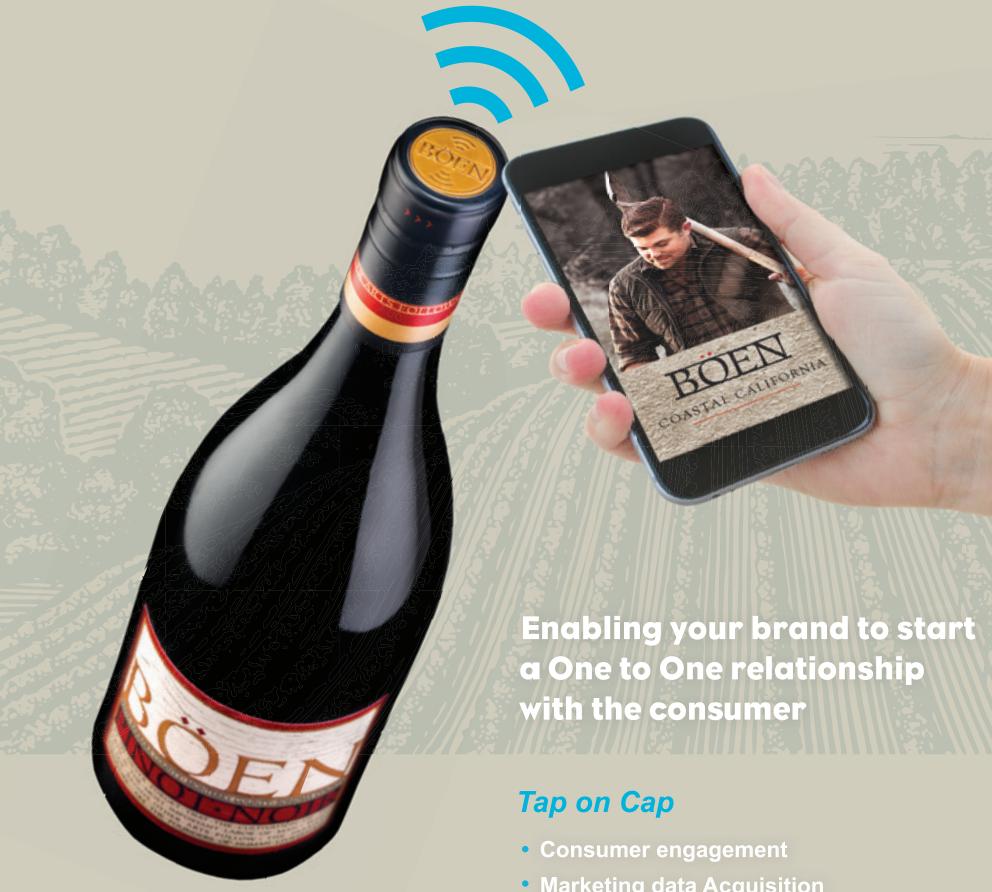
As we can see from **CHART 1**, the responses to the question of closure consistency showed a bit more movement than we have seen historically for both natural and technical cork closures. Both received higher ratings than they had in earlier surveys. By contrast, screw caps and synthetic closures received perception ratings that were in line with previous surveys.



The generally low 3.2 rating given to synthetic closures, and the generous increase in the rating given to natural corks, seem to be somewhat out of line with what an analytical analysis would find if the closures were analyzed just for consistency. For example, the **Australian Wine Research Institute** (AWRI) study completed some years ago found that, under isothermal conditions, bottles closed with natural cork *could* have an OTR lower than everything except bottles closed by screwcaps. The same study also showed that bottles closed with natural cork exhibited an OTR variability at least one to two orders of magnitude greater than synthetic closures, screw caps or even technical cork. There is also a very human tendency, called confirmation bias, to discount or not remember negative results. We think that these results should be interpreted not as a valuation of the absolute consistency of these closure types, but more as a rating on the consistency of the closures relative to how the winemaker expects them to perform.

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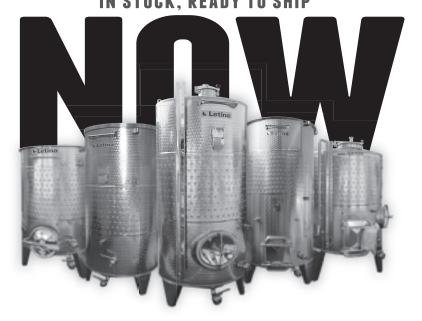
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# Wine Closures

Natural cork is the most frequently used closure by winemakers due to its ability to compress and expand to form a tight seal, as well as allow the wine to breathe over long periods. Natural cork is regarded as environmentally friendly, since corks are easy to recycle and cork is sustainably produced (the same trees are stripped about every nine years). Historically, the main drawback of natural cork is the possibility of wine developing cork taint (becoming "corked") brought on by TCA (2,4,6-trichloroanisole) in the wine, which in most cases is said to be imparted by the cork itself due to natural occurrences in the cork or to how it is processed. Over the past couple decades, the cork industry has changed or improved their production processes to the point where there is much less of a chance of TCA contamination. Several vendors now are also guaranteeing their closures have a below the detection-threshold.

**Technical corks** include any closure made from cork granules. Often they are made to resemble natural corks and are manufactured using a combination of agglomerated natural cork granules, a binding agent, with other optional parts. For our purposes, this category includes highly-engineered closures like the DIAM that include non-cork "microspheres" as well as cork granules and binding agents.

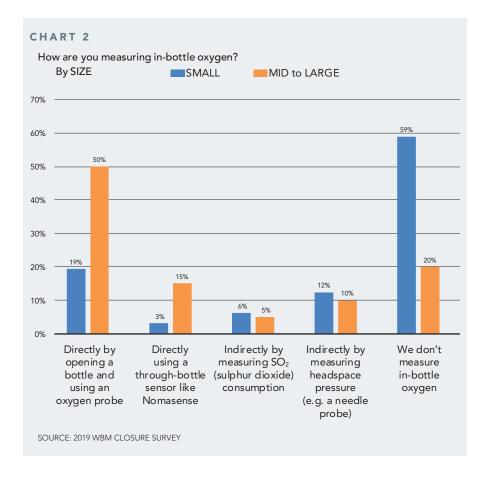
Sometimes with natural cork disks glued to the ends (in contact with the wine). These types of corks are also known as "1+1" corks (there are also 2+0: two disks on one end, and 2+2: two disks on each end) and have a low incidences of cork taint compared to natural corks. Technical corks are efficient at preserving sulfur dioxide concentrations within the bottle, and are most commonly used with wines that are meant to be consumed within the short-term (two to three years). The "Twin Top" is the most well-known technical cork developed.

Synthetic closures mimic natural cork closures in how they look and function, for the most part, but are made of plastic (injection-molded or extruded), thus do not present the risk of TCA contamination. The most commonly cited drawbacks of synthetic closures are that they are difficult to remove from the wine bottle (as well as re-seal) and are susceptible to higher risks of oxygen permeation than natural cork (although this latter aspect has seen improvement). Historically, synthetic closures had drawback that has created some opposition to synthetics is their environmental impact, as they are oil-based and are not biodegradable like a natural cork. However, some synthetic closures on the market are made from plant-derived ethanol rather than petroleum.

Screw caps, also known as "screwcaps" (no space), "Stelvin caps," ROTE caps (Roll On Tamper Evident) or ROPP caps (Roll On Pilfer Proof), are made from aluminum and seal onto a wine bottle's neck in a threaded fashion, as opposed to being pushed into the bottle's opening like a natural cork closure. Screw caps are said to offer a tighter seal, thereby protecting against cork taint and keeping unwanted oxygen at bay, serving to preserve aromas and improve a wine's overall quality. Conversely, some have accused screw caps of suppressing wine aroma and quality too much (reduction). Screw caps, the predominant closure choice in New Zealand, continue to rise in usage by U.S. wineries as U.S. consumers become more comfortable with them.

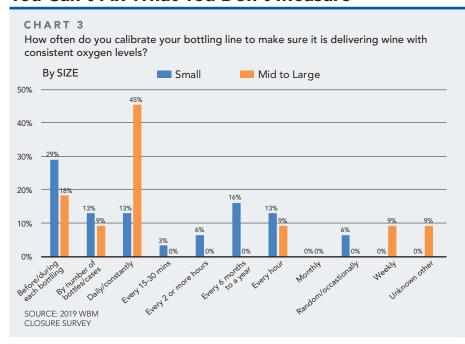
# **Oxygen Measurements**

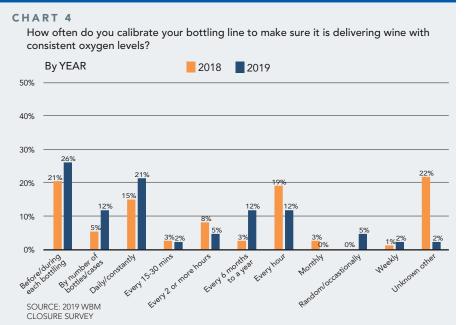
**CHART 2** shows how the respondents are currently checking the dissolved oxygen (DO) in their wines after bottling. We can see that there is a clear division between the behavior of winemakers from small, mid-sized and large wineries. More than half the (59 percent) of respondents from small wineries don't check their in-bottle DO at all. Only one-fifth of mid-sized and large wineries take a similar, no-measurement, approach.





### You Can't Fix What You Don't Measure





# **Bottling Line Calibration**

The last two charts can be used to show how important the survey respondents view bottling calibration for assuring a consistent amount of oxygen is in each bottle of wine. CHART 3 is this year's results with the responses from small wineries separated from mid-sized and large wineries. CHART 4 compares this year's results with last year. Although there are clearly differing results between the 2018 and the 2019 surveys, one should resist over-interpreting this difference because we do not yet have enough data to determine if there is any sort of trend or if the results from one year or the other are anomalous. Taking that remonstration into account, we are encouraged by the large drop in the "unknown/other" responses for CHART 4. Future surveys should confirm if this is an indicator that winemakers are realizing the importance of bottling line calibration.

# **Survey Respondents**

This year's Closure Survey received a total of 156 responses from across North America.

Sixty-six percent of survey respondents reported their job as being in wine-making, 64 percent as president/owner/GM, 32 percent work in cellaring/production, 33 percent in sales/marketing and 32 percent in purchasing/finance (respondents were able to choose more than one function).

The purpose of the survey was to determine trends in wine bottle closure usage and perceptions within the US wine industry. Please note that the findings of this survey are meant to offer a general look at trends and practices; it is not a scientific study and should be used only as a tool and a point of reference for further inquiry. **WBM** 



# **Caveats and Clarifications**

The WBM Closure Survey tracks the *number* of wineries using a particular closure and does not track relative amounts or total cases bottled under a particular closure. Neither does the WBM Closure Survey capture closure usage in terms of numbers of units sold.

In terms of the total volume of wine produced, and therefore the total number of bottles produced, the U.S. wine industry is heavily weighted toward a very small handful of companies that produce about 80 percent of the wine bottled in the U.S. Their closure choices dictate which closures are in most of the bottles of wine consumed.

The total number of a particular closure type use on the high-speed bottling lines in Fresno, Modesto, Stockton and Madera is a nice point of trivia, and is certainly important to the companies supplying the packaging materials used on these bottling lines, but it isn't really relevant to the particular closure choices that a small or mid-sized winery on the Niagara Escarpment, the Michigan Upper Peninsula, upstate New York, Washington, Oregon or even Napa Valley may use. The WBM Closure Survey should be interpreted as insight into the closure choices of individual wineries, not as a measure of which wine-closure types have the largest shelf-presence in U.S. grocery stores.

The reason that we don't weight our responses by total production is that the large wineries approach winemaking in a fundamentally different manner than small wineries, from vineyard to consumer sales. The responses from winemakers from large wineries thus represent how most wine is indeed made in the U.S., but only represent a very small minority of winemakers and wineries.

Synthetic closures are a good illustration of this phenomenon. For several years now, the WBM survey has been showing a slight but steady decrease in the *number of wineries* using synthetic closures. At the same time, it appears that more wines are bottled under synthetics than ever. We may be well past the point where more than half the wine bottles in the U.S. are closed by synthetic closures but only 10 percent of wineries use them.

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# New Seismic Safety Technology Hits the Market

Four-barrel racks are more stable and recommended

Kerana Todorov

**Kerana Todorov** is a staff writer/news editor at Wine Business Monthly. She can be reached at *ktodorov@winebusiness.com*.



Michael Blom, director of barrel operations at Top It Off Bottling

**ON AUG. 24, 2014,** residents of Napa woke in the middle of the night as the ground began to shake. Chimneys fell, windows in downtown Napa were smashed, the local newspaper's press literally jumped off its tracks. In wine cellars and warehouses near the epicenter of the 6.0-magnitude earthquake, hundreds of barrels stacked on movable racks toppled. **Silicon Valley Bank** reported the disaster caused an estimated \$83 million worth of damage to the wine industry. Since then, companies have developed and marketed new technologies meant to protect uniquely shaped winery assets and inventories.

# Western Square and Onguard Market Seismic Safety Systems

To prevent barrels from toppling over, Western Square Industries is marketing a new seismic safety system that uses technology developed outside the industry: a product used in museums to protect large statues and other works of art. This system was tested in the summer of 2018 at UC Berkeley's Pacific Earthquake Engineering Research Center, said Trygve Mikkelsen, chief executive officer at Stockton-based Western Square Industries.

The seismic safety system is based on a sliding base-isolation technology **EQX Global LLC** of Napa has developed from research published in Japan, said **Paul Segas**, a principal at EQX. Similar technology has been used to secure large statues at special exhibits at the **Asian Museum** in San Francisco and the **Louvre Abu Dhabi** in the United Arab Emirates.

Western Square's new seismic safety system places a steel tray underneath the bottom barrel racks—either under a portable two-barrel or four-barrel rack. The flooring is covered with an epoxy coating, which allows the tray to slide against the movement of the earth during an earthquake. A sudden shift in tectonic plates disperses an extraordinary amount of kinetic energy. Western Square's seismic safety system prevents energy from the earthquake

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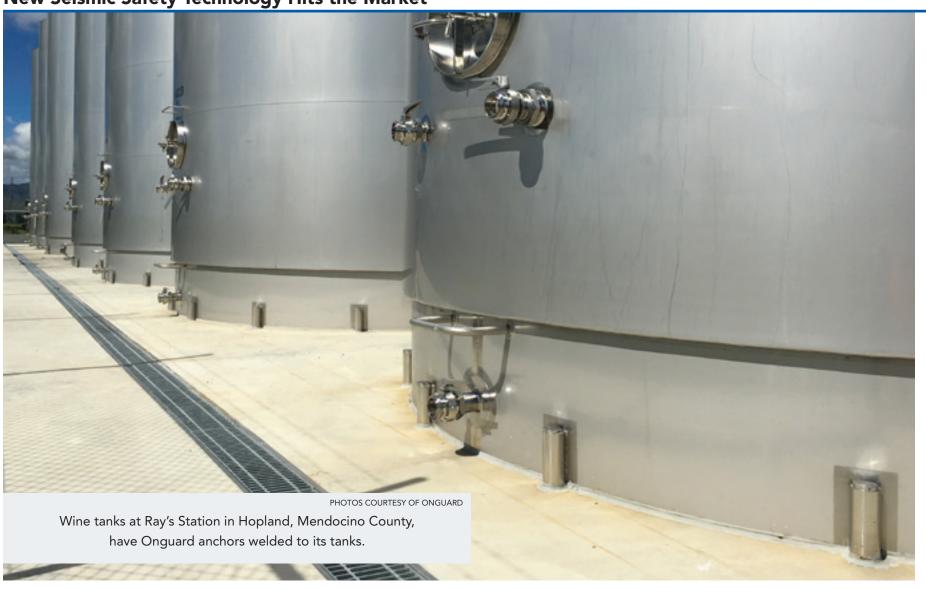
2-Barrel Rack

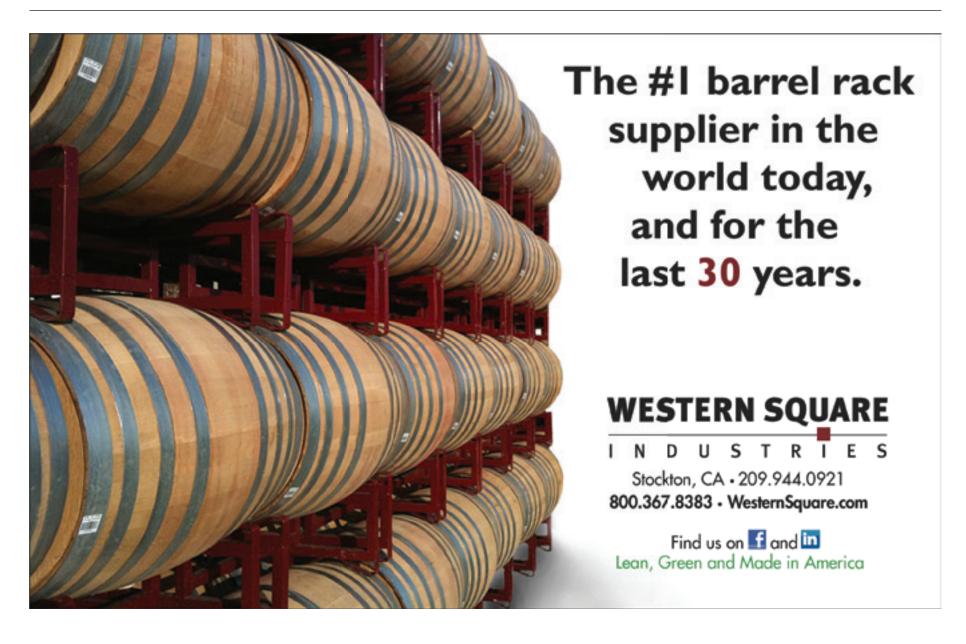
4-Barrel Rack

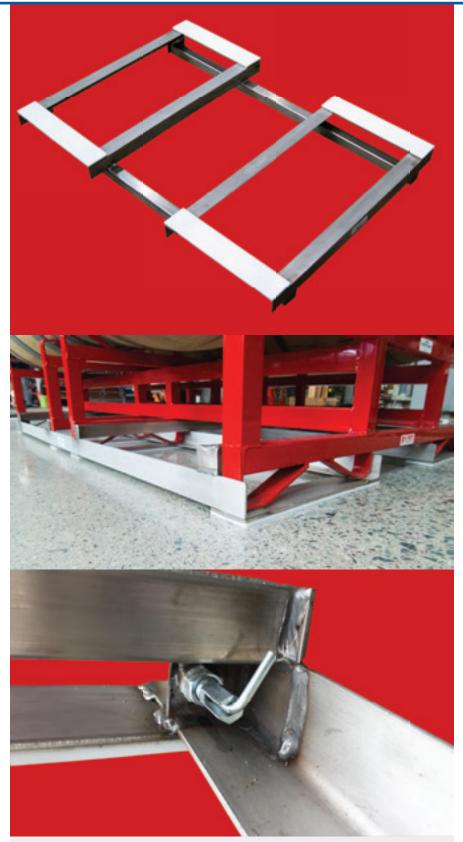












PHOTOS COURTESY OF WESTERN SQUARE INDUSTRIES

Western Square Industries has a new seismic safety system. A stainless steel tray is placed under the bottom rack. The tray slides on the concrete floor coated with epoxy in the event of an earthquake.

from being absorbed by the barrel stack, according to Western Square. During an earthquake, the barrel stack only moves a fraction of what it would without the system in place, according to Western Square. This effect is called "base isolation," according to the company.

Western Square is coordinating installation of the system with four local wineries, but it's no small investment. Preparing the floor with an epoxy coating costs about \$10 per square foot, said Mikkelsen. Pricing the flooring improvement can be estimated by the number of stacks. A stack of four-barrel racks stacked 6 feet high covers about 25 square feet—or \$250. A seismic steel tray costs \$750 for a two-barrel rack and \$1,200 for a four-barrel rack.





PHOTOS COURTESY OF ONGUARD

Onguard anchors (top) are welded to tanks to prevent them from toppling during an earthquake.

New Zealand-based **Onguard** has developed a different technology specifically for anchoring wine tanks. The steel anchors are welded to the base of each tank and are designed to dissipate the energy from seismic jolts through yielding, according to the company. Onguard has been providing the system in the United States since 2016.

"Our ductile anchor is one that contains a sacrificial fuse that yields in both tension and compression when the tank is cycling back and forth with earthquake accelerations," Onguard founder and president **Will Lomax** said. The fuse is ductile carbon steel contained within a plastic sleeve and ranges from 2.6 tons to 33 tons in size.

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# **Key Steps to Take to Prevent Damage in an Earthquake**

- Keep the general public away from barrel rooms
- Use four-barrel racks instead of two-barrel racks
- Stack barrels with their bilge facing the main aisles and orient barrel heads end-to-end
- Restrain the top barrels to their rack
- Anchor tanks down
- Install standalone catwalks with no tank support
- Avoid "solve-all," impractical and costly solutions

—Joshua Marrow, Black Stone Consulting

All 300 or so tanks equipped with the Onguard system in New Zealand survived the 7.8-magnitude Kaikoura earthquake that shook the small country in 2016 with no damage or losses.

"The level of investment depends on the size of the tank and the seismicity of the site, but typically ranges from US\$0.08 to \$0.30 per gallon of wine stored in the tank," Lomax said.

The company has installed the system on tanks as small as 2,000 gallons, noted Lomax, whose company has clients in various industries. The company is currently working on a solution for a 3.7 million gallon tank used in the petrochemical industry, Lomax said. Onguard can install the system on any tank size. The system has been installed at facilities in New Zealand, California and Oregon.

# **Seismic Safety Measures Evolve at Wineries**

As of four years ago, most barrels at **Trinchero Family Estates** facilities are stacked on four-barrel racks for better stability, according to **Glenn Andrade**, senior vice president of winemaking. But the winery also has been experimenting with different methods to anchor its tanks, including using bolts and welding rings.

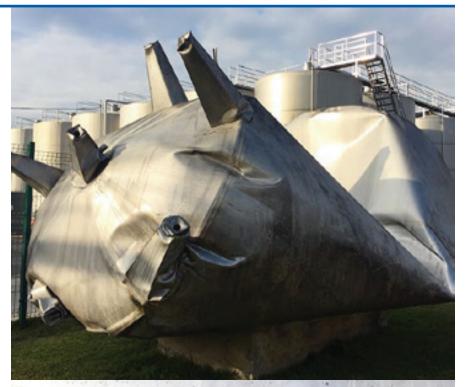
Christiane Schleussner, production winemaker at Silver Oak in Alexander Valley, a facility opened in 2018, said the company uses four-barrel stacks for greater stability instead of two-barrel racks. Silver Oak's winery in Oakville in the Napa Valley has been using the four-barrel rack system since the 1990s.

**Joshua Marrow**, director of seismic, structural engineering at **Blackstone Consulting LLC** has been researching seismic safety in the wine industry since the late 1990s. He stresses solutions do not have to break the bank. In fact, one of his strongest recommendations is simply using four-barrel racks and strapping the top barrels.

And wine tanks? "Anchor your tanks down. Don't let them run around!" he said.

The two-barrel rack's performance during recent earthquakes has been shown to be poor, Marrow said. The poor earthquake performance was validated through experiments conducted at UC Berkeley's **Richmond Field Station**. Videos of the experiments show stacks of four-barrel racks swaying, but not falling. Stacks of two barrel-racks, on the other hand, tumble on the shake table.

According to Marrow, any two-barrel rack can slide or walk off the end of the supporting barrel below, causing a collapse of the barrels above it. The collapsing stack then collides with adjacent stacks, causing a domino effect.





ERIN KIRSCHENMANN

At Vina Balduzzi in Chile, an earthquake toppled tanks that weren't bolted down. The movement created a vortex and suction, causing the wine inside to burst through the tank door and crumple the vessel.

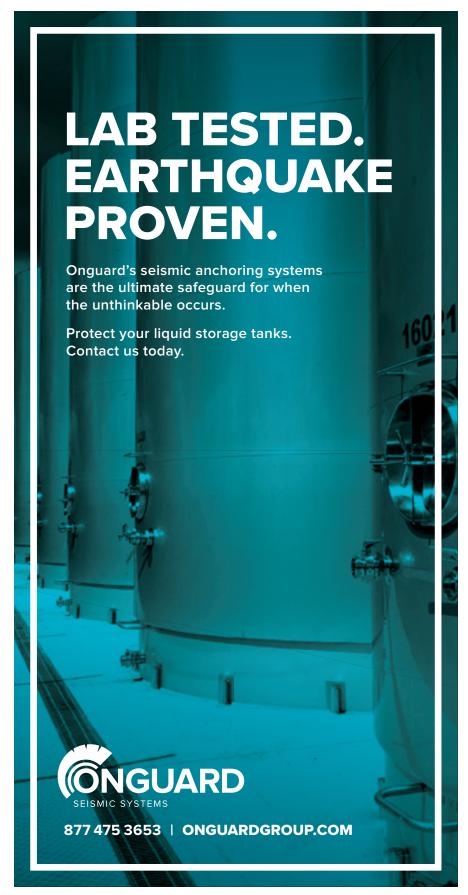
In addition to stack collapse, any top barrel can be ejected and either wedge itself between other stacks or fall to the ground and explode.

**Michael Blom**, director of barrel operations at **Top It Off Bottling**, consulted with Marrow after the 2014 earthquake. At the time, he was the owner of **Napa Barrel Care**, located on the southern edge of Napa. Blom had just arrived in Hawaii when the earthquake hit. He immediately flew back to California to find most of the warehouse's 20,000 barrels had fallen.

Marrow helped Blom reconfigure his barrel room by stacking barrels with the bilge facing the aisle (instead of the head), as well as end-to-end for greater stability. It took 30 days to pick the barrels up and another month to get them organized, Blom recalled.

Now, Blom also straps the top barrels, which are stacked five or six barrels high, with trucker straps purchased at **Home Depot**.

Blom tells his clients there are no guarantees that the barrels will not fall during an earthquake. "The stacking is to give my staff more time to get out of the building," Blom said. **WBM** 





# What's in the Wine Microbiome?

A review of microbial ecology throughout the fermentation process

Molly Kelly

**Molly Kelly** became the enology extension educator at Penn State University in February 2018 after five years as enology extension specialist at Virginia Tech.

**THE THOUSAND SPECIES OF** yeast, bacteria, and filamentous fungi that are abundant in the soil, on the vine and the fruit, and even in the cellar, form communities known as microbiomes. These organisms are present at various stages in the vineyard and throughout the winemaking process. Substantial yeast and bacterial biodiversity exist at different times and interact throughout the entire process.<sup>1</sup>

Many researchers have sought to define the influences of numerous bacteria and fungi on the chemical and sensory properties of wine. While some grape/wine microorganisms can have a negative impact on wine quality such as the bacteria *Acetobacter spp*. and the yeast *Brettanomyces spp*., some microorganisms are beneficial and can enhance sensory complexity of wines.<sup>2</sup> Potentially these post-harvest microorganisms could be used as an early predictor of wine chemical composition. Several researchers have shown that grape and wine microorganisms exhibit regional patterns that correlate with wine chemical composition, suggesting that it may influence terroir.<sup>3</sup> Other factors that contribute to regional microbial patterns include soil type, climate, topography, viticultural practices, and winemaking techniques.<sup>4</sup>

In this article, we will discuss the changing microbiome throughout the fermentation process, techniques to characterize the microbiome and finally, the importance of interactions among organisms.

# **Grapes and Must**

### YEAST

Grapes are the main natural reservoir of native yeasts. Researchers have reported 93 different yeast species belonging to 30 different genera that were isolated from 49 different grape varieties growing in 22 countries. Renouf et al. (2007) identified 47 yeast species belonging to 22 different genera on fruit. These yeasts were isolated from the surface of grape berries of six different varieties. Several species of non-*Saccharomyces* yeast are commercially available as coinocula with *Saccharomyces* yeasts, which can increase the sensory complexity of wines.

CFU stands for "colony forming unit" and is a measure of viable bacterial or fungal cells present when grown in culture. Although large numbers of yeast species are identified on grapes, the actual cell populations are low. Yeast populations on immature grapes range from 10<sup>1</sup> to 10<sup>3</sup> CFU per gram) but increase to 10<sup>3</sup> to 10<sup>6</sup> at harvest time. \*Gaccharomyces cerevisiae\* is infrequently found on clean fruit (compared to other species) but fruit that is



Ben Chrisfield, Penn State University graduate student, processing fruit in the research winery at Penn State

damaged may increase its growth.8 Some researchers have reported isolation of *Brettanomyces* on both healthy and sour-rot infected grapes.9

The growth of yeasts on the berry surface may be related to the increased surface area of each berry and to the availability of nutrients. During maturation, the berries increase in size, more nutrients are available on the surface of the berries and sugar concentration increases. The decrease in acidity may also stimulate growth.<sup>10</sup>

Several studies report that yeast diversity is dependent both on climatic and micro-climatic conditions. In the vineyard, the micro-climate is the climate from the soil upward into the vine canopy, and that microclimate has a significant impact on wine quality. For example, some studies reported higher yeast counts for vintages with high rainfall, which is probably due to substantial fungal proliferation.<sup>10</sup>

The health status of berries can also affect the diversity of yeasts. For example, *Botrytis cinerea* can penetrate the surface and release nutrients, possibly altering the microorganisms on the grape surface.<sup>11</sup>

### **BACTERIA**

In order to minimize the faults caused by LAB and AAB genera, winemakers need to understand the metabolic requirements of these two different bacteria. Control of their growth in a wine depends on how the winemaker manages the oxygen in that wine. LAB genera are classified as a facultative anaerobe, as they grow either in the presence or absence of oxygen. In the presence of oxygen, they grow more robustly and express their faults, but it should be noted that they still grow in the absence of oxygen. AAB genera are obligate aerobes, which means they require oxygen to grow. However, they don't die without oxygen – they only lay in wait for oxygen to become available.

A review by Barata et al. (2012a) lists over 50 bacterial species that have been identified on grape berries.8 The species isolated mostly belong to two groups: gram positive lactic acid bacteria (LAB) and gram-negative acetic acid bacteria (AAB). These organisms are separated into two groups based on their different staining reactions, which is the result of differences in cell wall composition. Other organisms recovered include *Bacillus spp.* and *Enterococcus spp.* LAB include organisms such as *Lactobacillus* and *Pediococcus* as well as *Oenococcus*. While lactic acid bacteria are the typical agents of malolactic fermentation, *Oenococcus oeni* has been seldom isolated from

the vineyard. The AAB are strictly aerobic bacteria and include *Acetobacter* and *Gluconobacter spp.*<sup>8</sup>

Analysis of grape berry bacterial microorganisms revealed changes in the size and structure of the population during berry ripening, with levels rising gradually and reaching their highest level when berries were overripe. Research has found that as the grapes reach maturity, gram-negative communities such as *Acetobacter* decline, whereas gram-positive communities such as LAB *genera* increase. A study by Martins et al. (2012) found that at harvest time averages of the different microbial populations were around 103 CFU per berry for gram-negative aerobic or anaerobic bacteria and 104 CFU per berry for gram-positive bacteria.

AAB are often detected on healthy grapes.<sup>7</sup> AAB populations are stimulated by berry damage and grow to around 10<sup>6</sup> CFU per berry on rotten grapes.<sup>13</sup> Typically, winemaking conditions result in loss of these strictly aerobic bacteria, although they have also been found to survive in the absence of oxygen, but this is usually not the case.<sup>14</sup> Since some AAB may survive the fermentation, they can be implicated in wine spoilage downstream. The most serious consequence of AAB spoilage is the production of high levels of acetic acid.

Other organisms, generally considered as spoilage organisms, can also grow on grapes, including filamentous fungi such as *Aspergillus* and *Penicillium*, and may greatly influence the sensory quality of wine through the production of mycotoxins or off-flavors.<sup>15</sup> Downy mildew (*Plasmopara viticola*), powdery mildew (*Erysiphe necator*) and gray mold (*Botrytis cinerea*) are also capable of producing off-flavors.<sup>16</sup>

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# **Alcoholic and Malolactic Fermentation**

### **YEAST**

Once grapes are crushed, non-Saccharomyces yeasts multiply and reach peak populations in the early stages of alcoholic fermentation. Populations of non-Saccharomyces may be as high as 106 to 108 CFU/ml depending on production conditions.<sup>17</sup> Hanseniaspora/Kloeckera are normally the dominant native yeasts present on grapes at harvest, but their activity may be limited to pre-fermentation and early stages of alcoholic fermentation and may decrease as alcohol concentrations increase. Saccharomyces normally completes the alcoholic fermentation (AF). However, fermentations conducted at temperatures less than 15-20° C may decrease the sensitivity of these species to ethanol. If these species equal S. cerevisiae as the predominant species at the end of fermentation, they may have an impact on wine flavor either positively or negatively.18



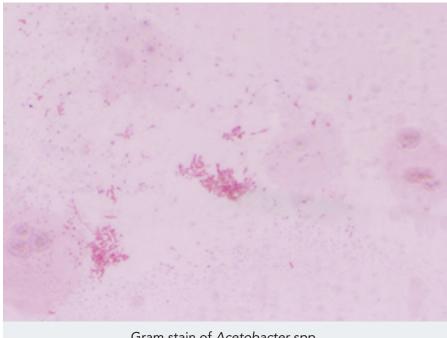
S. cerevisiae growth on yeast/mold agar

Other yeasts that may be isolated from grapes and must include species of Brettanomyces, Dekkera (the sporulating counterpart of Brettanomyces), Candida, Pichia, Hansenula and Torulopsis. 19 Diseased and damaged grapes harbor significantly more spoilage yeasts that can negatively affect the fermentation. These yeasts can metabolize the sugar in the grapes, which contain 160 to 240 g/L, mainly in the form of glucose and fructose. In addition, the spoilage yeast species can result in strong off-flavors and may be tolerant to sulfur dioxide.

### **BACTERIA**

Like yeasts, lactic acid bacteria (LAB) are also found in the AF. LAB isolated from musts and wines include L. brevis, O. oeni and Pediococcus. The typical spoilage times for LAB are during stuck fermentations and in finished wines containing low SO<sub>2</sub> and residual malic acid or sugar.

In addition to the production of acetic acid through the metabolism of citric acid as well as glucose, LAB can result in several other faults, such as mousiness, geranium taint and ropiness. Mousey taint is an aftertaste. It is not volatile at wine pH, but when mixed with the neutral pH of saliva, it becomes apparent. The taste is described as mouse urine and rancid nuts. This taint is usually the result of LAB activity but can also be caused by Brettanomyces. Geranium taint is caused by the metabolism of sorbic acid by LAB. Sorbic acid is a yeast inhibitor added to prevent refermentation in the bottle. Although generally effective as a fermentative yeast inhibitor, sorbic acid shows little inhibition of LAB, AAB or film yeasts.<sup>20</sup>



Gram stain of Acetobacter spp.

Some strains of LAB, such as Oenococcus oeni, are beneficial. This bacterium is involved in the decarboxylation of malic acid to lactic acid during malolactic fermentation (MLF). This reaction increases pH and results in a "softer" mouthfeel. Diacetyl is also produced, which creates a "buttery" character. One to four mg/L of diacetyl is considered desirable - depending on wine style – while high concentrations (>5-7 mg/L) are considered a spoilage characteristic.

In addition to the sensory implications, acetic acid and products of LAB metabolism can act as inhibitors to Saccharomyces. This may cause a delay in the onset of fermentation or may result in a stuck fermentation later on. A sluggish fermentation should never be inoculated with malolactic bacteria. The bacteria can metabolize glucose and fructose to acetic acid, increasing VA by 1 g/L or more.

Bacteria in the acetic acid bacteria group (AAB) include Acetobacter and Gluconobacter. They use ethanol (and glucose) aerobically to form acetic acid. Of the two, Acetobacter is the more commonly encountered. Acetobacter can grow in barreled or bottled wines and use small amounts of oxygen absorbed during clarification and maturation. The most serious consequence of spoilage by AAB is the production of high levels of acetic acid (volatile acidity), as previously mentioned.20

Where fruit deterioration has not occurred and alcoholic fermentation begins quickly, populations of AAB decline to <100 CFU/ml. Gluconobacter is unable to survive the alcoholic environment of wine, even when aerated.21 In slowly fermenting or stuck AF where carbon dioxide levels may be insufficient to prevent oxygen uptake, AAB may be able to grow.

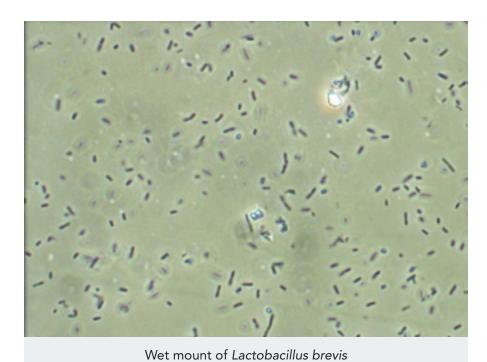
# **Post-Fermentation**

### **YEAST**

During the aging of wines, several different yeasts and bacteria grow, some of which are capable of causing spoilage. The distribution of yeast species in cellar-aging wines includes Dekkera/Brettanomyces, film yeast such as Candida and Zygosaccharomyces.

The most common form of yeast spoilage is due to Brettanomyces bruxellensis. This yeast produces volatile phenols and acetic acid. Examples of flaws include aromas described as "medicinal" in white wines and "leather" or "horse sweat" in red wines. Other aroma descriptors include barnyard, wet dog, tar, tobacco, creosote, plastic and band aid.

Brettanomyces can infect red wine 6-10 months after barreling and can spoil bottled wines as well. It can also be transmitted by fruit flies. It may grow on the disaccharide cellobiose, a by-product of toasting in barrel production. Control of this yeast is difficult because it is tolerant to sulfur dioxide.<sup>20</sup>



### **BACTERIA**

The typical spoilage times for LAB include finished wines with low SO<sub>2</sub>, and residual malic or sugar. In addition to the production of acetic acid through the metabolism of citric acid as well as glucose, LAB can result in several other faults, discussed previously.

AAB growth may be encouraged by autolysis of wine yeasts and O. oeni due to an increased nutrient supply. Please refer to the previous section for discussion of AAB growth implications.





# Premium Tannin

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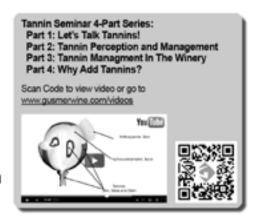
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# **Characterizing the Microbiome**

Traditional microbiological methods involving isolation in or on nutritive media can lead to mixed results. Microbes constituting less than 1% of the total population cannot be detected and these methods may fail to detect viable but not culturable (VBNC) organisms.<sup>22</sup> Microorganisms in the VBNC state fail to grow on microbiological media, yet still display low levels of metabolic activity. The development of molecular methods such as DNA/RNA amplification allows a more complete and comprehensive view of microbial diversity.<sup>5</sup>

Various researchers utilize the amplification of bacterial 16S rRNA [the internal transcribed spacer (ITS) region is amplified for fungi] to detect the organisms present on grapes and in wine. By amplifying this highly conserved region of the genome, the polymerase chain reaction (PCR) amplifies a few sequences to generate millions of copies that enable identification of these strains, allowing detection and quantification. Each organism has a signature sequence, that permits a rapid image of the population of the microbial population at a certain stage.<sup>23</sup>

# **Microbial Interactions**

Many factors affect the microbial ecology of wine production, with the chemical composition of the juice and fermentation processes being most important. Where mixtures of different species of yeast and bacteria exist, there is the possibility that interactions will occur between microorganisms.

The first significant interactions between microorganisms occur on the surface of the grapes in the vineyard. Interactions continue throughout AF by yeast<sup>24</sup> and the malolactic fermentation by LAB.<sup>25</sup>

Early growth of yeasts in grape juice can result in a decrease of available nutrients and, as a consequence, the wine cannot support additional microbial growth. In addition, such growth produces a variety of metabolites, some of which may be toxic to other organisms. The inhibitory effects of ethanol and short chain fatty acids on some microorganisms are well documented. <sup>26,27</sup> Carbon dioxide production and purging of the juice/wine can limit exposure to oxygen, limiting the growth of aerobic species such as AAB.



Some species may produce inhibitory peptides, proteins or glycoprotein and enzymes that destroy other species by lysis, a process by which the cell is destroyed due to rupture of the cell wall or membrane. However, there are also mechanisms which lead to enhanced microbial growth. The large amount of yeast biomass produced during fermentation will die and autolyze, releasing amino acids and vitamins. These may encourage the growth of other species later in production.<sup>27</sup> In addition, this biomass may function as a bio-adsorbent to remove toxic substances (e.g., metal ions, grape phenols). Proteolytic and pectolytic yeast species may hydrolyze the proteins and pectins in juice to produce substrates (the material upon which an enzyme acts), resulting in possible growth of other species.<sup>28</sup>

Damage to the skin and surface of grapes increases the availability of nutrients for microbial growth and encourages an increased population (>106 CFU/g) and diversity of yeasts. These yeasts are required to co-exist with other organisms such as filamentous fungi, acetic acid bacteria and lactic acid bacteria which will also grow on damaged fruit.<sup>22</sup>

One example of yeast-bacteria interaction is malolactic fermentation. Growth of *O. oeni* during this fermentation decreases wine acidity by transforming l-malic acid into l-lactic acid. Wine flavor and complexity are achieved through production of additional metabolites. Microbiological stability of the wine is also achieved by removal of residual nutrients.<sup>27</sup>

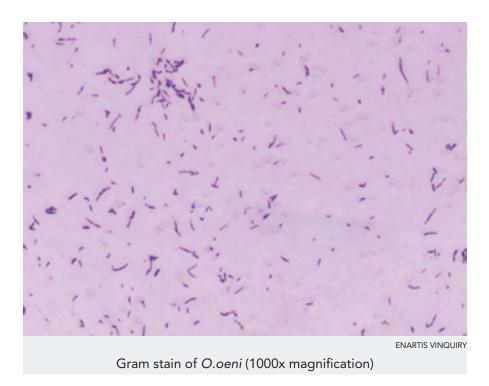
Many factors affect the growth of *O. oeni* in wines and the progression of the malolactic fermentation. Among these, yeast–bacterial interactions can be very important. Research indicates that the strain/s of *S. cerevisiae* responsible for the alcoholic fermentation can inhibit the growth of *O. oeni* and thus the malolactic fermentation.<sup>19</sup> The relationship is very much strain-dependent, at both the yeast and bacteria levels.

Yeast-yeast interactions, as with others, can be negative or positive. Ethanol produced by *S. cerevisiae* is the major compound affecting the variety of yeasts during fermentation.<sup>23</sup> Most indigenous yeasts do not survive above 3-10% (v/v) ethanol concentration. However, some non-*Saccharomyces* yeasts can survive until the end of AF due to their high resistance to alcohol. Examples include *Torulaspora delbrueckii*, *Zygosaccharomyces bailii* and *Pichia spp.*<sup>18</sup>

One of the most well-known examples of negative interaction involves the growth of one strain that is restricted by the coexistence of another and by metabolite secretions. The most extreme example is the killer phenomenon. This involves the production of specific extracellular proteins and glycol proteins by certain yeast strains (killer yeasts) that kill other strains that are more sensitive.<sup>29</sup> This phenomenon contributes to the presence of various yeast strains throughout fermentation.

Non-Saccharomyces yeast strains have been shown to have antimicrobial activity against other non-Saccharomyces yeasts. They also expressed antimicrobial action against undesired spoilage yeasts including Brettanomyces/Dekkera.

Commercial strains of non-*Saccharomyces* wine yeasts are available. Typically, the non-*Saccharomyces* yeast is inoculated, then followed by a *Saccharomyces* strain. This allows the winemaker to mimic "wild" fermentations in a controlled setting.



# **Conclusions**

Wine is a product of many varied interactions between yeast, fungi and bacteria. These relationships start in the vineyard and continue throughout the winemaking and storage process. These relationships can have either a positive or negative influence on wine quality.

Increased control of natural fermentations or fermentation by multistarters requires a better understanding of interaction mechanisms. It is established that when two yeasts co-ferment, it impacts the aromatic profile. Research in the field of the wine microbiome could have a positive impact on production practices. While some strains may produce off-flavors, a program of selection and evaluation could result in the identification of those strains with desirable flavor attributes.

Research has demonstrated that understanding the microbiome could potentially provide tools to winemakers to improve wine characteristics or lesson the incidence of problem fermentations. Such information could be practical for predicting the suitability of potential vineyards or for preventing microbiological issues in abnormal vintages.

There may be several promising applications for grapevine and wine-fermentation management with the opportunity to develop tailored strategies for improving grape and wine quality of individual varieties. Customized fermentation management strategies could improve product outcomes through moderating sulfite additions, temperature control, oxygen limitation, inoculation or cold maceration to promote or suppress individual populations based on the microbial composition of a given grape variety.<sup>30</sup> This potentially powerful way to manage the winegrowing process may be viewed as a manipulation of terroir, but it also offers an exciting area for future research. WBM





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# Winemaker Trials

# Using Leaf Pull to Increase Thiols in Sauvignon Blanc

Sauvignon Blanc is an uncommon variety in Oregon's Willamette Valley—so the wine studies program chair of Chemeketa Community College decided to lead his students in a study to discover how, if at all, leaf pull at fruit set can increase the fruit's aromatic compounds.

Stacy Briscoe

**SCOTT DWYER, WINE STUDIES** program chair at **Chemeketa Community College,** was drawn to the wine industry after completing his graduate education at the **University of Virginia**. He worked for several years as the assistant winemaker at **Pollak Vineyards** in Greenwood, Virginia. During this time, he also became the research coordinator and co-founder of the **Winemaker's Research Exchange**, a wine research non-profit focused on promoting innovation and education in the wine industry. In 2016 he took on the roles of winemaking instructor and program chair for the Chemeketa Community College Wine Studies Program, located in the Willamette Valley.

Winery: Chemeketa Cellars

**Objective:** This trial measures the increase of thiol concentration levels in Sauvignon Blanc, using heavy early leaf pull compared to standard practice.

**Trial Description:** Immediately following fruit set, every other row of four identical rows of Sauvignon Blanc (Musquè Clone 101-14 rootstock) was 100 percent hand-leaf-pulled in the morning on the east side. Two rows had zero leaf pull throughout; though these rows were monitored for signs of disease and mildew pressure, neither presented during the growing season. The two lots were picked separately but identically on the same day into four 16A non-slotted macrobins (two trial, two control). Immediately following harvest, each bin was treated with 10mg/L SO<sub>2</sub>(l) and cooled overnight at 6° C. The following day each lot was pressed separately but identically with 50mg/L SO<sub>2</sub>(s) added to the press pan and transferred to separate 500L stainless steel tanks. The tanks were juice-fined and cold-settled (6° C) for 48 hours, after which they were racked into a different set of 500L stainless steel tanks. After 48 hours, the temperature increased to 12° C, and both tanks were inoculated with 20g/hL Excellence FTH yeast. After 36 hours, signs of fermentation were present, and YAN was increased by 100mg N/L using DAP. Both lots were fermented dry, and 8g/hL extralyse was added. Eleven days following extralyse, 35ppm SO<sub>2</sub> was added, and both tanks were moved to storage at 12° C. Both tanks have identical head space and were layered with inert gas (argon) once a week.

<b>LOT 1:</b> Control - No leaf p	oull LOT 2:	Trial - Leaf pull
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ANALYSIS NAME	LOT 1	LOT 2	UNITS
free sulfur dioxide	<2	<2	mg/L
molecular sulfur dioxide	<0.10	<0.10	mg/L
total sulfur dioxide	35	40	mg/L
titratable acidity	8	7.9	g/L
рН	2.95	2.96	
volatile acidity(acetic)	0.18	0.21	g/L

### sulfides (GC/SCD headspace)

hydrogen sulfide	< 0.5	< 0.5	μg/L
carbon disulfide	<1.0	<1.0	μg/L
methyl mercaptan	0.6	0.6	μg/L
ethyl mercaptan	<0.5	<0.5	μg/L
dimethyl sulfide	1.8	1.8	μg/L
dimethyl disulfide	<1.0	<1.0	μg/L
diethyl sulfide	<0.5	<0.5	μg/L
methyl thioacetate	9.5	7	μg/L
diethyl disulfide	<0.5	<0.5	μg/L
ethyl thioacetate	<5.0	<5.0	μg/L
Glutathione HPLC MS/MS (QQQ)	9.9	9.5	mg/L
3-isobutyl-2-methoxypyrazine GC MS/MS	<1.0	<1.0	ng/L

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**Conclusion:** Initial impressions are that thiols are higher in the control but seem to lean toward the "reductive thiols" rather than the boxwood/ gooseberry component that is the goal. While the control may have more thiols in the true chemical sense, it may have less of the "right" ones.



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# Winemaker's Postmortem

# Why were you interested in measuring thiol concentrations of grapes using heavy early leaf pull versus standard practices? Why did you choose to work with Sauvignon Blanc specifically?

**Dwyer:** Thiols, most specifically 3-Mercaptohexan-1-ol (3MH), 3-mercaptohexylacetate (3MHA) and 4-methyl-4-mercaptopentan-2-one (4MMP) are responsible for the aromas many people find desirable in certain styles of Sauvignon Blanc. Leaf pull is a commonly used method in many areas to increase the concentration of these compounds by increasing UV exposure and fruit zone temperature. In our 8-acre student vineyard, we have a small block of Sauvignon Blanc and wanted to investigate the downstream differences of leaf pulling versus non in our own vineyard.

# Was there a problem you were looking to solve or a benefit you were hoping to achieve through this study?

**Dwyer:** There have been several previous studies showing that heavy leaf pull at fruit set results in increased concentrations of these thiols. Sauvignon Blanc is not terribly common in the Willamette Valley, so in addition to being able to observe the effects of leaf pull on a finished wine, our goal was also to see if our results were similar to, or consistent with, previous experiments. If so, perhaps early and aggressive leaf pulling can be used as a tool to help increase thiol concentrations of Sauvignon Blanc throughout the Willamette Valley.

# Can you explain what steps you took in setting up your trial?

**Dwyer:** In a single block (0.25 acres) with four identical rows of Sauvignon Blanc (Musque Clone 101-14 rootstock), every other row was 100 percent leaf-pulled on the morning (east) side within and up to approximately 30cm above the fruit zone immediately following fruit set. The "control" rows were left as-is and monitored for signs of disease or mildew pressure, neither of which presented during this growing season.

# What were some of the complications you encountered during the course of your trial? How did you address these issues?

**Dwyer:** The most challenging part of this experiment was ensuring that the two lots were treated identically following harvest. Having completely equal treatments is difficult when exploring compounds that are extremely volatile. Luckily, I was working with a great team of people who went to painstaking lengths to ensure the experiment carried out according to plan.

# What was the opinion of your team members with whom you worked on this trial?

**Dwyer:** As a class/team, we were excited for this trial, both to work with Sauvignon Blanc and to reinforce the ever-important connection of the winery to the vineyard. The results were a little confusing, but both ended up being excellent wines, so no one was too disappointed.

# Can you briefly describe the results of your trial? Did the outcome reflect your expectations?

**Dwyer:** The trial and control were very different throughout fermentation; but as time progressed, they became more and more similar sensorially. From the standpoint of making an aromatic and thiol-rich Sauvignon Blanc, we were successful with both lots. From the standpoint of demonstrating leaf pull as a tool to increase thiols, we fell short. Our results didn't exactly align with our expectations or previously published research on the subject. In fact, they were the opposite. (See below.)

Thiols	3MH (ng/L)	3MHA (ng/L)	4MMP (ng/L)
Control	264.6	16	536.8
Leaf Pull	202.5	7.5	406.4

# Knowing what you know now, will you at all adjust your vineyard management or winemaking practices?

**Dwyer:** Since Sauvignon Blanc is not typical wine for us, I don't think these results will really alter our current program. If we considered making it in the future, I would still likely use leaf pull, as it has advantages beyond increasing thiol production.

# What were some of the comments from your team members after the trial? Which wine did they prefer and why?

**Dwyer:** As we worked with the wine each day during fermentation, there were significant differences between the two lots. Though we couldn't comment on the concentration of thiols, as a group we very much preferred the "trial" whose profile was much heavier in what we presumed to be 3MHA (grapefruit passion fruit) as compared to the control whose profile appeared heavy in 4MMP (box tree). Once fermentation was complete, it became harder and harder to differentiate between the two samples. However, in a blind tasting of the finished wines, a significant majority of participants identified the control as having higher concentrations of thiols, which was later confirmed through analysis.

A blind sensory panel (n=27) showed a statistically significant perception of increased aromatic intensity in the control wine as compared to the trial wine (p<0.01). On average, tasters reported increased green aromas in the trial, as well as increased fruit intensity in the control, though laboratory testing showed <1.0 ng/L of 3-isobutyl-2-methoxypyrazine in both wines (ETS).

# Do you plan to do a follow-up trial to re-test these results? If so, would you run the same test on the same grape, or try the same test on a different grape variety?

**Dwyer:** Yes, I think the same trial repeated with the same block across different growing seasons would be interesting in confirming or not confirming the outcomes of this trial. Additionally, repeated trials could eventually show a degree day/thiol correlation or define specific processing techniques that help to capture a greater concentration of thiols in finished wine. **WBM** 



# Grape Berry Ripening: How Can We Help You?

Are there products available that can speed the ripening process?

Mark Greenspan



AS LONG AS I'VE been in this industry (close to a quarter century in the non-academic sector), it seems like I've been bombarded with "snake oils:" specialty products that will increase yields and Brix while also elevating wine quality. I recall having to tell many of these vendors that we don't always want higher yields for fine wines nor do we necessarily want higher Brix. And, what again do you mean by "higher wine quality?" Usually the response just bounced to higher Brix again, which we don't necessarily equate to high wine quality, especially in warm and sunny California.

That said, are there some products that could be something greater than snake oil? I think so, but nothing beats good viticultural practices.

# What is Ripening?

First, let me better define what I am referring to when I discuss ripening. Ripening can mean different things to different people. Indeed, many people do think of Brix as the determination of ripeness; and even though most of us have moved on from that simple notion, we still track Brix, and it is still our indicator of, at least, when to taste fruit for harvest. In marginal climates where attaining a decent Brix is not easy (notwithstanding climate change), Brix can be an essential indicator of ripeness. But in California, we're spoiled. Unless we are growing the wrong variety for the regional climate we're in, or if the vineyard is not overcropped, attainment of desirable Brix is not very difficult in California. Oh, well, except for Red Blotch-affected vineyards, but I'll discuss that in an upcoming column.



Dr. Mark Greenspan has more than a quarter-century of scientific viticulture research and viticultural field experience. He specializes in irrigation and nutrition management, yield and canopy management, vineyard climate and microclimate, vineyard design and vineyard technology. He is the founder of Advanced Viticulture, Inc. based in Windsor, California (www.advancedvit.com), providing consulting, technology, vineyard management and vineyard development for wineries, winemakers and wine growers devoted to producing premium wines. Please direct queries to mark@advancedvit.com or 707-838-3805.

So, what I am really referring to when I think of ripeness is really everything else besides sugar concentration. Of course, acid and pH are important, but acid (and hence pH) are a primary metabolite, so I'm really not talking about that either. For white varieties, that largely includes aromatic compounds and their precursors, but for red varieties it will include those, as well as mostly phenolic compounds responsible for color and color stability, mouthfeel, "structure" and simple attributes such as bitterness and astringency. Flavor, aroma and phenolic compounds develop largely separately from sugar importation into the fruit. Rather, they are called "secondary metabolites" and are produced naturally by the fruit, in essence, to increase the desirability of the fruit to be consumed by animals, ostensibly to be pooped out by that animal somewhere else, thus spreading the seed contained within the fruit.

For us, we are interested in developing flavor, aroma and mouthfeel in the fruit for making the best wine from a vineyard. Sugar really has nothing to do with flavor, though its conversion to ethanol during fermentation does provide flavor and body to the wine. Nevertheless, we are really more focused on developing the ideal color and mouthfeel, appropriate and desirable flavor and aromatics, as well as a minimization of undesirable properties, such as vegginess, bitterness and astringency.

The holy grail for fine winegrowing is to achieve "flavor ripeness" (and by that I mean all the above) at a reasonable sugar content and before the fruit begins to shrivel. In my mind, once fruit begins to shrivel, the flavors go quickly into pruney and raisiny characteristics—wines lack freshness and longevity; they become uninteresting and, frankly, undesirable. Couple that with the yield loss that accompanies berry dehydration and no one is happy. So, in regions where sugar accumulates fairly easily, our goal should be to accelerate flavor development.

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# Grape Berry Ripening: How Can We Help You?



Are there some products that could be something greater than snake oil? I think so, but nothing beats good viticultural practices.

# A Brief Physiology of Ripening

The secondary metabolism of the grape berry is fueled by its primary metabolism, which is essentially the metabolism of malic acid, the fuel source, after veraison begins. The secondary metabolism is a complex set of interlined reactions catalyzed by, as for all biological processes, enzymes. These enzymes are encoded in the vine's genome and are expressed a little bit before veraison. They may continue to be expressed after veraison, but the big push occurs prior to veraison, roughly during the lag phase of berry development.

What do I mean by "expressed?" The encoding sequence on the DNA is transcribed by RNA, making essentially a copy of that DNA template. The RNA then encodes proteins by sequencing amino acids to form peptides, or small proteins. The proteins themselves fold, twist and wrap, depending on their specific sequences, forming unique shapes that, in turn, are specifically designed to catalyze one specific biochemical reaction. There are numerous enzymes that are encoded in this manner, all of which act in concert (not really, but we like to think so) to conduct the miracle of grape berry ripening. By the way, I'm a viticulturist, not a molecular biologist, so if I got some of that wrong, too bad—its close enough for this discussion.

The expression of these genes is not completely automatic. Well, it is automatic in that it will occur when the phenological time clock says it is time, but the relative expression of these enzyme-encoding genes can be influenced. In other words, the amount of enzyme produced per berry is not fixed and can be modulated by the vine.

It turns out that one of the main motivations for expression of the ripening genes into enzymes is stress. Vines under stress want to get their fruit to its tastiest state before they potentially lose the ability to maintain that fruit (and themselves). So, we can kick the vine into extra ripening enzyme production through stress. We can induce stress on the vines in many ways, including cultural, physical, biological and chemical.

# **Cultural and Physical Influences on Ripening**

One of the most commonly used cultural practices for ripening enhancement is water stress management, a subject I've written about numerous times (and will again). Essentially, vines that are water-stressed elevate the plant growth regulator (a.k.a. hormone) abscisic acid (ABA) throughout the vine, including in the berry. ABA, the stress hormone, is one of the most important plant growth regulators when it comes to affecting ripening. ABA itself has been shown to enhance expression of many ripening-associated genes/enzymes. So, enhancing ABA will help us achieve our objective of accelerating flavor ripening in our vines.

Crop load is often associated with wine quality in that high crop loads are usually associated with poorer wine quality. While there is always debate about the true yield-quality relationship, I do believe there is a relationship. Some of the relationship likely has nothing to do with the actual crop load, but on the spatial separation of clusters and uniformity of exposure in the fruit zone. But there may be a source/sink relationship between ABA and berry mass. That's just speculation, of course, and berries are not really a true "sink" for ABA, but there could be a concentration effect of some sort. Please don't repeat that one as scientific fact. Just think about it.

Canopy management directly affects the environment of the clusters, both with regard to light and temperature. Both will have a direct effect on berry composition, especially on boosting anthocyanins and flavonols and degrading methoxypyrazines. But, I'm frankly not so sure how much, if any, of this involves enhancement of enzyme expression. While clearly important, I would not place canopy management into the ripening rate enhancement category.

As mentioned, ABA is perhaps the most well-known stress hormone, though there are other plant growth regulators that respond to stress, including methyl jasmonate and brassinosteroids. On the other side, growth regulators, such as gibberellic acid, cytokinin and auxin, are growth-promoting hormones and may be thought of as the yin to the stress hormones' yang. Under stress, vines produce more stress hormones and less growth hormones and vice-versa.

A company called **AgroThermal Systems** manufactures equipment that generates high heat that is blown on vines by towing the unit with a tractor through the vineyard periodically. The brief exposure to high heat is reputed to induce a stress response in the vines, akin to the stresses from water stress or pathogen stress. According to the company, this has the effect we are discussing here, that is to stimulate the process of ripening to enhance phenolic ripeness in the fruit. I have not tested this technology myself, but it appears to be a feasible concept.



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# **Chemical and Biological Influences on Ripening**

Since the stress hormones can stimulate ripening processes, could we just apply them to the vines and get the response we wanted without all that pesky deficit irrigation? The answer is yes and no. Yes, plant growth regulators, such as ABA, may be sprayed on the vines to help promote ripening, but no, they probably won't replace sound water stress management. There is a commercial ABA-containing product, but I'm not aware of other stress-related plant growth regulators that are available commercially in California. I've witnessed some growers who have applied ABA to vines around veraison (sometimes by my suggestion), and the results have been lackluster. I think the lack of positive results may be due to timing (probably should be applied during lag phase, not veraison) and application target (foliage not fruit). The target, I think, may be an important factor. Grape berries have a thick waxy surface and getting anything to penetrate through that barrier is probably futile. ABA is generated in the leaves (and roots), so the leaves should probably be the target and not the fruit. Likewise for any other hormone that is, or will be, available to apply to vines.

Biostimulants, usually plant and/or sea kelp extracts, are good at stimulating vegetative growth, and we use them routinely in an effort to even up the shoot lengths in our vines during the grand period of growth. But these biostimulant products usually contain gibberellic acid and are generally counter to the stress hormones. So, I would suggest that those products are not desirable to apply just before, during and after *veraison*.

I'm sure we will continue to see novel materials to apply to vines to promote ripening. I was recently introduced to a product from Lallemand called LalVigne. This is a deactivated yeast product that can be foliar-applied to grapevines. It is not a plant growth regulator, so it does not have an EPA registration, is listed as an organic material and is considered to be in the "generally regarded as safe" category. They make two products, one called LalVigne AROMA and the other called LalVigne MATURE. The former is intended to enhance aromatic ripening in fruit while the latter is intended to enhance phenolic ripening in fruit. They work by inducing a stress in the grapevine, as the deactivated yeast are perceived by the vine as a pathogen, even though the product is "dead" and cannot infect the vine. As I've been saying all along, the stress response of the grapevine is to accelerate the reproductive cycle or, in other words, stimulate ripening. The company recommends applying the material at the onset of *veraison* and again about 10 days after the first application.



Of course, I am skeptical of any product like this. However, I recently had the opportunity to taste numerous trials conducted by many wineries that use this product against control treatment wines made by vines not treated by the product. The effects ranged from subtle to dramatic. I felt that the more flawed the control wine was (lacking something like color, structure or another mouthfeel component or having excessive vegginess), the bigger the difference was between the control and the treated wine. Better wines had some perceptible differences, but the improvement was marginal. However, there were some amazing differences in the wines.

Encouraged, but still skeptical, we will be trialing the product this year in some difficult vineyards and will see for ourselves what the utility of this product really is for us.

Possibly even more far-fetched, but still intriguing, is a product sold by **Enartis** and made by their sister company **BluAgri** called BluVite. Like LalVigne, they have two formulations (for both red and white grapes). The difference here is that the product is not intended to be applied to the vines themselves but to the soil. The product contains sulfur, magnesium and yeast hydrolysate (there's that yeast again). It is intended to stimulate the native microbial populations of the soil which, in turn, stimulate root branching, better nutrient turnover and overall healthier vines.

They have data to show how it has improved vegetative qualities relative to untreated controls. This includes longer shoots/canes of larger caliper, higher

leaf area index with greater chlorophyll content and overall more biomass production. If the product indeed stimulates microbial populations (difficult to prove), I can see how it would have the effects they claim.

What is more difficult to comprehend is how their claims of improved fruit and wine quality come about. That said, they do have data that indicate improvements in berry composition. Why would a soil microbial stimulant have a benefit to wine quality? This may be, at least in part, due to improvements in uniformity of fruit maturation, from set through veraison and onto harvest. While not a stress-inducing product like those mentioned above, it may nevertheless have a benefit to wine quality. I suppose this is more akin to the canopy management influence than a stress-inducing ripening stimulant. Again, this product is worth trialing, so we're doing just that.

All-in-all, we can combine good vineyard practices with a few choice spray-on concoctions to enhance the natural ripening of the grapevine. Continue to be skeptical about "snake oils" while remaining open-minded about products that may actually work. Don't trust photo comparisons alone when someone tries to sell you on a product. Insist on seeing scientific research with charts and tables that indicate whether or not the treatment differences were significantly different from the control. That is sound skepticism. WBM



# Can the Effects of Grapevine Red Blotch Disease Be Mitigated with Cultural Practices?

Dr. Alexander Levin

**Dr. Alexander Levin** is a viticulturist and assistant professor in the Department of Horticulture and Southern Oregon Research and Extension Center at Oregon State University. He can be reached at *alexander.levin@oregonstate.edu*.

SINCE ITS CHARACTERIZATION IN 2008, Grapevine Red Blotch Disease (GRBD) has been a major concern for the North American grape industry. GRBD was first discovered and characterized as distinct from Grapevine Leafroll Disease (GLD) in a Cabernet Sauvignon vineyard at the University of California, Davis Oakville Experimental Vineyard<sup>3</sup>, and the causal agent—Grapevine Red Blotch Virus (GRBV)—was identified shortly thereafter<sup>7</sup>.

While mostly localized in the western grape-producing regions of the United States, GRBD has been positively identified in many other economically-important grape producing regions of the United States, Canada and Mexico<sup>6,8,11</sup>. Moreover, there is documented vector-mediated viral spread throughout vineyards in afflicted regions<sup>4,5</sup>.

The negative economic impact of GRBD has been estimated to range from \$885 per acre in eastern Washington to \$27,419 per acre in Napa County, California<sup>13</sup>. These losses are primarily due to concerns about the negative effects of the disease on fruit and wine quality, though GRBD may also reduce vine productivity. With a lack of information regarding infected vine response to cultural management practices, many growers have resorted to removing infected vineyard blocks altogether. However, extensive vineyard replanting may not be economically viable for many growers, and any newly replanted blocks may become re-infected due to surrounding vector activity. Thus, nationwide industry sustainability is threatened. While entomological and viral research continues, grape growers desperately need more viticultural information on how to successfully farm GRBV-infected blocks in the interim period.

To address this need, field trials were initiated in Southern Oregon in 2017 to test common cultural practices, such as irrigation, fertilization and crop thinning in commercial winegrape vineyards to determine their effectiveness at mitigating the negative impacts of GRBD. A summary of preliminary research results from these ongoing studies follows a short review of GRBD symptoms. Current best management practices are included.

### KEY POINTS

- Since 2017, Oregon State University-led field trials are testing the effects of vineyard management practices on Grapevine Red Blotch Virus-infected grapevines.
- Preliminary data show that deficit irrigation practices exacerbate the negative effects of the disease, but supplemental irrigation may somewhat mitigate disease severity. In contrast, supplemental fertilization or reducing crop load has minimal to no impact.
- Current best management practices continue to consist of planting certified virus-tested plant material, recognizing symptoms and removing infected vines and avoiding environmental stress in heavily-infected blocks.



PHOTOS BY ALEXANDER LEVIN

Early season foliar symptoms of Grapevine Red Blotch Disease in Pinot Noir in Rogue Valley AVA near Ashland, OR. Photo taken approximately one week prior to *veraison*, August 1, 2018.

# **Review of GRBD Symptoms**

Much like leafroll virus, foliar GRBD symptoms first appear in mid-summer (near veraison) on the oldest (basal) leaves and progress up the canopy as harvest approaches<sup>14</sup>. In red-fruited cultivars, foliar symptoms are distinct in some cultivars (such as Cabernet Franc and Cabernet Sauvignon) with red blotches and red veins but may not be readily recognizable in other cultivars (such as Malbec, in which the entire leaf blade may turn red; Pinot Noir symptoms can be easily confused with those of grapevine leafroll virus). Moreover, leaves of red-fruited cultivars tend to turn red in response to other environmental stressors, such as nutritional deficiencies or physical damage (girdling or shoot breakage). In contrast, foliar symptoms in whitefruited cultivars (Chardonnay and Sauvignon Blanc) resemble those of nutritional disorders—interveinal chlorosis appearing at veraison leading to necrosis at harvest. It should be noted that symptom onset has been observed approximately two weeks before veraison in both northern coastal valleys of California and in southern Oregon. In general, symptom onset can be quite variable across years, sites and cultivars.

The negative effects of GRBD on grape production can be direct—stunted vine growth, lower production and reduced fruit quality; and/or indirect—revenue loss due to removal and replanting, or due to contract restrictions/cancellations.<sup>13</sup> Prior to discovery of the virus, early work from UC Davis found that GRBD-symptomatic Cabernet Sauvignon grapevines in Napa

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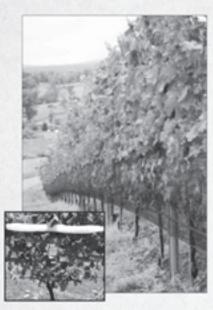
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County had significantly reduced sugar concentrations at harvest<sup>3</sup>. This early work also showed that symptomatic grapevines had increased acidity, reduced juice pH and reduced anthocyanin concentration—all undesirable characteristics for premium wine production.

Given the relatively recent discovery of GRBV, there have been few published reports on infected vine responses to management practices. A broad characterization of GRBV effects on grapevine molecular physiology has recently been published<sup>2</sup>. Field observations have found that GRBV infection and the effects of GRBD can vary substantially with geographic regions, cultivar/rootstock and weather patterns during the growing season. New work has corroborated some of these observations, showing differential vine response to GRBV infection among rootstocks<sup>10</sup>. Nevertheless, infected vine response to management practices remains anecdotal.

# Preliminary Results from Management Trials

The Southern Oregon management trials were generally designed to either increase or decrease inputs across infected (GRBV+) and healthy (GRBV-) vines. In all trials, healthy and infected vines were confirmed by polymerase chain reaction (PCR)-based assays, and GRBD progression and severity were monitored at regular intervals throughout the growing season. Vine water relations, gas exchange and fruit growth and development were monitored until harvest. At harvest, crop yield and quality were determined.



Late season foliar symptoms of Grapevine Red Blotch Disease (together with nutritional deficiency and mechanical damage) in Pinot Noir in the Rogue Valley AVA near Jacksonville, OR. Photo taken just prior to harvest, September 6, 2018.



Late season foliar symptoms of Grapevine Red Blotch Disease in Pinot Noir in the Rogue Valley AVA near Jacksonville, OR. Photo taken just after harvest on September 28, 2016.

Crop yield was consistently higher (+23 percent) in GRBV+ fruit—contrary to some previous reports—and was likely due to a higher vine water status conferred by GRBV infection. A reduction in post-*veraison* stomatal conductance was associated with the higher water status and lower photosynthesis in GRBV+ vines. While these phenomena were observed in Oregon-grown Pinot Noir, similar responses have recently been documented in California-grown Cabernet Sauvignon as well<sup>10</sup>.

In most cases—but not all—GRBV+ fruit did not ripen to commercial maturity as total soluble solids (TSS) plateaued around 21° to 22° Brix. Notably, increasing irrigation tended to reduce the TSS difference between GRBV+ and GRBV- vines, but increasing fertilization or reducing crop had little effect. Increasing irrigation reduced GRBD symptom severity, but increasing fertilization or reducing crop load had no effect. Thus far, there have been no consistent effects on organic acid concentration and juice pH, corroborating observations that effects of GRBD on fruit quality are highly variable across years, regions and cultivars.

Reducing irrigation increased skin anthocyanin concentration in GRBV+ fruit (+16 percent) but to a lesser degree than in GRBV- fruit (+35 percent). Total (skin + seed) tannin and total (skin + seed) phenolic concentration in GRBV+ fruit was reduced (-10 percent) but was not altered with any cultural manipulations, indicating that the genetic control over these processes by GRBV was stronger than environmental control by cultural practices. Taken



together, these results suggest that keeping vines well-watered may mitigate some of the negative effects of GRBV, but ultimate changes in secondary metabolism due to GRBV infection may necessitate using infected fruit for different wine programs or blending with lots from healthy vineyards.

It is important to highlight that previous reports of GRBD reducing TSS by up to 5° Brix at harvest failed to consider that in growing regions where high TSS are easily attainable, the difference in TSS between GRBV+ and GRBV- vines will be exaggerated. Because harvest TSS are often a function of cultivar and wine style, the organoleptic impact of GRBD may depend more on those two factors.

For example, negative impacts of GRBD may be stronger on fruit destined to make a full-bodied red wine, whereas they may be weaker or not noticeable on fruit destined to make an aromatic, light-bodied wine. Although this may be a subtle distinction, it should be considered when deciding how to manage various infected blocks, particularly when there are certain economic restrictions.

Non-replicated wines were made from some experimental field treatments, and some were subjected to blind—though informal—sensory evaluation by growers and winemakers during a technical meeting in 20189. In general, tasters preferred GRBV- wines, but the differences in preference among treatments were surprisingly small (2 to 4 percent). Indeed, many tasters reported that they preferred some characteristics of the GRBV+ wines or could not tell the difference. Though not rigorously scientific, the tasting results underscore the previous assertion that the impact of GRBD depends on wine style as these were medium-bodied red wines made from Pinot Noir.

# **Best Management Practices for GRBD**

- 1. Plant material: The first step in any virus management strategy is always to start with certified virus-tested plant material produced by nurseries that participate in statewide certification programs. There is no cure for GRBD; when a vine becomes infected with GRBV, it will remain infected. Remember: nurseries are not certified; plants are. This means that the same nursery can sell you vines from certified and non-certified blocks. Be sure to ask your nursery if the plants you are purchasing are certified. In addition, be sure to confirm the that your state's grapevine registration and certification program has included GRBV as a pathogen of concern.
- **2.** Recognize symptoms and mark symptomatic vines: Because the best way to control GRBV in the vineyard is to remove sources of inoculum, become familiar with the expression of foliar symptoms across cultivars, and mark vines that are symptomatic. Test samples of symptomatic vines to confirm presence of GRBV. Remove infected vines and replant with clean vines.
- **3. Avoid environmental stress:** Maintain a regular program for monitoring both the water and nutrient status of your blocks. Correct for any nutritional deficiencies but do not over-fertilize. Be sure that vines are not stressed for water (particularly early in the season) by applying supplemental irrigation (if available).

# **Note About Insect Vectors**

In management of related viral diseases, such as Grapevine Leafroll Disease, control of the insect vector is an important component of any suite of best management practices. Thus far only one insect species, a type of treehopper—specifically, the threecornered alfalfa hopper, *Spissistilus* 

*festinus*—has been found to vector GRBV<sup>1</sup>. Apart from being a feeding host, grapevines have recently been shown to be a reproductive host for *S. festinus* as well<sup>12</sup>.

In some growing regions, other treehoppers that are closely related to the threecornered alfalfa hopper have been found in vineyards together with infected vines<sup>5</sup>, though their ability to vector GRBV remains an open question. Ultimately, because there are no materials labeled for treehopper control in vineyards, vector management is currently limited as a potential tool to control GRBD in the field. WBM

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# Visitor Counts Increase in Emerging Regions, Decline in Napa

Results of the 2019 Wine Business Monthly/Silicon Valley Bank Insights to Successful Consumer Wine Sales Survey Report indicate the tasting room model is maturing with the rate of growth slowing in more established regions while increasing in emerging destinations.

Cyril Penn

**DIRECT-TO-CONSUMER (DTC) SALES REPRESENT** 65 percent of an average winery's revenue. Most direct sales growth has taken place over the past decade and growth has accelerated during the last five years, driven by tasting rooms and clubs.

# **Tasting Room Openings Outnumber New Wineries**

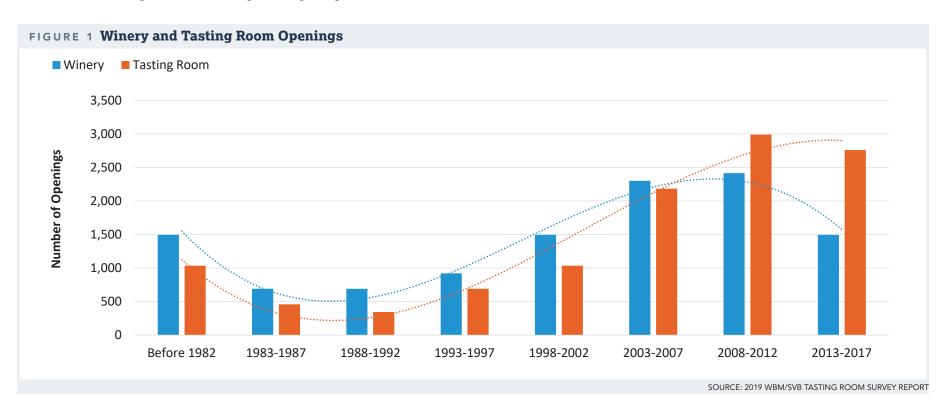
**FIGURE 1** shows the number of winery openings for the last few decades. In the last 30 years, wholesale consolidation accelerated, and three-tier sales became even more challenging for smaller wineries. To build profit margins and find new ways to reach consumers, many turned to the DTC sales model, and the pace of new tasting room openings increased. In 2008,

the tide turned, and the number of new tasting rooms beat out the number of new winery facilities.

Today, many of those hospitality centers are satellite tasting rooms or "urban" tasting rooms. This year's survey delved into the trend of opening tasting rooms in "urban" areas. More than 90 percent of urban tasting rooms in existence today opened in 2003 or later; 40 percent have opened since 2013.

During a webcast held to release and discuss top line findings of this survey, Silicon Valley Bank wine division founder and executive vice president Rob McMillan asked, "Is that the way we're going to increase our sales—by just opening more tasting rooms? Is it rational?" It was an open-ended question.

"We've done a pretty good job with tasting rooms, but now the growth options for the tasting room are probably more limited than they used to be," McMillan said.









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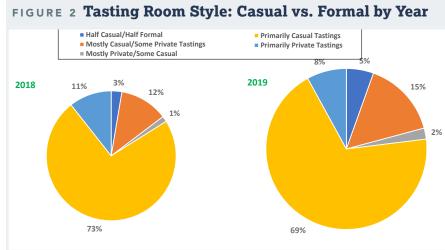


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# **Shifting Toward Casual Tastings**

Tasting room service style greatly affects purchasing and spending. For the last five years, we've noted a trend for wineries to offer more by-appointment tastings. The 2014 survey report showed formal seated tasting led to the highest average sales per customer and higher club conversion rates, something that many club managers and tasting room managers took to heart. The 2019 survey, however, showed that many wineries are moving back toward a more casual model for several reasons.





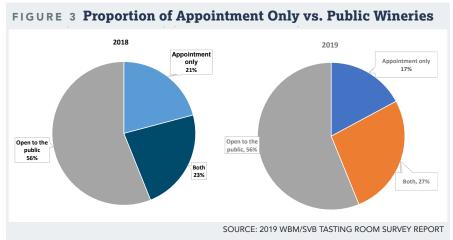
SOURCE: 2019 WBM/SVB TASTING ROOM SURVEY REPORT ave shifted toward more casual tasting

Winery hospitality teams have shifted toward more casual tasting experiences, rather than formal.

During the webcast, **Lisa Kislak**, chief marketing officer at **Crimson Wine Group**, noted that this finding mirrors a trend in the restaurant industry: diners are looking for communal experiences. Sometimes this means that a host (or in the case of a winery, a member of the tasting room staff) will sit with a guest and have a dialogue, which sets a relaxed tone and contributes to a more communal environment.

**Tammy Boatright**, president of **VingDirect**, said the finding reflects the trend she's seeing and cited the example of a Sonoma County client with a luxury brand that concluded it had too many visitors on weekends and not enough during the week. The client dialed in a combination of walk-in and appointment-only experiences.

Wineries increasingly recognize that today's consumer is looking for choice when it comes to their individual experiences. Wineries are endeavoring to offer open tastings and tastings by appointment, as shown in **FIGURE 3**. Twenty-seven percent of respondents are refining their models to include both by-appointment and walk-in traffic, up from 23 percent who said the same last year. Wineries are recognizing that one of the benefits of a reservation-only policy is that it facilitates the collection of consumer data: names, email addresses, and more.



The use of by-appointment tastings is evolving. Eight years ago, Napa represented the majority of by-appointment tastings in this survey. To some extent, that was because Napa county regulations restrict the number of wineries that can be open to the public. The survey, however, revealed that by-appointment and seated tastings deliver better outcomes in terms of sales dollars and volume. Other regions soon followed suit and moved toward by-appointment tastings.

# **Average Tasting Room Purchases Rise: Is Napa Pricing People Out?**



**FIGURE 4** indicates trends in the average dollar amount spent on tasting room purchases, which varies depending on the region. Sonoma County saw average tasting room wine purchase prices rise this year, and there's upward momentum in Washington, Paso Robles and British Columbia.

If one looks across different regions, most are showing increases. In Napa and in Oregon, though, average tasting room purchases appear to have declined. The overall average is down in part because it is weighted by Napa.

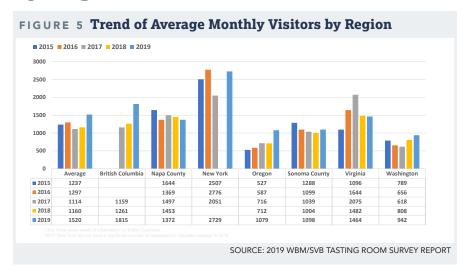
The average tasting room purchase increased during the last four years but decreased from a high of \$159.96 in 2018 to \$142.69 in this survey; a drop of 11 percent.

The apparent dip in average spending in Napa represents just one data point. There is typically some variability in survey findings depending on respondents. That said, the findings that average tasting room purchases in Napa declined this year are directionally consistent with findings in the 2019 Sovos/Wines Vines Analytics Direct to Consumer Shipping Report. Based on an analysis of shipment data—not a survey—the report indicated the overall average price per bottle increased 2.4 percent averaged over all regions this year, the most significant one-year price spike since 2011. It found that Sonoma

County was a standout among regions with the total volume of shipments increasing 19 percent and the value of shipments increasing by 18 percent. In Napa, however, both the volume and value of direct-to-consumer shipments fell in the Direct to Consumer Shipping Report. The findings led to philosophical questions and speculation as to whether pricing in Napa has gone too far, pushing some customers out of the market.



# **Trending Average Monthly Visitors by Region**

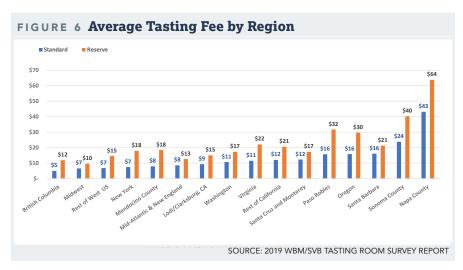


**FIGURE 5** indicates more people are visiting tasting rooms in general. Emerging regions, including British Columbia, Oregon and Washington, saw strong gains. These regions are increasingly being recognized as destinations by consumers.

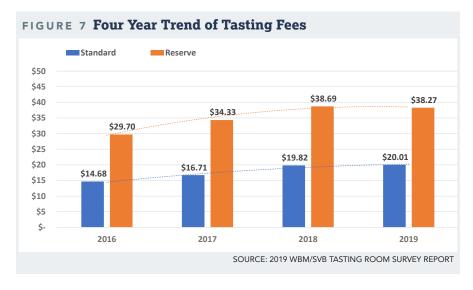
On the other hand, the survey shows declines in average tasting room visitation over time in Napa and Sonoma counties. There are many factors at play, including the recent wildfires. Rising tasting room fees could also be one of the factors slowing visitation, especially with younger consumers.

One of the most likely drivers, though, is the move to slower, seated tastings. The data indicates winery visitation in Napa tasting rooms is falling despite other reports that more tourists are visiting Napa Valley. Napa, as a region, has set the bar in terms of direct sales—especially when it comes to personalized service. Again, the apparent decrease in tasting room visitation in Napa is in part a result of more personalized experiences, with consumers visiting fewer tasting rooms but staying longer during each visit. People are sitting down for extended periods of time so wineries physically can't see as many people as they did in the past.

# **Average Tasting Fees – Napa Leads** the Pack



**FIGURE 6** provides average tasting fees by region. Unsurprisingly, Napa leads in this category with reserve tastings that average \$64 and standard tasting fees that average \$43. As is often the case, Napa is in its own category.

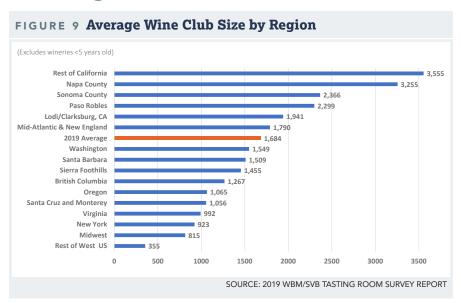


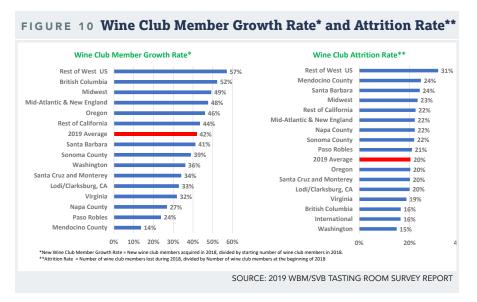
This year's survey indicates the year-to-year growth in average tasting fees recorded in prior surveys has paused. This could reflect the maturing of wine regions and of the tasting room model in general.

One of this year's findings is that the average tasting fee runs between 40 and 55 percent of a winery's median bottle price—a data point that should be considered when thinking through and setting tasting fees.



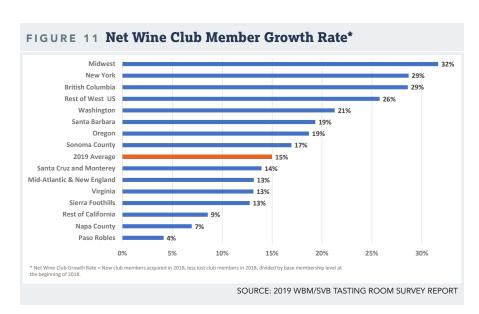
# Feeding the Beast, Growing the Wine Club

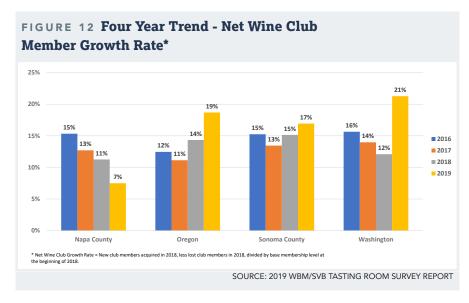




While wineries are continually signing up new members, they are simultaneously losing them. This isn't inherently new. Wine club and DTC managers have been talking about new and innovative ways to retain club members for ages. Fortunately, wineries continue to gain more members than they lose. The 2019 average wine club member growth rate is 42 percent, while the average attrition is 20 percent.

The survey shows nearly all regions experience a similar attrition rate of 15 percent plus or minus 5 percent, with an average wine club membership length at 29 months, consistent with prior surveys.





Oregon continues to mature, as does Washington. As some of the other results of this survey have shown, it was a good year for Sonoma County tasting rooms in general, fires notwithstanding. This slide shows Napa's net wine club member growth rate has slowed to 7 percent—roughly half what it was four years ago. Some of what's driving that could be saturation: as clubs get larger, older wineries need to maintain or increase the number of visitors to keep feeding the beast. The number of tasting room visitors falling probably affects wine club signups. To be sure, visitation isn't down at all wineries in Napa —many are working hard to get people to their wineries. Getting more people to come is a top priority for tasting room and club managers. Many work strategic and proactive partnerships with other wineries, hotel concierges, restaurant staff and other influencers.



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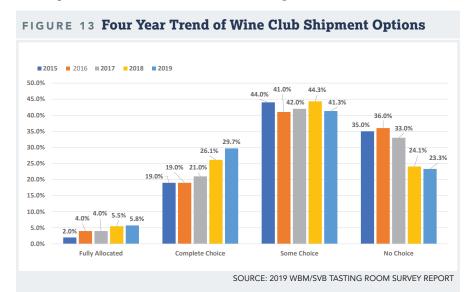






# **Club Members Have More Options for Each Offering**

**FIGURE 13** shows that more wineries offer better choices in the types of wines and/or the frequency of club shipments. The number of wineries not offering at least some choice continues to drop.



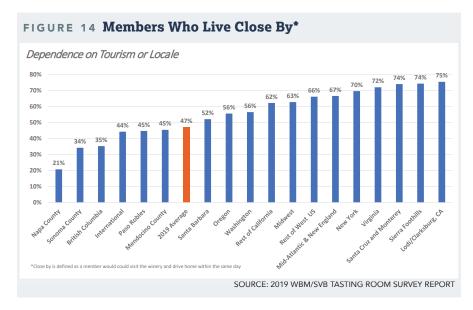
Providing selection in rate, number and type of wine has been shown to increase average spend and result in higher wine club conversion rates.

"A few years ago, people in the survey mostly responded that no, they didn't give people (much) choice. Obviously, we've overcome that," SVB's Rob McMilan said. "If the industry is to be successful managing two different demographic cohorts [Boomers and Millennials], choice is going to be important," he said.

Giving options to club members increases the odds of recruiting a new club member, even if some customers prefer trusted curation.

While choice of product probably makes it easier to convert a customer into a member, the data doesn't prove it necessarily leads to longer average time in the club.

# Taking the Message Beyond the Tasting Room



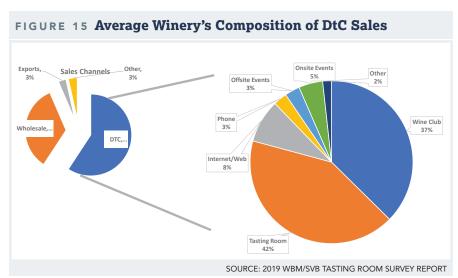
This metric, which we started tracking in 2017, underscores the need for wineries to connect with consumers living far away. It is defined by whether people can come to a given winery location and leave the same day or if they need a hotel. Really, the need for wineries to raise the bar in reaching out to these customers is one of the key takeaways from the survey results.

Napa County is 80 percent dependent on people that reserve a room at a hotel. That speaks to the need for wineries to be better at staying in touch with remote consumers after their visit. It also means investing in the ability to have those consumers be able to try wines without physically making it to the tasting room.

The Lodi AVA participated in larger numbers in this year's survey, allowing a breakout of their information. One difference between Napa/Sonoma and Lodi customers is proximity. Seventy-nine percent of Napa's club members are tourists, while in Lodi just 25 percent of club members are tourists. Lodi/Clarksburg's sales are driven by locals while Napa/Sonoma is driven by tourism.

Lodi/Clarksburg is driven by locals. They need to simultaneously appeal to their current and local customer base while driving in new tourism. Napa, conversely, needs to engage more locals, it seems, in order to sustain business.

# The Average Winery's Breakdown: Where Direct to Consumer Sales Come From



This chart breaks out the average winery's compositions of DTC sales. The left side of the chart includes the wholesale channel while the right side only includes direct sales. That's why internet/web sales are 8 percent of sales. They are smaller when one factors in the wholesale channel.

Clearly internet and web sales are an untapped area many wineries are increasingly turning their attention to. *Wine Business Monthly* will report more on winery efforts in the e-commerce space with the results of the 2019 Technology Survey, which will run in the August 2019 issue. **WBM** 

# 2018

# **VISITOR COUNTS DOWN?**

The 2018 WBM/Silicon Valley Bank tasting room survey pointed to a drop in average visitor counts in Napa, Sonoma, Washington and Virginia, even though data showed average purchases were increasing in value and wineries saw steady average club membership rates of 29 to 30 months. It was initially attributed to wineries doing a better job counting visitation but later was attributed to other factors: the sheer number of tasting rooms increasing, and more tasting rooms engaging guests in more-involved and time-consuming experiences. The evolution of how people engage with appointment-only and more experiential activities causes visitors to spend more time at each location, leaving time to visit fewer locations in a day.

# **INCENTIVES FOR CLUB RETENTION**

Results showed an increasing number of wineries offering tasting room employees residuals for wine club retention, payments for exceeding team goals and incentives for exceeding goals. Despite incentives trending up, this showed room for improvement with just 8.2 percent of wineries offering payment for contact data capture and just 5.7 percent offering residuals for wine club retention.

# **ROLE OF URBAN TASTING ROOMS**

Urban tasting rooms underperformed tasting rooms at the winery in every metric: less visitation, fewer wine club signups, lower wine sales.



# 2017

### **REVENUE RISING**

Responses showed the value of tasting room sales growing 15 percent nationally between 2015 and 2016. The volume of wine sold increased, but growth in revenue outpaced growth in volume, reflecting higher bottle prices. Average wine club conversion rates rose to 7 percent, while average tasting room purchases reached \$122.

### **DAY TRIPPERS VS. TOURISTS**

The survey asked about day-trippers and the number of wine club members living within a day's drive—ie: the number of wine club members that can come to the tasting room and go home the same day without needing hotel reservations. It had been assumed that tasting rooms in Napa and Sonoma relied largely on day-trippers—people from the San Francisco Bay area driving up for the day. However, the survey showed 80 percent of tasting room visitors in Napa weren't day trippers — a reminder for wineries to focus on ways to maintain relationships with club members living far away.

# **SERVICE AND STYLE REMAIN KEY**

For a fourth year, the survey showed that tasting room service style greatly affects purchasing. It found wineries that are open by appointment only report average purchase amounts that are higher than for wineries that are open to the public. It demonstrated that the choice of tasting room experience greatly influences the success of DTC programs, including conversion rates to wine orders, conversion to wine club members and more. Seated private or formal tasting experiences represent a small segment but a disproportionate share of revenue for some wineries.

# 2016

### **ENHANCING GUEST EXPERIENCES**

The theme continued to be the escalation of higher-end guest experiences—not just in Napa and Sonoma but in regions across the country—the overarching finding being that wineries were doing a better job at turning tasting-room visitors into club members. The survey showed club conversion rates tripled over three years. Growth varied by region, but wineries saw club memberships grow at double-digit rates the prior year. The average net wine club growth rate across the country was 16 percent.

### **SERVICE AND STYLE**

The survey for a third time asked about tasting purchases by service style, whether tasters typically were standing at a tasting bar, seated at a tasting bar, seated in a casual tasting or group or if visitors participated in formal seated tastings. Service style again correlated greatly with spending, with formal seated tastings leading to the highest average sales per customer. The survey showed wineries that were by appointment-only reported average purchase amounts that were more than three times higher than wineries that were regularly open to the public.

# **REIMBURSING TASTING FEES?**

The survey asked about different tasting fee reimbursement methods. While 52 percent of wineries credited back the tasting fee if a specific number of bottles were purchased, 18 percent set a specific dollar amount and 35 percent waived the fee if the customer joined the club. Sixteen percent said they didn't reimburse tasting room fees. Wineries were encouraged to consider adding value in other ways besides reimbursing fees.

# **INCENTIVES FOR CLUB RETENTION**

For the first time, the survey asked about the payment of residuals for wine club retention. While just 5 percent of respondents said they paid residuals for club retention, it remains an emerging area. Incentives for straight wine sales were also seen increasing. While 34 percent of those surveyed said they offered straight commissions, 21 percent offered bonuses for reaching individual goals.

# **TIPPING IN THE TASTING ROOM**

The survey revealed 74 percent of wineries allow tipping in the tasting room.

# 2015

# REVENUES INCREASE – SO DOES PROFESSIONALISM

Tasting room revenues increased between 2013 and 2014 as wine clubs grew on average a net 14 percent. Volumes and revenues were up. The average number of cases sold increased 15 percent, with revenues up 18 percent. Results were attributed to consumer interest; legal barriers to interstate wine shipping falling; the economy being relatively stable; and wineries getting better at connecting with consumers—i.e. the level of professionalism increasing.

### **SERVICE AND STYLE**

For a second year, the survey showed a large number of wineries, nearly one in three, offering seated tastings of some sort. Seated tastings were associated with higher average purchases and wine club conversions.

# TREADING WATER VERSUS GROWING THE CLUB – OR, WHY IT'S HARD TO GROW

The survey showed club attrition rates in the wine industry averaging about 18 percent, with many finding growing clubs to be a challenge, in part because of the need to sign up so many new members to maintain a given size. The survey showed wineries in Napa needing to overcome a 23 percent annual attrition rate to grow.

# THE VALUE OF CLUB MEMBERS

The survey indicated how valuable wine club members are in terms of revenue, with the average wine club member spending \$637 per year per club—a figure that reached \$1,023 in Napa. The survey showed the average wine club member had a lifetime value of \$1,491, or \$2,258 in Napa.

# 2014

### **SERVICE AND STYLE**

For the first time the survey showed that the type of tasting experienced offered matters. It asked about tasting room purchases based on type of tasting. Wineries that were open by appointment only reported average purchase amounts of nearly \$294 while wineries regularly open to the public reported average purchase prices of \$70. The survey asked about tasting purchases by service style, whether tasters typically were standing at a tasting bar, seated at a tasting bar, seated in a casual tasting or group, or if visitors participated in formal seated tastings. Service style correlated with spending. The survey found formal seated tastings leading to the highest average sales per customer; in 2014 the figures were \$172 versus an average purchase of \$78 for tasters that were standing at the bar.

### **MELON SQUEEZERS**

The survey asked about the conversion rate of visitors to sale but by flipping the question around and showed that on average, 36 percent of all tasting room visitors across all regions were "melon squeezers," or those that didn't purchase any wine at all.

### **ECONOMY RECOVERING**

In a sign of the economy improving, tasting rooms received more visitors, customers spent more across all the regions. Tasting room traffic the prior year averaged 1,302 visitors per month; an 11.5 percent increase, which followed an 8.5 percent growth in traffic reported the previous year. Napa led in tasting room traffic with more than 2,000 monthly visitors per tasting room.

# BEST PRACTICES: FOCUSING ON CONVERSION RATES

The survey report emphasized three key conversion rates wineries should always track: conversion rate to wine order; conversion to wine club membership; and conversion rate to the mailing list.

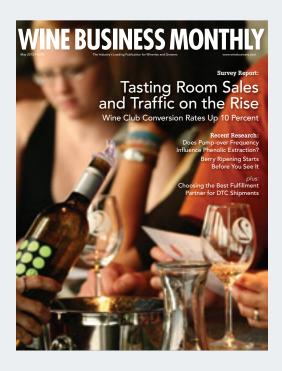
# 2013

# **SALES RISING**

The survey showed sales through winery tasting rooms increasing, particularly in the premium range (above \$40), with price increases becoming more tolerated and accepted. It found that tasting room traffic had increased 8.3 percent on average across all regions in 2012. Santa Barbara County saw the largest increase. The average tasting room purchase amount in 2012 was \$69. Napa's average was \$164. All regions saw an increase in overall tasting room revenue in 2012, with an average increase of 8.9 percent. Tasting room case sales increased 9.4 percent on average over the previous year.

### **MORE TASTING FEES**

The survey showed a record number of tasting rooms charging tasting fees—79 percent in 2012 compared to 70 percent in 2011, with 68 percent of all tasting rooms reimbursing the fee when a purchase was made. Of all wineries surveyed, 83 percent now had a wine club, compared to 77 percent the previous year.



# 2012

# PARTNERING WITH SILICON VALLEY BANK – STATISTICALLY SIGNIFICANT FINDINGS BY REGION

Wine Business Monthly first partnered with Silicon Valley Bank to jointly produce the annual tasting room survey in 2012. The partnership resulted in a significantly larger response rate—over the course of three years that rate more than doubled. The survey report for the first time provided a comprehensive review of tasting room and wine club trends, broken down across all regions of North America. The survey added regional benchmarks for wineries by region, making it a more valuable industry resource.

### **REBOUNDING FROM A RECESSION**

Results showed a rebound from a prior recession, with nearly every region experiencing growth in the number of tasting room visitors. Survey results showed, though, that some regions were more negatively impacted by the economy than others. There was a 7 percent growth in the average tasting room purchase across all regions while Napa's average tasting room purchase grew 12 percent.

# MORE WINERIES CHARGE TASTING FEES

The survey found 70 percent of North American wineries charging tasting room fees. Even in regions where most wineries were pouring their wines freely to guests, at least a third of the wineries now charged at least some tasting fee.



# 2011

# **WEATHERING THE STORM**

While the Great Recession saw discretionary spending fall, WBM's sixth annual Tasting Room Survey Report found sales stabilizing and even increasing in 2010 on into the first quarter of 2011. While tasting room sales held steady as a sales source, wine club sales growth fell, as did Internet sales.

# MORE SKUS FOR TASTING ROOMS

Having exclusive wines or wines that are only available in the tasting room is a differentiator. The sixth annual tasting room survey report showed wineries increasing the sheer number of differing wines available for purchase. Fifty-five percent said the number of SKUs, or stock-keeping units, in their tasting rooms had increased while 38 percent said that number was the same. Some 93 percent of wineries said that the number of SKUs in their tasting rooms had either stayed the same or increased.

# **BARRIERS TO GROWTH?**

A lack of DTC marketing tools such as CRM software or web analytics software were cited by 60 percent of respondents as a barrier to DTC wine sales. Facing a capital-constrained environment, respondents cited a lack of resources, such as people, time and money; effective technology and systems; acquiring customers; and a lack of DTC marketing tools, such as those for customer relationship marketing (CRM) and Web analytics.

# TELESALES A DRIVER

Wineries reported both in-house and out-of-house, telesales becoming more of a driver of new DTC sales.

# 2010

### **MORE WINERIES OFFERING CHOICE**

Data showed sales growth via the tasting room outpacing ecommerce and wine clubs, and wineries starting to offer multiple wine club options. Wine club attrition rates fell in early 2010. While the outlook was mixed, direct to consumer sales held their own. The report showed an increasing number of wineries starting to watch their metrics, measuring attrition and wine club conversion rates.

### **RECESSION HANGOVER**

By all accounts, it had been a challenging year for wine sales in general, particularly at higher price points. The survey showed price points where most wineries were selling direct dropping slightly, with more wines sold in the \$14 to \$24.99 category and slightly fewer wines sold direct in the \$25 to \$49.99 category.

# WINERIES INCREASINGLY DEPENDENT ON DIRECT SALES

The percentage of DTC sales derived from the tasting room increased over 2009 but wine club and ecommerce sales were pretty flat. Because of compliance headaches, one quarter of all wineries reported shipping to just one state. On the other hand, 42 percent of wineries said they were licensed to ship in more than 10 states.

# CALIFORNIA ALLOWS WINE BY THE GLASS IN TASTING ROOMS

The survey asked wineries if they serve wine by the glass. The practice was already widespread in most of the country but was new to California. State law legalized the practice in 2009.

# 2009

# RECESSION STRIKES, CONSUMERS BAIL ON CLUBS

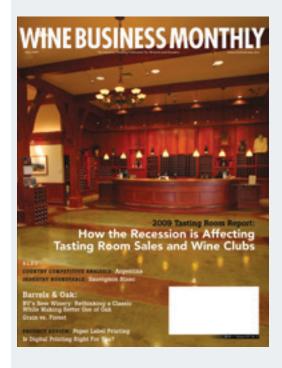
The 2009 survey showed direct-to-consumer sales and wine club sign-ups slowing.

Two-thirds of wineries with wine clubs reported an increase in membership cancellations.

Fewer wineries charged for tastings compared to the previous year, signaling a leveling off, and more tasting rooms were applying the fee to wine purchases

# **SHARPENING THE FOCUS**

Successful wineries used the time to hone their expertise and leverage traffic. Readers were reminded that even with decreasing traffic, there was still much that could be done. Wineries worked to up conversion rates for the wine club, for example, with the same number of visitors by evaluating staffing and providing additional training. The report included discussion reminding people to view tasting room traffic as a jumping-off point for future relationships and to emphasize the ABCs of direct-to-consumer sales: Always Be Collecting—customer information.



# 2008

### **MAXIMIZING REVENUE**

The survey found more wineries seeking to maximize revenue by charging higher tasting fees and increasing wine club sign-ups by offering greater cash incentives for employees enrolling new club members. Sixty five percent of wineries were charging a fee for tastings (6 percent more than the previous year), and charging tasting fees in the "above \$5" range was becoming considerably more popular (up 17 percent over 2006). Seventy four percent of wineries reported having wine clubs (although there were nearly twice as many associated with West Coast wineries), with 15 percent of wineries now paying an incentive of \$15 or more for each wine club sign-up (up 7 percent over 2006).

### 2007

### **CHARGING FOR TASTINGS**

Results showed 59 percent of tasting rooms now charging a fee for tastings, an 8 percent increase over the previous year. The survey found communication with customers and information collection primarily being conducted via email newsletters (77 percent) as opposed to print newsletters and postcards (43 percent). At this point, results showed most tasting fees ranging between \$3 and \$5, with 77 percent of western wineries and 47 percent of non-western wineries indicating they were in this range. A significant number of non-western wineries (41 percent) said that they charged less than \$3. Just ten percent of western wineries charged more than \$10.

# **FINDING STAFF**

Much discussion focused on compensation with tasting rooms tending to under-staff and under-pay. Some things don't change.

# 2006

# TASTING ROOMS HAVE MUCH IN COMMON

WBM's first tasting room survey report showed similarities between wineries across the country with many establishing multiple off-site tasting rooms, creating fee-based regular and reserve tasting options, and focusing on non-wine sales revenues in the tasting room. The survey confirmed the obvious: smaller wineries were more dependent on tasting room sales than larger wineries.

# **TASTING FEES WERE LOWER**

Results showed half of respondents charging for tasting. Things change. At the time the editors were surprised it was that high.

Average fees were between \$3 and \$6 across the country, with some wineries outside the West Coast not charging for tastings at all.

WBM

# WINE BUSINESS MONTHLY



# Message in a Bottle:

# Innovations in Glass are Born by Marketing and Aesthetic Needs

Most innovations in glass bottles are a direct result of glass vendors pushing the envelope and moving beyond their existing stock line to serve a previously untapped market need. More and more frequently it's the wineries that are looking for ways to differentiate their products by customizing their glass packaging.

Michael S. Lasky

**Michael S. Lasky** is the former editor of *AppellationAmerica.com* and is the author of hundreds of articles for national magazines and newspapers.

**AS RETAIL SHELVES ARE** obviously crowded with a legion of stock wine bottles, which for the most part are differentiated mainly by labels, capsules and other adornments, it follows that any innovation of the actual glass container, be it for aesthetics or specific function, will truly stand out. Of course the shape, or mold, of a bottle is an important element in defining the glass as innovative. But it is the function-driven design that reveals a bottle's true, unique pedigree.

Wine Business Monthly sought out new glass designs from both glass manufacturers and distributors, as well as bottle-savvy wine companies and négociants. Here are some of the truly innovative bottle designs: Some have been available for a number of years but are deserved for more widespread attention, and others are proprietary to a single company and are represented here as inspirational examples of bottles proactively designed to fill both a marketing aesthetic and utilitarian end.

The examples of proprietary glass, exclusive to a particular company, will be so noted and bottles available for sales to winery will include website addresses for specific ordering information. All bottles shown here are promised to work on automated bottling lines.

# 187ml Single-serve Wine Bottle

Ardagh Group, ardaghgroup.com



With the increasing popularity of single-serve containers mostly limited to aluminum cans, **Ardagh Group**, one of the largest domestic manufacturers of glass bottles, realized there was a growing niche for single-serve glass wine bottles. Together with **GPS Global Brands**, whose focus has been on providing luxury single-serve options for the wine industry, Ardagh has introduced a 187ml single-serve glass wine bottle, available in colored and flint glass, boxed in 24-pack cases. The company boasts that the new bottles are "100 percent infinitely recyclable packages."

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BerlinWinePackaging.com



# Super Punt: Bordelaise Cru Classé

Saverglass, saverglass.com



Everything old is new again—at least when you consider the **Saverglass** Heritage Collection, of which the Bordelaise Cru Classé is an eye-candy example. Despite the constraints of an automated production process and refusing to compromise on any aesthetic or technical aspect, the bottle provides a modern flair while replicating the bottles of another age. No doubt its 75 mm deep, angular punt separates this from any other punt-centric bottle. In fact, the 75 mm punt is the deepest cavity ever achieved in any automated production process. The Bordelaise Cru Glassé's extended, slender neck accentuates its broad shoulder. Despite this atypical glass mold, it works without an issue on bottling lines.

# Solstice: Sustainability at Large

Saverglass, saverglass.com



The purpose was straightforward in filling a previously overlooked trend but growing too much to be ignored: Creating a bottle whose design easily conveyed to consumers that the wine inside was organic or biodynamic. With an eye to the expanding presence of sustainably farmed wines, France-based Saverglass has started to roll out bottles specific to this growing market. Distinguished by its earthen shape, which follows the ovoid contours of the vats often used by organic and biodynamic wine producers, the Solstice has a small, round, semi-circular punt, measuring 21 mm deep, that is intended to represent the quarter moon. Solstice also incorporates a more practical design element—similar to decanters, the bottle's slender neck, combined with its ovoid-shaped body, effectively helps to aerate the wine.

# Vinebox Tasting Tubes: Tasting Room To-Go

Proprietary design for direct-to-consumer sales only, getvinebox.com



Former corporate attorney **Matt Dukes**, the CEO and co-founder of **Vinebox**, a subscription-based service of six to 12 seasonal boxes of wine samples, each packaged in proprietary-designed, 100 ml test tube style cylinders, said he was inspired by the single serving successes of **Keurig** coffee and **Nespresso**. He combined that marketing concept with the glass tube presentations he saw French winemakers use when sampling each other's wines, while he was living on a small family winery in Bordeaux.



Every quarter Vinebox subscribers receive a box comprised of a potpourri of mostly European varietal wines. It's sort of a "tasting room-to-go." Cross-pollinating the science lab glass into a consumer sampler proves truly innovative and actually came from the previous success Dukes had with another Bunsen burner-inspired, single-serve wine sampler, **Usual Wines**.

# Look at me



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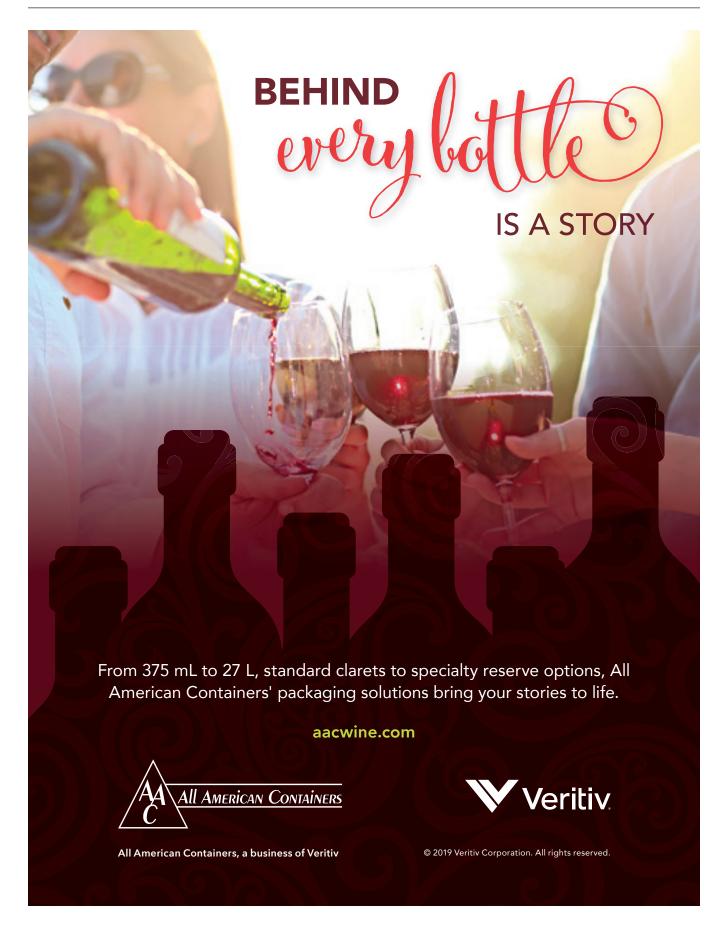
MONVERA.COM

# Usual Wines' By-the-Single-Glass Bottles

Proprietary design for direct-to-consumer sales only, usualwines.com

Although glass manufacturers are the source of most of the innovative bottles, more and more frequently wine companies that seek to differentiate their products push the design (and marketing) envelope with unique molds. For Usual Wines, a recent DTC-only start-up, bottle innovation was not only the raison d'être for marketing appeal, explained CEO Matt Dukes, but also for the wine's consumption. The company hired well-known industrial designer **Karim Rashid**, who is best recognized for his **Method** soap bottles, with the concept to make their wine bottles stand out

from any other single-serve bottle with the goal of separating the quality of the wines from what could be termed "airplane wines." The resulting 6.7 ounce, wide-bottomed, screwcap bottles are an artistic take on glass containers you would find in laboratories and are filled with French rosé and red blends from California. Wine that would ordinarily be filled in 750 ml bottles can be stretched to fill four times as many 187 ml containers—pure marketing genius.







# Sommelier Mouth: No Drip

Global Package, globalpackage.net, estal.com/en



The often heard complaint from sommeliers, let alone other wine consumers, is that all wine bottles tend to drip a bit after each pour. Spain-based packaging distributor and glass manufacturer Estal seems to be the first to successfully produce a line of wine bottles to both stop the drip and drop the bottling line issues that rise with improper capsule fittings. The continuous straight neck and mouth result in a cleaner silhouette. The design can also allow the neck to be thicker, which is a characteristic of premium and luxury wine and allows for the seamless, no wrinkling installation of capsules, be they polylaminate, aluminum or tin. The sommelier slot below the lip facilitates the cut of the capsule, resulting in a clean, straight cut at the neck of the bottle. Unlike standard mouths, the cutting line is unequivocal and guided—plus doubles as an anti-drip barrier. Moreover, these features of the bottle help to enhance the unique, non-stock bottle shape while maintaining the use of the same capsule, cork, production speed, bottle height and weight. The Sommelier is distributed in the United States exclusively by Napa-based Global Package.

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# O-I/Amorim Helix: Screwcap/Cork Hybrid

O-I or Amorim Cork America, helixconcept.com



Despite a screwcap's resealing convenience and ability to maintain wine flavors for years without the possibility of cork taint, many consumers have been reluctant to embrace the alternative closure. They miss the traditional bottle opening ceremony and that ensuing initial pop. Cork giant Amorim combined forces with global glass goliath O-I to produce an inner-groove bottle and a matching, screw-shape cork so consumers could have their wine and drink it too. The Helix bottle looks like your standard stock glass bottle but sports an internal thread in the neck to accommodate Amorim's ergonomically-designed screw-shaped cork. Although the Helix combo has been available since 2013, its acceptance by wineries has been slow but steady, embraced mainly by the under \$10 category like Bronco Wine Company's Charles Shaw (aka Two Buck Chuck) and its Great American Wine Company. As the novelty of its innovation has faded since its first availability, the Helix's low-key awareness by consumers has surprisingly begun to rise. Despite this, wineries might be reluctant to adopt the Helix because it requires using bottles exclusively from O-I and corks from Amorim, thus forsaking existing glass and cork supplier contracts.

# JNSQ (je ne sais quoi): Market Researched Bottle Design Sells Itself

Proprietary design for direct-to-consumer sales only, *insq.com* 



Like the Millennial women for whom it was made, JNSQ (short for je ne sais quoi) makes a statement inside the bottle and out. Inspired by the artistry of classic luxury perfume bottles, the JNSQ Rosé Cru's first-of-its-kind shape and signature rose stopper were designed and manufactured by expert glass-makers in France. The goal was to create a unique bottle whose curves would stand out on the shelf, behind the bar or in the middle of the table—and is the result of dozens of prototypes. "Long after the wine inside has been enjoyed, the bottle becomes a keepsake for displaying fragrances, bath salts or even premium water," according to the corporate marketing mission. The Wonderful Company, best known for its Fiji Water, Wonderful Pomegranates and Almonds, produced the bottle from a brain-stormed concept for this new wine brand without a winery—and an innovatively designed bottle as a package that sells itself, not necessarily what's inside. WBM



- Ultra clean rootstocks
- 100% containerized
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- 2010 protocol selections

Magnum Vine

12" Big Pot Vine™

# Clonal Field Days

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starts at 9am Duarte Georgetown Vineyards 4661 Spanish Dry Diggins Rd. Greenwood CA 95635

Clean, Clonal, Containerized

1-800-GRAFTED www.duartenursery.com \* Hughson, CA









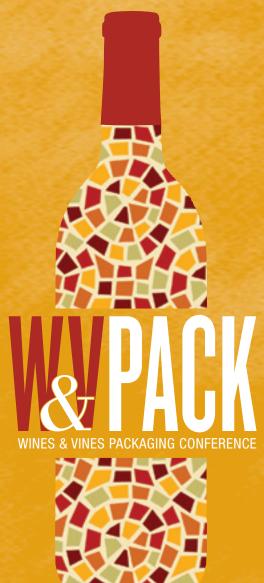
Ubervine<sup>11</sup>



# THE SIXTH ANNUAL WINES & VINES PACKAGING CONFERENCE

Conference highlights include:

- Legendary designer Chuck House in conversation with Lance Cutler
- Consumer preferences for wine in cans
- Connecting to new wine consumers and the next generation of wine producers
- Brand development for private labels and bulk wine
- Packaging Design Award winners revealed!



AUGUST 8, 2019 LINCOLN THEATER IN YOUNTVILLE, CALIF.

# THANK YOU TO OUR CURRENT 2019 SPONSORS

















































































# **Retail Sales Analysis:**

# Wine Sales Increase as Volume, Packaging Shrink

Wines Vines Analytics

# Wine Sales Up More Than 1 Percent by Value

Total off-premise wine sales value rose 1.4 percent from a year ago to nearly \$14.4 billion in the 52 weeks ended April 20, according to scan data tracked by **Nielsen**. Sales slipped 1 percent in the four weeks ended April 20 versus the same period a year earlier, totaling \$1.1 billion.

# **Sales Volume Continues to Slide**

Off-premise sales volume exceeded 161 million 9L cases in the past 52 weeks, a decrease of more than 1 percent. The four weeks ended April 20 saw an even sharper drop, as volumes fell more than 3 percent to 12.1 million 9L cases.

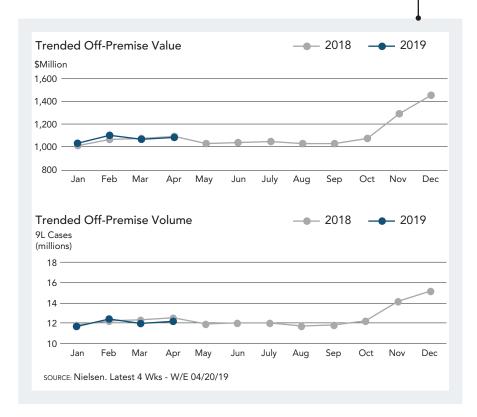
# Volume Growth Linked to Packaging

Packaging type points to sales growth, with wines in smaller, alternative packaging posting the strongest advances. Box wines priced at \$4 per 750 ml have been especially successful, with 9.6 percent growth by value and 10.2 percent growth by volume in the 52 weeks ended April 20. Sales totaled \$800.6 million on a volume of 13.5 million 9L cases.

The steadiest growth by packaging type among box wines occurred in the 3L format, with sales up nearly 8 percent to total \$644.6 million and volume rising more than 7 percent to 12.5 million 9L cases in the latest 52 weeks. However, the strongest overall growth was seen among 1L boxes, which gained 11.7 percent by value to more than \$30 million in sales over the period, while volumes increased 9.1 percent to 453,582 9L cases.

Wines in Tetra Pak also saw strong growth, with sales increasing 12.7 percent to \$223.7 million in the latest 52 weeks. Volumes increased 10.8 percent to more than 3 million 9L cases.

The appeal of smaller, more convenient packaging types was also apparent among table wines in glass. Typically, the larger the package, the greater the decrease in sales during the period. A significant exception was wines in 375 ml glass bottles, which saw sales increase 8.7 percent to \$18 million. Volume growth kept pace, rising 8.6 percent to 69,140 9L cases. The average price of these wines was \$21.70 per 750 ml, reflecting not only the popularity of more expensive wines but also consumer preference for smaller portions. **WBM** 





# Methodology

Sourced from Nielsen, these figures represent off-premise retailer wine sales to the consumer aggregated across a variety of channels nationwide, including grocery, drug, mass merchandisers, convenience, dollar, military, as well as a selection of warehouse clubs, and liquor channel geographies and liquor channel retail chains. Nielsen figures are updated and released every four weeks.

Nielsen Table Wine Category Segments MARKET: Total US xAOC+Conv+Military+Liquor Plus PERIOD: Week Ending April 20, 2019

TOTAL TABLE WINE 14,350,470,645 1,086,393  BOX 1,369,939,365 107,166 \$0-\$3.99 568,980,891 43,233 \$4+ 800,595,323 63,693  Value Glass \$0-\$3.99 678,707,413 50,111 Popular Glass \$4-\$7.99 3,213,190,816 237,936 Premium Glass \$4-\$7.99 3,213,190,816 237,936  Super Premium Glass \$11-\$14.99 2,774,251,820 214,446  Ultra Premium Glass \$15-\$19.99 1,377,115,939 107,477  Luxury Glass \$20-\$24.99 565,902,616 42,846  Super Luxury Glass \$25+ 752,003,721 53,476  IMPORTED 3,792,729,545 287,775  ITALY 1,191,184,941 89,493	20/19 04/20/19 3,844 1.4 6,377 4.6 5,688 -2.0 3,076 10.0 1,675 0.6 1,361 -5.0 0,285 -5.1 1,633 -1.0 5,353 7.6 7,395 7.6 3,770 7.6 5,985 4.6	Wks - W/E 04/20/19  -0.9  -2.4 -10.0 -1.8 -1.8 -1.8 -1.1 -1.1 -1.1 -1.1 -1.1	Latest 52 Wks - W/E 04/20/19  161,202,891  33,483,761 19,998,283 13,480,702  124,475,961 17,011,156 48,914,825 29,690,187 18,356,663 6,716,746 2,167,521 1,579,626  40,142,544 10,479,920	Latest 4 Wks - W/E 04/20/19  12,121,298  2,564,345 1,497,418 1,064,103 9,306,329 1,239,204 3,605,157 2,219,423 1,420,726 527,891 164,076 114,053 3,023,118	Latest 52 Wks - W/E 04/20/19 -1.2 2.1 -2.4 9.6 -2.4 -6.5 -5.8 -1.9 6.8 6.4 5.4 1.3	Latest 4 Wks - W/E 04/20/19  -3.3  1.1 -3.9 8.8 -4.8 -10.1 -7.6 -5.2 3.3 6.0 2.2 -1.1	Latest 52 Wks - W/E 04/20/19 7.42 3.41 2.37 4.95 8.52 3.33 5.47 9.43 12.59 17.08 21.75 39.66	Latest 4 Wks - W/E 04/20/19 7.47 3.48 2.41 4.99 8.58 3.37 5.50 9.40 12.57 16.96 21.75 39.06
BOX 1,369,939,365 107,166 \$0-\$3.99 568,980,891 43,231 44+ 800,595,323 63,693    Total Table Wine Glass 12,726,476,311 958,75   Value Glass \$0-\$3.99 678,707,413 50,11   Popular Glass \$4-\$7.99 3,213,190,816 237,936   Premium Glass \$8-\$10.99 3,359,953,725 250,49   Super Premium Glass \$11-\$14.99 2,774,251,820 214,444   Ultra Premium Glass \$15-\$19.99 1,377,115,939 107,47   Luxury Glass \$20-\$24.99 565,902,616 42,846   Super Luxury Glass \$25+ 752,003,721 53,476   IMPORTED 3,792,729,545 287,775	7,377 4.3 5,688 -2.6 3,076 10.3 1,675 0.3 1,361 -5.6 0,285 -5.3 1,633 -1.3 6,353 7.4 7,395 7.4 3,770 7.6 5,985 4.6 5,412 1.6 3,213 1.3 6,687 1.6	3 4.9 -2.4 2 10.0 3 -1.8 0 -8.4 3 -7.1 3 -4.7 4 3.6 4 5.7 3 3.1 4 1.2 6 -0.9 5 -0.1	33,483,761 19,998,283 13,480,702 124,475,961 17,011,156 48,914,825 29,690,187 18,356,663 6,716,746 2,167,521 1,579,626 40,142,544 10,479,920	2,564,345 1,497,418 1,064,103 9,306,329 1,239,204 3,605,157 2,219,423 1,420,726 527,891 164,076 114,053 3,023,118	2.1 -2.4 9.6 -2.4 -6.5 -5.8 -1.9 6.8 6.4 5.4 1.3	1.1 -3.9 8.8 -4.8 -10.1 -7.6 -5.2 3.3 6.0 2.2 -1.1	3.41 2.37 4.95 8.52 3.33 5.47 9.43 12.59 17.08 21.75	3.48 2.41 4.99 8.58 3.37 5.50 9.40 12.57 16.96 21.75
\$0-\$3.99	5,688 -2.6 3,076 10.3 1,675 0.3 1,361 -5.6 0,285 -5.3 1,633 -1.3 6,353 7.4 7,395 7.4 3,770 7.9 5,985 4.4 5,412 1.6 3,213 1.3 6,687 1.6	-2.4 2 10.0 3 -1.8 0 -8.4 3 -7.1 3 -4.7 4 3.6 4 5.7 0 3.1 4 1.2 6 -0.9 5 -0.1	19,998,283 13,480,702 124,475,961 17,011,156 48,914,825 29,690,187 18,356,663 6,716,746 2,167,521 1,579,626 40,142,544 10,479,920	1,497,418 1,064,103 9,306,329 1,239,204 3,605,157 2,219,423 1,420,726 527,891 164,076 114,053 3,023,118	-2.4 9.6 -2.4 -6.5 -5.8 -1.9 6.8 6.4 5.4	-3.9 8.8 -4.8 -10.1 -7.6 -5.2 3.3 6.0 2.2 -1.1	2.37 4.95 8.52 3.33 5.47 9.43 12.59 17.08 21.75	2.41 4.99 8.58 3.37 5.50 9.40 12.57 16.96 21.75
\$\frac{\text{Y}}{\text{VID}}\$ \$4+\$ \$800,595,323 \$63,695 \$12,726,476,311 \$958,75\$ \$12,726,476,311 \$12,726,476,476,311 \$12,726,476,476,311 \$12,726,476,476,476,476,476,476,476,476,476,47	3,076 10.3 1,675 0.4 1,361 -5.0 1,361 -5.1 1,633 -1.3 6,353 7.4 7,395 7.4 3,770 7.0 6,985 4.4 5,412 1.4 3,213 1.5 6,687 1.0 0,116 9.	2 10.0 3 -1.8 0 -8.4 3 -7.1 3 -4.7 4 3.6 4 5.7 0 3.1 4 1.2 6 -0.9 5 -0.1	13,480,702 124,475,961 17,011,156 48,914,825 29,690,187 18,356,663 6,716,746 2,167,521 1,579,626 40,142,544 10,479,920	1,064,103 9,306,329 1,239,204 3,605,157 2,219,423 1,420,726 527,891 164,076 114,053 3,023,118	9.6 -2.4 -6.5 -5.8 -1.9 6.8 6.4 5.4 1.3	8.8 -4.8 -10.1 -7.6 -5.2 3.3 6.0 2.2 -1.1	4.95 8.52 3.33 5.47 9.43 12.59 17.08 21.75	4.99 8.58 3.37 5.50 9.40 12.57 16.96 21.75
Luxury Glass \$20-\$24.99       565,902,616       42,84         Super Luxury Glass \$25+       752,003,721       53,476         IMPORTED       3,792,729,545       287,775	1,675 0.4 1,361 -5.0 0,285 -5 1,633 -1 6,353 7. 7,395 7. 3,770 7.0 6,985 4. 5,412 1.6 3,213 1.1 6,687 1.0	3 -1.8 0 -8.4 3 -7.1 3 -4.7 4 3.6 4 5.7 0 3.1 4 1.2 6 -0.9 5 -0.1 0 -4.3	124,475,961 17,011,156 48,914,825 29,690,187 18,356,663 6,716,746 2,167,521 1,579,626 40,142,544 10,479,920	9,306,329 1,239,204 3,605,157 2,219,423 1,420,726 527,891 164,076 114,053 3,023,118	-2.4 -6.5 -5.8 -1.9 6.8 6.4 5.4	-4.8 -10.1 -7.6 -5.2 3.3 6.0 2.2 -1.1	8.52 3.33 5.47 9.43 12.59 17.08 21.75	8.58 3.37 5.50 9.40 12.57 16.96 21.75
Luxury Glass \$20-\$24.99       565,902,616       42,84         Super Luxury Glass \$25+       752,003,721       53,476         IMPORTED       3,792,729,545       287,775	1,361 -5.0 0,285 -5.1 1,633 -1.3 6,353 7.4 7,395 7.4 3,770 7.0 6,985 4.4 5,412 1.0 3,213 1.3 6,687 1.0	-8.4 -7.1 -4.7 -4.3 -4.7 -4.3 -5.7 -6.3 -0.9 -0.1 -4.3	17,011,156 48,914,825 29,690,187 18,356,663 6,716,746 2,167,521 1,579,626 40,142,544 10,479,920	1,239,204 3,605,157 2,219,423 1,420,726 527,891 164,076 114,053 3,023,118	-6.5 -5.8 -1.9 6.8 6.4 5.4	-10.1 -7.6 -5.2 3.3 6.0 2.2 -1.1	3.33 5.47 9.43 12.59 17.08 21.75	3.37 5.50 9.40 12.57 16.96 21.75
Luxury Glass \$20-\$24.99       565,902,616       42,84         Super Luxury Glass \$25+       752,003,721       53,476         IMPORTED       3,792,729,545       287,775		3 -7.1 3 -4.7 4 3.6 4 5.7 0 3.1 4 1.2 6 -0.9 5 -0.1 0 -4.3	48,914,825 29,690,187 18,356,663 6,716,746 2,167,521 1,579,626 40,142,544 10,479,920	3,605,157 2,219,423 1,420,726 527,891 164,076 114,053 3,023,118	-5.8 -1.9 6.8 6.4 5.4 1.3	-7.6 -5.2 3.3 6.0 2.2 -1.1	5.47 9.43 12.59 17.08 21.75	5.50 9.40 12.57 16.96 21.75
Luxury Glass \$20-\$24.99       565,902,616       42,84         Super Luxury Glass \$25+       752,003,721       53,476         IMPORTED       3,792,729,545       287,775	1,633 -1.3 6,353 7.4 7,395 7.3 3,770 7.6 6,985 4.6 5,412 1.6 3,213 1.6 6,687 1.0 0,116 9.	3 -4.7 4 3.6 4 5.7 0 3.1 4 1.2 6 -0.9 5 -0.1 0 -4.3	29,690,187 18,356,663 6,716,746 2,167,521 1,579,626 40,142,544 10,479,920	2,219,423 1,420,726 527,891 164,076 114,053 3,023,118	-1.9 6.8 6.4 5.4 1.3	-5.2 3.3 6.0 2.2 -1.1	9.43 12.59 17.08 21.75	9.40 12.57 16.96 21.75
Luxury Glass \$20-\$24.99       565,902,616       42,84         Super Luxury Glass \$25+       752,003,721       53,476         IMPORTED       3,792,729,545       287,775	6,353     7.4       7,395     7.3       3,770     7.0       6,985     4.0       5,412     1.0       3,213     1.0       6,687     1.0       0,116     9.0	3.6 4 5.7 0 3.1 4 1.2 6 -0.9 5 -0.1 0 -4.3	18,356,663 6,716,746 2,167,521 1,579,626 40,142,544 10,479,920	1,420,726 527,891 164,076 114,053 3,023,118	6.8 6.4 5.4 1.3	3.3 6.0 2.2 -1.1	12.59 17.08 21.75	12.57 16.96 21.75
Luxury Glass \$20-\$24.99       565,902,616       42,84         Super Luxury Glass \$25+       752,003,721       53,476         IMPORTED       3,792,729,545       287,775	7,395 7.4 3,770 7.0 5,985 4.4 5,412 1.0 3,213 1.0 5,687 1.0	5.7 3.1 4 1.2 5 -0.9 5 -0.1 0 -4.3	6,716,746 2,167,521 1,579,626 40,142,544 10,479,920	527,891 164,076 114,053 3,023,118	6.4 5.4 1.3	6.0 2.2 -1.1	17.08 21.75	16.96 21.75
Luxury Glass \$20-\$24.99       565,902,616       42,84         Super Luxury Glass \$25+       752,003,721       53,476         IMPORTED       3,792,729,545       287,775	3,770 7.0 5,985 4.6 5,412 1.0 3,213 1.0 5,687 1.0 0,116 9.	3.1 4 1.2 5 -0.9 5 -0.1 0 -4.3	2,167,521 1,579,626 40,142,544 10,479,920	164,076 114,053 3,023,118	5.4 1.3	2.2 -1.1	21.75	21.75
Super Luxury Glass \$25+         752,003,721         53,476           IMPORTED         3,792,729,545         287,775	5,412 1.6 5,412 1.6 3,213 1.6 6,687 1.0 0,116 9.	1 1.2 6 -0.9 5 -0.1 0 -4.3	1,579,626 40,142,544 10,479,920	114,053 3,023,118	1.3	-1.1		
IMPORTED 3,792,729,545 287,775	5,412 1.d 3,213 1.d 5,687 1.d 0,116 9.	5 -0.9 5 -0.1 0 -4.3	40,142,544 10,479,920	3,023,118			39.66	39.06
	3,213 1.6 6,687 1.6 0,116 9.	-0.1 0 -4.3	10,479,920		-0./		7.07	7.00
	5,687 1.0 0,116 9.	-4.3	1		-1.0	-3.4	7.87 9.47	7.93 9.58
	0,116 9.		11 054 244	778,151 899,329	-0.9	-3.4	5.07	5.08
			11,956,364 2,987,521	211,919	8.5	2.2	12.91	13.15
	1,014 -4.		3,821,681	303,049	-3.3	-5.7	5.56	5.51
CHILE 254,890,225 20,04  SPAIN 163,304,632 11,700  GERMANY 82,795,821 5,875	7,407 -3.0		2,066,535	149,004	-2.0	-7.5	6.58	6.55
S GERMANY 82,795,821 5,873	3,950 -4.3		821,047	58,563	-1.0	-4.3	8.40	8.36
NEW ZEALAND 479,401,149 39,17			3,458,016	282,446	9.0	12.7	11.55	11.56
ARGENTINA 338,682,430 25,084			3,711,296	274,927	-9.6	-9.2	7.60	7.60
SOUTH AFRICA 24,278,554 1,751			210,013	15,330	-8.1	-3.3	9.63	9.52
	3,091 9.:		449,746	27,263	3.6	-16.3	7.68	8.03
DOMESTIC 10,557,741,100 798,611	·		121,060,347	9,098,180	-1.4	-3.5	7.27	7.31
CALIFORNIA 9,512,111,053 720,36			112,403,892	8,442,213	-1.6	-3.4	7.05	7.11
WASHINGTON 616,409,773 45,56			5,145,364	382,686	1.1	-6.5	9.98	9.92
⊇ OREGON 199,844,367 15,31	7,371 13.4	1 11.7	1,018,643	77,820	12.3	10.4	16.34	16.40
OREGON 199,844,367 15,31: TEXAS 32,253,778 2,44: NEW YORK 34,980,909 3,52:	5,532 -1.	1 -3.4	393,553	29,117	-3.2	-5.4	6.83	7.00
NEW YORK 34,980,909 3,52	1,117 -5.8	-11.4	484,622	53,198	-7.6	-6.8	6.02	5.52
	1,864 1.	7 -2.2	422,922	30,195	0.3	-4.6	8.02	7.99
INDIANA 23,637,278 1,744	4,136 -0.5	-3.8	261,677	19,071	-1.2	-4.7	7.52	7.62
MICHIGAN 22,148,589 1,40	7,717 -2.4	4 -5.5	241,718	15,031	-1.9	-6.4	7.63	7.80
RED 7,402,370,627 554,670	0,418 0.0	3.3	74,142,735	5,551,011	-2.2	-5.6	8.32	8.33
WHITE 5,852,504,006 449,720	6,904 0.3	7 1.0	70,638,424	5,357,645	-1.2	-1.5	6.90	6.99
FINK 1,094,284,876 81,975	5,385 11.5	5 4.9	16,408,109	1,212,438	3.2	-0.8	5.56	5.63
CHARDONNAY 2,548,239,092 196,31	1,999 0.:	2 0.3	30,080,177	2,288,065	-1.9	-2.5	7.06	7.15
CABERNET SAUVIGNON 2,645,095,658 201,509	9,305 3	2 -0.2	24,697,791	1,890,198	0.3	-2.2	8.92	8.88
PINOT GRIGIO/PINOT GRIS 1,316,740,535 101,904	4,278 2.0	3.2	17,166,087	1,318,099	1.2	2.1	6.39	6.44
PINOT NOIR 1,085,895,030 82,164	1,893 2.5	5 -1.1	8,449,321	635,032	-0.1	-3.8	10.71	10.78
MERLOT 734,531,539 54,02	9,471 -6.3	-9.7	10,225,302	746,934	-7.6	-11.2	5.99	6.03
SAUV BLANC/FUME 957,199,820 76,30	9,897 6.9	9 8.5	8,421,486	667,076	5.0	7.0	9.47	9.53
MUSCAT/MOSCATO 646,525,440 47,580	0,410 -2.:	2 -5.0	9,865,212	716,978	-3.6	-6.6	5.46	5.53
MUSCAT/MOSCATO 646,525,440 47,580 WHITE ZINFANDEL 281,968,637 20,730 MALBEC 261,584,190 19,490			5,712,089	414,557	-8.9	-9.6	4.11	4.17
			2,455,493	183,472	-9.0	-10.1	8.88	8.85
RIESLING 242,599,967 17,433			2,690,423	190,706	-6.2	-10.8	7.51	7.62
ZINFANDEL 227,374,664 16,57			1,620,244	118,106	-5.4	-10.0	11.69	11.69
SHIRAZ/SYRAH 150,479,880 10,83			1,723,109	123,181	-10.5	-14.9	7.28	7.33
WHITE BLENDS (ex. 4/5L) 224,920,716 16,43			2,742,945	202,334	-4.5	-6.3	6.83	6.77
RED BLENDS (ex. 4/5L + CHIANTI) 1,859,194,022 136,703			17,160,281	1,261,241	0.5	-4.5	9.03	9.03
ROSE BLEND 524,884,148 39,89			4,544,145	343,935	40.9	22.3	9.62	9.66
750ML 10,354,938,105 781,550			82,709,653	6,208,926	-0.3	-3.5	10.43	10.49
1.5L 2,092,962,940 156,36 3L 62,442,870 4,680			36,149,513	2,686,930	-5.6 10.1	-6.7	4.83	4.85
3L 62,442,870 4,680	5,396 -8.0 7.530 -9.0		1,636,685	120,067 183 705	-10.1 -11.0	-12.2 -13.3	3.18	3.25
3	7,530 -9.0 4,311 -1.8		2,522,822 1,307,914	183,705 96,175	-11.9 -3.5	-13.3 -6.8	2.61 6.79	2.64 6.89
	9,386 8.3		69,140	5,301	-3.5 8.6	-6.8 -2.6	21.72	22.96
ex. 4/5L 882,711,819 70,36			15,740,949	1,244,969	7.8	7.6	4.67	4.71
20 024 157 2 25	3,001 11. <sup>3</sup>		453,582	35,274	9.1	11.3	5.52	5.57
<u> </u>	7,558 5.0		242,581	18,778	6.2	9.5	5.10	5.09
× 3L 644,576,564 51,143			12,452,738	986,797	7.2	7.7	4.31	4.32
3L 644,576,564 51,143 5L 487,224,640 36,808			17,742,733	1,319,373	-2.5	-4.3	2.29	2.33
TETRA 223,673,536 18,100		7 10.8	3,049,427	239,754	10.8	7.0	6.12	6.30

Source: Nielsen

# **Top Growers in Sonoma County**

Kerana Todorov

Kerana Todorov is a staff writer/news editor for Wine Business Monthly. She can be reached at ktodorov@winebusiness.com.



A WINE BUSINESS MONTHLY survey indicates Jackson Family Wines still grows the most fruit in Sonoma County, followed by E&J Gallo. Other top growers include the pension fund owned by TIAA-CREF, Treasury Wine **Estates** and **Rodney Strong Vineyards**.

The survey was completed by phone, email and analysis of Sonoma County Agricultural Commissioner records and other public databases.

Growers in the survey noted that planted vineyard acreage is bound to change as they pull vines, replant or let their land lie fallow for a while.

Additionally, more vineyard transactions are anticipated in Sonoma County once again this year. Joe Ciatti, partner at Zepponi and Co., said wineries acquire vineyards to have fruit under their control and prefer to purchase existing vineyards as there is very little open land left to plant in Sonoma County.

Tony Correia, president of The Correia Co., also expects to see new vineyard transactions. Some may be driven by the lack of family succession planning by an aging ownership or "just plain owner fatigue" due to challenges property owners face, including labor shortages, weather, regulations, a slowing wine market and a soft grape market. Correia also predicts that larger wineries may decide to liquidate vineyards to improve financial performance.

Vineyard pricing in Sonoma, like in Napa, is either flat or up while prices in California's other wine regions are down, according to Ciatti's presentation during Wine Business Monthly's Vineyard Economics Symposium (VES) in May.

Correia, who also spoke at VES, stated the average cost for prime vineyards in Russian River Valley or the Sonoma Coast runs between \$175,000 and \$180,000 per acre.

	Company	Acreage	Source/More Information
1	Jackson Family Wines/ Jackson Family	3,700	The Jackson family owns 3,700 acres of planted vineyards in Sonoma County, according to the company.
2	E&J Gallo and affiliated businesses	3,665	The biggest winery in the world owns 3,665 planted vineyard acres in Sonoma County, according to the company.
3	TIAA/Silverado Investment Management Group	2,000	TIAA/SIMCO has about 2,000 acres of planted vineyards in Sonoma County, according to the company.
4	Treasury Wine Estates	1,375	Treasury Wine Estates owns about 1,375 acres of planted vineyards in Sonoma County, according to the company.
5	Rodney Strong Vineyards	1,369	Rodney Strong owns about 1,369 acres of planted vineyards in Sonoma County, according to the company.
6	Ferrari-Carano Vineyards and Winery	1,285	Ferrari-Carano Vineyards and Winery owns about 1,285 planted vineyard acres in Sonoma County, according to the Sonoma County Agricultural Commissioner's database.
7	Constellation Brands	1,150	Constellation Brands owns about 1,150 acres of planted vineyards in Sonoma County, according to the Sonoma County Agricultural Commissioner's database and other public records.
8	Sonoma-Cutrer Vineyards	1,128	Sonoma-Cutrer Vineyards owns about 1,128 planted vineyard acres in Sonoma County, according to the Sonoma County Agricultural Commissioner's public database.
9	Foley Family Wines	1,100	The Foley family owns about 1,100 acres of planted vineyards in Sonoma County, according to the company. The vineyards include Roth, Foley Sonoma, Chalk Hill, Sebastiani and Lancaster Estate.
10	Sangiacomo Family Vineyards	1,100	Sangiacomo Family Vineyards owns about 1,100 acres of planted vineyards in Sonoma County, according to the company. The family also leases another 500 acres in the county.
11	Ledbetter Family	908	The Ledbetter family owns about 908 planted vineyard acres in Sonoma County, according to public databases. The family owns Lodi-based Vino Farms LLC.
12	Balletto Vineyards	784	Balletto Vineyards owns 784 acres of planted vineyards in Russian River Valley, according to the company. The vineyards are either fully owned or in partnerships. The vineyards include Cinque Terre, BCD and Balletto.
13	Cline Cellars and Jacuzzi Family Vineyards	729	Cline Cellars owns 729 acres of planted vineyards in Sonoma County, according to the company. The vineyards include Five Sisters, Jacuzzi Vineyards, Catapult Ranch and Diamond Pile.
14	Kunde Family Winery	650	Kunde family members own about 650 planted vineyard acres in the Sonoma Valley, according to the family.
15	Dutton Ranch	529	Dutton Ranch owns 529 acres of planted vineyards in Sonoma County, according to the company.  Dutton also leases 350 acres and manages another 224 acres of planted vineyards within the county.
16	Vimark Vineyard Management	520	Vimark owns 520 planted vineyard acres in Alexander Valley and Russian River, according to the company.
17	Ehret Family Winery	500	The Ehret family owns Bavarian Lion Vineyards in Knights Valley, according to public databases.
18	St. Francis Vineyard and Winery	465	St. Francis Vineyard and Winery owns 465 acres of planted vineyards in Sonoma County, according to the company.
19	Lytton Rancheria	429	Lytton Rancheria owns about 429 planted vineyard acres in Sonoma County, according to the Sonoma County's Assessor's records.
20	Ken Wilson and Family	423	Ken Wilson and family own about 423 planted vineyard acres in Sonoma County, according to the Sonoma County Agricultural Commissoner's public database. Holdings include Wilson Artisan Wineries.

	Company	Acreage	Source/More Information
21	Korbel Champagne Cellars	415	Korbel Champage Cellars owns 415 planted vineyard acres in Sonoma County, according to the company.
22	Domaine Chandon	383	Domaine Chandon owns about 383 planted vineyard acres in Sonoma County, according to public records and the company.
23	Martinelli Winery	360	The Martinelli family owns about 360 planted vineyard acres in Sonoma County, according to public records.
24	Syar Family Vineyards	353	Syar Family Vineyards owns 353 planted vineyard acres in Sonoma County, according to the company.
25	Silver Oak	350	Silver Oak owns 350 planted vineyard acres in Sonoma County, according to the company.
26	Robledo Family Winery	350	Robledo Family Winery owns about 350 acres of planted vineyards in Sonoma County, according to the company.
27	Mulas Family/Alta Vista Vineyards	340	The Mulas family owns about 340 acres of planted vineyards in Sonoma County, according to the company.
28	Hoot Owl Creek Vineyards/Alexander Valley Vineyards	338	Hoot Owl Creek Vineyards and Alexander Valley Vineyards operate in a joint venture in the Alexander Valley. Their holdings include 338 planted vineyard acres, according to the company.
29	Mauritson Wines	323	The Mauritson family owns 323 acres of planted vineyards in Sonoma County, according to the family. Most of the fruit is for Mauritson Wines.
30	Ledson Wineries and Vineyard	300	Ledson Wineries and Vineyards owns about 300 acres of planted vineyards in Sonoma County, according to the company.
31	Munselle Vineyards	300	Munselle Vineyards owns about 300 planted vineyard acres in Sonoma County, according to the company.
32	Leveroni Vineyards	291	The Leveroni family owns about 291 planted vineyard acres in Sonoma County, according to the Sonoma County Agricultural Commissioner's public database and other public records.
33	Robert Young Vineyards/Robert Young Estate Winery	286	Robert Young owns 286 acres of planted vineyards in Alexander Valley, according to the company.
34	Crimson Wine Group	285	Crimson Wine Group owns 285 planted acres in Sonoma County, according to the company.
35	Vella Properties LLC	285	The Vella family owns about 285 planted vineyard acres in Sonoma County, according to public records.
36	Price Family Vineyards	276	Price Family Vineyards owns 276 planted vineyard acres in Sonoma County, according to public records.
37	Paul Hobbs Winery	276	Paul Hobbs owns about 276 planted vineyard acres in Sonoma County, according to the company.
38	Burdell Properties	246	Burdell owns about 246 planted vineyard acres in Sonoma County, according to the company. Holdings include Arroyo Lindo, Buena Tierra and Corazon Del Rio vineyards.
39	Hancock Natural Resource Group	244	Hancock Natural Resource Group owns 244 acres of planted vineyards in Sonoma County, according to public records.
40	Domaine Carneros	232	Domaine Carneros owns about 232 acres of planted vineyards in Carneros, according to the company.

	Company	Acreage	Source/More Information
41	Ridge Vineyards Inc.	220	Ridge Vineyards owns 220 planted vineyard acres in Sonoma County, according to the company. Ridge Vineyards leases an additional 80.8 planted acres within the county.
42	Ricci Vineyards	216	Ricci Vineyards owns 216 planted vineyard acres, all in Carneros, according to owner Dale Ricci. There are 110 acres of Chardonnay, 100 acres of Pinot Noir and 6 acres of St. Laurent.
43	Windsor Oaks Vineyards and Winery	210	Windsor Oaks Vineyards and Winery owns about 210 planted vineyard acres in Windsor, according to the company.
44	Laird Family	210	The Laird family owns 210 acres of planted vineyards in Sonoma County, according to the company.
45	Cooley Ranch	210	Cooley Ranch owns about 210 planted vineyard acres in Sonoma County, according to the Sonoma County Agricultural Commissioner's public database.
46	Haire Management Co. LLC	209	The Haire family owns 209 planted vineyard acres in Carneros, according to the family.
47	Kenwood Vineyards	208	Kenwood Vineyards owns about 208 planted acres of vineyards in Sonoma County, according to the company.
48	Hanna Winery and Vineyards	201	Hanna Winery and Vineyards owns 201 acres of planted vineyards in Russian River Valley, Alexander Valley and in the Valley of the Moon, according to the company.
49	Donnell Ranch	200	Donnell Ranch owns 200 acres of planted vineyards in Carneros, according to the family. The holdings include El Novillero ranch.
50	Gloria Ferrer Caves & Vineyards	197	Gloria Ferrer owns 197 acres of planted vineyards in Sonoma County, according to the company.
51	Duckhorn Vineyards	195	Duckhorn owns 105 acres in Alexander Valley and another 90 acres in Russian River, according to the company.
52	Trinchero Family Estates	178	Trinchero owns 178 acres of planted vineyards in Sonoma County, according to the company. The family-owned wine business is based in St. Helena.
53	Kistler Vineyards	176	Kistler Vineyards owns about 176 acres of planted vineyards in Sonoma County, according to the Sonoma County Agricultural Commissioner's and Assessor's public databases.
54	Timber Crest Farms	175	Timber Crest Farms owns about 175 planted vineyard acres in Sonoma County, according to the Sonoma County Agricultural Commissioner's public database.
55	Peline Vineyards	175	Peline Vineyards owns 175 planted vineyard acres in Alexander Valley, according to the company. The family-owned property is planted primarily in Cabernet Sauvignon.
56	Rombauer Vineyards	173	Rombauer Vineyards owns about 173 planted vineyard acres in Sonoma County, according to the company.
57	Peter Michael Winery	170	Peter Michael Winery owns about 170 planted vineyard acres near Jenner and in Knights Valley, according to the company.
58	Iron Horse Vineyards	164	Iron Horse Vineyards owns 164 planted vineyard acres in Sonoma County, according to the company.
59	Sleepy Hollow	162	Mark and Marilyn Herzog own about 162 planted vineyard acres in Sonoma County, according to public records.
60	Eagle Creek LLC/UBS Realty Investors LLC	154	Eagle Creek LLC/UBS Realty Investors LLC own about 154 acres of planted vineyards in Sonoma County, according to the Sonoma County Agricultural Commissioner's and the Sonoma County Assessor's public databases.

	Company	Acreage	Source/More Information
61	Stuhlmuller Vineyards	150	Stuhlmuller Vineyards owns about 150 planted vineyard acres in Sonoma County, according to the company.
62	Reynoso Vineyards	150	Reynoso Vineyards owns about 150 acres of planted vineyards in Sonoma County, according to the Sonoma County Agricultural Commissioner's public database.
63	Murphy Vineyards	150	Murphy Vineyards owns 150 planted vineyard acres in Alexander Valley, according to the company. The company includes Murphy Vineyards and KD Vineyards.
64	Carraro Family	148	The Carraro family owns about 148 planted vineyard acres in Dry Creek Valley, according to the Sonoma County Agricultural Commissioner's public database.
65	Hook & Ladder Vineyards and Winery	147	Hook & Ladder Vineyards and Winery owns about 147 planted vineyard acres in Sonoma County, according to the Sonoma County Agricultural Commissioner's public database.
66	Larson Family Winery	143	The Larson family owns about 143 planted vineyard acres in Sonoma County, according to the company.
67	The Donum Estate	142	Donum owns 142 planted vineyard acres in Sonoma County, according to the company.
68	Emeritus Vineyards	140	Emeritus Vineyards owns about 140 acres of planted vineyards in Sonoma County, according to the company.
69	Dry Creek Rancheria Band of Pomo LLC	139	Dry Creek Rancheria Band of Pomo LLC owns about 139 planted vineyard acres at Bellacana Vineyards in Sonoma County, according to public records. Bellacana Vineyards is near River Rock Casino in Geyserville.
70	Lago di Merlo Vineyards and Winery	137	The Merlo family owns about 137 planted vineyard acres in Sonoma County, according to the Sonoma County Assessor's Office. The Merlo family produces Lago di Merlo wines.
71	Passalacqua Vineyards	125	Passalacqua Vineyards owns about 125 planted vineyard acres in Sonoma County, according to the Sonoma County Agricultural Commissioner's public database.
72	Jack London Ranch LLC	125	Jack London Ranch LLC owns about 125 planted vineyard acres in Sonoma County, according to the Sonoma County Agricultural Commisssioner's database.
73	Bacigalupi Vineyards	125	The Bacigalupi family owns about 125 acres of planted vineyards in Sonoma County, according to the Sonoma County Agricultural Commissioner's database.
74	K L Barr LLC	121	Keven and Linda Barr of K L Barr LLC own about 121 planted vineyard acres in Sonoma County, according to the Sonoma County Agricultural Commissioner's public database.
75	Foppiano Winery	120	The Foppiano family owns about 120 planted vineyard acres in Sonoma County, according to the family.
76	Rued Vineyards and Family	120	The Rued family owns about 120 acres of planted vineyards in Sonoma County, according to the company.
77	Belle Terre Ranch	120	The Dick family owns 120 planted vineyard acres in Alexander Valley, according to the family.
78	Rochioli Vineyards and Winery	120	The Rochioli family owns about 120 planted vineyard acres in Russian River Valley, according to the family.
79	Williams Selyem Winery	120	Williams Selyem Winery owns about 120 acres of planted vines in Sonoma County, according to the company.
80	Jordan Vineyard and Winery	118	Jordan Vineyard and Winery owns about 118 planted vineyard acres in Alexander Valley, according to the company.

	Company	Acreage	Source/More Information
81	Saini Vineyards and Family	118	The Saini family owns about 118 planted vineyard acres in Sonoma County, according to public records.
82	Redwood Ranch and Vineyards	110	Redwood Ranch and Vineyards owns about 110 planted vineyard acres in Alexander Valley, according to the company.
83	Rio Lago Ranch and Vineyard	105	Rio Lago Ranch and Vineyard owns 105 acres of planted vineyards in Sonoma County, according to the company.
84	Furlong Estate Vineyards	103	The Furlong family owns about 103 acres of planted vineyards in Alexander Valley, according to public records and the family.
85	Donalie Acres Inc.	103	The Calonego family owns about 103 planted vineyard acres on Napa Road, according to public databases.
86	Rancho San Miguel Winery	102	Rancho San Miguel owns about 102 acres of planted vineyards in Sonoma County, according to the Sonoma County Agricultural Commissioner's public database.
87	Eco Terreno Wines/ Mark Lyon	101	Eco Terreno Wines owns about 101 planted vineyard acres in Sonoma County, according to the company. Holdings include the Lyon Vineyard and Cisne Vineyard.
88	Joseph Phelps Vineyards	100	Joseph Phelps Vineyards owns 100 acres of planted vineyards near Freestone—20 acres of Chardonnay and 80 acres of Pinot Noir, according to the company.
89	Knights Valley Ranch	100	Knights Valley Ranch owns about 100 planted vineyard acres in Sonoma County, according to the Sonoma County Agricultural Commissioner's public database.
90	Los Chamizal/Haywood Winery	100	Peter Haywood owns 100 planted vineyard acres at Los Chamizal Vineyards in Sonoma County, according to public records.
91	Knights Valley Ranch/ Slusser	100	The Slusser family owns about 100 acres of planted vineyards off Franz Valley Road, according to the Sonoma County Agricultural Commissioner's public database.
92	D&L Carinalli Vineyards	100	The Carinalli family owns about 100 planted vineyard acres in Sonoma County, according to the Sonoma County Agricultural Commissioner's public database.
93	Hafner Vineyards	99.5	Hafner Vineyards owns about 99.5 acres of planted vineyards in Sonoma County, according to the Sonoma County Agricultural Commissioner's public database.
94	Landmark Vineyards at Hop Kiln Estates	99	Landmark Vineyards owns about 99 planted vineyard acres in Sonoma County, according to the Sonoma County Agricultural Commissioner's public database.
95	Gundlach Bundschu	97	Gundlach Bundschu owns about 97 acres of planted vineyards in Sonoma County, according to the Sonoma County Agricultural Commissioner's public database.
96	Olympic Sun LLC/ Washington State Investment Board	94	Olympic Sun LLC owns about 94 planted vineyard acres at Shone Farm in Sonoma County, according to public databases.
97	Santa Rosa Junior College/Shone Farm	94	Santa Rosa Junior College owns about 94 planted vineyard acres in Sonoma County, according to the Sonoma County Agricultural Commissioner's public database.
98	Mahoney Vineyards	91	Mahoney Vineyards owns 91 acres of planted vineyards in Carneros - Sonoma County, according to the company.
99	Kullberg Family	90	The Kullberg family owns about 90 planted vineyard acres at Stage Gulch Vineyards, according to the Sonoma County Agricultural Commissioner's public database.
100	Keller Estate	88	Keller Estate owns about 88 planted vineyard acres in Sonoma County, according to public records.

# Succession Planning Starts With Communication

Winery owners share how their families made it to the second generation and beyond.

Jim Gordon

**IT'S NOT DIFFICULT TO** see that family-owned wineries are in a state of transition. The founders who established thousands of U.S. wineries from the 1970s through the 1990s have aged, retired or died, triggering transitions in management and ownership that have rocked the wine industry in this decade. Practically every week brings a new headline about a vintner family that created a business with passion, sweat and tears now selling that business to a private investor or one of the big existing wine companies that have the vision and the resources to keep expanding.

Almost 30 percent of winery owners said they were "likely" to sell or "seriously considering" selling in the next five years, according to **Silicon Valley Bank**'s 2018 Winery Conditions Survey. The smallest wineries surveyed, those producing 2,500 cases or fewer, revealed the highest likelihood of selling, almost 35 percent.

Many of those likely transitions may occur because the founders are not successful in encouraging younger family members to get involved. The phenomenon is hardly limited to winery businesses, however. "Only a third of family businesses in general will make it to the second generation," said Peter Johnson, director of the Westgate Center for Leadership and the Institute for Family Business in the Eberhardt School of Business at the University of the Pacific in Stockton, Calif.

"From the second generation to the third generation, only about 12 percent or 13 percent will make it," Johnson said. "Then if you look at going to fourth generation, you're talking about 3 percent. It's about different goals, different values."

Johnson and other professionals who specialize in family business stress the importance of succession planning to maximize the likelihood that the business can stay in the family, among other benefits. Jay Silverstein, a partner at accounting firm Moss Adams who has served the wine industry for more than 20 years, wrote in a *Wine Business Monthly* article in 2015: "Over the years, most business owners I've met have at least four things in common: They're concerned about growing and preserving the value of their winery or vineyard; they want to make sure they're financially secure; they want to provide for the welfare of their business; and they hate paying taxes.

"All these elements come down to succession planning. Yet many winery and vineyard owners—due to time constraints, the perceived complexity

of succession planning or concerns about their own mortality—fail to adequately address their succession planning needs, which means they can't fully achieve their business and personal objectives," Silverstein stated.

# **Avoiding a Sad Scenario**

Sometimes the process of succession planning is the only way to get vintner family members talking to each other honestly about their hopes and desires around the future of their winery. Johnson described a sad scenario about the lack of communication during a panel discussion on succession planning at the **Wine Industry Financial Symposium** last September.

"Now a lot of people go, 'Wow, two-thirds don't make it to the second generation, that's horrible.' Maybe, maybe it's not. Maybe the business ran its course; maybe it's a generational thing. But shouldn't that be the family's decision? What you hate to see is a great family business where the next generation wants to come into it, and they don't because, 'Dad never talked to me about it. I don't know if he wants me to come into it or not.' You talk to Dad, and Dad says, 'Well, you know, next generation never talked to me about it. I don't want to push anything on them.' They go their own ways, and the business is sold.

"We want to make sure it's the family's decision, that it happened because of planning, not because of lack of planning," Johnson said.

Three wineries that put a lot of thought into the transitions shared their "Tales of Successful Succession Planning" at the Wine Industry Financial Symposium, along with those of Johnson and Russell Joy, an executive who has run family-owned wineries and now is vice president of California operations for Ste. Michelle Wine Estates.

The family winery members were: Cleo Pahlmeyer, president, Pahlmeyer Winery, a 15,000-case operation in St. Helena, Calif., with an average bottle price of \$135; Peter Mondavi Jr., co-proprietor, C. Mondavi & Family, also based in St. Helena, a 1.5 million-case producer with an average bottle price of \$11; and Christine Wente, whose title is "fifth-generation winegrower" at Wente Vineyards, in Livermore, Calif. The business produces 650,000 cases, averaging \$27 per bottle.

### **Five Generations of Wentes**

Christine Wente is one of six members of the fifth generation to own and run the family winery founded in 1883 by her great-grandfather. When her father, uncle and aunt inherited the business about 35 years ago they made all the decisions. But to bring in Wente and her brother, **Karl Wente**, as owners, they began creating an ownership and management hierarchy.

"We have, in this generation, really tried to formalize governance. I think it's pretty similar to what Peter Mondavi's family has done. Our philosophy has been to put things in place, before we need them, to make sure that we have structures in place before we have to make a dramatic decision."

The structures now include both a family council and a board of directors. The 10-member board includes five family members, the company's non-family CEO and CFO, and three outside advisors with expertise in operations, marketing and private equity.

"We haven't handed over the fiduciary vote, but we make decisions as a board," Wente said. "I think that's a fair way to say it. If something really came down to it, we would probably have to get into voting by share. We haven't had to, and we try to avoid that. I think something would be wrong if we got there."



LEFT TO RIGHT: Jordan, Karl, Christine, Niki, Carolyn, Eric and Phil Wente







C. MONDAVI & FAMILY AND THE CHARLES KRUG WINERY

The Mondavi families: (LEFT) Lia, Lucio, Katie, Peter Mondavi. (RIGHT) Riana, Alycia, Marc, Janice, Gigi, Angelina Mondavi

### C. Mondavi Welcomes Generation Four

Peter Mondavi Jr. and his brother **Marc Mandovi** are the third generation of Mondavis to own C. Mondavi & Family and the **Charles Krug Winery**. Their grandparents immigrated to the U.S. from Italy in 1908 and purchased Charles Krug in 1943. Peter Mondavi Jr.'s father, who was also named Peter, and his uncle, **Robert Mondavi**, had a widely publicized disagreement about family winery succession that ended in Robert Mondavi leaving the family company to start his own winery in 1966.

Peter Mondavi Jr. said the transition from his father to him and his brother was not very structured. "Dad remained president of the winery until he was like 99 years old. A wonderful life there. So in the transition, when Mark and I came in, there was one patriarch, one leader. Marc and I came in to work organically and worked up into various responsibilities in the winery."

After Mondavi Jr. and his wife had two children and Marc Mondavi and his wife had four, "We saw the complexity of the situation," Mondavi Jr. said. "This is something that dad did not set up. He did an exceptional job on the estate planning. On his passing in 2016 when he was 101, I think he had \$30,000 of assets to his name. So he did a tremendous job on that aspect of planning but not the governance planning. I think you have to have equal emphasis on both aspects, if you want to be successful for the next generations."

On the advice of a family business consultant, they first started an advisory board "to get our feet wet" and, after a year, created a seven-member board of directors composed of Mondavi Jr., Marc Mondavi and five outside experts. "They were brilliant, very successful in their own rights, but it really didn't work out because of the unique requirements of the wine business, the legal aspects of the system."

Deciding the board needed more family engagement, the brothers revised the membership to include themselves, Mondavi Jr.'s son, Marc Mondavi's daughter, the company's president and CEO **Judd Wallenbrock**, and two outsiders who were retired from the wine business. "I think that's been a tremendous improvement," Mondavi Jr. said. Later they started a family council to air issues that concern the family directly.

Management of the company is led by an executive leadership team, none of whom is a family member. As the head of the team, Wallenbrock reports to the board. "So we've gone completely non-family at that level in the company. Out of the six members of the fourth generation, only one is actually on the payroll full time," said Wallenbrock.



Cleo and Jason Pahlmeyer

# Pahlmeyer Founder Relinquishes Control

Cleo Pahlmeyer is president of the Napa Valley winery that her father, **Jason Pahlmeyer**, founded in 1986. But she worked in other industries for several years before joining the family business. "I was never pushed into this career, which I think is an important thing to know," she said. "My dad expressed an interest, a desire to step away from the management of the business. I thought I would become more and more interested in what he has been doing over the years. I thought, the family business is over unless I become a part of it at this point."

That was 10 years ago, and Pahlmeyer started out by answering phones, entering codes and taking orders. While she moved into managing the winery's direct-to-consumer sales, sales and marketing and public relations, non-family executives were making the big decisions.

"I guess it was always part of the plan for me to eventually run the company. But when my dad came to me about two years ago and said, 'I think it's time,' it was deer-in-the-headlights time. But with such a strong team it has felt like an incredible experience the last year and a half. At this point it feels like it has officially gotten to the next generation with our family winery."

Pahlmeyer said her winery does not have a board structure, like Christine Wente and Peter Mondavi Jr.'s families do. She said she relies on a network of individuals and the company's internal team for support. A voting structure was set up as part of the succession planning, and the company is owned equally by her stepmother, her two brothers and herself.

"We haven't had an issue because my dad hasn't been the generation that's been wanting to maintain control in every kind of way or anything like that. So each scenario has its benefits and its challenges. Having that sort of bridge, of an outside president running the company between my dad and me, has definitely made for a smooth transition."

tate Winery, Black Stallion Estate Winer uccella, Burgess Cellars, C Donatiello W Vin**The Wine Industry's** mus Leading Online Job Site Vineyard, Constellation Wines, Const Wines, Coquelicot Wines, Corliss Estat state Wines, Darioush Winery, Dash ield Winery, LLC, E & J G errari-Carano Vineyards & Winery, Fetze oley Family Wines, Francis Ford Coppo nery, Frog's Leap Winery, Galante Fami ls Estate, Groth Vineyards More wineri than any other online job site ridg Vinery & Vineyards, Lewis Cellars, Littor ynmar Winery, Marimar Estate Vineyard Parducci Wine Cellars, Merriam Vineya m Napa, My Wines Direct, Napa Wine C ch, Nickel & Nickel, Niner Wine Estates, dge Wines, Patz & Hall Wine Company, neyards, Plumpjack Winery, Prairie Berr sa Vineyards, Quixote Winery, LLC, R B Vineyards, Regusci Winery, Reynolds F Vineyards, Robert Sinskey Vineyards, R nc., Rombauer Vineyards, Rosenthal - T herford Hill Winery, Inc., Rutherf created & managed by

### Fair, but Not Equal, Roles

Russell Joy asked educator Peter Johnson and the panelists to address the fairness factor in passing ownership on to the next generation. Should each family member inherit an equal share of ownership, whether or not they end up working for the family business?

Johnson said, "With three or four kids, you'll have one that'll stay in the business, run the business, and two or three kids that aren't in the business. Now all of a sudden if there's three kids and you've got the one running it, as a third of the ownership, and the two that aren't have two-thirds, you create this challenge. You think, 'I'm a CEO, I'm running the business, I want to invest in this.' Or 'I think we need to re-invest money rather than pay dividends.'

"All of a sudden your siblings are sitting there going, 'Whoa, whoa, whoa, I'm more concerned about the dividends, the cashflow.' So, there are those challenges. You can have people that are not in the business, telling you how to run the business. There's this idea that fair and equal are the same thing, and they really aren't."

Johnson said he believes in encouraging families, where possible, to look at other investments, to be able to take care of those siblings that aren't in the business in a different financial way. An example was when the fourth generation of Wentes developed restaurant and golf properties in Livermore Valley to diversify.

"Here's the challenge: when you start to trim the family tree of who's in the family business. If we're all siblings up here, we buy these three out, their kids, as it is right now, won't have an opportunity to have ownership of the family business," Johnson said.







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Wente responded, "We have gone the fairness route for ownership. So it's passed down from parent to child equally. We've gone the market compensation way for participation. So I'm currently working part-time as an active board member. I make a lot less than my brother, who is our COO. Totally fine with me because he is the round-the-clock winemaker, traveling, doing a fabulous job. Mine is a choice to work less, so that's very fair. It is fair in my book, actually, though it's not equal."

Mondavi Jr. added that virtually all the descendants of his Mondavi grandparents have stayed in the wine business, long after Peter Sr. and Robert split up and long after Constellation Brands bought the Robert Mondavi Winery from the family and its shareholders. "We're just so passionate about this business that we all stick with it. We're really on the same page as Christine and their family. Just equal all the way down.

"The shareholders, fourth generation and third generation, they vote, and their primary influence is the composition of the board. Then, we rely on the board to oversee the president of the executive leadership team to drive the future success of the business. For the family council, we do have two members, my son Lucio and Mark and Genna's daughter, Rhianna, who are liaisons between the family council and the board. It's an informal thing, but it's trying to get the board in sync with the family's wishes. In this case, the family and the shareholders are one and the same," Mondavi Jr. said.

# Talk About Who's Coming In

Johnson offered advice on how family businesses can learn about and begin using succession planning. "How to prepare the next generation? One of the things that I would definitely do is have a conversation, talk to them. Don't make assumptions about who's coming in and who's not coming in. I'm dealing with a company right now. They're thinking about selling the business because the kids aren't showing any interest. I asked, 'Have you had that conversation? Do they understand the business? If they want it, you're behind them 100 percent?' You need to have that conversation."

Wente added that good books and articles about the process are widely available from family business consulting groups because, "There is now an excellent body of knowledge about family businesses. Business schools figured out that we're a big part of the economy. So there are really good blueprints and books and resources."

She cautioned that succession planning is not just about the family. "The family does need to have all the stakeholders in the business aligned on the long-term vision and your mission and your values," she said. "Every decision you make—whether you're just keeping to tradition or changing—you're still all making sure that you have that touch point for, are we heading in the right direction ultimately?"

Wente added, "You need to have alignment with your every stakeholder, every family member and your leadership team. When everyone agrees on what is our long-term vision, what is our mission, then that makes other decisions easy because you go back to that touch point." WBM

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# Is Your Winery's Website ADA Compliant?

As a series of lawsuits hit East Coast wineries, the industry pushes for best practices and education on accessible sites.

Stacy Briscoe

**Stacy Briscoe** is the assistant editor at *Wine Business Monthly*. She has been writing about wine professionally since 2015, freelancing for multiple publications including The *San Francisco Chronicle*, *Edible Communities* and *Napa Sonoma Magazine*, among others. She also maintains her own website, *BriscoeBites.com*, dedicated to wine reviews and tasting notes. Outside of wine writing, she also contributes as a freelance editor for the independent publisher She Writes Press. Stacy has a Bachelor of Arts degree in English-language literature from the University of California, Santa Cruz.

**THE LAST FEW YEARS** have seen a severe increase in **Americans with Disability Act** (ADA) web accessibility claims—lawsuits that allege certain websites are unusable by those with disabilities because said sites are not coded to work with assistive technology, such as screen readers. According to the **Seyfarth ADA Title III News & Insights Blog** (*adatitleiii.com*), written by ADA Title III specialty team attorneys, the number of suits filed in federal court under Title III of the ADA in 2018 numbered 2,258 cases nationwide, up 177 percent from 814 lawsuits filed the year before.

The Seyfarth ADA blog also states that the vast majority of these suits have originated, and continue to occur, in New York, with a total of 1,564 suits that make up nearly 70 percent of the total web-compliant suits in 2018.

The trend continues into 2019. **UsableNet**, a web and app accessibility consulting site, has been tracking the latest numbers on ADA website suits around the country. According to their report, lawsuits have increased 31 percent within the first quarter (Q1) of 2019, compared to the same quarter last year. Once again, New York takes the biggest hit, with 396 cases thus far in Q1 2019.

Why New York? The Seyfarth ADA blog points to the ruling in the 2017 case Blick Art and Five Guys, in which New York federal judges ruled that the rules outlined in the ADA cover websites—even those *not* associated with a brick-and-mortar establishment. Since that ruling, a flurry of suits from New York-based law firms and lawyers (which the blog lists by name) have been after companies whose websites also fail to accommodate the needs of the disabled.

Though businesses of all sizes have been affected (including big names like **Apple** and **Harvard**), the bulk of the suits seem to go to smaller establishments—such as wineries.

### **Winery Testimonial**

**Scott Osborn**, president and co-owner of **Fox Run Vineyards** in New York's Finger Lakes District, said he first learned about the issue through the **New York Wine and Grape Foundation** (NYWGF), which alerted its members of the suits plaguing the East Coast wine industry.

"I started working internally with my marketing person and my daughter about getting an accessibility statement on the website," Osborn said. The **Bureau of Internet Accessibility** (BOIA) describes an accessibility statement as a business' "policy, goals, and accomplishments related to web accessibility...including instructions on how to use specific accessibility technology that is available on the website and how to contact the organization if a disabled visitor runs into problems."

Osborn also started working with a designer to update various pages of his website. The problem, however, is that designing a website to be completely accessible isn't as easy as updating the computer management software. All imagery—photos, bottle shots, event calendars—need to include "alt text," or an embedded written description, and the website needs to be coded in such a way that assistive technology software can read aloud those descriptions to the visually impaired. Similarly, any audio used on a website needs to include closed captioning capability for the audibly impaired. In addition, the entirety of the website needs to be accessible via keyboard navigation, as most visually impaired persons do not utilize a mouse.

"What was surprising to me is that I'm responsible for the third-party software as well," said Osborn, referring to his e-commerce point-of-sale system. "The shopping cart needs to be compliant; and if it's not, I can be sued for that." Osborn said his vendor, **Nexturnal**, is aware of the issue and "working extremely hard" to assist all their clients in creating ADA-compliant check-out experiences for customers.

So, he said, it takes time to find and fix all these little details. Though Osborn had an accessibility statement in place, ensuring that he and his company are in the process of working on the issue, Fox Run Vineyards was still hit with a lawsuit.

"In January I got an email from an attorney in New York that said, 'You're being sued, and I'm happy to defend you,'" Osborn said. "I got two more emails like that at the end of January. It wasn't until February that we got served."

Osborn said the suit came as a big surprise: "We had been working to update the site, which is frustrating. It's not an easy fix."

At this point, Osborn and his team are planning to redo the winery's entire website. "We decided it needed an upgrade anyway," he said. They've hired **User1st**, a company that specializes in website accessibility—upgrading what needs upgrading, embedding the proper software that auto-updates as needed and, most importantly, employing disabled persons to test the website's functionality. "That's the only way to ensure it is 100 percent accessible," Osborn said.

# **Building Standards**

One of the underlying issues is that the American Disabilities Act was established in 1990 before the internet became the everyday tool it is today. Thus, there are no set standards written and enforced by the federal government.

Title III of the ADA states, "No individual shall be discriminated against on the basis of disability in the full and equal enjoyment of the goods, services, facilities, privileges, advantages or accommodations of any place of public accommodation by any person who owns, leases (or leases to), or operates a place of public accommodation."

On face value, it does indeed seem that Title III is speaking specifically to brick-and-mortar establishments. Yet, many recent rulings have stated that websites are, in fact, a "place of public accommodation" as they are intended to provide access to businesses and the ability to engage with said businesses.

"Businesses need to take responsibility under what the ADA *intends*," said **Stephanie Woodward**, director of advocacy at the **Center of Disability Rights, New York** (CDRNY). "And when we talk about 'should this [the Title III] be further clarified,' we mean how many times do we need to amend it to keep up with technology?" she asked.

Woodard said that the biggest argument her association hears is, "I didn't know this was a requirement." But, she said, it's a business owners' responsibility to be aware, not the disabled community's to make them aware. "Being accessible is just as important as paying taxes," she said.

That said, the CDRNY is a resource for the local New York community when it comes to educating businesses on the proper protocol for ADA-compliance, both in the physical and web spaces. Currently, the CDRNY is working alongside the **Greater Rochester Chamber of Commerce**, the **Lawsuit Reform Alliance of New** York and other advocacy partners to help inform businesses about the ADA lawsuits and answer questions regarding best practices and preventative steps.

"We [the CDRNY] certainly don't think litigation is the necessary first step," Woodward said. "We want to work with the community to ensure everyone is welcome to all businesses. The best way to do that is to educate."

# **Educating the Wine Industry**

In April 2019, Osborn, along with several others in the United States' wine industry, attended **WineAmerica's 2019 Wine Policy Conference** in Washington, D.C. Here, attendees had the opportunity to meet with key congressional staff to discuss both state-specific and national issues as they pertain to the wine industry.

At this conference, Osborn, in coordination with the NYWGF, presented to U.S. legislative staff the recent rise in the ADA-compliant website suits and how they've affected the wine industry.

"I think the issue came as a surprise to most of the New York representatives we met with," said **Sam Filler**, NYWGF executive director. "They were sympathetic to the issue, but I think they were surprised at the amount and scale of the lawsuits that have taken place."

Although representatives were "sympathetic to the issue," Filler said no one "promised anything." But he also noted that current New York state senator, **Diane Sevino**, is preparing legislation for safe harbor, which would give companies a set amount of time to make the needed changes to their websites before being slapped with a suit. He also said that WineAmerica will be launching more educational resources for wineries nationwide.

"We want to work with the disability community to come up with a solution so businesses can take the steps needed and comply with what was intended by the ADA," Filler said.

In the meantime, Filler said, the NYWGF is working with its associate members to educate them on best practices surrounding website accessibility, hosting webinars and providing other educational resources on the NYWGF website.

## Advice for the Industry

The takeaway from these lawsuits is that wineries across the country and of all sizes do need to be aware of their website's capability to cater to customers of all abilities. "They [wineries] need to take the issue seriously," Osborn said. "They could be excluding a huge portion of potential customers... access to a website is just as important as access to your tasting room."

Though it didn't save him from a suit, Osborn strongly suggests that a good first step is putting an accessibility statement in place. "It shows that you're at least working toward accessibility," he said.

He also said that **Web Content Accessibility Guidelines** (WCAG) 2.0, a voluntary international standard, provides a good checklist of what is needed to make a website accessible (*w3.org*). "Adhere to that as closely as possible," he said. "And work with a web developer to audit individual web pages and find out where there are any deficiencies in codes and labels."

Osborn, Filler and Woodward all say that working with a local disability chapter is also a smart move. "Disability rights organizations want to help, not sue," Osborn said. "Have them look at your site and tell you what you need. They're one of the best resources." WBM

# people

# Winemaking & Wineries

Signorello Estate, announced the new winemaking team of Priyanka French, winemaker, Celia Welch, consulting director of winemaking and Steve Matthiasson, viticulturalist. Longtime winemaker, Pierre Birebent, who has worked alongside Ray Signorello at Signorello Estate for 21 years, has announced his retirement. Birebent, a 6th generation winemaker from Corsica, France, plans to start a consulting business drawing on his 40-year career of winemaking experience.

Francis Perrin has joined Ste. Michelle Wine Estates as chief marketing officer, overseeing the company's brand management, digital marketing, innovation and direct-to-consumer functions. Perrin brings over 20 years of experience to his new role, including previous leadership positions with large public and private consumer packaged goods companies as well as previous wine and spirits industry experience. Most recently Perrin was the chief marketing officer at Bel Brands USA, the U.S. subsidiary of Bel Group, the world's third-largest branded cheese company. Prior to that, he held significant marketing roles with some of the world's foremost marketing companies including Procter & Gamble, L'Oréal and Pernod Ricard.

J. Lohr Vineyards & Wines announced the promotion of Brenden Wood from assistant winemaker to red winemaker, the position formerly held by Steve Peck, who was promoted in September 2018 to director of winemaking. Celebrating his 15th anniversary with J. Lohr this year, Wood will be responsible for all tiers of red wine in the family-owned-and-operated winery's portfolio, and will continue to work alongside the winemaking leadership group that includes director of winemaking Steve Peck, winemaker, white wines Kristen Barnhisel, production winemaker Karl Antink, and president/COO Jeff Meier.

Shannon Carrigan, age 24, assumed the role of winemaker from RJ Lint at Plum Hill Vineyards. Carrigan joined the Plum Hill Vineyards crew in August of 2016 as a graduate from California State Poly-Technic University, Pomona. She graduated with Magna Cum Laude Honors with a degree in Agriculture Business with an emphasis in the Animal Industry.

Roald Wine Company announced the appointment of Jim Montez to direct to consumer sales manager. Montez will be responsible for tasting lounge management, wine club, and public relations. Celebrating 20 years in the wine industry, Montez has spent time at Kendall Jackson, Chateau St. Jean, Wilibees Wines and Spirits, and Epic Wines and Spirits.



Jim Montez

Round Pond Estate appointed John Donegon Wilson as winemaker, according to an announcement by owners Miles and Ryan MacDonnell. Wilson will be responsible for the oversight of all aspects of winemaking for Round Pond's esteemed portfolio of wines.

The Wine Spies announced the addition of Gence Alton as the company's new wine curation chief. In this role, Alton, who will be known as "Agent Noir" at The Wine Spies, will be responsible for the selection of the wines that will be offered on winespies.com and the company's additional sales channels.

Troon Vineyard proprietors, Dr. Bryan and Denise White, announced the appointment of Nate Wall as winemaker for their estate vineyard in Oregon's Applegate Valley. Wall served for the last year as associate winemaker at Troon Vineyard and dramatically improved winemaking and cellar practices. He has also led the project to convert Troon Vineyard to biodynamic agriculture and winemaking and Troon is set to receive its first Demeter Biodynamic and C.C.O.F. organic certifications this year. Wall has an M.S. Degree in Environmental Engineering from the University of California Berkeley and a B.S. Degree in Biology from Eckerd College in Florida.

Signorello Estate announced that Tiffany Kenny has joined Signorello Estate and the Ray Signorello Family of Wines as sales and marketing director. In this newly created position, Kenny will oversee the vision, marketing strategy and branding for Signorello Estate, as well as its sister brands Fuse, Edge and Trim. She is also responsible for leadership and strategic vision across all DTC channels, including the winery's visitor experiences, allocation program, key market events and culinary experiences.

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# people

# Distributors, Importers & Retailers

Winesellers, Ltd., the family-owned, global importer and marketer of fine wines named three of its current directors to the title of vice president. This new layer in the organization is the first step to accommodate the company's planned growth and expansion. Valerie Lynch-Giroux is named vice president of East Coast region sales; Jim Stover is named vice president of national retail chains & Central Region sales; and Lee Schlesinger is named vice president of portfolio management & education.

Eric Leckey, who has 18 years of wine and spirits industry experience, has been named buyer/director of alcohol for Jetro/Restaurant Depot. He is a Certified Sommelier, Certified Specialist in Wine (CSW), and WSET Level 3. Leckey has spent a majority of his career on the supplier side, running regions in the west; California, Arizona, and Nevada, while coming to Restaurant Depot most recently as the sales manager for a mid-sized distributor and wholesaler



**Eric Leckey** 

Crimson Wine Group announced several promotions and additions to the team in support of the continued growth and evolution of the company. On the domestic wholesale sales team: Tina Mahaffey joins the organization as vice president-west; Aaron Crespin has been promoted to director of sales-central; and Stacy MacKelvie has been appointed regional manager-pacific northwest. Kim Benson joins Crimson Wine Group as vice president of finance, reporting directly to Crimson CFO Karen Diepholz. Additionally, Peter Janiak, previously executive chef at Seghesio Family Vineyards, will now oversee culinary programming for all the brands within the group in his role as Crimson Wine Group executive chef.

Patina, the flagship restaurant of Patina Restaurant Group, announced Jon Cross as the new head sommelier. Cross joins Patina after serving as the corporate wine director for Culinary Lab Restaurant Group, (Hinoki and The Bird, Rosaline, Black Ship) in Los Angeles.

beverage distributor with wholesale operations in Georgia and Alabama announces that Michael McNeill, MS—a two-time recipient of the "Best Sommelier in America" award—has joined the team. McNeill, who currently distinguishes himself as Georgia's only Master Sommelier, will serve as Georgia Crown's director of education.



Michael McNeill

3 Badge Beverage Corporation has hired John Cristal as Northeast market manager for its wine division, 3 Badge Enology. He is based in Stanford, C.T. and will oversee the company's wine sales for New York, New Jersey, Pennsylvania, Maryland, D.C. and Delaware. Cristal has worked in various capacities over his career in wine, including retail manager for high-volume New York stores and most recently on the distributor side of the business. He joins 3 Badge Enology from Vintage Epicure, a New York distributor selling global wine brands, where he was an account manager.

Winebow appointed Scott Edwards as general manager, California. He is based in Winebow's office in Benicia, California and reports to Erle Martin, executive vice president, wholesale west.

# **Industry Services & Suppliers**

Mark Drake founded DLG Consultants (The Drake Luxury Group). The firm will concentrate on selected wineries and spirit companies to represent to the national account on premise channel. With the national landscape continuously evolving, there is an opportunity to bring Drake's many years of experience to selected clients in helping their brands be represented and marketed on a more personal and individual bases.



Mark Drake

After seven highly successful years at Bien Nacido Vineyards and the Miller Family Company, where he was promoted from sales manager to director of sales to director of supply, Michael Brughelli has struck out on his own, establishing Vignerons. Under his new Vignerons consultancy, Brughelli will provide expert guidance as a consultant in the areas of high-end grape growing, winemaking, fruit sales, brand management and brand administration.



Michael Brughelli

Chopin Imports Limited named Bryan Tilbury western regional division vice president, effective May 2019. In his new role, Tilbury will lead and oversee the strategic direction of the west region. Tilbury brings 15 years of industry knowledge and has vast experience in working in all channels on both the distributor and supplier sides of the business. His background includes management of several luxury wine and spirit portfolios. In his most recent position, Tilbury served as pacific regional sales manager where he oversaw the wine portfolio for Hope Family Wines, was responsible for the top producing region in the country, across all channels, and increased sales goals by triple digits for the entire portfolio.



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Motion Industries, Inc. named John Watwood group senior vice president of the company's Southeast Group, effective May 2019. A graduate of University of North Alabama (MBA) and University of Alabama, Birmingham (BS Industrial Distribution/Marketing), Watwood has over 20 years of experience in the industry. He has worked in various positions with AIT, Fluid Engineering and SMC before joining Motion Industries in 2008.

Ackley Beverage Group appointed Kathleen Cardinale as director of sales northeast. Before joining Ackley Beverage Group, Cardinale spent over twenty years in hospitality and sales management, including vice president of sales at Verity Wine Partners. During her almost seven years with Verity she spent time in a variety of roles before being promoted to vice president of sales for New York and New Jersey in 2015. Prior to working with Verity Wine Partners, Cardinale was a sales representative



Kathleen Cardinale

with Lauber Imports in the Lower Hudson Valley. Cardinale's wine education includes the American Sommelier Association's 24-week viticulture and vinification certificate, Master Court of Sommeliers introductory certificate and she is a Certified Specialist of Wine.

### **Associations & Education**

The California Association of Winegrape Growers (CAWG) selected Napa Valley grower Andrew Hoxsey as the 2019 Grower of the Year and Clements grower Brad Goehring as the 2019 Leader the Year. Both will be honored on June 25 at the Awards of Excellence program and dinner during the CAWG Summer Conference in Sonoma.

Tom Payette, national winemaking consultant, was awarded Virginia Tech's Department of Food Science and Technology's Distinguished Alumnus in Government or Industry Award from the College of Agriculture and Life Science Alumni Organization. The Ut Prosim Award is given annually to an alumnus who has excelled in their profession as well as contributed extensively to the betterment of their industry through community service. Payette has worked in all aspects of wine production, from winery business planning, vineyard establishment and management, winery design and operations, as well as wine analysis, blending and sales. He currently serves on the Atlantic Seaboard



Tom Payette

Wine Association board, the Eastern Wineries Exposition board, and The Rapidan Foundation board.

Nichola Hall, staff scientist at Scott Laboratories, and R. Keith Striegler, grower outreach specialist at E. & J. Gallo Winery, have been named co-chairs for the 2020 Unified Wine & Grape Symposium program development committee. This is Hall's second year serving as program development co-chair. She currently serves as technical consultant for all areas of enology with a focus on fermentation management, microbial nutrition, wine microbiology and analysis, and winery hygiene at Scott Laboratories. Newly appointed co-chair Striegler serves as a grower outreach specialist with E. & J. Gallo Winery. He previously served as the outreach coordinator with the National Clean Plant Network.





Nichola Hall

R. Keith Striegler

Mount Barker Wine Producers Association will induct Tony Smith as a Life Member, highlighting a very prestigious career pioneering a new wine region and industry. Smith, formally of Plantagenet Wines, in 1973 was a founding member and first president of the Lower Great Southern Wine Growers Association which became the Mount Barker Wine Producers Association. Smith holds an OBE for his work in the wine industry and developing the Great Southern wine industry and was part of the group that officially recognized the Great Southern regionally for Wine Australia and the five sub-regions Mount Barker, Porongurup, Frankland, Albany and Denmark. WBM

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# winemaker of the month

# Holly Turner, winemaker, Three Rivers Winery, Walla Walla, WA

Wine Business Monthly is a mustread for me. It's the all-in-one easiest and most comprehensive way to keep in touch with industry innovations from machinery to must! I have gleaned some great insight by reading the "Varietal Focus" series, most recently the focus on Sauvignon Blanc (January 2017). We have been working on trials with yeast, oak and acidity regarding our Sauvignon Blanc really trying to bring some creaminess to the midpalate and increasing the riper side to the aromatics by adjusting fermentation temperatures and use of neutral oak with varying sur lie stirring and aging. By reading WBM I can find opinions and insights that can potentially improve our processes.



NAME: Holly Turner, winemaker
WINERY: Three Rivers Winery, Walla
Walla, WA

Since 1999 we have been producing handmade wines from the remote and arid Columbia Valley AVA in Eastern Washington. Our name pays homage to the three rivers that influence our growing region: the Columbia, Snake and Walla Walla. A pioneer in the region, Three Rivers Winery was the 14th established winery in the Walla Walla AVA.

**ANNUAL CASE PRODUCTION:** 15,000 cases

**PLANTED ACRES:** 8 estate

**CAREER BACKGROUND:** I earned my B.S. in biology from Western Oregon State College in Monmouth, Oregon. My first job out of college, I worked as a quality assurance technician in food laboratories for a couple different manufacturers. I was so bored I quickly decided that I needed a change. After a move from Portland, OR to Prosser, WA I found work in the tasting room for Chateau Ste. Michelle Winery. Within a few months, I moved into the lab, and then into an enologist position. I was hooked! I was

intrigued by the blend of art and science and knew I had discovered my true calling. Subsequently I enrolled in production courses in winemaking at UC Davis to gain more knowledge about this exciting field. In 2000 I moved on and spent a harvest in Argentina. I returned to be the assistant winemaker at Three Rivers Winery in Walla Walla, WA. Within two years, I was promoted to lead winemaker and am thrilled to be working in one of the world's greatest wine regions.

# WHAT HAS BEEN YOUR BIGGEST PROFESSIONAL CHALLENGE?

Managing the challenges Mother Nature throws at us. Every few years we can expect an extreme cold event, cold enough to damage the vines. We must manage those struggles in the vineyard and be agile enough to motivate the fruit to give its best in the cellar.

VARIETALS THAT YOUR WINERY IS KNOWN FOR: Cabernet Sauvignon, Merlot, Malbec, Sauvignon Blanc and Chardonnay

# San Sebastian

**PEOPLE TELL JAKE LORENZO** that travel used to be fun, but that it's not anymore. They complain about removing belts, taking off shoes, pulling out computers and exposing your toiletries to TSA agents. Walking long distances in airports, waiting impatiently for your luggage to finally roll down the conveyor and then standing in line hoping your taxi won't smell too strongly of goat curry and onions while you are stalled in the traffic jam on the way into town.

This detective admits, modern travel can be stressful, frustrating and plain boring, but to my way of thinking it still beats signing on for a wagon train to get across America, or cramming your way into the steerage hull of a ship with 3,000 other poor souls for the two week journey across the Atlantic. I'd rather eat lousy food with my \$20 cocktail in a dingy, crowded airport while I wait for my delayed flight, than go through another two-week journey on local buses from Istanbul to Kabul, Afghanistan like we did in 1973.

In life, it's about the journey, not where you end up. With travel, it doesn't matter how you get there, it's all about where you get.

Jake Lorenzo and Jakelyn's mother just got ourselves to San Sebastian, Spain (or Donastia as the local Basque population calls it.) In a lifetime of traveling, San Sebastian remains one of our top three favorite places in the world. The city has struggled in its long history, burning to the ground twice before rebuilding with its stately 19th century buildings. Just 12 miles from the French border, the town is nestled between the mountains and the gorgeous Bay of Biscay which is fed by the River Urumea and opens to the Atlantic Ocean.

Beautiful and charming, San Sebastian is also home to the most Michelin star restaurants per capita in all of Europe. Jake Lorenzo decided not to go to any of them. Don't get me wrong, this detective likes incredible food and I can cough up the requisite Euros for a fantastic meal if need be, but in San Sebastian you don't need to take out a loan to eat well.

San Sebastian is an anomaly. It is truly hard to get a bad meal here. Not only that, but eating is a wildly communal experience where the locals and tourists meander through the cobblestone streets to crowd into tiny restaurants where they sample dozens of inventive, luscious and gorgeous plates. The raucous crowd is four or five people deep jammed into narrow rooms dominated by long bars piled high with brightly colored pintxos: plump pink shrimp; green olives, peppers and anchovies; shimmering sardines; stuffed red piquillo peppers; all sorts of foraged wild mushrooms; fluffy yellow Spanish tortillas and divine white asparagus. They serve pig's ears, tripe, fish cheeks, suckling pig, foie gras and some of the biggest, most perfectly cooked grass-fed beef steaks in the world.

The art, which Jake Lorenzo learned very quickly, is capturing the eye of someone behind the bar and shouting out your initial order. Your server will grab the selection, have it heated if necessary and pass it to you across the bar. While he is handing you the plates, you give him your drink order along with your name, so he can start a tab. From there on, it is smooth sailing. Every time you approach the bar, your server will look to you for your next order. Food will appear, drinks will be refilled and when you are done, the itemized check will be exactly right. All of this performed in a cauldron of seeming mayhem with people shouting out orders, crowding into one another, pointing at different dishes and nodding their heads up and down when acknowledged by a server. As frenzied and chaotic as it appears, even

the most bewildered tourist ends up with a plate and a drink and a happy smile on their face.

The food in San Sebastian is extraordinary and inventive. Hidalgo 56 served a Volcan de Morcilla. This was a two-inch cylinder of blood sausage topped with an egg yolk. When you cut into it, the yolk poured down the side like lava from a volcano. Restaurant Rita served a



perfectly cooked filet of hake with crispy skin on a bed of baby peas hiding tender white asparagus. Platters of the legendary bellota ham are everywhere, but all the Spanish jamon is delicious. Ganbara presented us with porcini, chanterelle, morel and hedgehog mushrooms cooked on a flat top, topped with an egg yolk and then festooned with slices of foie gras. Left over egg whites created a light perfectly crisp batter for the most tender, delicious white asparagus I've ever tasted.

San Sebastian is a jewel with some of the best food on the planet, but the revelation is how they deal with wine. You can get a copa of very decent wine in any of the pintxo bars for less than three dollars. In more formal restaurants extensive wine lists feature Spanish wines primarily. Apart from

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the occasional frizzante glass of the local Txakoli we opted for Spanish cava or Verdejo from different regions, and Rosé from Navarra that was fresh and tasty. In restaurants those wines sold for \$10 to \$18 per bottle.

Vino joven, fruity red wine from the current vintage, was simply delicious and never more than ten Euros. Crianza wines from Rioja, Ribera del Duero or Priorat were always a delight, and available between \$12 and \$28. Even the Reservas were usually under \$30, and we were pleased to notice they are getting a handle on the over-handed American oak character that plagued these wines for many years.

In San Sebastian, the food is fresh, local and creatively prepared. That costs money. Restaurants realize that food is their business, so they charge fair prices for what you get, although the prices may seem a bit high for Americans. Wine, on the other hand, is something restaurants provide for their customers, because their customers demand it and it improves the dining experience. Prices in restaurants are usually just a couple Euros more than purchasing the same wine in a wine shop.

It would be unconscionable for a restauranteur to mark up a bottle of wine four or five times. His customers would riot. In San Sebastian you get a bottle of wine for \$15, not just a glass. You can purchase three or four glasses of different wines to try with the various dishes you have ordered and still not spend \$20. For those of us who love wine and good food, San Sebastian is as good as it gets. There is just something so civilized in eating delicious food and sipping on charming wines, and then paying for that meal without an extra trip to the ATM machine. What Jake Lorenzo wouldn't give for a bit of that San Sebastian spirit here in California. **WBM** 



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