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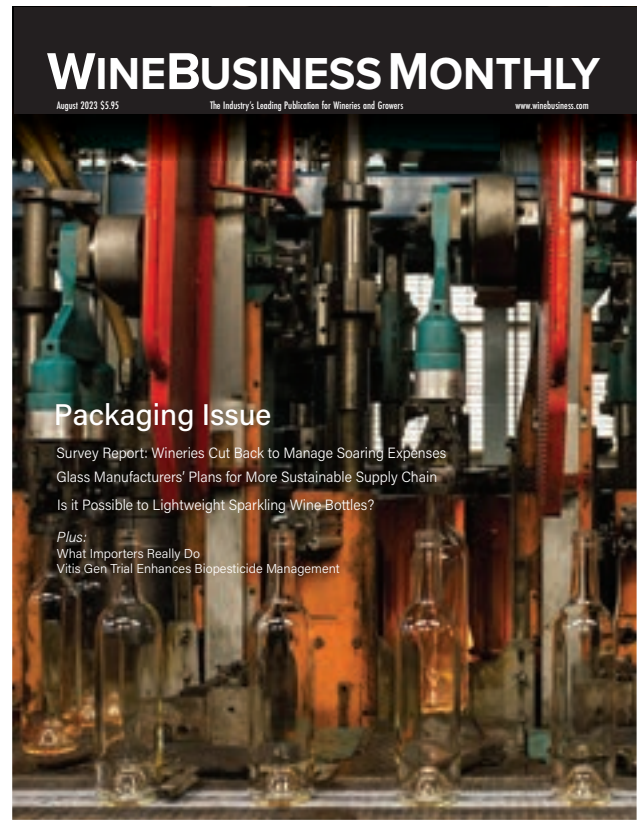
On Pioneers, Sustainability, and Passion

Winemaker Paul Dolan, who passed away last month, joined Fetzer Vineyards in 1977 and guided the company's growth for 27 years, ultimately as CEO. Under his leadership, Fetzer expanded production from 25,000 cases to more than 2 million cases annually and also launched Bonterra, the first national wine brand made from 100 percent organically grown grapes. Last summer, Fetzer Vineyards changed its operating name to Bonterra Organic Estates, using the new name as the umbrella for the company's corporate identity, a sign of the times and just how far ahead of the curve Paul Dolan was in his passion to adopt and promote organic grape growing and sustainable winemaking.

Much of this issue focuses on sustainability in the vineyard, cellar, packaging, and even within the supply chain. In the vineyard, we've known that biological pesticides have been around for years, but now their use is increasing. We have updates on biopesticide research in the vineyard; results of a trial where biologicals mitigated the effects of sunburnt grapes; and a deep dive into the benefits of organic yeast supplements.

Similarly, we're hearing more about lightweighting glass and making plants more energy efficient as well as progress in bottle reuse and recycling. What's new though are some of the efforts to make the supply chain itself more sustainable.

As anyone who has had to order packaging in the last two years knows far too well, packaging costs are soaring—a double whammy considering that the overall wine market isn't growing. Rising costs were the top concern of respondents to this year's Wine Business Monthly Packaging Survey. As a result, wineries are cutting packaging costs where they can while trying to keep pace with wine pricing.



Most wineries are small: more than two-thirds of U.S. wineries make less than 5,000 cases annually and nearly half make 1,000 cases or less. Most of these small wineries are motivated by passion, not just by numbers or depletions. As we are reminded in one article this month, importers face a similar scenario. While moving boxes is a must, the best wine importers are often relatively small and focus instead on what drives most of us in this industry: a love of wine.

~ Cyril Penn, Editor

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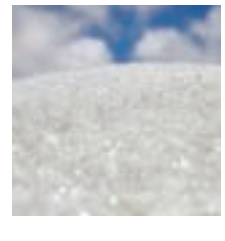

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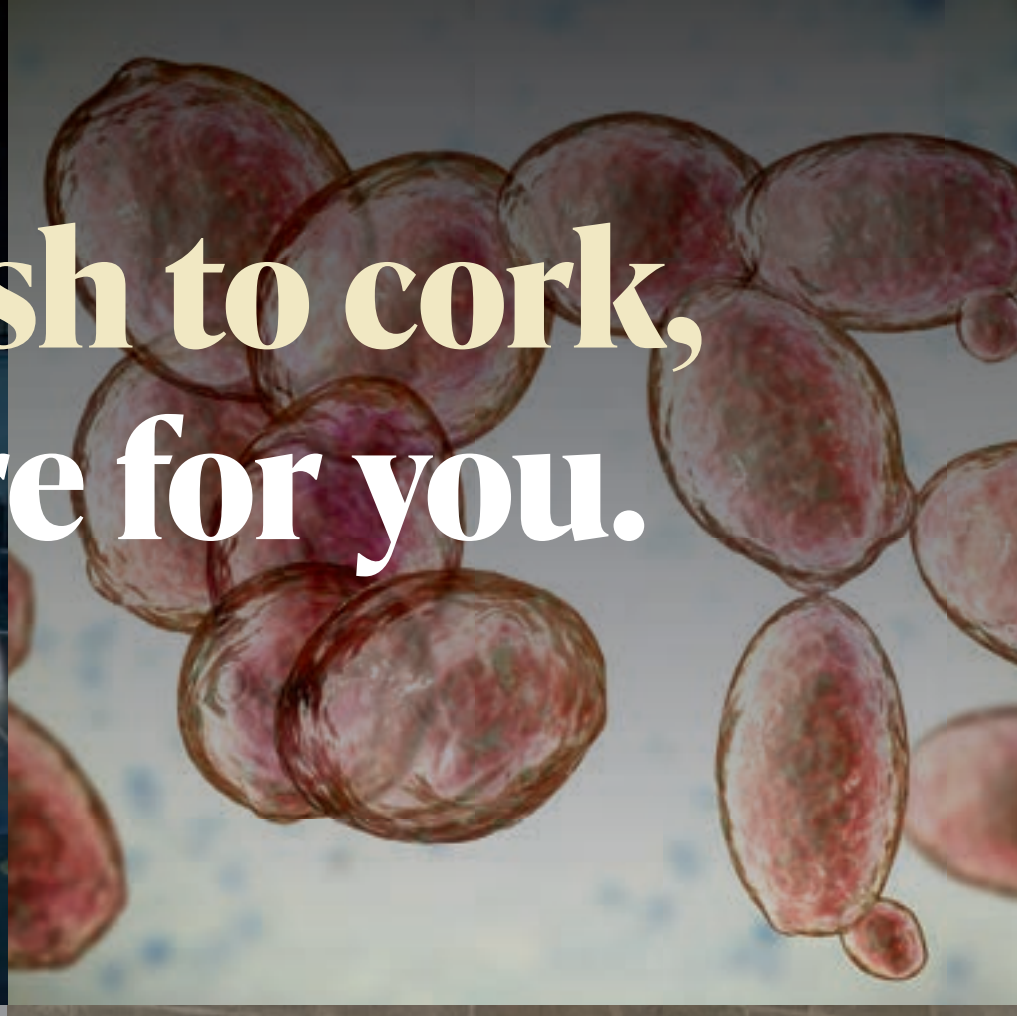

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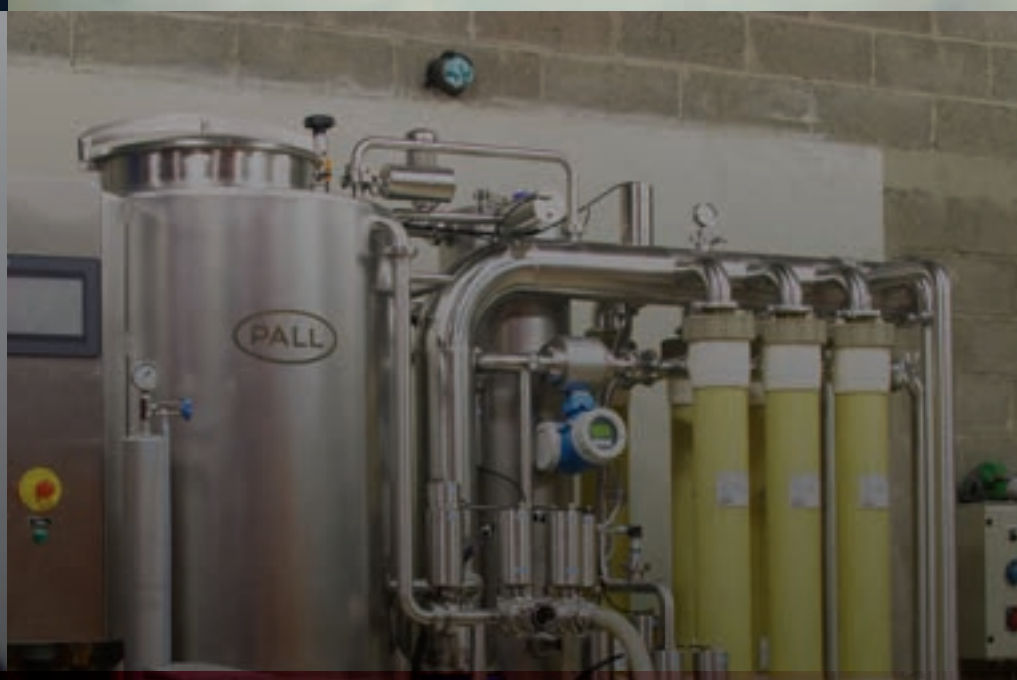

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winemaker, Niner Wine Estates, "Benefits of Certified Organic Yeast Supplements", page 12

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"Two things drive our packaging. One is ease of opening and consistency of product—or no corked wines. The other is sustainability: lighter bottles mean less carbon footprint.".

Remi Cohen

CEO, Domaine Carneros, "Glass Under Pressure: Sparkling Wine's Sustainability Paradox", page 58

"We have been trialing this glass for years now, and we are currently bottling more than half our sparkling wine in this lighter-weight bottle."

Felix Lamolinerie

CEO, Verallia USA, "Unfurling the Kinks", page 68

"With COVID, the overall worldwide supply chain was, has been, totally disrupted. The fact that we had a slowdown and then a quick recovery completely disorganized the flow in our industry (more) than I believe any industry in the world."

Darryl Vennard

Midwest regional sales manager, Vine Connections, "The Role of Importers", page 74

"I wear this company on my sleeve. You need to be evangelical about what you sell. If you are not proud of what you sell, people will sense that, and it will hurt you."

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

E. & J. Gallo Acquires Hahn Family Wines

In early June E. & J. Gallo announced its acquisition of the Hahn Family Wines portfolio, adding to Gallo's collection of Central Coast offerings. The terms of the agreement were not divulged in the announcement, though it was noted that the transaction excludes the Hahn family's vineyard assets.

Zepponi & Company served as the sole financial advisor to Hahn during the transaction. The acquisition marks Gallo's expansion of its premium wine portfolio. The Hahn Family Wines portfolio includes Smith & Hook, Hahn SLH wines and Hahn wines.

Napa Valley Winery Sues Local Vineyard Management Company Over Alleged Sulfur Burn

The owners of Black Cordon Vineyard LLC filed a lawsuit against Napa Valley-based Bazan Vineyard Management for allegedly causing more than $100,000 worth of damages, according to Napa County Superior Court records.

The owners of the vineyard claim that Bazan ruined two acres of Cabernet Sauvignon fruit in 2021 after Bazan allegedly sprayed the vines with sulfur during a heat spike when temperatures reached 103 degrees Fahrenheit, causing "sulfur burn," according to the lawsuit.

Black Cordon owners Karen and David Dunphy claim in the court filing that they had not been notified that the vineyard would be sprayed with sulfur, consequently resulting in the loss of around 2.4 tons of their 2021 harvest.

Rodney Strong Acquires River West Vineyard in Russian River Valley

In late June, Rodney Strong Wine Estates announced its acquisition of River West Vineyard, a 335-acre premium quality vineyard in the sought-after Russian River Valley appellation.

Since the late 1970s, the West Side Road vineyard has served as a single vineyard source of Chardonnay for several Rodney Strong vineyards and Davis Bynum Wines. The vineyard was planted in the 1930s and is based in the Middle Reach Neighborhood of the Russian River Valley. The acquisition of the vineyard–which is planted to Chardonnay, Pinot Noir, Sauvignon Blanc, Merlot, Cabernet Sauvignon and 100-year-old Zinfandel vines–brings Rodney Strong's total Sonoma County estate vineyard holdings to a total of 1,158 acres

Jackson Family Wines Acquires Acreage in Essex

Sonoma-based Jackson Family Wines announced its acquisition of 65 acres of land, to be planted with vines, in Essex's Crouch Valley in Great Britain. The company already has premium properties in Italy, France, Australia, Chile, South Africa and Canada.

The long term aim of the project, as described in a June article by Jancis Robinson, is to produce still wine; pinot and Chardonnay. In the immediate future, they will produce non-vintage and vintage English sparkling wine, initially based on their acquisition of 2022 base wine sourced from Kent and Sussex. As of yet, there are no immediate plans to construct a winery in the area

The Old Vine Registry is Launched

In June, the Old Vine Registry, a crowd-sourced global database of old-vine vineyards around the world, finally launched after months of work. The launch coincided with a webinar about the database hosted by Jancis Robinson (who, in 2010, started a worldwide Old Vine Register on her website, *www.jancisrobinson.com*) Sarah Abbott MW, Rosa Kruger, Tamlyn Currin and Alder Yarrow.

On the Old Vine Registry, www.*oldvineregistry.org*, people can search historic vineyards by vineyard name, grape variety, country, region, sub-region/appellation, name of the owner and name of a person of interest. WBM

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PRACTICAL Winery & Vineyard JOURNAL

Benefits of Certified Organic Yeast Supplements

Megan Hernandez

Megan Hernandez holds a bachelor's degree in viticulture and enology from UC Davis and has been making sparkling and still wine in Sonoma and Napa counties for more than two decades.

In discussions about sustainability in winegrowing and winemaking, it is viticulture, bottle weights, winery energy and water consumption that receive the most attention as big ticket items. Chemical and fertilizer applications, natural resource capture and management, and transportation impacts are easily measured both with their use and reduction; and while vineyard practices have a direct influence on the health of the vines and quality of the grapes, bottle sizes and solar panels do not. As a result, most of the sustainability conversation is focused outside of direct winemaking practices.

Within the scope of winemaking decisions products added or avoided during fermentation, offer both a way to bring eco-friendly measures further into the cellar and to directly impact wine outcomes. As the wine industry grapples with the effects of climate change and responsible stewardship, the connection between inputs, efficacy, quality and sustainability requires continued discussion.

Yeast, as the most fundamental component of winemaking other than grapes, is a great example of this connection. With little dialogue around how yeast products are made and how those practices can affect winemaking, wine quality and the environment, it's easy to overlook the up- and downstream impacts of these critical, one-celled winemaking partners. However, when it comes to wine quality, the health of the working yeast is critical to the health of the fermention; it's imperative that they be robust and have enough of the right nutrients to not just survive but to thrive in the juice-to-wine conversion. Certified organic yeast production is a way to support just that, in addition to being sustainable.

What is Organic?

The term "organic" is not as straightforward as it sounds. In terms of yeast, specifically nutritional supplements, organic nitrogen refers to the source of the nitrogen—does it come from DAP or amino acids, inorganic or organic? Certified organic, on the other hand, refers to the assessment of production processes by a recognized third party in accordance with a recognized governmental or industry standard. In such operations, only certified organic, non-GMO materials are allowed to be used as ingredients. While certified organic nutrients inherently include organic nitrogen, not all organic nitrogen products are certified organic.

The difference between the terms "Organic Materials Review Institute (OMRI)-listed for Organic Production" and "certified organic" should also be noted. OMRI provides a list of inputs that are allowed for production of organic wines when organic products are not commercially available. Products made in the conventional manner may be OMRI-listed if they meet OMRI requirements but do not qualify to be organically certified under the European Union, the U.S. Department of Agriculture, or the California Certified Organic Farming standards.

Yeast Production

In simple terms, making yeast requires sugar, nitrogen, vitamins, and minerals to grow, then rinsing and drying to be ready for commercial use. These ingredients and steps offer opportunities to shape the health and function of the resulting yeast products (active yeast, inactive yeast, yeast cell walls and other derivatives) which, in turn, affect the quality of finished wine with better varietal expression and longevity.

The conventional method of making yeast products uses sugar cane or beet molasses as a sugar source and liquid ammonia as a nitrogen source. Sulfuric acid and sodium hydroxide are used for pH buffering and microbial control. Synthetic vitamins and inorganic salts are added to complete the yeasts' nutrient requirements, and emulsifiers are required for protection from high temperature drying. This method has the benefits of speed and yield per batch with rapid yeast growth and quick drying times facilitated by chemical inclusion and protection. However, the chemical and heat stress can compromise functionalities by reducing ergosterol, lipid, enzymatic and nutritional components of the active yeast cells, cell walls and inactivated yeast.

By contrast, certified organic yeast production has a much different process, starting with certified organic substrates. Only certified organic raw agricultural materials are used to supply the yeast with all that they require—sugar, nitrogen, vitamins, and minerals—eliminating the need for chemical pH buffering, synthetic ingredients and excessive rinsing. Subsequently, the absences of chemical stress and the cooler drying temperatures in this production process retain the essential nitrogen, vitamins and trace minerals in the inactivated yeast (fermentation nutrients), as well as a higher percentage of lipids in yeast cell walls and intact enzymatic activity in active yeast. Key differences in the two approaches to yeast production are summarized in (**FIGURE A**).

Why Organic Matters in Winemaking

The importance of nitrogen in fermentations cannot be underestimated as it is the major nutrient for metabolic activity and growth for yeast cells.[1] Historically, nitrogen levels were targeted as the means to fulfill yeast requirements, with

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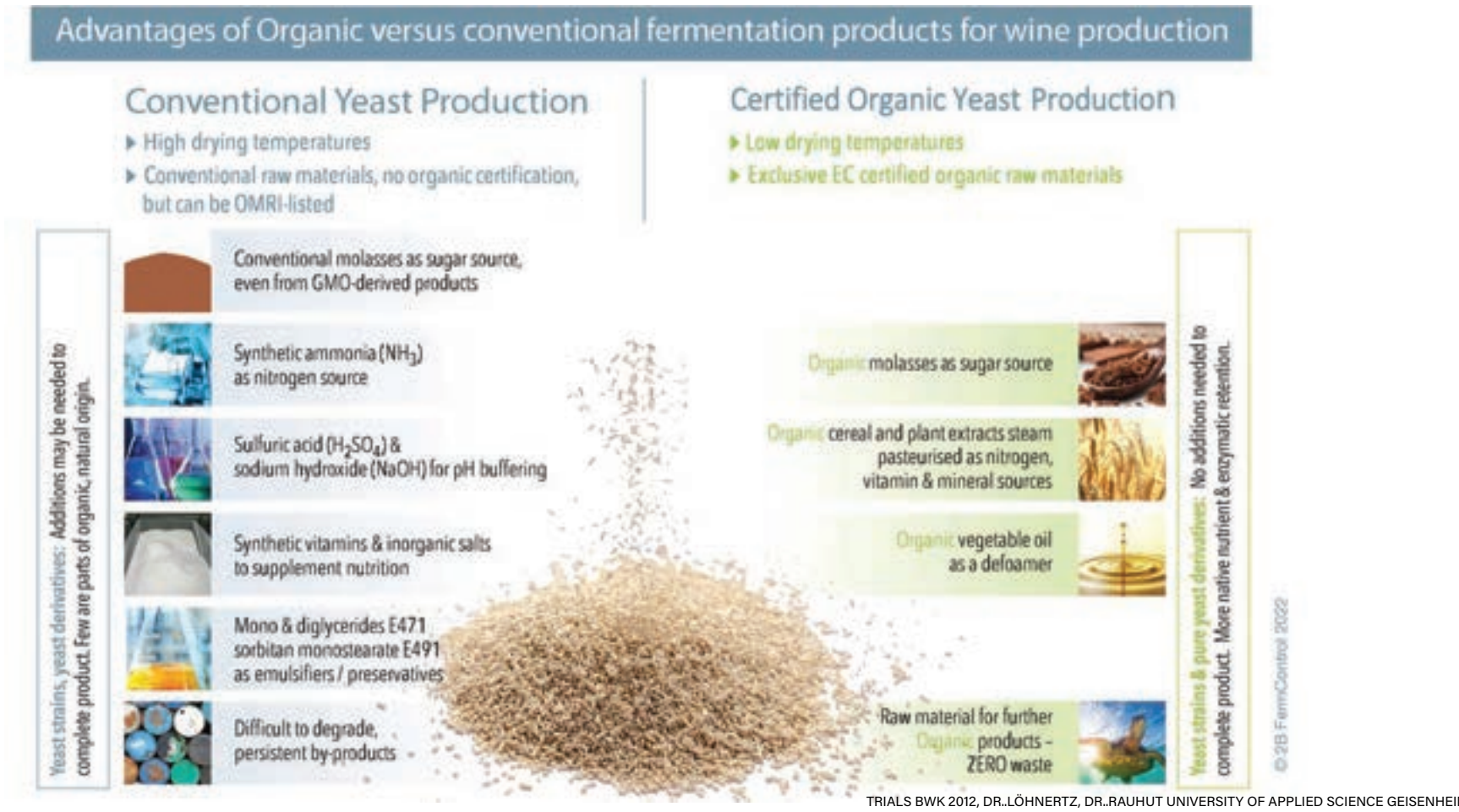

FIGURE A: Differences in conventional yeast and certified organic yeast production

diammonium phosphate (DAP) providing an economical, kinetically expedient boost to increasing yeast assimilable nitrogen (YAN), the available quantities of ammonium and amino acids in the must.

YAN analysis is a quick and efficient way of assessing the initial nutritional composition of grapes. Though strictly a nitrogen analysis, it is generally understood that lower values of YAN correspond to lower levels of other essential elements. This understanding has expanded nutrient practices from using just DAP to incorporating organic nitrogen sources and/or complex nutrients (inorganic and organic nitrogen plus synthetic supplements).

Recent trends have shown movement towards more nuanced additions of nutritional sources for a multitude of reasons:

- **Yeast Requirements:** Sugar and ammonium are not a balanced diet for yeast. Nitrogen is important, but other supplements, such as biotin, pantothenic acid, and thiamine—to name just a few—are essential as well.
- **Fermentation Behavior:** With a balanced diet, fermentations perform better and are easier to manage.
- **Organoleptics:** Healthier fermentations show better organoleptic results, leading to the development of complex nutrients, organic nitrogen nutrients and certified organic nutrients.
- **Consumer and Winemaking Trends:** Lower intervention and lower chemical winemaking have gained traction, and consumers are more inclined to be curious about product ingredients and sustainability.

A healthy fermentation requires sufficient:

- Sugar
- Nitrogen - ammonium and amino acids
- Vitamins (especially the B vitamins):
- Biotin (B7)
- Pantothenic acid (B5)
- Thiamine (B1)
- Pyridoxine (B6)
- Riboflavin (B2)
- Niacin (B3)
- Trace elements and minerals (zinc, magnesium, potassium, calcium, phosphate).

With these tools, a yeast cell will consume as much sugar as it can, producing CO_2, heat, and alcohol, replicating until inhibitory factors get in the way, or until available, necessary components run out. Without them, the yeast population struggles to complete the job we ask it to deliver—create delicious wine—often with its own form of indigestion (reductive characteristics) along the way. While yeast do not really care about the qualitative results of this, winemakers and consumers certainly do.

If nitrogen were the only consideration, DAP would be a great fermentation supplement for a few reasons: it is high in nitrogen, economical and delivers a jolt of energy to the fermenting yeast. However, in addition to DAP not always securing a completed fermentation, there is a well-established correlation between beneficial aromatics and amino acid metabolism,[2] moving the preference for DAP and DAP-based nutrients to those that are amino acid-driven (**FIGURE B**).

"I routinely add an organic yeast supplement in small (6g/hl) quantities to promote successful fermentations," stated winemaker Molly Bohlman of Niner Wine Estates in Paso Robles, Calif. "I typically have YANs above 200 ppm in our SLO Coast vineyard (Albariño, Sauvignon Blanc, Chardonnay, Pinot Noir, Meunier, Syrah, and Grenache) and can avoid DAP addition, which tends to create heat spikes and faster fermentations. I have found that an organic yeast supplement addition at one-third sugar depletion results in more stable temperatures, slower fermentation rates and less stuck fermentations compared to non-organic supplements."

While there is no consensus on an ideal target YAN, most conventional protocols call for multiple products to satisfy the yeasts' needs: re-hydration nutrients, inactivated yeast, DAP and/or complex nutrients. Organic nitrogen nutrients can provide yeast with more of the supplements and vitamins required than DAP alone. Organic inactivated yeast, however, further reduces the need for multiple products as enough amino acid-based nitrogen, vitamins (**FIGURE C**) and trace minerals (**FIGURE D**) are provided to satisfy the needs

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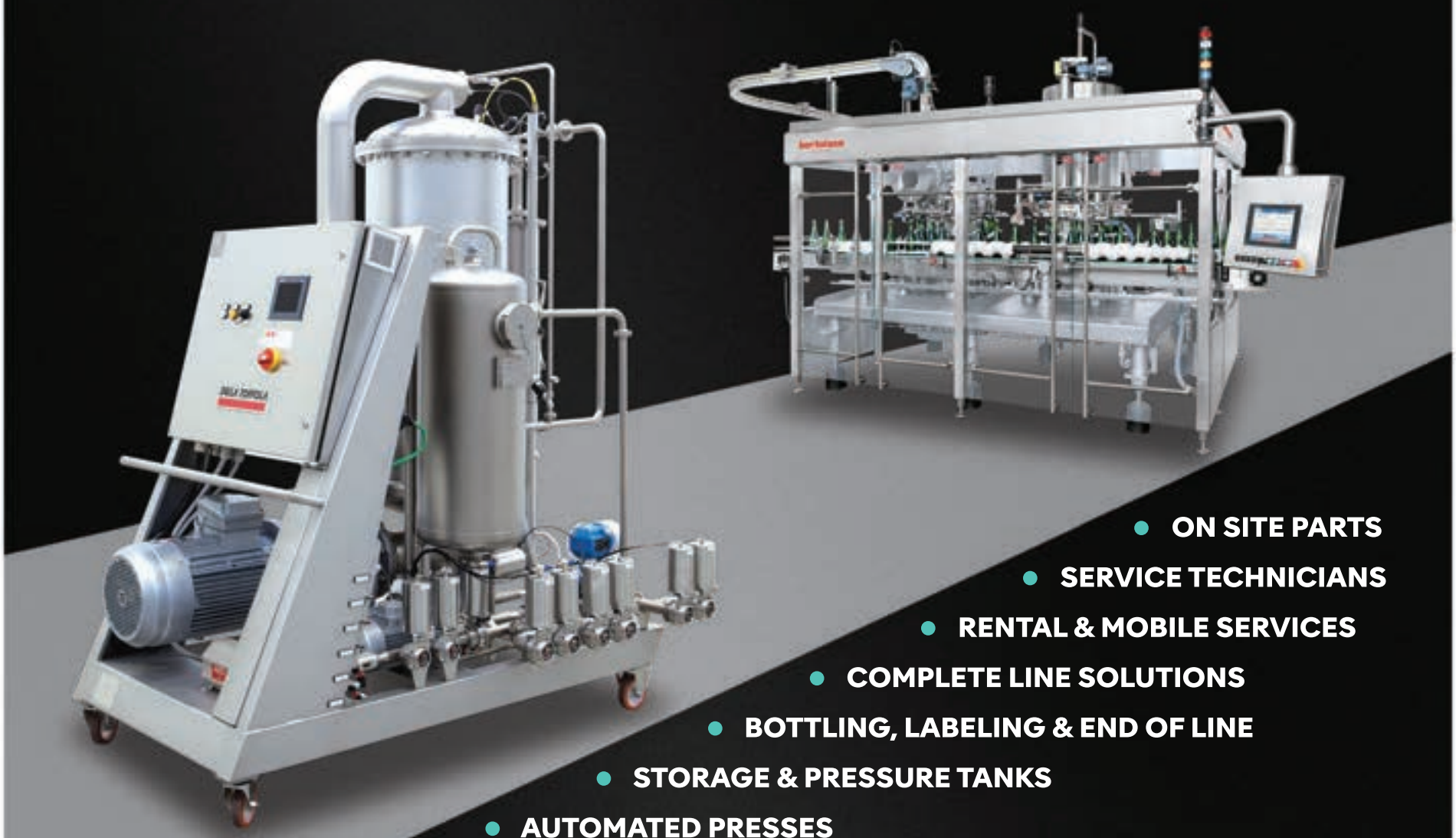

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FIGURE B: Organoleptics supported by DAP versus amino acids

of the yeast. This allows for elimination of other products, such as re-hydration nutrients and DAP at lower YAN levels.

At the same time, the functionality of amino acids versus DAP and DAP-based products promotes efficient nutrient uptake, favorable flavors, and aromas (**FIGURE E**), as well as more glutathione production (**FIGURE F**) for antioxidant protection.

Ultimately, these qualitative benefits have helped steer the yeast and yeast-derivative production in a more organic nitrogen-based direction.

"I have generally been skeptical about additives and products in my approach to winemaking," explained Anthony King of King Wine Consulting in Carlton, Ore. "Early in my career, there were very few options for yeast nutrients on the market, and our trials with them often fell short of control on a sensory basis. My move to Oregon brought a whole new set of challenges regarding reduction.

"Meanwhile, new certified organic nutrient products entered the market that philosophically matched our farming practices. Our early trials with additions

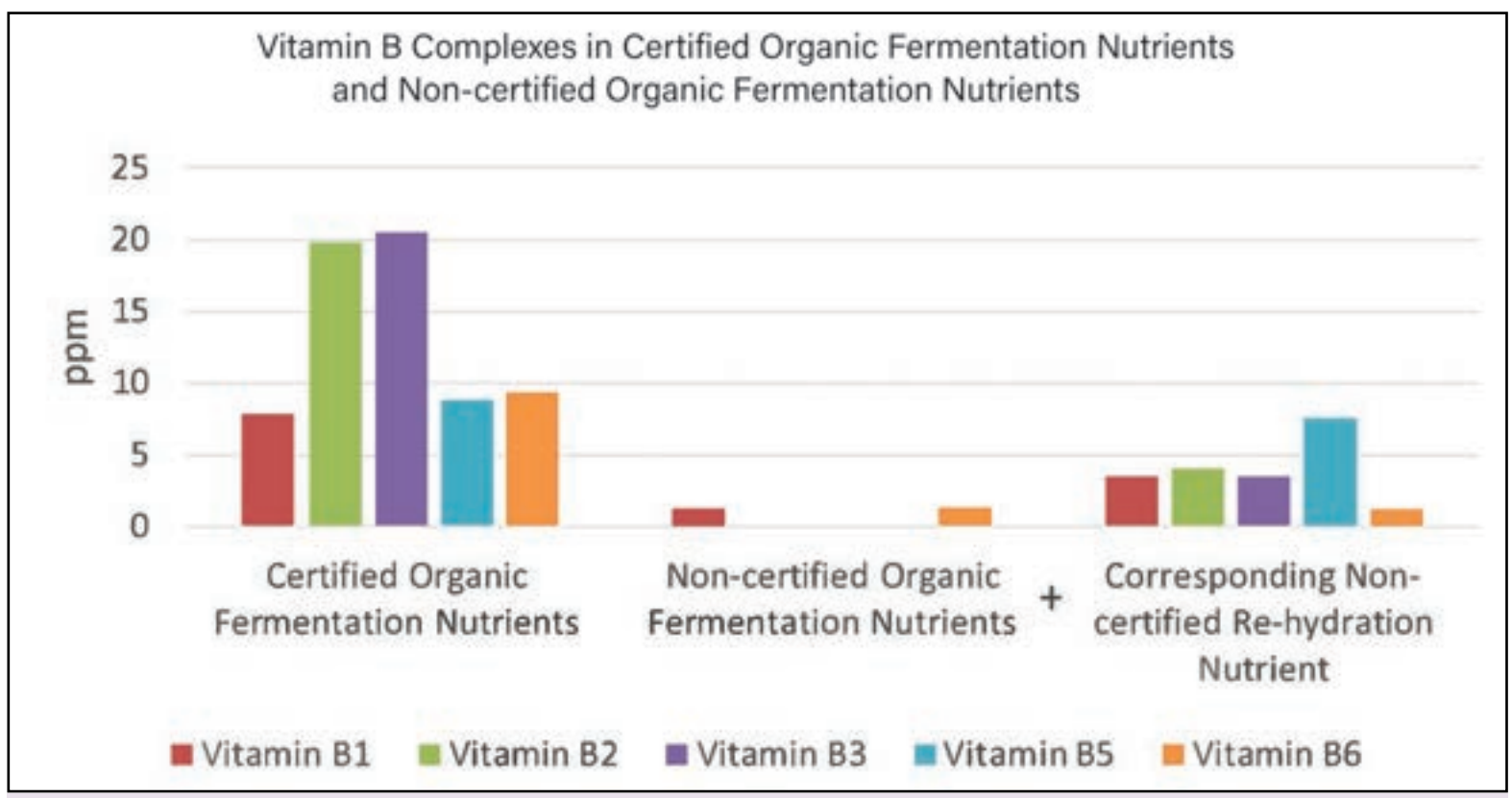

FIGURE C: Comparing vitamin B levels between conventional and organic production methods in yeast nutrient supplements

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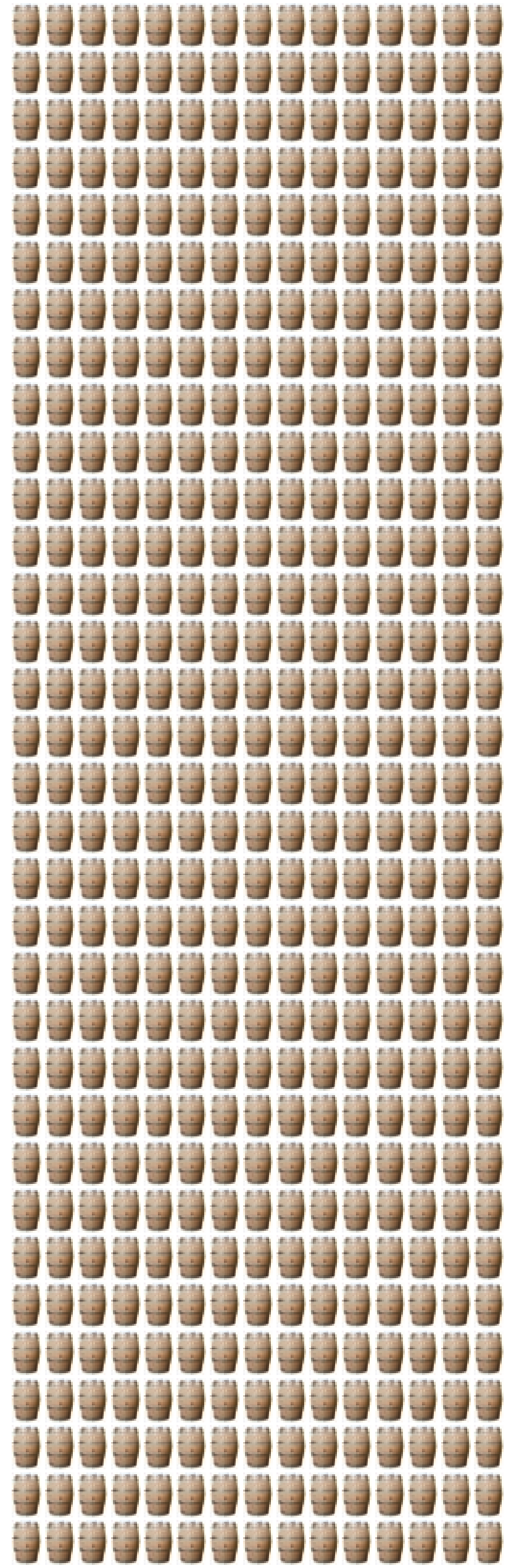

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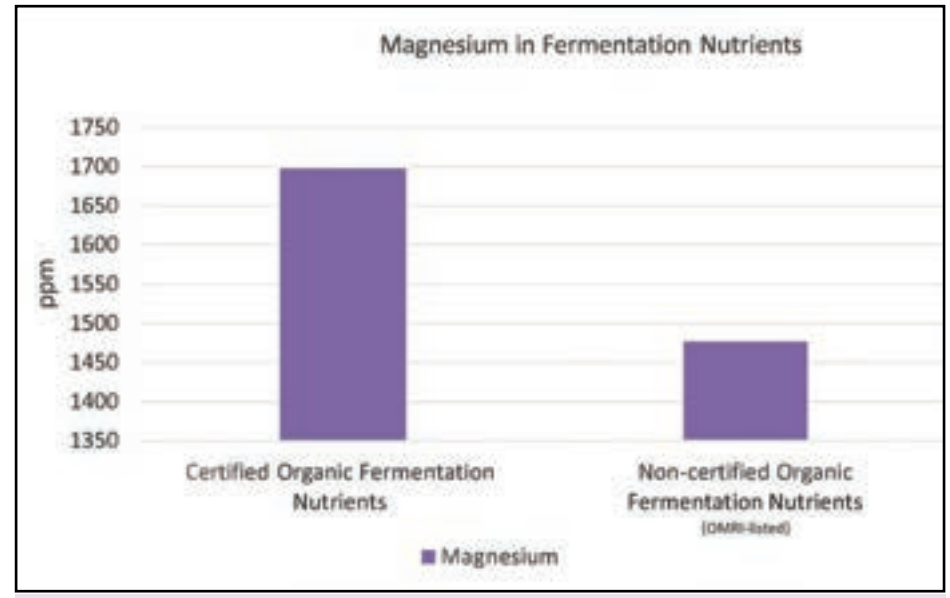

FIGURE D: Comparing magnesium levels between organic nitrogen and certified organic production methods for yeast nutrient supplements

to low-YAN wines showed greater purity of fruit, using the new organic products versus the old standbys we had tried years earlier. I have continued to use the same organic nutrients over the years when YAN are below 180 ppm or so and step up the additions for more severely deficient musts; the resulting wines continue to show more distinctive fruit while also fermenting to dryness without too much worry."

Why Organic Production Matters Beyond Wine Itself

As the wine industry grapples with the changing climate, wineries are taking a closer look at their sustainability measures and where they can make impacts on recycling and rethinking what has been the status quo. One way of quantifying all of this is through calculating one's Greenhouse Gas (GHG) Emissions. Broken down into three scopes, GHG calculations require companies to look holistically at their activities, getting a full view of what their emissions are throughout the following categories:

- **Scope 1** - Direct emissions from company-controlled resources. What goes into running facilities and vehicles and what is released during processing.
- **Scope 2** – Indirect emissions from purchased utilities, such as electricity, heating and cooling.
- **Scope 3** – Indirect emissions associated with company operations, including travel, waste, purchased goods, distribution, capital goods, use of sold products, "end of life" treatment of products, etc.

Enological products fall into Scope 3, which is the most complex. Although yeast products are just a small piece of the entire process, the crucial question is, "What are we asking others to do on our behalf?" especially regarding agriculture and chemical industries.

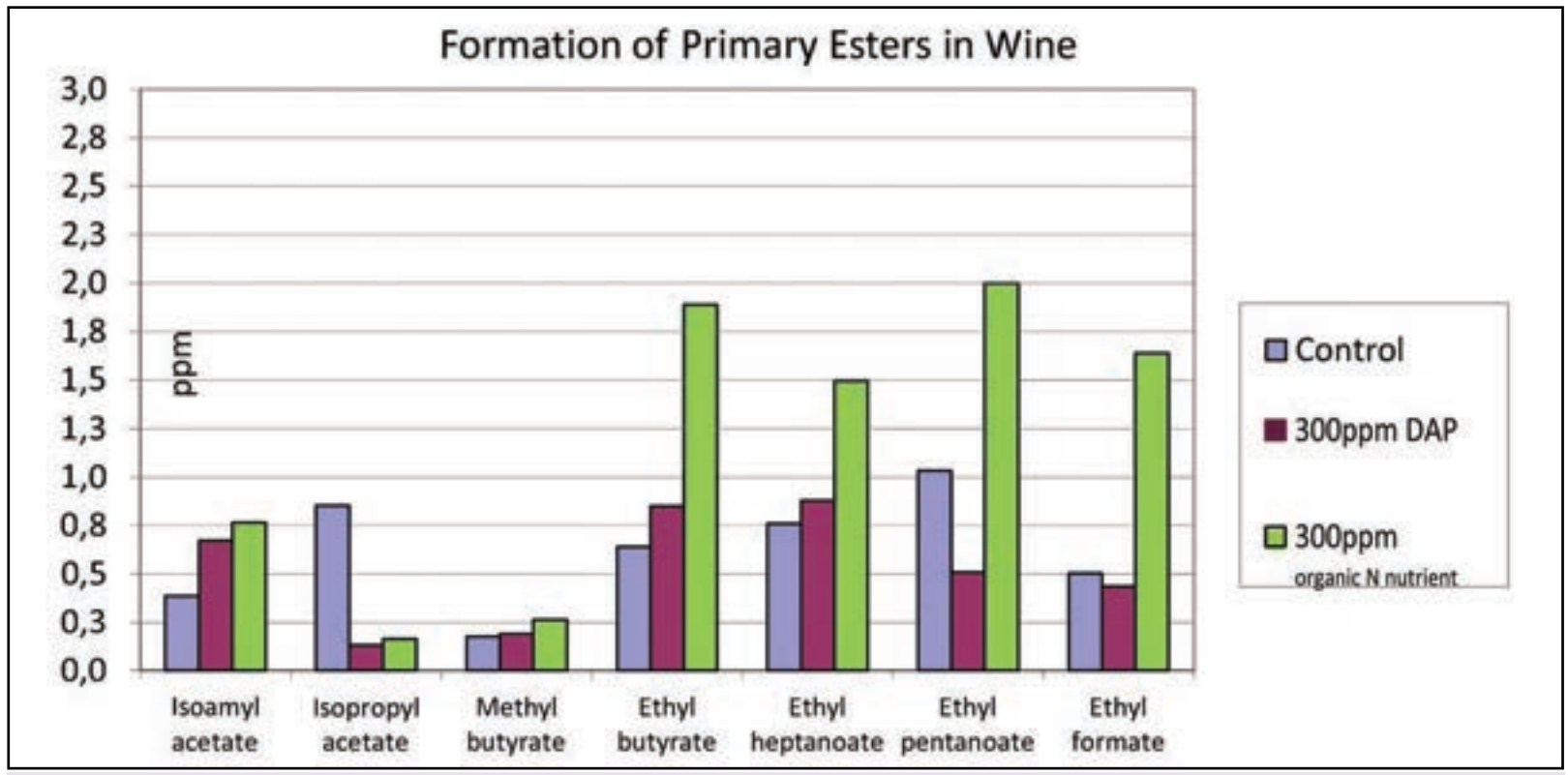

FIGURE E: Comparing fermentative component levels between organic nitrogen and certified organic nutrient supplements

As expressed by one Sonoma County winemaker, "We farm each of the vineyards that we work with. As farmers, we use organic practices in each of our vineyards, cutting out the usage of synthetics entirely. As winemakers, we use cultured yeast in the cellar. However, the idea of adding yeast products created using chemically-derived ingredients seemed conflicting to say the least. We have long felt that our connection to each vineyard we farm has deepened and, therefore, the wine quality due to our approach to farming. In the cellar, it is important to us to not deviate from this approach, which is why we use certified organic products."

Conventional yeast production taps into both ammonia production for propagation and fertilizer for beet and sugar cane farming. While these would impact Scope 3 for wineries, the weight on Scopes 1 and 2 for the production upstream is significant. The more yeast made, the more ammonia and fertilizer required.

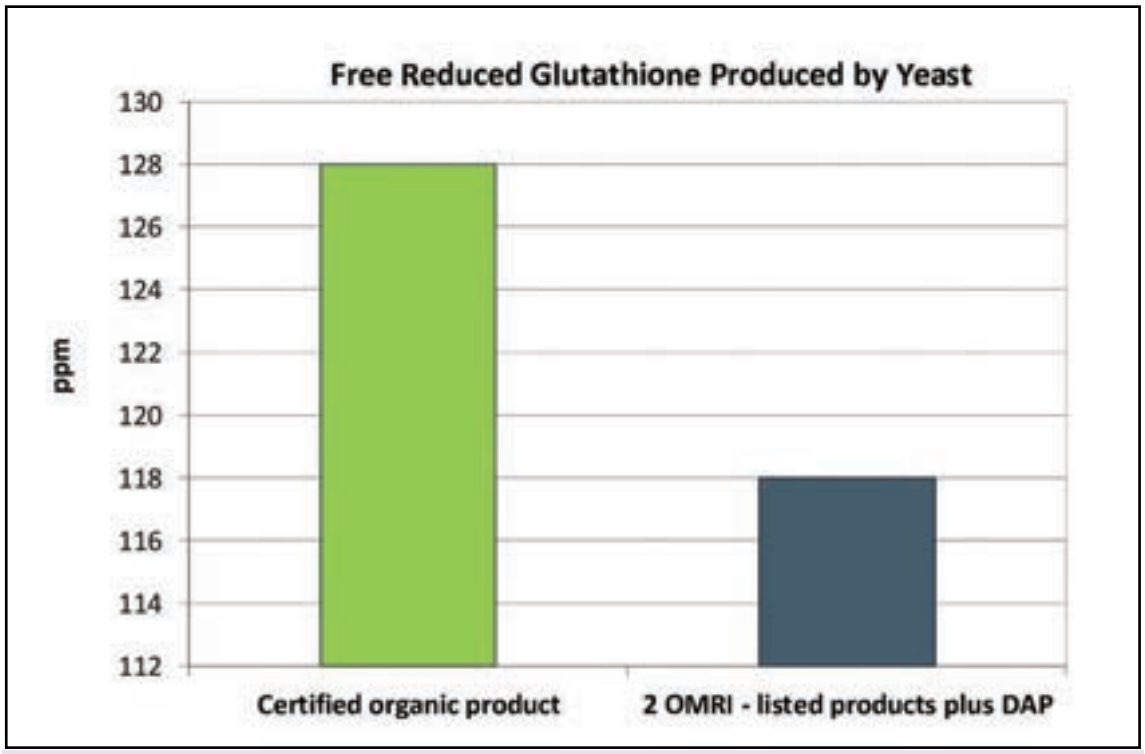

FIGURE F: Comparing glutathione production levels between conventional and organic production methods for yeast nutrient supplements

According to a 2020 policy briefing by The Royal Society, "The global production of 176 million tonnes of ammonia per year accounts for around 1.8% of overall global carbon dioxide emissions. Agricultural fertilizers account for 80% of annual ammonia production, but only 17% of that nitrogen is consumed by humans in crops, dairy, and meat products. The remainder leaches into the soil, air and water, causing widespread biodiversity losses, eutrophication, and air quality issues from particulate matter, emissions of greenhouse gases, and stratospheric ozone loss."[5]

By supporting industries that support organic farming, not only is there less chemical farming, but there is also more pressure on finding better, more environmentally sound answers to conventional farming and the associated chemical factors. By investigating alternatives to status quo inputs, the door is open to finding advantages in more sustainable solutions.

Final Thoughts

Sustainability is not a one-size-fits-all endeavor; there needs to be proven benefits beyond the "Do Good" or "Feel Good" mentality of making decisions. At the grocery store, consumers do not continue to buy organic groceries just because they are organic: they still must taste as good, if not better. Winemaking is no different; so, when considering additives, questions such as, "Do the products work well," "Is the wine benefiting" and "Does this work in the cellar," all must be considered.

Rebecca George, associate winemaker at Napa-based Brandlin Estate, noted this connection. "We have been using certified organic yeast and yeast nutrients for several years now and can attest that the certified organic products are simply more effective at achieving fermentation completion and producing wines with pure fruit expression when compared to their conventional counterparts. As a Napa Green-certified vineyard and winery, we are intentional with our product purchasing, so any product that helps reduce our Scope 3 emissions, by being more efficient with resources, is a plus in our book," she said.

Knowing how enological additives are made gives winemakers the ability to incorporate more sustainability into their winemaking practices. More importantly, knowing how production affects functionality gives them more options and greater control over the outcome of their wines.

With fermentation control and maintenance being a key factor in wine quality, and the wine industry's inextricable connection to climate change, the question of how to bring sustainability further into cellar practices is worth asking. Each individual winemaker must determine which yeasts, supplements, fermentation styles and protocols to implement based on their specific needs, such as cellar practicality, budgets, ease-of-use, flexibility and organoleptics.

Organic yeast production, with the values of wine quality, cellar practicality and environmental conscientiousness, offers winemakers additional means to meet their winemaking needs and sustainability goals in a way that benefits not just the wine they make, but also the environment to which wine is so connected. **WBM**

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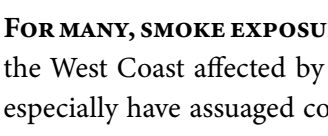
Winery-Based Approaches to Smoke-Affected Vintages

April Louis



April Louis is a journalist and LGBTQ+ rights advocate based in Napa, Calif. She started her wine career on the biodynamic Rippon Vineyard in New Zealand and ran sales programs for a variety of Pinot Noir producers in Sonoma County before moving to writing. Formerly a member of the editorial staff of *Wine Spectator*, she now freelances for a variety of publications. April is one of the few transgender members of the wine industry and highlighting diversity plays a major part in her work.

For many, smoke exposure is a dirty term, and with multiple vintages across the West Coast affected by wildfire, it's not hard to see why. Larger wineries especially have assuaged consumer concern about smoke, and in many cases good wines are still being made in challenging vintages but behind the scenes many wineries are utilizing new grape sources, repackaging their portfolios, and utilizing newer filtration methods to save fruit from at-risk vintages and smoke-impacted fruit.

Historically, premium wine has been all about location; our AVA system was set up for exactly this reason as different regions and sub-regions can bring extremely diverse expressions to similar varieties. Recent sub-AVA additions, such as the West Sonoma Coast and SLO Coast in California, further diversify the vast number and specific locations of AVAs[1]. However, in smoke-impacted vintages this kind of terroir specificity can prove challenging to produce, and to get around the issue, they may have to broaden their grape sources to several AVAs to create a viable product.

The unfortunate reality is that wine demand remains stagnant, with bulk wine sales not markedly improving—some varieties have dropped in the average price per ton across the state[2]—even in years when producers are lacking tonnage due to smoke impact. However, many bulk wine regions, particularly in California, were not hard-hit during smoke events, keeping supply relatively plentiful. Premium growing regions, including Napa, Sonoma and Oregon's Willamette Valley, have been hit the hardest in recent years, and premium region-specific producers have historically been unlikely to utilize bulk grapes and must from regions considered lesser in quality.

Yet, many larger producers are changing their grape sourcing and utilizing new techniques to remediate smoke-impacted lots before final blending to deal with the negative.

A source who worked in the cellar for Napa's Duckhorn Vineyards in 2021 told *WineBusiness Monthly* about a two-step process used to fix lots from the 2020 vintage with noticeable levels of smoke impact.

"We used an additive that contained a specific enzyme that would bind to phenolics from smoke impact events, and, after that, filtered to remove the unwanted phenolics. It was a two-step process before being allocated to a final blend," stated the source.

Using this process, Duckhorn could save wine lots that would have previously not met its standards. It's still unclear whether these processes decrease overall wine quality, and they will need to be better tested in the marketplace long-term. At the time, Duckhorn was able to save its typical single vineyard and AVA releases for the smoke-impacted 2020 vintage.

However, the early results with consumers are promising, with Duckhorn recently reporting overall sales growth and wine shipments up 3.5% in the third quarter of 2023[3]. The 2020 red wine vintage is currently on sale in the marketplace for multiple Duckhorn brands, including Kosta Browne and Goldeneye. Anecdotally, consumers seem unfazed by the vintage being thought of as problematic and possibly smoke-tainted. The wines have also been scored highly, with multiple releases rated 90+ by major reviewers[4,5,6]. If the so-called "experts" cannot pick up on any smoke taint characteristics in their tastings, why would consumers?

One could argue that this type of filtration process from a third party is unsustainable for many producers due to its cost and could make consumers weary of a winery's offerings in the long-term. But according to Anita Oberholster, an enology specialist at UC Davis, "Winemakers will ensure the quality of the wine (from the 2020 vintage) is what the consumer expects. They know that if consumers taste wine that is tainted, they won't reach for it again.[7]"

The more common approach, and possibly the more sustainable one, is what Duckhorn did for its Sauvignon Blanc release. The same source from Duckhorn's cellar told WBM that "to meet projected demand, we borrowed fruit from the Decoy portfolio to make up the difference for the 2021 vintage after a light 2020 harvest due to smoke impact and moved the labeling to the North Coast AVA."

This was one example of a strategy used by producers to create their necessary volume around smoke-impacted vintages. Producers source grapes from different areas, both to protect their releases and to increase overall margins[8]. Many premium wines now even have the California AVA designation, something that was not commonly seen in years past. Brands, such as Joel Gott, have

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led the way by producing recognizable premium wines with the California AVA on the label.

This isn't all due to just fire and loss of wine—wineries have already seen continued success with multi-region blending to increase overall quality as well. Bedrock Wine Co.'s Old Vine California Zinfandel is one prominent example, with vineyard sources from all over the state[9]. While it is an entry-level wine in Bedrock's portfolio, it is also one that is critically acclaimed and consistently high quality.

How AVA-Specific Producers Deal with Smoke

What about smaller producers and producers whose identities are tied to one specific growing area or even one specific vineyard?

In 2020 Siduri founder Adam Lee's Clarice Wine Company lost the entirety of its grape harvest to smoke as the company sources its Pinot Noir portfolio exclusively from the Santa Lucia Highlands. Lee had a unique approach to satisfying his dedicated direct-to-consumer client base—which he explained to *WBM* via email—first by making a Rhône-style wine called "ENOW" with grapes from Paso Robles. He then acquired a wholesale license and purchased some 2019 Pinot Noir from Roar Winery, being familiar with the grape quality as a consultant for Roar.

This Pinot Noir and ENOW were combined in a 50% off offering for Clarice wine club members; and while this situation was not ideal, sometimes smaller brands were forced to find creative ways to manage difficult vintages. According to Lee, Clarice was able to maintain nearly all its membership, even without releasing a single one of its usual wines. As the back label of ENOW stated, "2020 pushed us to our limits."

In Oregon, Vivianne Kennedy of Portland's RAM Cellars offered a different solution. "Depending on the level of smoke impact, limiting—or eliminating—maceration time and making lighter-bodied wines from smoke-impacted grapes lessens the impact on the finished wines. This, combined with releasing the resulting wines as soon as possible, is a solution that allows us to continue to work with fruit from impacted sites."

Smoke taint typically forms mostly on grape skins, making white wines and Rosé easier to process successfully during smoke-impacted harvests, but Kennedy stated that grapes intended for full red wine releases can be adjusted, during these events, to lessen skin contact times. While this is an impossibility for brands dedicated to store shelves and specific release profiles, it does present an opportunity for more flexible DTC-oriented brands that can sell a story to their clientele directly with a one-off wine.

All of this amounts to producers, especially those tied to one growing region, needing to be flexible during difficult vintages. This is something that can be incredibly difficult in an industry that only gets one chance per year to

produce a product, and sometimes grapes are too smoke tainted to be saved, or a producer is unable to pivot quickly enough and find alternate sourcing or production methods to save the vintage.

One last alternate way to repackage severely smoke-tainted grapes or wine comes via the high-proof alcohol industry. Hangar 1 Vodka was one example of this during the 2020 Northern California wildfires[10]. Hangar took grapes from a smoke-affected vineyard and called it "Smoke Point." This shows that sometimes the story of a natural disaster can lead to unique product stories and a repurposed grape product. The distillery describes the vodka as having unique characteristics, including notes of allspice, something uncommon for a normally neutral tasting spirit[11].

Selling winegrapes for high-proof alcohol is more commonly seen in Europe, where varieties like Airén are used in commercial alcohol production on a mass scale. In recent years, France has seen a sizable excess of grape production relative to demand, with large amounts of wine converted into industrial alcohol, mostly for use in pharmaceuticals and cosmetics[12]. While this is a last-ditch effort to fix an oversupply issue, at the very least the product does not go to waste.

All these options amount to producers needing to be flexible in smoke vintages to attempt to create a unique and attractive product for consumers. Whether that is merely solved with smoke remediation technologies, expanding product offerings or outsourcing to a different producer is a case-by-case issue. Smoke impact is always a difficult issue to deal with, especially for the long-term health of winery sales programs, but utilizing alternate packaging and blending tactics can help wineries survive these events and move forward. **WBM**

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WINEMAKER TRIAL

Pre-Fermentation Probiotics

Prep and Troubleshooting Led to Rapid Application of Biologicals to Mitigate Secondary Effects of Sunburnt Grape Clusters, Increased Microbial Load

Bryan Avila

Trials & Troubleshooting: This section sheds light on how real-world producers use their experience, scientific knowledge and systems-based thinking to evaluate new solutions for commercial-scale production. These articles provide a brief trial summary with context and an interview with the Trial Lead to help spread the word about current work occurring in the United States' wine industry. Articles spotlight new solutions coming from academia, consultants, suppliers and production teams. Bryan Avila is the co-founder of the Vintners Institute – Guild & Academy. For more information, or to share your research story, visit: *vintnersinstitute.com/trialsandtroubleshoots*

Trial Leads: The Markham Winemaking Team

Kimberlee Nicholls, winemaker, Markham Vineyards

With three decades of experience and an unwavering passion for Merlot, Kimberlee Nicholls has earned a reputation as one of Napa Valley's most respected winemakers. She is known for crafting wines of character and complexity from Markham's 260 acres of certified sustainable estate vineyards and land, spanning the valley from Calistoga to Oak Knoll. Her food-friendly winemaking style is fueled by her love of cooking and the art of pairing lovingly prepared food with artfully crafted wines. She is proud to be part of one of the few women-led winemaking and viticulture teams in Napa Valley and is involved with MAPP (Mentorship, Advocacy, Pandemic relief and the Power of women), a non-profit organization that empowers women to lead through mentorship and advocacy. She earned a degree in biology from Willamette University before entering the wine industry and ultimately joined the Markham Napa Valley Vineyards team in 1993.

Abigail Horstman, assistant winemaker, Markham Vineyards

A Bay Area native and UC Davis Enology & Viticulture graduate, Abigail "Abi" Horstman didn't have to travel far from her roots to Markham Napa Valley Vineyards. Still, the path to get there took her around the world for harvests in many different countries, including Italy, New Zealand and Israel. In her journey through various winery experiences across the globe and stateside, Horstman discovered an affinity for the boutique winemaking approach she now employs at Markham. She loves the process of creating small-lot fermentations for Markham's Marked Parcel and District Series wines and the hands-on experience she's gained with the winery's tight-knit, women-led winemaking team.

Patricia Sciacca, enologist, Markham Vineyards

As a Napa Valley native, Patricia Sciacca grew up in vineyards, watching her grandfather grow his own grapes. This inspired a passion for wine that eventually led her to study wine and viticulture with a concentration in enology at Cal Poly San Luis Obispo, where she also managed the research lab. Since joining Markham Napa Valley Vineyards in 2021, Sciacca has learned about the intricacies of Merlot and has been tasked with finding new and innovative ways to add to the winery's sustainability efforts.

THE PROBLEM:

During 2022's Western heatwave, record high temperatures reached 114°F at the Napa State Hospital on Sept. 6, 2022. Extreme highs like this damage the grape tissue and can cause splitting, exposing their nutrient-rich juice. Sweet and sticky clusters are a welcome mat for hungry, native microflora and fauna. The secondary infections that set in, after the fruit gets damaged, are often the greatest cause for alarm. They create conditions, including summer bunch rot, that allow oxidative bacteria and yeasts, such as *Gluconobacter* or *Kloeckera apiculate*, to flourish and produce acetic acid and ethyl acetate, aka vinegar and nail polish aromas. Winemakers are acutely aware that conditions like these lead to high volatile acidity (VA) and stuck fermentations, creating a snowball effect of problems in the cellar, including sluggish and stuck ferments.

TROUBLESHOOTING STRATEGY:

The Markham winemaking team thought to preempt widespread VA issues by implementing use of a biological. One such regimen, Laffort's ZYMAFLORE® ÉGIDE™, consists of *Torulaspora delbrueckii* (TD) and *Metschnikowia pulcherrima* (MP)—non-*Saccharomyces* yeasts—and is promoted by Laffort to help out-compete the native microflora for the damaged grape's exposed nutrients. Traditional use of sulfite additions alone to control unwanted microbial blooms may lead to other issues, such as sulfide production, inhibition of malolactic fermentation and high total sulfite levels, which can affect flavor.

THE DECISION:

Laffort's ÉGIDE was used to prophylactically handle the additional microbial load of the sunburned grapes. This heat spike fast-tracked what may have been a multi-year project into a result that fortunately kept sulfurs low during extreme conditions. Thanks to Laffort's Rendezvous event, Markham's winemakers had already selected their non-Saccharomyces biological control product to reduce the need for SO_2 during vinification. The winemaking team made the decision to keep to the standard sulfite addition rate and supplement with a dry pitch inoculation of 22 g/L to all incoming fruit clusters.

PROCESS VALIDATION:

This decision was based on a blend of intuition and an understanding of the science at play. That said, sometime during the flurry of incoming grapes, the Markham winemaking team was analyzing the production data for evidence that the decision was working in the manner intended. In this case, it meant double-checking the vendor's claims with some

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numbers to show that things were functioning as predicted despite the nature-induced decision of a blanket-level product implementation. The Cabernet Sauvignon coming in from Markham's Yountville Ranch Vineyard provided reassuring feedback that the team had made the right decision.

FEEDBACK SAMPLE SET:

- CONTROL (Early Pick): No biological addition
- TREATMENT (Later Pick): Dry-Pitched ÉGIDE

The first lot was a no-addition control, and the lot harvested two weeks later was treated with the biological: both wines were made using the same production protocols. Enologist Patricia Sciacca had the following observations:

"This is a side-by-side fermentation kinetic chart (**FIGURE 1**) of Cabernet Sauvignon from our Yountville Ranch. Both were mechanically harvested. No cold soak on either tank. Brix was run via Anton Paar DMA 35, and VA was run using the Admeo Y-15 Acetic Acid. The ÉGIDE negative lot was picked on Sept. 15, 2022, and had a starting VA of 0.21 g/L.

"The ÉGIDE-positive lot was picked on Sept. 28, 2022, and had a starting VA of 0.21 g/L. The ÉGIDE-positive tank finished fermentation in 15 days (the average for Markham is about 12 days). The ÉGIDE-negative tank stalled at about 4° Brix. The tanks were pressed together on Oct. 13 and allowed to finish primary fermentation prior to malolactic inoculation." Notice how the lot with ÉGIDE added was harvested two weeks later and yet, by Oct. 13, had a lower RS/lower VA. ÉGIDE proved to be an effective biocontrol for Markham's purposes.

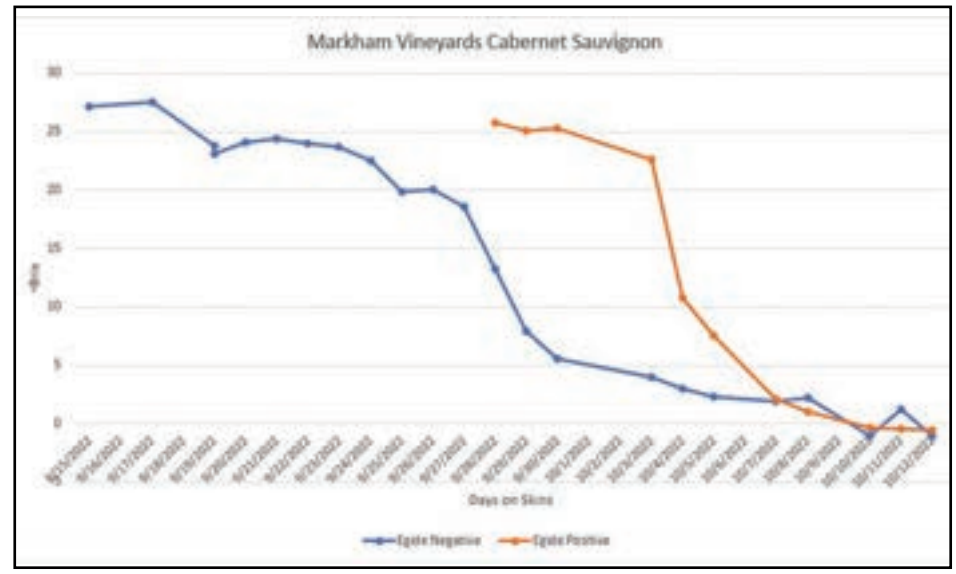

FIGURE 1: Two Cabernets from the same vineyard block differ in harvest date and ÉGIDE treatment. Note, the ÉGIDE-positive lot that was harvested later finished with lower VA, lower residual sugar (RS) and in less time.

Post-Mort Q&A

What was the motivation to use biologicals and why did you choose Laffort's ZYMAFLORE® ÉGIDE™?

After a nasty heat spike, we anticipated some fruit damage and began combatting VA on our fruit immediately. Fortunately, we went to Laffort's Rendezvous event, where they introduced all their current research, trials, and new products. We decided to try their non-*Sacc*, biological control product called ÉGIDE. There is always going to be some level of crazy. We are happy to see that there are tools out there that help us handle whatever crazy event each vintage will throw at us. They spoke about it as a dry pitch on fruit to lower the initial sulfur hit. Once we got wind of the widespread heat spikes, resulting in elevated VAs, we went "all in" and added VA to our incoming juice panels and began adding ÉGIDE on the fruit. Like with the Frank's Red Hot sauce commercial, "We put that shit on everything."

“When I was given the opportunity to collaborate and learn about barrels and wood from such an experienced team, I thought: why should I not do it?! Only progress can come from that.”

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Comparison	Egide Negative		Egide Positive	
Pick Date	9/15/2023	Starting VA: 0.21 g/L	9/28/2023	Starting VA: 0.21 g/L
Press Date	10/13/2023	Ending VA: 0.35 g/L	10/13/2023	Ending VA: 0.25 g/L
		RS: 6.1 g/L		RS: 2.32 g/L

Which grape varieties did you implement this practice on? Why did you pick those?

We put it on all our fruit varieties because we knew that they had all been through the heat spike. We started putting it on white grapes; then once the reds started coming in, they got some too.

How did you evaluate your decision to implement the addition of probiotics? What parameters did you measure?

Since we already expected that sunburned grapes can lead to dry, cracked skins followed by rapid spoilage, we needed to formulate a plan. It's traditional to add significantly elevated amounts of sulfites; however, we decided to keep our sulfide usage low and used biologicals to help ward off spoilage. We ended up using Laffort's ÉGIDE yeasts directly to harvested fruit clusters, as a dry pitch, with an add rate of around 20 grams of dry ÉGIDE per ton of grapes.

Following the heat spike, just about everything was ready to pick. We did not have the convenience of setting up an experiment: we just had to come up with a game plan and go. We had not previously measured VA on incoming fruit in the past, but we needed to implement some more visibility into this system. We began measuring initial VA, fermentation time and final VA for each lot code. During this influx of grapes, we were able to isolate a few blocks that we thought could provide some insights into what was going on in this system. We set out to collect some comparative numbers.

Who else worked with you on this trial?

Jillian Johnson-DeLeon of Laffort is our sales rep and our friend. She has been a great resource for us on this and is a great resource. Kim Oshiro was our harvest intern who's also a Master of Wine student and later linked us with her contact at *WineBusiness Monthly* to help spread the word.

What were you and your team's initial thoughts on the use of a biological instead of a traditional dosage of elevated sulfites in high microbial-load fruit?

This product seemed like a good way to work with nature and not against it. We were excited for a reduced SO_2 solution, but we were a little skeptical if it would work. Our hope was that we could keep our standard sulfite levels and just add ÉGIDE to minimize oxidative spoilage during the lag phase of the fermentation.

Did you encounter any difficulties during the trial? If so, how did you address these complications?

Not really, it was pretty easy. We knew how many grapes were coming in. In the morning, we would just weigh it out dry then add it to their corresponding vineyard blocks as they came in. The hard part was finding two comparative lots to help determine the validity of the decision. We settled on a Cabernet Sauvignon block from our Yountville Ranch.

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How did you evaluate or measure the effectiveness of the application(s)? What was the most important outcome of the trial that growers/winemakers can use?

Outside of the first few lots that came through, we didn't have very many high-VA lots.

We had planned on running a trial this vintage to reduce SO_2 usage; but once the big temperatures started coming, we implemented it immediately at the production scale. We heard several stories about elevated VAs on incoming fruits and in the resulting wine, but we were not experiencing that. We attributed it to our proactive use of ÉGIDE but needed to verify our decision to better understand it. Acetic acid is not found in healthy intact fruit; so, once we implemented our juice VA screening of incoming lots, we quarantined high-VA lots to keep a close eye on them.

One thing that we noted was that while all the wines eventually finished fermentation, NONE of the lots that we added ÉGIDE to stayed on the Q-list for very long, not even any sneaky peaks in VA even after pressing.

Were the results as you predicted or did anything unexpected occur?

The results were better than we could have hoped. I didn't expect such great success with this.

What was the team's impression of the resulting wines made using the ÉGIDE treatment?

For one, none of the wines had any VA to worry about given the extreme weather event. However, on the resulting wines, we did not detect any microbial issues—no yeasty or microbial qualities despite the non-Sacc yeast present. We were happy with the outcomes.

What are your next steps for this technology?

We look forward to gaining other efficiencies using biologicals. We are hoping that ÉGIDE can perhaps help us reduce water usage, equipment sanitization time and use less sulfites in the wine. Next year we are considering spraying 5% solutions on our fruit and harvesters in the vineyard. Since they recommend making a fresh batch every day, we are thinking about distributing them to the vineyard manager to spray it on the harvesters. ÉGIDE should provide a probiotic-like effect that would help to ensure better sanitation and use significantly less water. **WBM**

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Dealing with compromised fruit in the winery: *winebusinessanalytics.com/sections/printout_article.cfm?content=136671&article=feature*

Summer Bunch Rot: UCIPM - *ipm.ucanr.edu/agriculture/grape/summer-bunch-rot-sour-rot*

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Be Prepared: The Spotted Lanternfly is Moving West

We've Learned a Lot, but There's Still Much to Learn

Cain Hickey, Flor E. Acevedo, Michela Centinari, and Claudia Schmidt

The authors are faculty and extension specialists at Pennsylvania State University, College of Agricultural Sciences. **Cain Hickey** is a viticultural extension educator; **Flor E. Acevedo** is assistant professor of entomology/arthropod ecology; **Michela Centinari** is associate professor of viticulture; and **Claudia Schmidt** is assistant professor of marketing and local/regional food systems.

Editor's Note: *Have you ever seen a spotted lanternfly? If you live west of the Mississippi, in the cold areas in the Midwest or the warm climates in the South, the answer is probably "no," unless you grow grapes and follow news about what is happening in vineyards across the country. However, it is quite possible that this invasive species may manage to find its way to vineyards in California, Oregon, Washington and other grape growing regions, and growers should be prepared so they know what they are facing and how to cope with it.*

THE SPOTTED LANTERNFLY (SLF) was first found and identified in southeastern Pennsylvania in 2014. Officially referred to as a planthopper, both nymphs and adults can jump 4 to 6 feet and farther than that in repetitive jumps. More important is the fact that they're also hitchhikers. They are native to China, India, Japan and Vietnam, and probably arrived in Pennsylvania on a ship loaded with cargo from one of those countries. SLF will hide themselves (or lay their eggs) on trains, trucks and cars, or on products that are being transported. In Virginia, SLF was first seen in January 2018 in a stone yard in Winchester that was adjacent to a railroad, as well as highways going from Pennsylvania to Virginia along the Appalachian Mountains. To date, the only SLFs that tried to get to California were dead when they arrived in San Francisco by airplane.

Since their accidental introduction to Pennsylvania in 2014 and despite quarantine efforts there, SLF populations are currently established in 51 out of 67 counties in that state. The insect has also spread to 13 additional states: Maryland, New Jersey, Delaware, Virginia, West Virginia, New York, Connecticut, Rhode Island, Massachusetts, Ohio, Michigan, Indiana and North Carolina.[1]

Basic SLF Information

Life Cycle: Spotted lanternfly has one generation per year, and its rate of development is affected by temperature and the host plants it feeds on (FIGURE 1). Under the environmental conditions of Pennsylvania, first instar nymphs emerge from May to June; second through fourth instar nymphs develop in June and July. Adults start emerging in late July and lay eggs between September and the first fall frost of the season. Adults die with freezing temperatures, but their eggs survive winter and hatch the following spring.

Distribution Within the Vineyard: Egg masses can be found on a variety of surfaces. In the vineyard, they are commonly found on vineyard posts, trunks and cordons (FIGURE 2). First instar nymphs hatch in the spring, often shortly before bloom. Nymphs hatch in and out of the vineyard. In the

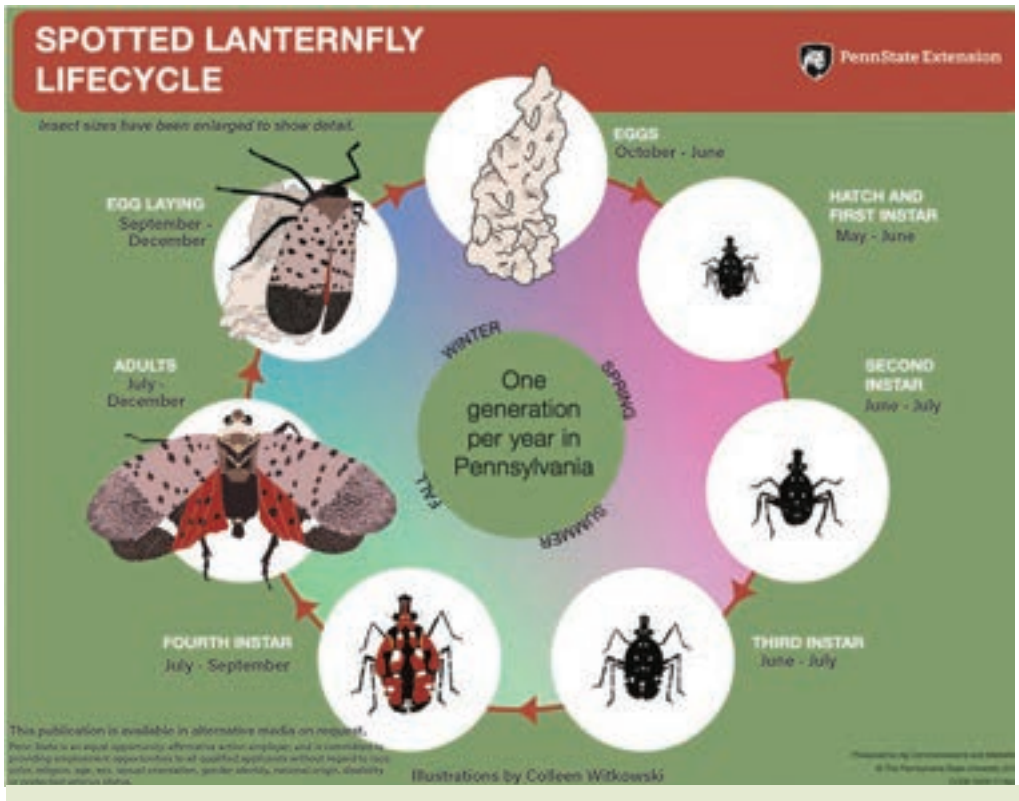

FIGURE 1: The spotted lanternfly has a one-year lifecycle; first instars hatch in May-June, developing into adults during the summer and laying egg masses in the fall.

FIGURE 2: SLF egg masses on metal posts in the spring, when hatching occurs

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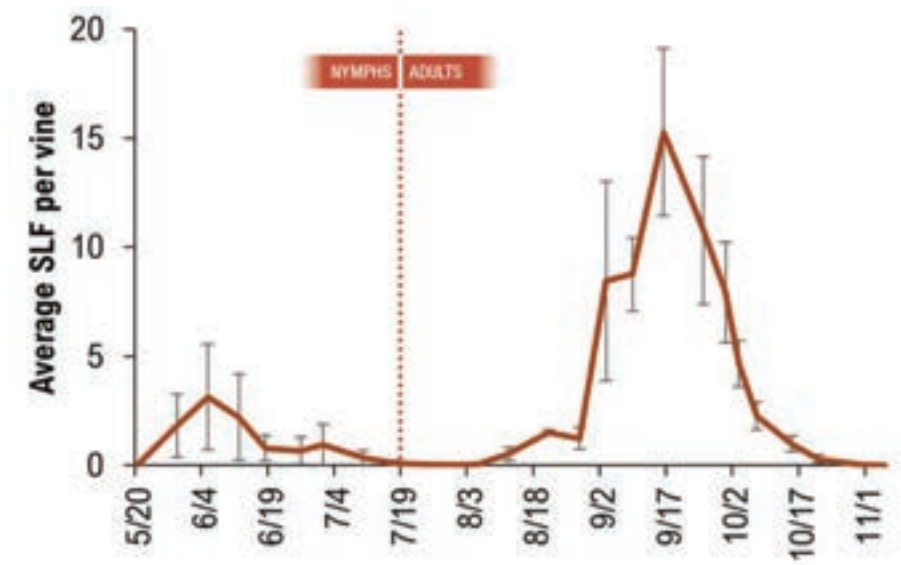
FIGURE 3: After hatching, nymphs crawl on the underside of grape leaves.



HEATHER LEACH, ADAPTED FROM PENN STATE EXTENSION

FIGURE 5: This graph shows the average number of SLF per vine from 2018 to 2020 across eight different vineyards in Berks County, Pennsylvania. The adult population peaked in mid-September in these cases.

vineyard, first instar nymphs can be found crawling on posts and grapevines, specifically on the shoots and undersides of leaves (FIGURE 3). Throughout summer (approximately from fruit set through veraison), second through fourth instar nymphs can also be found feeding on vegetative, succulent grapevine tissues of the canopy.

The population density of nymphs will vary throughout the growing seasons, depending on the number of egg masses from the previous season and the timing and effectiveness of insecticides. Adults feed mainly on shoots in August and September, but later in the season, early fall and onward, they are mostly found on cordons and trunks (FIGURES 4A & 4B). Many adults and egg masses are on vineyard edges, approximately 40-60 feet in from end posts. "Edge feeding" is not exclusive, however, and routine scouting is important to ensure that adults are identified and managed throughout the entire vineyard.

In summary, SLF can be found in vineyards from May (pre-bloom) through October/November (post-harvest), with peak adult numbers occurring in September and October in Pennsylvania (FIGURE 5). A recent series of industry surveys reported that adults persisted in Pennsylvania vineyards from mid-September through mid-November.[2] However, the number of vineyards that reported adult SLF presence tended to decline in late October and November.

FIGURE 4a: Adult SLF on a grapevine cordon.

FIGURE 4b: Adult SLF on a grapevine trunk.

Discoveries in the Vineyard

Recent Vineyard Research: Spotted lanternfly feeds on many plant species but is particularly detrimental to grapevines and tree of heaven where heavy infestations have resulted in plant death. Erica Laveaga, Kelli Hoover and Flor E. Acevedo, researchers in the department of entomology at Pennsylvania State University, recently reported in *Frontiers in Insect Science* that SLF can complete development and reproduction when feeding exclusively on cultivated Concord (*Vitis labrusca*) grapevines, but development was slower, mortality was high, and oviposition was severely reduced.[3] The study also found that insects that fed on a mixed diet of Concord grape and tree of heaven (*Ailanthus altissima*) had faster development, higher survival, greater reproduction and higher adult body mass than those that fed exclusively on either Concord or tree of heaven.

These results agree with other studies in that tree of heaven plays an important role in spotted lanternfly fitness.[4, 5] Another recent study carried out by Johanna E. Elsensohn and colleagues at Appalachian Fruit Research Station in Kearneysville, West Virginia, and one colleague at Penn State, found high survival and fast development of SLF feeding on Riesling grapevines as single hosts or in combination with black walnut or tree of heaven, but fecundity was not measured in the study.[6] Collectively, these studies suggest that not all grapevine cultivars appear to be equally suitable for SLF development. *Vitis vinifera* cultivars seem to be better hosts than *Vitis labrusca* (Concord) and *Vitis rotundifolia* (Muscadine).[7] It is well accepted that SLF can reach adulthood and reproduce without tree of heaven. Access to mixed diets improves insect fitness, but the effect of mixed diets that exclude tree of heaven has shown low female fecundity.

Michela Centinari's lab at Penn State recently published a study to determine the effects of SLF feeding on grapevine physiology. This two-year study, which was conducted with field-established Riesling grapevines, found a reduction of starch and nitrogen concentrations in roots by the end of the growing season and a decrease in fruit-soluble sugars at harvest with increasing adult SLF densities (number of insects per plant). Extensive exposure to SLF reduced leaf carbon assimilation, transpiration and stomatal conductance in grapevines.[8] These results suggest that prolonged exposure of grapevines to high SLF feeding densities affects important plant physiological parameters within a single season of infestation, which could impact grapevine growth and health in the following years. There is likely going to be variability in the responses of different grapevine cultivars to SLF feeding, but this study improves our understanding of the mechanisms by which lanternflies affect grapevines.

Current and Future Research in Vineyards: Currently, the Acevedo, Centinari and Kwasniewski laboratories at Penn State University are working together to estimate SLF action thresholds for *Vitis vinifera* cultivars. The team is infesting mature Chardonnay and Cabernet Franc grapevines with increasing numbers of SLF nymphs and adults to determine their effect on yield parameters, juice and wine quality, and grapevine health.

The estimation of action thresholds is critical for the industry as it will help guide growers on the appropriate insect densities that need to be targeted to avoid economic loss. Economic thresholds are the basis of insect pest management programs, and their use leads to a more efficient application of pesticides, higher economic benefits to growers and reduction in pest populations. However, the estimation of action thresholds isn't straightforward due, in part, to the multiple factors that influence crop yield and wine quality, such as cultivar type, vine age, vine health status, insect feeding time, experimental site and weather patterns, etc.

The Acevedo lab is also doing basic research to understand the fundamental mechanisms by which SLF affect grapevines. These studies are using state-of-the-art techniques to identify genes and proteins involved in the synthesis of molecules in the insect that can trigger defense responses in grapevines. A better understanding of these mechanisms may help improve management practices.

Industry Perspectives

The most threatening life stage of SLF–the adults–is most persistent around harvest time. Thus, in addition to the "typical" chaos of harvest, controlling adult SLF and reducing its feeding time is an added logistic to a vineyard manager's already extensive "to-do list."

While the time and money required to apply extra insecticides are burdensome, the "time factor" may be particularly important during the busy harvest season. Additional considerations of developing an effective insecticide program are: (1) implementing frequent insecticide class rotations, (2) abiding by label-mandated seasonal maximum application amounts and (3) abiding by label-mandated pre-harvest intervals.

In a survey conducted in 2022 by Dr. Claudia Schmidt, former SLF extension associate at Penn State Heather Leach and other members of the Penn State extension, including Centinari and Hickey, grape growers and winery owners were asked a series of questions concerning SLF impacts on their vineyard and/or winery enterprise. In that survey, respondents noted that on average, two to six extra insecticide applications were needed during severe SLF infestations, and up to 10 were necessary to manage extreme infestations. One respondent commented, "The biggest loss is the money required to spray constantly to keep the population of SLF under control."

Over 75% of survey respondents "agreed" or "strongly agreed" that SLF populations are a significant threat to grape production in their state, both currently and within the next five years.

However, to put the threat of SLF into context, growers and winery owners reported that other industry issues remain of greater concern, such as management of diseases and labor availability for vineyards, labor issues and consumer perception of wineries.

Another economic impact is that some vineyard owners have been hesitant to replant after SLF damage or to expand in general. One survey respondent noted, "(I am) waiting to see how bad it's going to be before expanding."

Another survey respondent commented, "SLF threat is (a) moderate contributor to delay in small expansion. (The) major contributor is material/labor expense."

Based on our recent observations, we are happy to report that Pennsylvania grape growers have resumed planting new acreage throughout counties within the SLF quarantine area.

Management Options for SLF Control

Control Measures/Management Options: We recommend proactively scouting for SLF throughout the growing season, from SLF first instar nymphs through the adult stage, and apply management tactics when populations are present. Resources for learning to properly identify the different insect stages (eggs, nymphs and adults) are available online.[9] Growers should start by inspecting vineyard edges and tree of heaven, when present on the property, and then proceed throughout the rest of the vineyard. It is also important to scout vegetation surrounding the vineyards.

A study carried out by Ashley Leach and Heather Leach found a high proportion of SLF adults and egg masses in the first 100 feet of vegetation surrounding vineyard plots.[10] These areas serve as reservoirs for the insect, increasing the challenge to control this pest. Scouting can be done by inspecting vegetation and using traps wrapped around the trunks of tree of heaven, walnut or willow trees. Details on how to build circle traps are available online.[11]

Biological Control: The use of microbial agents and natural enemies for SLF control is currently under study in different research laboratories and institutions. Generalist insects and vertebrate species have been found to prey on SLF, including praying mantises, wheel bugs, birds, etc. Dr. Kelli Hoover's lab at Penn State is currently conducting research that aims to identify natural SLF predators and their predatory capacity.

Cultural Control: Cultural control measures, such as egg scraping, netting (perimeter around vineyard borders and/or around vines) and trapping, may make sense on a small scale. However, these tactics are less practical and can be cost-prohibitive in commercial production situations. Eliminating tree of heaven continues to be a recommended practice for SLF control until research demonstrates otherwise. Tree of heaven is an invasive species and is the insect's preferred host. As explained above, SLF fitness is greatly reduced in the absence of this plant.

Chemical Control: Managing SLF with insecticides can be done in a variety of ways. Some growers will "tank mix" and spray the insecticide throughout the entire vineyard. Some will spray the vines on the borders of the vineyard, and some will implement a combination of these tactics, depending on the time of season and the relative pressure observed when scouting. Regardless of the method(s) used to apply insecticides, the current list of insecticides recommended for SLF management can be found online. (NOTE: Refer to current labels and regulations before using pesticides.)[12] Vineyard managers should note that Chlorpyrifos (commercially named as Lorsban and Warhawk) is no longer recommended for controlling egg masses. In February 2022, the United States Environmental Protection Agency revoked all food tolerances for chlorpyrifos; as a result, the use of chlorpyrifos is no longer allowed on crops grown for food or feed purposes.

Some growers may target nymphs with insecticides while others may manage nymphs when they tank mix an insecticide to target other vineyard insects, such as grape berry moth or Japanese beetles. We suspect that there is no relationship between the number of nymphs in the vineyard in spring and summer and the number of adults that will appear in the fall of the same season. Hence, optimal nymph control, during the growing season, doesn't necessarily mean that the number of adults will be reduced in the fall of the same season as the adults tend to enter the vineyard continually in late summer and fall from perimeter areas. Consequently, repeated insecticide applications are often needed to control adults throughout late summer and fall as they re-infest vineyards.

More to Know

University specialists beyond the vineyard from the Penn State Extension and College of Agricultural Sciences continue to engage in SLF research and education. Regional university specialists from the northeastern U.S. are becoming more involved in SLF research and education as the pest continues to spread into several states.

SLF research, education and information exist outside the vineyard, and we encourage readers to explore other resources offered beyond those focused on vineyard management (*extension.psu.edu/spotted-lanternfly*). While we know considerably more about SLF than we did nine years ago, there is still much to learn about this invasive pest. We look forward to helping grape and wine industry stakeholders make the best management decisions possible given the limitations of our current understanding of science and SLF research. **WBM**

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VitisGen3 Variety Trial Enhances Biopesticide Management

Richard Carey

There is a reason that many articles are being written about biopesticides these days: across all sectors of agriculture, we are seeing diminishing disease control via conventional fungicides as pathogen populations become more resistant. Compounding the issue is the reduced number of conventional materials in the pipeline due to the cost of development, slow registration pathways, and environmental concerns. New suppliers of non-conventional agents, such as biopesticides, have been looking for new and improved ways to combat plant pathogens to reduce the need for traditional chemical control, lengthen the useful lifespan of conventional solutions, while reducing the overall environmental impact of vineyard disease management.

The Green Revolution introduced chemical herbicides, insecticides, and fungicides into the grower's arsenal that dramatically improved global food security. These chemistries were powerful, effective, and reasonably inexpensive. In the years since, we have come to understand their significant environmental and human health consequences. Environmental regulations have put greater scrutiny onto the commercial development process and pipeline and have slowed the speed of development while increasing its cost. With fewer new compounds coming onstream, vineyard managers are looking for alternative materials to protect crops.

Dr. Katie Gold, assistant professor of grape pathology at Cornell Agritech, part of Cornell's College of Agriculture and Life Sciences (CALS), and David Combs, Cornell Grape Pathology research support specialist, have been testing the efficacy of several newly released biopesticides on wine, hybrid, and juice grapevines since 2020. The Gold lab team has made several presentations over the last few years about their work. In December 2021, Alice Wise, viticulture specialist with Cornell Cooperative Extension on Long Island, published a report on a project that evaluated one of the earlier biological pesticide products, Regalia, in combination with Stargus, regarding the success of these products on grapevines in Suffolk County, New York.[1]

Cornell Grape Pathology's latest project is funded by the USDA NIFA SCRI VitisGen3 project, which will support the evaluation of several disease-resistant varieties under conventional and biopesticide management programs in commercial-style production. The grant, awarded in 2022, is the third in this series focused on breeding powdery mildew-resistant grape varieties. These new trials mark the first time VitisGen-developed varieties will be evaluated in the field under commercial-style management. More information about the VitisGen3 project is available at *vitisgen3.umn.edu/about-vitisgen3*.

Scientists and grape growers have known that relying too heavily on conventional pesticides leads to an increase in pest resistance to those products. Mutations occur naturally within all organismal populations, including plant pathogens, and sometimes one of those randomly occurring mutations confers increased fitness, such as fungicide resistance. These mutations can impart partial or total resistance to a compound used to control the pest, and then quickly propagate throughout the entire population due to the increased survival likelihood the trait confers.

Integrated Pest Management (IPM) is a management philosophy developed in reaction to the Green Revolution and the environmental impact of pesticides developed during that time. The goal of IPM is to create protocols to reduce the amounts and effects of conventional pesticides through systems thinking.

Recently, IPM has undergone a revitalization and update in its strategy and implementation. An article in *Evolutionary Applications* (2020) provides insight into the newer implementation of IPM.[2] The authors present the concept of an evolutionary framework for the foundation of the IPM structure, a change that will encourage testing the efficiencies of control measures and predict long-term consequences of any measures taken on the specific ecosystems in which they are used. The prior protocol of IPM was based more on reaction to a problem presented, while the new protocol will anticipate the problem and develop preventative measures.

These authors emphasize that environmental resistance is part of a normal mutation. However, in an agricultural setting, where the maximization of certain traits is paramount for production demands, including quantity, resistance traits have either consciously or unconsciously been lost from many commercial varieties. The VitisGen3 project is specifically designed to deal with this problem as part of an integrative solution to reduce the reliance on

TABLE 1: BIOPESTICIDE CLASSES

1. **Biochemical pesticides** are naturally occurring substances that control pests by non-toxic mechanisms. Biochemical pesticides include substances that interfere with mating, such as insect sex pheromones, as well as various scented plant extracts that attract insect pests to traps. Because it is sometimes difficult to determine whether a substance meets the criteria for classification as a biochemical pesticide, EPA has established a special committee to make such decisions.
2. **Microbial pesticides** consist of a microorganism (e.g., a bacterium, fungus, virus or protozoan) as the active ingredient. Microbial pesticides can control many different kinds of pests, although each separate active ingredient is relatively specific for its target pest[s]. For example, there are fungi that control certain weeds and other fungi that kill specific insects.
3. **Plant-Incorporated-Protectants** (PIPs) are pesticidal substances that plants produce from genetic material that has been added to the plant. For example, scientists can take the gene for the Bt pesticidal protein and introduce the gene into the plant's own genetic material. Then the plant, instead of the Bt bacterium, manufactures the substance that destroys the pest. The protein and its genetic material, but not the plant itself, are regulated by EPA.

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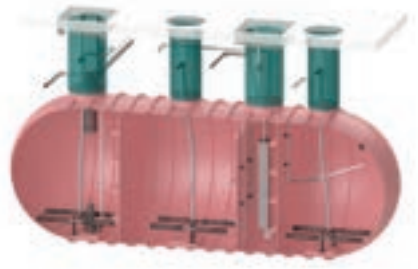

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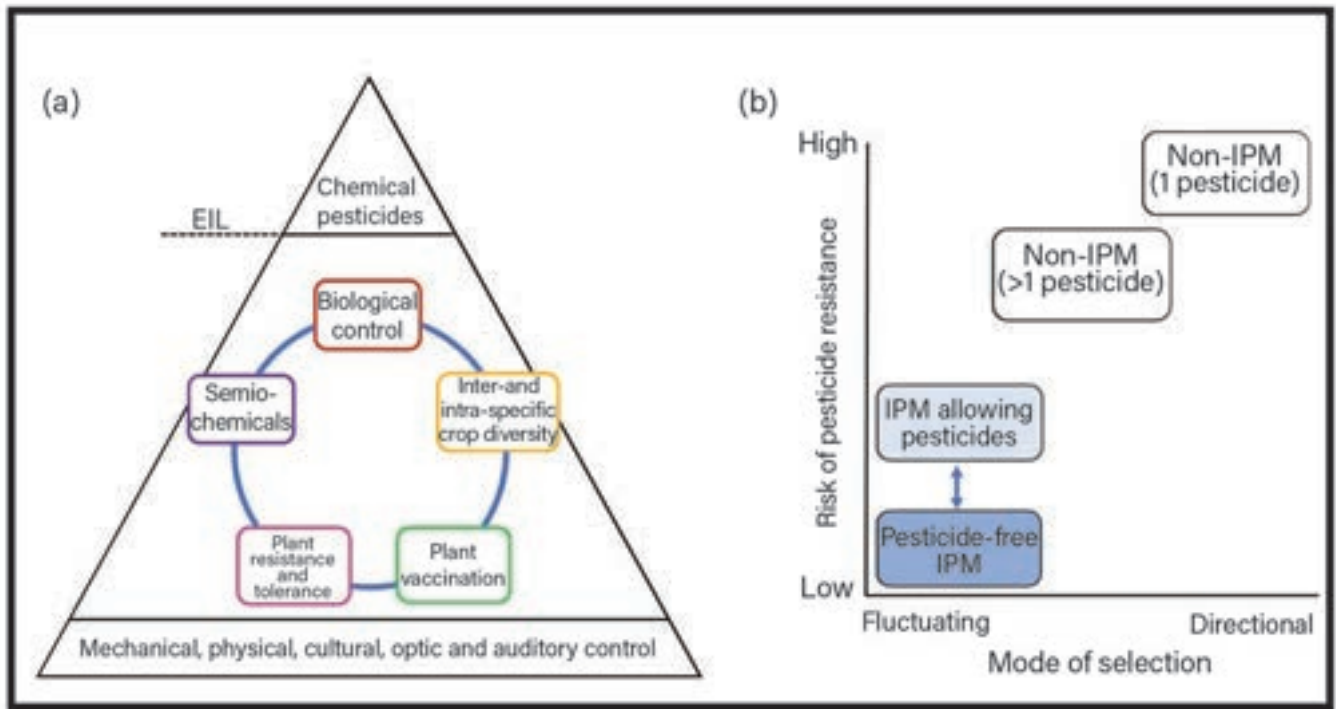

FIGURE 1: These diagrams show the importance of prevention and that it's an evolving process.

(a) Sustainable pathogen control begins with prevention based on disruption and delay of attack of the host. The more time, the more avenues, the more the plant can overcome the pathogen with its own defense mechanisms to keep a crop below its economic injury level (EIL).

(b) Varying non-pesticide measures, coupled with propholactic biopesticides, results in a longer delay and the lower amount of the final arrow in the quiver – conventional pesticides.

conventional pesticides via increased innate disease resistance and optimized chemical control.

A strong push is now underway to educate grape growers about the necessity of embracing IPM strategies—with the additional emphasis on prevention—to benefit grape growers worldwide. The May 2023 issue of *WineBusiness Monthly* included an article by Dr. Pam Marrone, owner of Invasive Species Corporation. Her article, "New Biological Products Prove More Effective, Meet Sustainability Needs," (the first in a series of articles) is an in-depth article that includes a good description of many of the biological pesticide product types and their modes of action.

Update on Biopesticide Research

Cornell's VitisGen3 field trials evaluate how coupling resistant varieties with biology-driven disease management and biopesticide-focused management programs will improve sustainability in the U.S. wine and grape industry. Some, but not all, biopesticides are listed by the EPA as organic. Organic Materials Review Institute (OMRI) approval, the means of acquiring an organic label, is a separate registration pathway from EPA registration. According to the EPA, there are three classes of biopesticides:

1. Naturally occurring biochemical pesticide substances that control pests by non-toxic mechanisms from plant, animal, mineral, microbial

Biochemical Pesticides Class 1

1A Romeo

1B EcoSwing BOTANICAL FUNGICIDE

1C

1D OSO FUNGICIDE

Microbial Pesticides Class 2

2A STARGUS BIOFUNGICIDE

2B Double Nickel LC

2C

2D

2E LIFEGARD BIOLOGICAL PLANT ACTIVATOR

TABLE 2: Two of the three EPA classes of biological pesticides are important for grapevines and are some of the more common biological and microbial pesticides on the market. The following list gives the brand names of the companies that sell them:

1A – Wilbur-Ellis Agribusiness – *www.wilburellisagribusiness.com*
1B - Gowan Company – *www.gowanco.com*
1C, 2A – Pro Farm Group – *www.marronebio.com*
1D, 2B, 2E – Certus Biologicals – *www.certusbio.com*
2C, 2D – AgBiome – *www.agbiome.com*

or other origin. In terms of grape disease control, the most common biochemical pesticides are plant extracts and microbial extracts.

2. Microbial pesticides consisting of microorganisms (a bacterium, fungus, virus, or protozoan) as the active ingredient. The subcategory of biofungicides describes formulations of living organisms used to specifically control the activity of plant pathogenic fungi.
3. Plant Incorporated Protectants (PIP) that are genetically incorporated into a plant's genome to ward off attacks to a plant (**TABLE 1**).[3] These are uncommon in plant disease control.

The New York Grape and Wine Foundation sponsors the B.E.V. NY conference every winter. In her 2022 presentation at this conference, Gold emphasized that the industry is going to need to rethink their current standards of practice given the reality of increasing fungicide resistance in pathogen populations. Gold conceptualized vineyard fungicide resistance management as a house, encouraging vineyard managers to consider knowledge of the risks and problems faced in the vineyard as the foundation of their disease control programs. The pillars of the house are early detection and proactive prevention. This is the prevention part, and the place where most of the work needs to be focused. Biopesticides play an important role in proactive prevention of fungicide resistance development. Integrating biopesticides into disease management programs can reduce the overall use of conventional chemistries while retaining satisfactory disease control, thus slowing resistance development by reducing selective pressure for fungicide resistance (**FIGURE 1**).

VitisGen3 Variety Trial Enhances Biopesticide Management

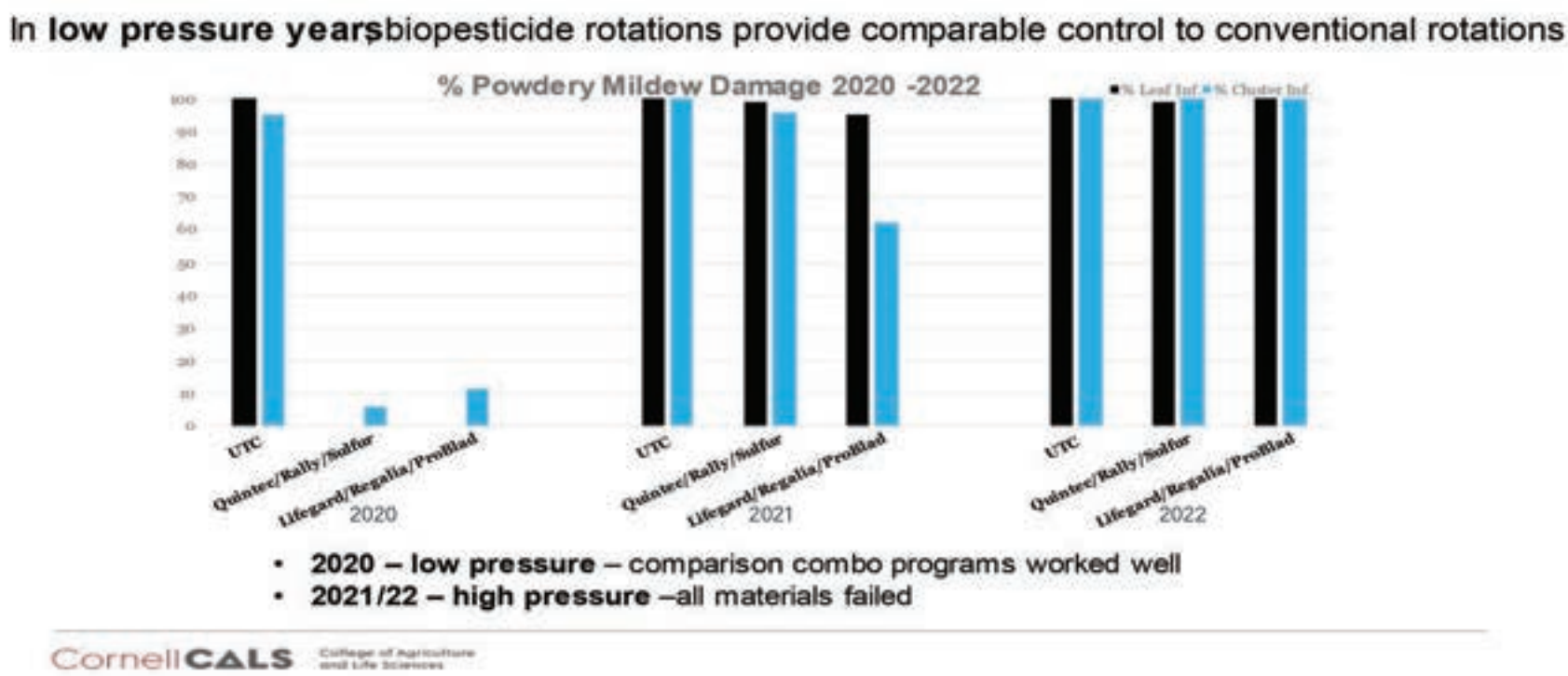

FIGURE 2: Biopesticide rotations provide comparable control when a low pressure year (2020) for control of powdery mildew is compared to a high pressure year (2021/2022).

Biopesticides have been present for years; but until now they have not been adopted as a significant percentage of the pesticides used. Today, they are the fastest segment for growth in the grapevine sector and represent 5% of the global market.[4] Some examples are:

1. Regalia (formerly Milsana) is an extract of giant knotweed. Coupled with benzothiadiazole (BTH), it was commercialized in 1990 for powdery mildew protection. However, subsequent BTH was discontinued due to lack of efficacy.

2. Romeo is another plant extract that is a foliar application made from yeast. It was discovered in 2006 and was released into the European market by Lesaffre in 2017/18.

3. Lifegard WG is a defense-activating biofungicide which has a unique mode of action amongst fungicides: it acts upon the plant to activate innate defense, rather than upon the pathogen.

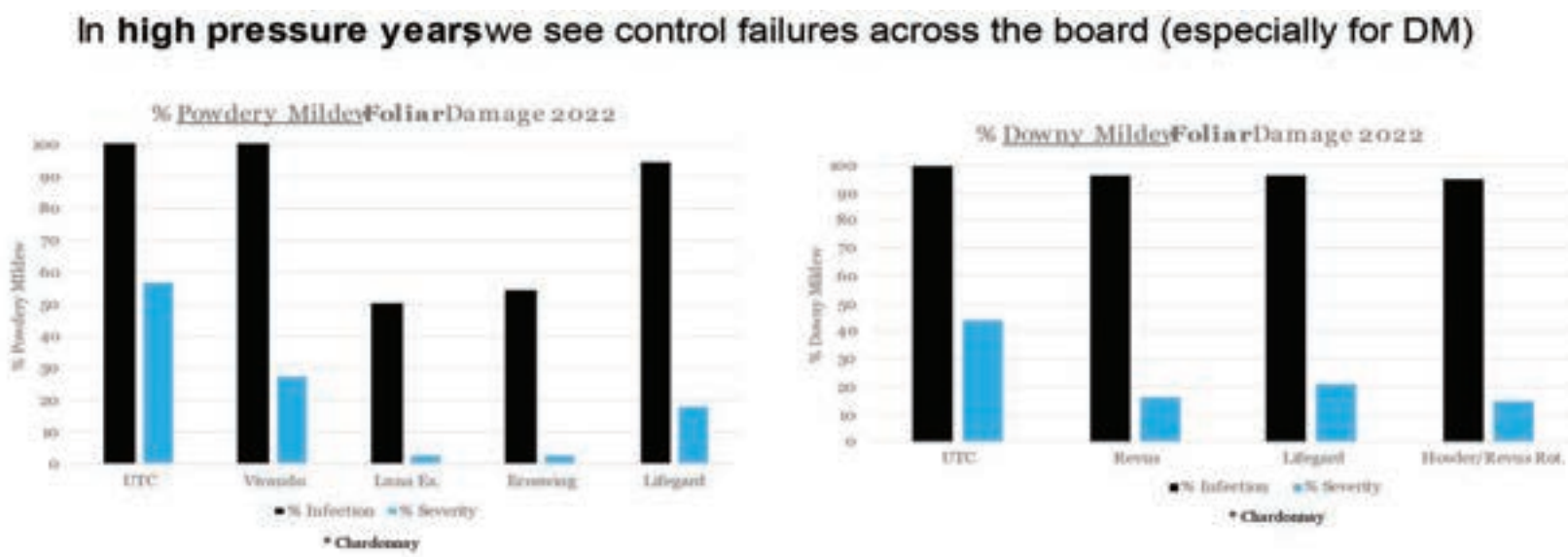

FIGURE 3: On foliar sprays, biopesticides show a pressure dependence that is better on powdery mildew than for downy mildew infection. Both diseases show that their efficacy is challenged by the pressure of infection.

4. Pseudomonas chlororaphis is the active ingredient in the Howler biofungicide.

Demand for these products has grown significantly in recent years.

Currently, the EPA has registered 390 compounds listed as biopesticides. Producers of these biological materials are scavenging for natural products that can have utility against processes or organisms that reduce the target plant's ability to grow and to produce a high-quality crop. There is a much lower threshold to get the new biological products to market, because the environmental risk and the health and safety of the products are much less of a concern for regulatory departments. Several of the more common biopesticides and their primary class of action are shown in **TABLE 2**. Two articles are available online for more in-depth information on biological pesticides, plant protectants, and insecticides.[5, 6]

Recently I had a conversation with Steve Bogash, the Northeast and Mid-Atlantic territory manager of ProFarm Group. He indicated that many of the biological pesticide companies have thousands of compounds that are being catalogued as potential materials for use "at some point." The problem in bringing these compounds to market is a combination of the cost of production, the ability to grow an organism at scale, and producing that product at

TABLE 3: VitisGen3 Grape Breeders

Institution	Breeder	Title
Cornell AgriTech	Dr. Bruce Reisch	Professor of plant breeding and genetics
University of California Davis	Dr.Dario Cantu	Professor of Grape Genomics
University of California Davis	Dr. Luiz Diaz-Garcia	Assistant Professor Grape Breeding and Local Phenotyping
University of California Davis	Dr. Mélanie Massonnet	Assistant Scientist Grape Genomics
University of Minnesota	Dr. Mathew Clark	Project Director, Associate Professor of Grape Breeding and Local Phenotyping
University of Minnesota	Dr. Dan Voytas	Professor of Grape Genomics
Missouri State University	Dr. Chin-Feng Hwang	Professor of Grape Breeding and Local Phenotyping
North Dakota State University	Dr. Harlene Hatterman-Valenti	Professor Grape Breeding and Local Phenotyping
South Dakota State University	Dr. Anne Fennell	Professor Grape Genomics
USDA	Dr. Surya Sapkota	Research Geneticist, Grape Breeding and Local Phenotyping
USDA	Dr. Gan-Yuan Zhong	Research Leader, Grape Genomics

VitisGen3 Plant Pathologists

Institution	Breeder	Title
Cornell AgriTech	Dr. Katie Gold	Assistant Professor Plant Pathology
University of Georgia	Dr. Phil Brannen	Professor of Plant Pathology
Virginia Tech University	Dr. Mizuho Nita	Assistant Professor of Plant Pathology, Physiology and Weed Science
USDA	Dr. Lance Cadle-Davidson	Co-Project Director and USDA-ARS Research Plant Pathologist

scale. There also are shelf-life issues, even if the product has a high probability of being useful.

The opposite is true for the conventional pesticide market, as that industry is declining, and manufacturers don't see enough profitability after research and development as consumer demand tends toward reducing the amount of conventional chemicals introduced into the environment.

The goal of the grape industry is to change the direction for vineyard health and sustainability for the positive. One of the driving forces in this change will be finding compounds that have as high a degree of control efficacy as conventional pesticides with fewer environmental and health issues.

It is important to understand that these biological compounds have different chemistries than their conventional counterparts. Gold uses the analogy of a

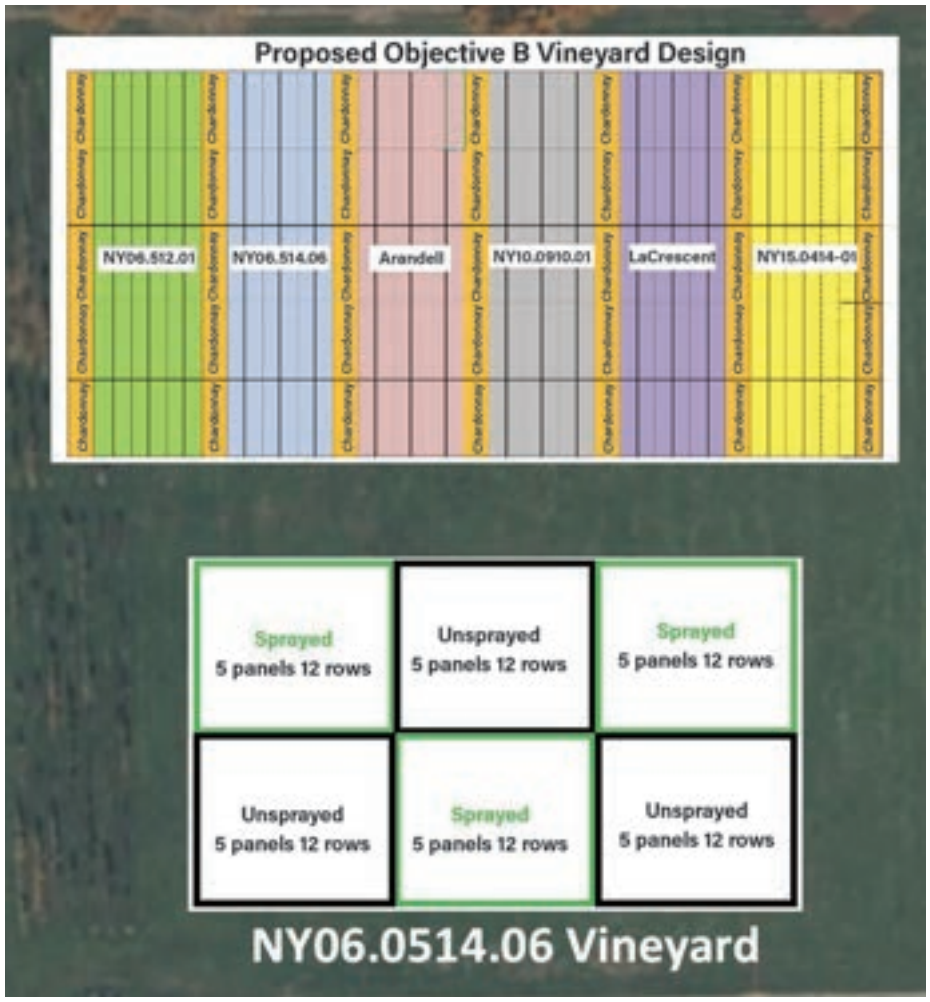

FIGURE 4: This diagram shows the proposed vineyard plot for the VitisGen3 trials for grape breeding against disease and for grapevine responses to several EPA biopesticides.

lock on your door; a good lock will prevent an opportunistic or weak thief, but the determined, strong thief can still break through. These products require more in both quantity and frequency of use because they are acting in a way that doesn't necessarily kill the organism. Instead, the product makes it harder for the pest to grow so, in many ways, the plant can develop a defense against a low-level attack, keeping the "honest thieves" at bay.

In the case of Regalia, the giant knotweed extract stimulates a multitude of plant protective measures on application of the material. It thickens the epidermal plant tissue, making it harder for the plant pathogen to penetrate the outer cell layers. The plant also increased the quantity of peroxidases, glucanases and phenolic compounds.

Now that the need to change protocols has reached a critical level, more products are on the way to general adoption, with some having better efficacy than the first generation. When vineyard managers include biopesticides into their program, there are several procedures that will have to be incorporated with their use. Many products will have shorter shelf life than conventional pesticides and some will have storage conditions that will have to be followed, such as temperature limitations and special handling due to a particular microbes' requirements. Many of these compounds have a strong prophylactic response but are not as efficacious when the pressure is high.

Over the years, Cornell Grape Pathology has evaluated several different types of biopesticides in their seasonal spray trials. For both powdery and downy mildew, they evaluated control on leaves and on grape clusters separately. Overall, they find that many newly released biopesticides have comparable performance to conventional products. However, it is important to note that biopesticides are sensitive to biological pressure. The greater the pressure, the more difficult it will be to maintain control of downy and powdery mildew, especially on foliar spray (**FIGURES 2** and **3**).

Earlier this year, AgBiome Innovations released a new microbial called Theia. They have incorporated a new strain of *B. subtilis AFS032321*, which now adds a new tool that covers many current grape diseases. Theia is listed as an OMRI product and works to control black rot, downy mildew, Botrytis gray mold, Phomopsis, powdery mildew, and several soil diseases. Agbiome's literature claims the *B. subtilis* will block fungal, bacterial, and oomycete pathogen and activate grapevine natural defenses.

There are other products that can be used in a tank mix to provide the same type of protection. Biological pesticides do not have a high probability of incurring resistance to these materials; however, it will be prudent to continue mixing materials of different modes of action to protect against that possibility in the coming years.

Biopesticides can improve the health of our vineyards, and vineyardists will need to up their game with these different types of materials. It will be necessary to research the target organisms for each product in each vineyard, and whether one product works better than another in that location. A more rigorous schedule will need to be developed for biological pesticides to assure that the vineyard is protected early: The lag phase of infection is the easiest time to hit the pathogen with the most effective solution. The more infection is allowed to build up, the more passes will be required to lower the causative agent, especially when weather conditions may work against control. Tank mixing with different components will be a required procedure to maximize each pass through a vineyard. Mixing with conventional materials is also an option to find the best combinations. In this scenario, much lower levels of conventional pesticides can be used.

VitisGen3

New developments are incorporated into the USDA grant for the VitisGen3 project. A major component of this grant is a breeding program to find cultivars of hybrids from programs at several institutions participating in VitisGen3 (TABLE 3). An important part of the VitisGen3 project is extending the work from the previous two projects by expanding the process of disease control through a combination of the biopesticides discussed above, but also breeding grapes to include genetic resistance to pesticides. This is the best way to reduce the need for conventional control measures. In strong pressure times, this process may not completely protect a plant, but it certainly will make it easier to control during that time of stress.

VitisGen3 will employ the gene editing tool Crispr to select specific genes for disease resistance and insert them into vines and test the vine's ability to fend off the pathogen. A project goal will insert only the resistance gene and not change any other character traits to see if it will be possible to only need to identify that the (Pick your name of Grape) "X cultivar Disease resistant" as an identifier for the variety of grape made into wine.

The VitisGen3 project will then develop control measures so that the lowest number of pesticides of any type can control the pathogens and produce high quality wine.

Combs described one of the plots as six replicated blocks with half as sprayed blocks and half unsprayed blocks (FIGURE 4). At the time of this writing, the blocks have been planted. The plan is to monitor everything from no or minimal spray to the extent possible, to varying levels of sprays of different types, with appropriate observations. Gold also plans to monitor these blocks with hyperspectral analysis and phytopatholobot robotic inspections, as well as the conventional visual inspection protocol. Vegetative barriers will exist between each block to minimize cross block contamination.

As a result of these trials, more definitive observational techniques are expected to be developed. These new tools will be available to vineyard personnel to manage their vineyards to produce consistent high-quality fruit for growers.

Conclusion

Even though the biological pesticide renaissance has been too long coming, most scientists and vineyardists in this field believe that now is the time for increased use of biological pesticides to happen. It may cost a bit more per acre, but the results will far outweigh the negatives, and will be a benefit to the health and safety of the vineyard personnel. Non-target organisms will thrive more, and there is even the prospect of more vineyards being able to achieve near organic levels on a regular basis, even if they are not certified as organic.

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PACKAGING SURVEY REPORT

Cost Rises to Top of Packaging Concerns

Many Wineries Have Already Switched to Lighter or Lightest Glass Bottles

Andrew Adams

Everything everywhere and seemingly all at once has become more expensive, and the mix of materials used in wine packaging is no exception.

According to the 2023 WineBusiness Monthly Packaging Survey, the average cost of a glass bottle has risen 8% from $1.91 to $2.07 in the past year with the biggest increase of 16% being reported by Napa County wineries that pay an average of $2.74 for the bottles they use the most. Sonoma County wineries reported a higher average cost of $3.33 after increasing 8% from $3.07.

Lacking a multiverse of packaging options due to consumer perception and traditional quality cues, wineries have had to watch packaging prices eat away at already thin margins.

When asked what the most important driver or objective of their packaging strategy was this year, 43% of all wineries surveyed said it was to control costs, with the highest share of 48% among Sonoma County wineries and 47% for the rest of California. Cost was the leading concern among wineries of all sizes as well, with it being the top reason (36%) among the largest wineries that produce more than 500,000 cases a year and the smallest (38%) that produce fewer than 1,000 cases. It was also the top driver in packaging strategy among those producing 1,000 to 4,999 cases, at 50%.

The concerns reflected in the survey are confirmed by the latest economic data. Glass bottles are included in the U.S. Bureau of Labor Statistics' (BLS) Producer Price Index (PPI) data. According to the BLS, the PPI for glass containers grew 50% from 190 in April 2013 to 279 in April 2023. Almost all that increase came after 2019, with the index growing 34% from April 2019 to April of this year. In the same period, label costs increased 30%, capsules rose by 26%, and the index, including corks, increased 8%.

While lead times have largely normalized, sourcing adequate and consistent materials is still a challenge, with 27% of all wineries saying it was their top concern. This was also the top concern among Napa County wineries at 33%. The sustainability of packaging was the top concern of just 16% of all wineries surveyed, yet it was the main driver for 25% of Napa County wineries and 26% of surveyed wineries in the Central Coast region of California.

Capsules Getting the Cut

Looking to reduce their overall materials costs, more wineries are eschewing the traditional capsule. In 2022, 74% of all wineries surveyed reported using a capsule to finish wines in traditional glass bottles. That share dropped to 55% in 2023 while those answering they used "nothing" to finish their bottles rose to 24% from just 5% in 2022. Of those who selected nothing to finish their bottles this year, 61% said they did so to lower costs.

Among all wineries that use capsules, 49% say it gives their wines a premium look, and that can be seen in 76% of surveyed wineries in Napa County which reported using capsules. By comparison, the use of capsules was the lowest among participating wineries in the Central Coast, with only 26% saying they used capsules and 63% reporting they used nothing.

At Baldacci Family Vineyards in the Stags Leap District AVA of Napa Valley, general manager Kellie Duckhorn said the use of capsules first came up for discussion during a pre-pandemic design refresh because it was the one material that required lengthy lead times. In a recent collaboration with the design firm CF Napa on a new luxury line dubbed The Thomas Collection, priced at more than $250 a bottle, Duckhorn said they opted not to use a capsule but rather a cigar wrapper label on the bottle neck to provide a luxury finish.

Duckhorn is still considering the use of capsules on the rest of the winery's lineup but is also aware of consumer perception and that most people buying a $50 Chardonnay (such as the one from Baldacci's estate vineyards in Carneros) would expect it to have a capsule.

Average Cost for Most-Used Bottle

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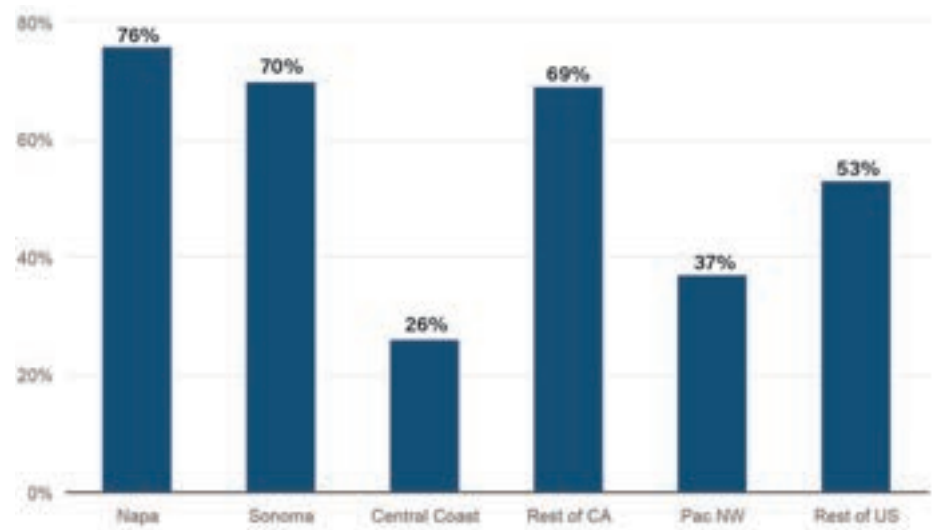
Capsule Use by Winery Region



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Baldacci produces around 12,000 cases a year from 50 estate acres and a few contract vineyards. In terms of the general strategy for packaging, Duckhorn said when she joined the winery as general manager in 2015, she sought to reduce the overall number of packaging vendors the winery worked with while also building long-term relationships with suppliers committed to sustainability.

As she is also dependent on mobile bottling services, she wanted a source of glass that was consistent (fewer costly line changes during bottling) and less susceptible to logistical delays that would require her to reschedule bottling days. She also wanted a producer that was domestic to reduce the carbon footprint of shipping empty bottles to the United States. That led her to Gallo Glass, and she commented, "It's been a wonderful partnership ever since."

What proved to be an unexpected bonus was that Gallo Glass was quick to shave bottle weights to improve sustainability while not compromising quality. If she does have any problems, she also appreciates being able to call someone in Modesto, Calif., rather than Qixian, China. Duckhorn is not thinking about trying to reduce bottle weight, as the bottles Baldacci uses are already sustainable, which has really paid off on direct-to-consumer shipments.

Recent cost increases have not prompted Duckhorn to question her packaging strategy of long-term relationships and a commitment to sustainability.

"While costs have increased over the past five years, the total impact on an aggregated basis has not been enough to redirect our focus," she said.

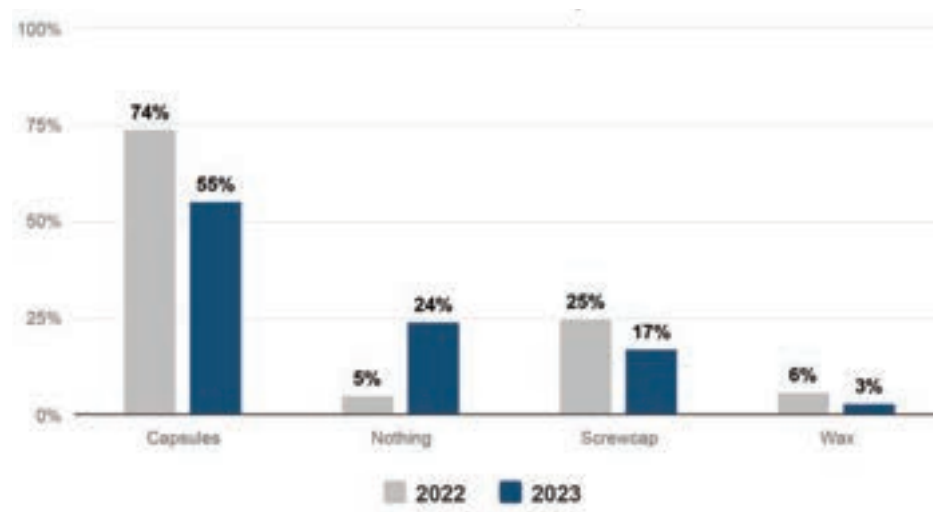
Duckhorn also solicits quotes from the winery's vendors every November to be early on its commitments, and that often can yield some discounts from suppliers thankful for the upfront commitments.

Many Wineries Have Switched to Lighter Glass

When asked if they had reduced the weight of their most used glass bottles in the past year or two, 69% of all wineries said they had not. Of the wineries that had not reduced bottle weight, 30% said the most important factor in that decision is that it would make their brand look less premium while 39% selected "other." Of those wineries selecting "other," 61% reported it was because they had already switched to a lighter glass bottle or were already using the lightest glass possible.

Among the wineries that have not reduced bottle weight, 64% of Napa County wineries reported that losing premium appeal was the key reason, along with 54% of Sonoma County wineries. The concern regarding premium appeal was the highest among wineries in the Pacific Northwest at 73% but was the lowest among the "Rest of U.S." group at 33%. These wineries were more concerned (37%) about making any major changes to their packaging strategy considering ongoing supply challenges.

Material Used to Finish Glass Bottles



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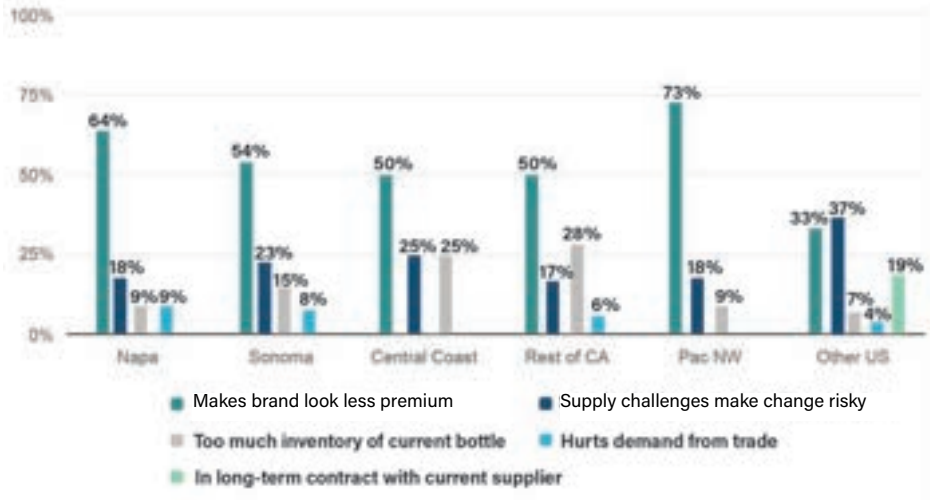
Top Reasons for Not Going to Lighter Glass



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For those that did switch to a lighter bottle recently, the top reason was to reduce greenhouse gas emissions at 36%, followed by reducing the cost of bottles (24%) and reducing the cost of shipping or transporting heavier glass (21%).

Scott Osborn purchased Fox Run Vineyards in Penn Yan, N.Y. in 1994. He said right from the start he wanted to run the business in a sustainable manner. Osborn earned Lake Friendly Farming certification in 2002 and has followed that with ongoing work to improve soil health, established a 4-acre preserve for pollinators and other beneficial insects, and installed a 150KW solar system that powers the entire estate, which produces around 22,000 cases a year.

He said moving to lightweight glass was an easy decision he made almost as soon as his suppliers offered the option.

"Two things drive our packaging," he said. "One is ease of opening and consistency of product—or no corked wines. The other is sustainability: lighter bottles mean less carbon footprint."

To offset the rising costs of packaging materials, Osborn said he's trying to keep pace with his retail prices but is concerned about slowing sales.

"The challenge for price increases is at what point do you see decreased sales in retail shops due to the increases in costs," he explained. "We've been slowly raising our prices about once a year. Even with the price increases, I'm not making as much as I was in 2019."

Osborn works with New York-based packaging provider Waterloo Container that sources glass from Mexico, Canada and Pennsylvania. According to the packaging survey, 62% of participating wineries source their glass from the U.S., with 59% of those in the "Rest of the U.S." group which would include New York. The highest response rate for using domestic glass was the Pacific Northwest where 76% of surveyed wineries buy American.

The commitment to screwcaps followed Osborn's review of research out of Australia and New Zealand that convinced him they are the best option to protect wine quality while also ensuring his customers enjoy a consistent experience when they buy one of his bottles. The highest use of screwcaps was seen among wineries not on the West Coast, with 23% reporting it was their most common type of closure followed by 21% of those in the Pacific Northwest. Wineries in both those regions cited the reason they used their preferred closure is that it preserves quality better than the alternatives.

Osborn is so committed to screwcaps that he built a new 9,000-square-foot facility for production and bottling with a new Costral line from France to seal his 2021 and 2022 reds under the closure. He's also considering using some of the latest generation caps that are designed for aging for his long-lived dessert wines made in the tradition of port.

"We are having a conversation about aging particular wines, but one of the problems of putting wine away is you have to have more warehouse space," he said.

Cost Rises to Top of Packaging Concerns

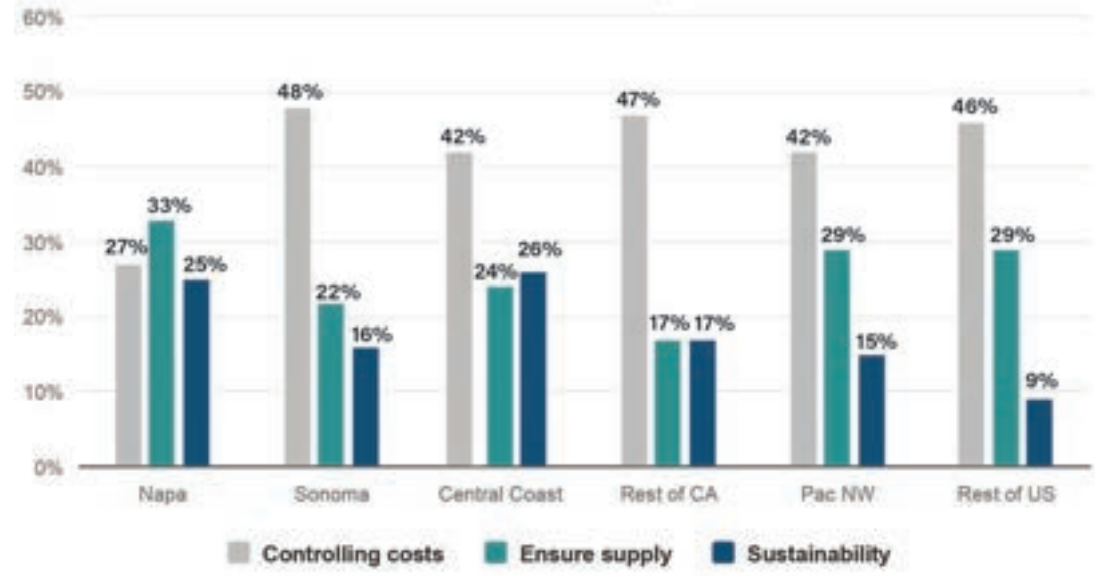
The use of screwcaps is the lowest in the coastal regions of California, with 7% of Sonoma County wineries and 5% of Central Coast wineries reporting it's their preferred closure, along with 19% of wineries in the rest of the state.

Napa County wineries had the highest rate of use for whole natural corks at 71% followed by the Central Coast at 58% and Sonoma at 57%.

Based on the question, "What is the primary reason you use this closure," wineries that use whole, natural corks prefer them for both the premium appearance and their belief that they are the best way to preserve wine quality. The premium aspect was the top answer by Napa County wineries with 43% while wineries in Sonoma County and the Central Coast were about even in terms of prioritizing a premium look and closure effectiveness.

While Osborn's commitment to screwcaps may set him apart from most of the wineries surveyed, his opinion that glass is the most sustainable format is shared by 60% of participating wineries. Among other non-West Coast wineries, the opinion is shared by 64% of surveyed wineries, and it was the top answer for wineries in Napa County (71%), Central Coast (68%) and Sonoma County (48%).

Primary Packaging Concern by Region



WINEBUSINESS ANALYTICS

Opening a Can of Success

Among all wineries, 18% thought cans were the most sustainable option, and that was higher in the Pacific Northwest with 26% and 14% for wineries in the rest of the U.S. category.

One of the largest wineries in the Midwest, Wollersheim Winery & Distillery, has enjoyed tremendous success since launching a few wines and RTD cocktails in cans.

Founded in 1972, Wollersheim is located in Prairie du Sac, Wisconsin and produces around 100,000 cases a year. That production is divvied up by more than 30 SKUs of wines and spirits.

Production manager Anthony Meyer has been with the winery for eight years and told WineBusiness Monthly that the winery started canning about two years ago after researching the market potential and consulting with distributors.

"We have a very traditional mindset here; and so, when we're implementing something new, we make sure to do our due diligence," Meyer said. "We're always looking to be more sustainable, and we do feel that consumer perception is stronger when you can state those things."

Wollersheim started canning wine in 2019 with a run of 12,000, and that has since ballooned to 100,000 cans a year after the winery launched RTDs two years ago. The winery works with a mobile canning service based in Milwaukee.

"This segment works well for us in our region with many lakes and rivers for leisure and strictly no glass allowed on these waterways," he said. "PET kegs are an alternative that allow us placement on taps at on-premise locations that do not offer bottle service."

In general, he said Wollersheim's packaging strategy is based on consumer appeal and sustainability foremost, with cost becoming more of a factor in recent years. While Meyer noted that lead times have improved this year versus last year, he's running into more challenges with product availability and scheduling. He said the production schedules at packaging material manufacturers is less consistent, meaning he needs to be more flexible with his bottling schedule.

"Instead of filling large volumes of one wine, we may have to do three or four wines in the same bottle just to stay on top of inventory," he said.

According to Meyer, Wollersheim's main challenge this year has been managing cost increases. Not all the wines produced are made with estate grapes, and he said the cost to truck fruit in from the West Coast has doubled from five years ago. Material costs have gone up between 5% and 10% just within the past year. He commented that it has affected how much the winery is making of what and puts more of a focus on what is profitable and what isn't.

Methodology

The 2023 *WineBusiness Monthly* Packaging Survey was conducted between April 1 and April 30, 2023.

The survey participants include winemakers and winery management involved in packaging decisions. Respondents include contacts at wineries of all sizes and states across the U.S. From a total universe of 11,000 U.S. wineries.

The responses were structured to enable reporting by winery size (annual production) and geographic location. Allowing us to accurately report information for the total market. Accepted statistical techniques are employed to allow segmentation as indicated in the data presented. **WBM**

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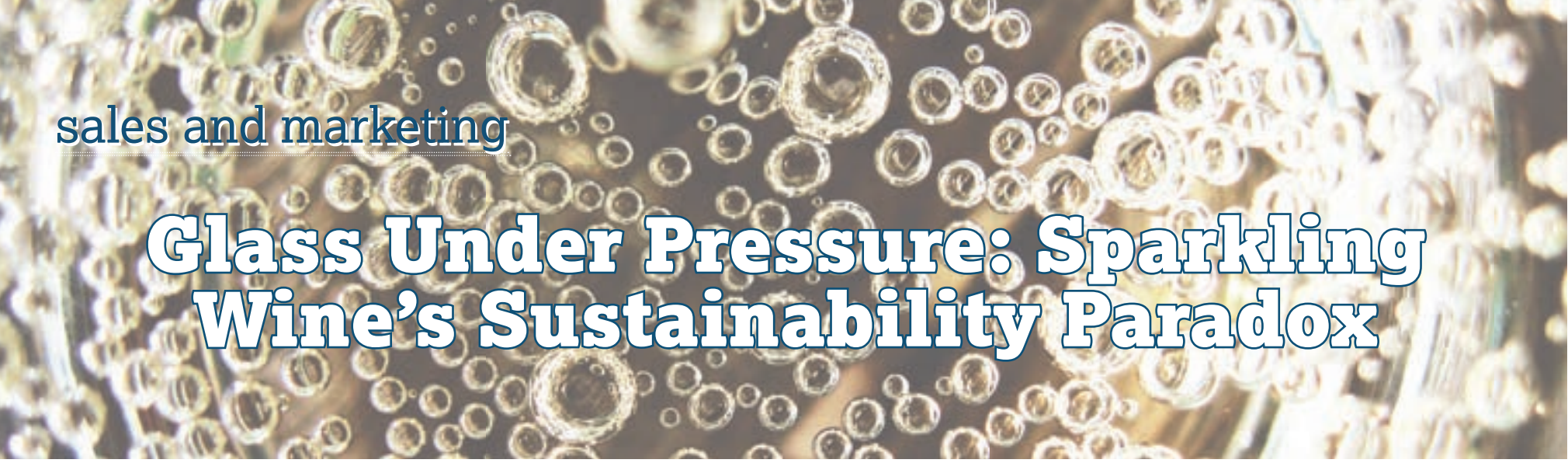


Glass Under Pressure: Sparkling Wine's Sustainability Paradox

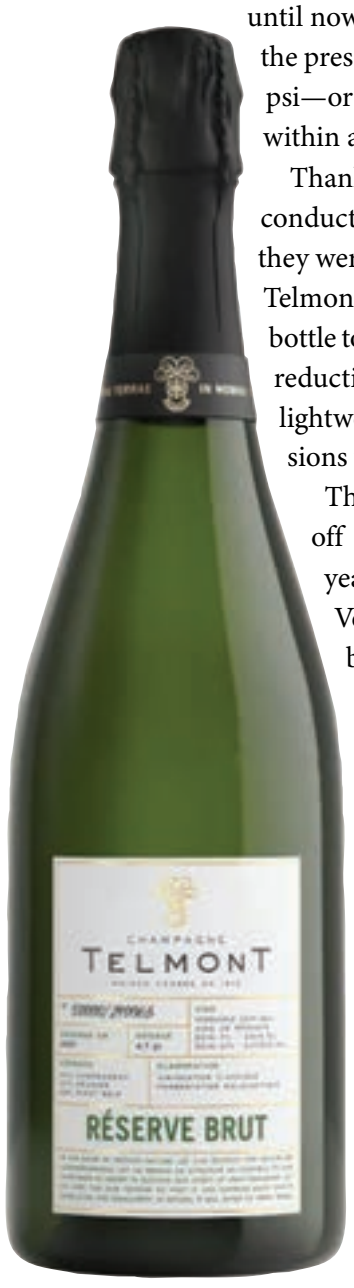
Michael S. Lasky

Ever the strong advocate of sustainability, Ludovic du Plessis, CEO of Champagne producer Maison Telmont, has long been aware of the paradox faced by his company and all sparkling wine companies: the pressure created by the secondary fermentation in the bottle demands heavier glass to prevent explosion—but the consumer wants a lighter bottle.

The weight of a sparkling wine bottle is roughly two times that of a still wine bottle and many believe it to be antithetical to the requirements of sustainability. Until recently, the standard champagne bottle weighed 900 grams, or 2 pounds. In comparison, wine bottles can weigh up to 50% less.

However, a partnership between Telmont and French glassmaker Verallia has resulted in a groundbreaking 800-gram sparkling wine bottle.

About a decade ago, Verallia put its bottles for sparkling wines on a "diet" and was able to reduce the hefty 900-gram weight to 835 grams (1.8 pounds) that until now, has been the lowest weight that can withstand the pressure of Champagne, which ranges from 70 to 90 psi—or roughly two to three times the typical pressure within a car tire.



Thanks to a decade of experimentation and research conducted by Verallia in partnership with Telmont, they were able to shave an additional 35 grams from the Telmont bottle, making it now the lightest Champagne bottle to date, according to Telmont. While the 35-gram reduction may not seem all that substantial, this new lightweight bottle does produce 4% fewer CO_2 emissions when factoring in transportation costs.

The technical challenges of taking even 35 grams off the weight partially explain why it has taken years to achieve an 800-gram bottle. Not only did Verallia have to reduce the bottle's overall weight, but the glassmaker had to maintain the necessary mechanical resistance to the pressure.

Verallia successfully created a trial of 3,000 champagne bottles, which are perceptually hard to differentiate from the heavier counterparts. According to du Plessis, the aging process will take about three years in the cellar, which means the first full run of 30,000 lighter-weight bottles will not be seen on retailer shelves until 2026.

As the worldwide popularity of Champagne and sparkling wines continues to soar, according to *WineBusiness Analytics* sales stats, the anticipation for more carbon footprint-friendly bottles for sustainability-aware wineries is also forecast to multiply.

American Producers Proactively Seek Lighter Sparkling Wine Bottles

Domestic sparkling wine producers strive to package their bubbly in the most climate-friendly containers available and should welcome the innovation of lighter-weight glass containers. However, they are approaching this possibility with an even higher level of caution to guarantee consumer safety.

As Harry Hansen, senior vice president of winemaking and winegrowing at Gloria Ferrer Caves & Vineyards, told *WineBusiness Monthly* (WBM), "That's why there is a lot of testing done before we move forward with lightweight sparkling bottles. Nobody is taking for granted that reducing some 200 grams out of a bottle leaves us with something safe."

Hansen noted that Verallia has offered to help Gloria Ferrer reduce its carbon footprint with the reduced weight bottle; but as of press time, Sonoma-based Gloria Ferrer hasn't arrived at the testing stage.

"We're going to proceed to investigate and run safety and other tests, but we're coming out with a lightweight bottle imminently," Hansen said.

Besides safety concerns, another factor Hansen attributed to the slow movement toward lighter weight sparkling bottles in the U.S. is simple: "There is currently no wholesale sparkling wine bottles manufactured in North America," he said.

While Schramsberg Vineyard's marketing and e-commerce manager Matthew Levy regrets that the Calistoga-based sparkling wine producer is currently unable to use a different, lighter-weight bottle, he said the company is glad that they can take other steps to keep their carbon footprint as low as possible.

As it happens, Schramsberg was one of the first wineries to receive Napa Green certification. A portion of qualifying for this certification has to do with its recycling and composting programs which minimize the amount of waste that goes to landfills.

"Our newest effort to do our part is the adoption of the California CRV logo onto our labels. While our bottles have always been recyclable, by adding the California CRV logo to the label we can remind the consumer to properly dispose of the glass bottle," Levy added.

As new technologies come to light, Levy said Schramsberg will test them to see if they will maintain the winery's quality standards while ensuring the safety of consumers.

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Verallia Champagne Ecova 835 g / 29.45 oz

Napa-based Domaine Carneros, ever the vigilant, sustainability-centric winery, has also been on the hunt for lower-weight sparkling bottles.

"We've been working with our glass manufacturer, Saverglass, on a lighter-weight bottle that can withstand the pressure of sparkling wine. We have been trialing this glass for years now, and we are currently bottling more than half our sparkling wine in this lighter-weight bottle. A typical sparkling bottle weighs 900 grams, but these lighter bottles weigh 835 grams," said Domaine Carneros' CEO, Remi Cohen.

Cohen has been aware of Verallia's sparkling bottle trials with the pared-down weight of 800 grams and hopes to go to market with that option soon. Domaine Carneros will trial that glass as soon as it becomes generally available.

Meanwhile, the winery employs other sustainability practices, both in the winemaking process and externally, by participating in a program with its fulfillment partner, Winery Direct, that offsets 100% of the carbon emissions from packages shipped direct to consumers.

Saverglass Focuses on the Furnace of the Future

In 2009, Saverglass created the 835-gram, 750ml sparkling bottle called the Champenoise Eco Design.

"It represented an 8% reduction in bottle weight from Saverglass' Champenoise USA bottle and industry-typical, 900-gram sparkling bottle. We have had one large account using it for years, and it is available to other customers," said Philippe Barnagaud, Saverglass' president and CEO. "As wineries become more diligent in their sustainability efforts, this bottle option has become increasingly popular.

Saverglass Champenoise Eco Design Standard Premium

"As sustainability efforts continue to become part of the decision-making process and with the supply chain issues resolving, we expect to have more customers test the bottle out and, when pleased with the results, switch to this 'right weight' version," Barnagaud continued.

When considering the lightweight nature of the bottle, it is critical to recognize that

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Verallia Champagne Ecova Cava 800 g / 28.22 oz

its total CO_2 impact is primarily influenced by the combustion process of the furnace used to produce it, as well as the overall sustainability practices of the manufacturing facility and the aftermarket transportation process. This is the reasoning behind the Saverglass "Furnace of the Future" plan.

Although the Furnace of the Future is on hold due to a lack of European funding, Saverglass is moving forward with a hybrid and low-carbon furnace.

"We are focusing on a hybrid fusion to maintain our productive capacity and the quality, flexibility and security of the processes. The first step is using as much low-carbon electricity as possible (renewables and nuclear). An example is our Acatlán factory in Mexico, where we are significantly reducing our carbon footprint by increasingly powering our furnaces with nuclear energy," Barnagaud explained.

Barnagaud emphasized the intelligence of recycling glass as the least expensive and most productive method for taming the carbon footprint of both creating and disposing of glass. Recycling practices are much more mature and developed in Europe than in the United States; because of the hundreds of different municipalities in the 50 states, each with different requirements and enforcement, glass recycling has far to go, especially compared to its practice in Europe.

"We also continue introducing as much cullet into the production process as possible," Barnagaud said.

Cullet is recycled/broken glass melted for reuse in the production of new bottles. Using cullet saves energy and reduces CO_2 emissions because it melts faster and at a lower temperature than raw materials, reducing the amount of energy needed during the melting process. Barnagaud said 1 ton of cullet used can result in a reduction of 250 to 300 kg of CO_2 emissions. He added that it's important to remember that to increase the use of cullet, the amount of glass collected, through recycling, must increase.

Saverglass, like other European glassmakers, is committed to "right-weighting" bottles.

"Right-weighting ensures that our production and products maintain optimal safety standards while also standing out aesthetically for our clients. We have developed a revolutionary digital simulation tool to push the boundaries of weight reduction and enhance production performance and product quality, including aesthetics, thickness and complex geometries," Barnagaud continued. "While reducing the weight of all wine bottles, not just ones for Champagne, is crucial, excessive light-weighting can result in generic, unattractive cylindrical shapes. We question whether premium wine brands are willing to rely solely on label attire for packaging differentiation. For us, right-weighting offers a more balanced approach: it allows premium brands to find criteria for differentiation beyond just labeling." **WBM**

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PACK DESIGN SPOTLIGHT: REDESIGN

Fresh Look for an Ancient Brand Name

Andrew Adams

Aristotle (Scheid Family Wines)

MSRP: $12.99

2021 Vintage Production: 5,000 cases

Packaging Vendors
Designer: BrandN8 - James Eli
Bottle: Gallo Glass Co.
Closure: Amorim Cork America
Capsule: Maverick Enterprises, formerly Enoplastic USA
Label: G3 Label-Tapp Napa

While the ancient philosopher Aristotle advocated moderation and viewed drunkenness as one of man's worst vices, he assuredly imbibed as was the custom of the Greek symposia and gained the wisdom conferred by the sacred wine at the heart of the Eleusinian Mysteries.

His name now also adorns a bottle of modern Californian wine and while it may not promise infinite life as that of Eleusis, it does offer a very competitive price-to-quality ratio as a $12.99 certified organic Monterey County Petite Sirah. The wine is a retailer exclusive produced for Whole Foods by Scheid Family Wines and was entered into the redesign category of the 2022 Pack Design awards. The redesign by visual strategist James Eli of BrandN8 was meant to capture the eye of shoppers from the shelf with an updated, modern look that remains a homage to the philosopher. Stylized typography, a unique dieline and a glossy embossed ancient Grecian urn on the label help ensure the new look makes the brand stand out.

A black capsule is meant to convey a premium look without sacrificing the wine's affordable price. "Certified sustainable" added in a beveled deboss further highlights this element of brand strategy.

"Currently, Aristotle is a single-varietal brand," said Scheid Family Wines Marketing Director Jennifer Evans in an email. "However, the brand strategy is not solely based on the variety. The brand focus started with certified sustainable farming, and now with the 2021 vintage, it has evolved into an organically certified wine."

Evans noted that the brand's packaging was further enhanced by adding "made with organic grapes" on the front and nutritional information on the back label, along with such details as the wine being produced with 100% wind energy, is vegan-friendly and sports the CCOF-Certified Organic logo.

"As consumers are demanding greater sustainability efforts from companies and more transparency in product labeling, Aristotle is delivering on both," Evans said. "With the expansion of our estate vineyard acreage that is organically certified, there is the possibility that this brand could expand into other red varieties in the future."

Since the redesign, Evans observed that the new look appears to have resonated with consumers with depletions of Aristotle up 7% in 2022 over the previous year. The growth is even more impressive, Evans said, considering similarly priced Petit Sirah wines were down 24% in the 52 weeks ended March 26 of this year, according to data by IRI. The contest judges also agreed it was an effective redesign, with one noting: "Losing the script and the ancient images modernizes the wine, and the cleaner label is appealing." **WBM**

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Retail Sales Analysis

Retail Wine Sales Decline 2 Percent in May

WineBusiness Analytics

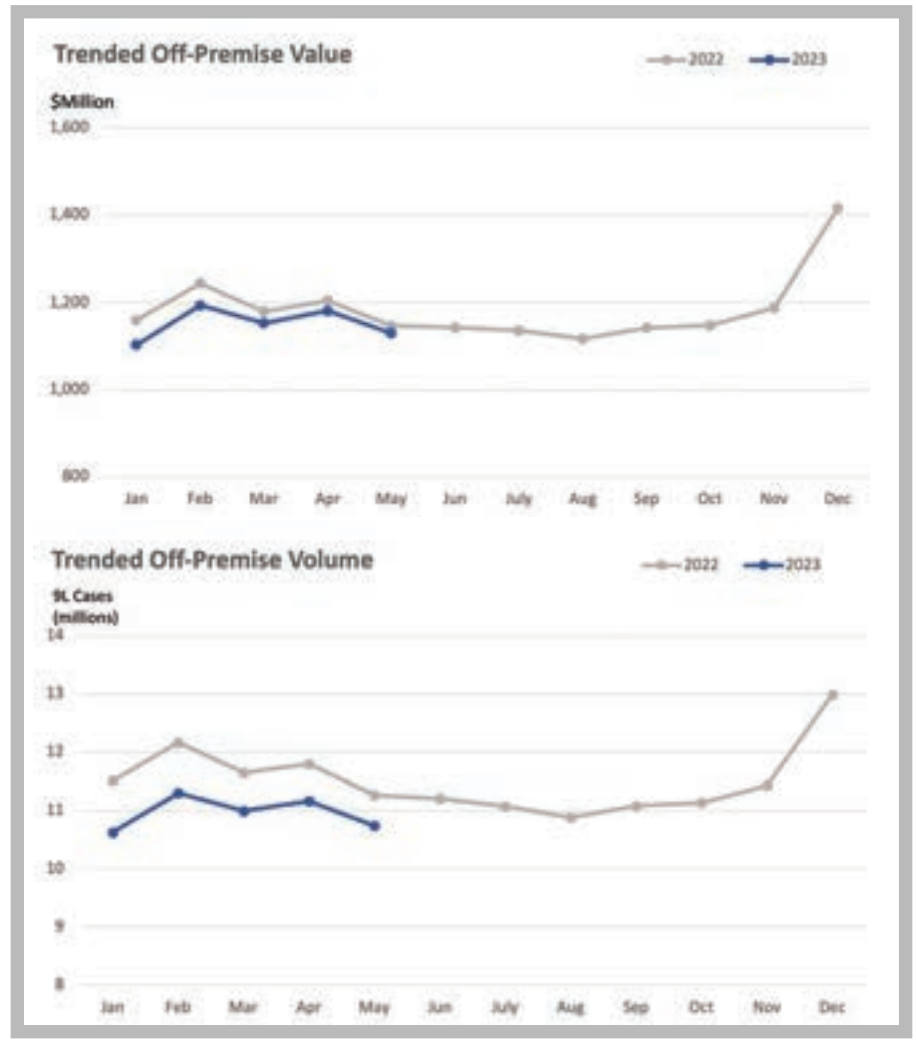
Produced by **WineBusiness Analytics**, the *Wine Analytics Report* is the industry's leading source of market insights, objective analysis and data.

SALES VALUE DOWN 2 PERCENT IN MAY

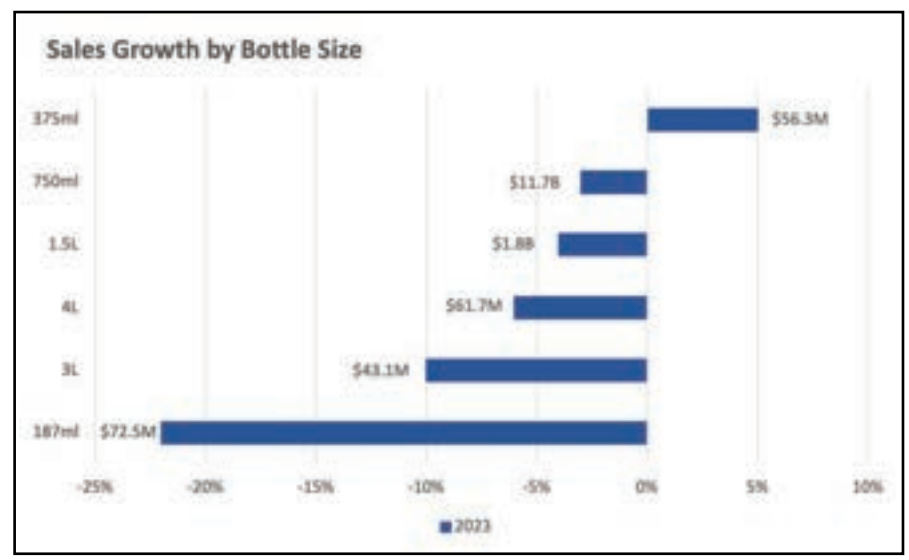
Off-premise table wine sales fell 2 percent versus a year ago to more than $1.1 billion in the four weeks ended May 20, NIQ scan data showed. Growth of nearly 3 percent in box wine sales offset a parallel decline of nearly 3 percent of wine in the much larger category of wines in glass. Box wines reported growth across all price tiers, led by 4 percent growth among wines priced $4-plus per 750ml. The $15-$19.99 price tier remained the only segment of wines in glass to see sales grow versus a year ago, rising more than 1 percent. Sales in the latest 52 weeks saw similar trends, falling more than 2 percent versus last year to $15.7 billion. Sales of box wines increased nearly 3 percent to $1.6 billion while wines in glass fell 3 per cent to $13.7 billion. Wines priced $15-$24.99 a bottle saw sales increase while all other price tiers saw declines.

SALES VOLUME DOWN 5 PERCENT IN MAY

Off-premise table wine sales volume fell 5 percent versus a year ago in the four weeks ended May 20 to 10.7 million 9L cases. Box wines priced $4-plus per 750ml were alone in reporting growth, with volume up nearly 2 percent to 1.3 million cases. The most resilient price segments were those between $11 and $24.99 a bottle, all of which saw volume decline less than 4 percent. The most resilient segment, down just 1 percent, was the $15-$19.99 tier. The trends were slightly more pronounced in the latest 52 weeks as volumes fell more than 5 percent to 148.7 million 9L cases. Box wines priced $4-plus per 750ml were alone in reporting growth, rising more than 2 percent. Wines in glass declined across all price tiers, with wines at $15-$24.99 a bottle declining being the most resilient with declines of less than 3 percent.



Source: NIQ Latest 4 weeks—ended May 20



Source: NIQ Latest 52 weeks—ended May 20

GLASS PACKAGING: LESS IS MORE

Recent months have seen a renewed focus on lighter-weight glass packaging, but NIQ scan data shows that consumers are leaning into lighter volumes, too. While the dominant status of glass packaging for wine means sales of wines in glass have declined alongside wine sales overall, 375ml bottles saw sales value and volume both increase 5 percent in the 52 weeks ended May 20. Sales totaled more than $56 million on a volume of 219,818 cases. All other bottle sizes saw sales decline, led by 187ml (down nearly 22 percent) and 3L (down 10 percent). The smallest declines were reported by the traditional sizes of 750ml (down nearly 3 percent) and 1.5L sizes (down 4 percent).
NIQ data indicate that growth of the 375ml format isn't driven by price-consciousness. The format is the most expensive sold through NIQ-tracked outlets, with an average bottle price of $21.33 in the latest 52 weeks. This compares to an average of $12.45 for the traditional 750ml bottle and $3.84 for box wines, which have also posted growth. The data for 375ml bottles correlates with the premiumization phenomenon, which has been driven by lower volumes of higher-priced wines as well as the growth of value formats. Consumers are willing to spend if the packaging meets their needs, whether for smaller portions of fine wine or a shelf-stable reserve of their daily glass. **WBM**

Methodology

Sourced from NIQ, 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. NIQ figures are updated and released every four weeks.

NIQ Table Wine Category Segments **MARKET:** Total US xAOC+Conv+Military+Liquor Plus **PERIOD:** 4 Weeks Ended May 20, 2023

		Dollar Value		Dollar Value % Chg YA		9L Equivalent Volume		9L Equivalent Volume % Chg YA		Avg Equivalent Price Per 750ML	
		Latest 52 Wks - W/E 05/20/23	Latest 4 Wks - W/E 05/20/23	Latest 52 Wks - W/E 05/20/23	Latest 4 Wks - W/E 05/20/23	Latest 52 Wks - W/E 05/20/23	Latest 4 Wks - W/E 05/20/23	Latest 52 Wks - W/E 05/20/23	Latest 4 Wks - W/E 05/20/23	Latest 52 Wks - W/E 05/20/23	Latest 4 Wks - W/E 05/20/23
	TOTAL TABLE WINE	**15,676,377,633**	**1,129,834,501**	**-2.4**	**-2.1**	**148,703,203**	**10,741,877**	**-5.4**	**-5.2**	**8.79**	**8.77**
PRICE TIERS BY CONTAINERS	BOX	1,613,055,241	124,029,638	2.6	2.8	34,985,287	2,622,472	-0.9	-1.6	3.84	3.94
	$0-$3.99	556,057,889	42,546,594	0.7	0.2	17,668,928	1,308,553	-3.7	-4.7	2.62	2.71
	$4+	1,056,776,741	81,432,673	3.6	4.1	17,313,040	1,313,252	2.2	1.6	5.09	5.17
	Total Table Wine Glass	13,742,537,345	981,132,774	-3.0	-2.7	110,324,786	7,862,173	-6.7	-6.3	10.38	10.40
	Value Glass $0-$3.99	330,558,103	24,607,980	-4.6	-3.0	8,149,992	568,330	-8.6	-10.7	3.38	3.61
	Popular Glass $4-$7.99	2,570,326,087	187,925,116	-5.0	-5.0	37,903,080	2,727,707	-8.4	-7.8	5.65	5.74
	Premium Glass $8-$10.99	2,710,291,471	193,846,703	-4.9	-5.0	23,446,646	1,658,605	-7.9	-7.8	9.63	9.74
	Super Premium Glass $11-$14.99	3,764,018,148	273,607,507	-1.4	-0.9	24,591,583	1,767,719	-4.2	-3.6	12.76	12.90
	Ultra Premium Glass $15-$19.99	2,099,377,928	149,457,327	1.4	1.3	10,160,222	719,201	-1.4	-1.0	17.22	17.32
	Luxury Glass $20-$24.99	869,729,599	62,400,223	0.1	-0.5	3,280,264	233,993	-2.7	-2.5	22.10	22.22
	Super Luxury Glass $25+	1,394,903,342	88,420,031	-7.3	-6.9	2,776,992	182,066	-10.8	-7.1	41.87	40.47
IMPORTED	IMPORTED	4,314,227,446	316,086,010	-2.5	-1.8	39,705,584	2,911,309	-5.5	-4.3	9.06	9.05
	ITALY	1,389,940,527	97,889,753	-3.8	-3.3	10,649,600	751,864	-6.8	-5.5	10.88	10.85
	AUSTRALIA	612,883,455	44,109,239	-6.2	-5.9	9,594,480	694,691	-8.2	-7.4	5.32	5.29
	FRANCE	624,497,455	47,002,573	-2.5	-2.7	3,251,907	248,709	-5.2	-4.5	16.00	15.75
	CHILE	366,811,949	28,110,037	0.4	1.7	6,242,717	477,590	-0.6	0.1	4.90	4.91
	SPAIN	155,845,149	11,389,899	-3.0	-3.3	1,087,195	81,359	-5.0	-5.4	11.95	11.67
	GERMANY	73,659,760	5,014,640	-3.8	-5.0	600,748	40,897	-5.4	-6.7	10.22	10.22
	NEW ZEALAND	673,378,323	52,711,266	4.1	4.2	4,403,413	337,547	-0.4	-0.6	12.74	13.01
	ARGENTINA	299,825,005	21,328,123	-6.0	-2.0	2,964,454	211,331	-10.0	-5.5	8.43	8.41
	SOUTH AFRICA	36,805,339	2,797,269	1.9	-1.5	391,774	30,555	3.4	1.5	7.83	7.63
	PORTUGAL	51,375,189	3,953,479	1.5	5.4	473,944	35,752	-3.7	-0.1	9.03	9.22
DOMESTIC	DOMESTIC	11,362,150,187	813,748,491	-2.4	-2.3	108,997,620	7,830,568	-5.4	-5.5	8.69	8.66
	CALIFORNIA	10,258,466,845	735,761,195	-2.0	-1.7	100,822,850	7,268,217	-5.2	-5.0	8.48	8.44
	WASHINGTON	542,551,699	38,603,218	-7.7	-10.1	4,120,662	291,458	-11.0	-13.5	10.97	11.04
	OREGON	290,113,112	20,200,748	-5.7	-2.5	1,373,794	95,978	-7.8	-4.3	17.60	17.54
	TEXAS	27,659,931	2,012,025	-9.9	-9.1	259,348	18,493	-19.2	-16.2	8.89	9.07
	NEW YORK	42,444,679	3,536,014	0.1	-1.0	420,993	29,894	-7.1	-7.9	8.40	9.86
	NORTH CAROLINA	43,845,447	3,099,471	-2.7	-6.1	409,865	29,092	-8.8	-8.2	8.92	8.88
	INDIANA	24,682,984	1,748,996	-1.6	-2.7	246,125	17,016	-7.9	-7.3	8.36	8.57
	MICHIGAN	25,134,604	1,514,945	-4.1	-9.4	236,319	13,962	-8.7	-12.5	8.86	9.04
TYPES	RED	8,034,177,579	548,915,237	-3.9	-3.6	67,106,279	4,656,613	-6.4	-6.1	9.98	9.82
	WHITE	6,531,212,517	494,139,505	0.2	0.3	68,212,426	5,088,406	-3.4	-3.3	7.98	8.09
	PINK	1,102,836,819	86,624,120	-6.5	-6.5	13,307,820	995,432	-10.5	-9.8	6.91	7.25
VARIETALS	TOTAL CHARDONNAY	2,691,004,745	203,230,665	-1.0	-0.9	27,815,504	2,080,512	-3.8	-3.9	8.06	8.14
	TOTAL CABERNET SAUVIGNON	3,126,683,485	215,067,048	-1.7	-1.8	24,403,041	1,716,920	-4.1	-4.1	10.68	10.44
	TOTAL PINOT GRIGIO/PINOT GRIS	1,492,913,176	114,015,049	1.6	1.8	17,639,101	1,326,134	-2.0	-1.7	7.05	7.17
	TOTAL PINOT NOIR	1,312,478,163	88,855,896	-2.0	-1.5	8,656,515	590,630	-4.5	-3.9	12.64	12.54
	TOTAL MERLOT	584,058,929	40,791,216	-6.9	-6.7	7,173,193	503,614	-8.8	-8.8	6.79	6.75
	TOTAL SAUV BLANC/FUME	1,378,034,070	107,887,906	5.2	6.0	11,013,400	850,379	1.8	2.7	10.43	10.57
	TOTAL MUSCAT/MOSCATO	558,307,534	39,908,712	-7.5	-8.2	7,484,409	526,634	-10.8	-11.4	6.22	6.32
	TOTAL WHITE ZINFANDEL	207,154,231	15,500,186	-8.4	-6.1	3,882,879	285,235	-11.2	-8.8	4.45	4.53
	TOTAL MALBEC	224,589,731	15,951,374	-6.4	-1.7	1,926,500	138,915	-9.0	-3.3	9.72	9.57
	TOTAL RIESLING	218,420,630	15,198,082	-5.3	-6.6	2,083,694	143,219	-8.5	-9.4	8.74	8.84
	TOTAL ZINFANDEL	194,913,365	12,856,437	-8.6	-8.6	1,216,029	80,339	-11.0	-9.7	13.36	13.34
	TOTAL SHIRAZ/SYRAH	98,304,970	6,544,345	-12.1	-13.5	959,034	65,869	-15.8	-14.8	8.54	8.28
	WHITE BLENDS (ex. 4/5L)	242,618,830	17,529,198	-3.1	-3.9	2,503,344	178,686	-5.1	-7.5	8.08	8.18
	RED BLENDS (ex. 4/5L + CHIANTI)	2,024,235,290	136,289,070	-6.3	-6.0	16,141,504	1,091,890	-7.8	-8.3	10.45	10.40
	ROSE BLEND	642,506,136	52,648,189	-6.1	-6.6	4,664,037	368,656	-11.0	-10.2	11.48	11.90
GLASS SIZES	750ML	11,710,590,720	831,596,299	-2.6	-2.4	78,382,312	5,548,947	-6.0	-5.5	12.45	12.49
	1.5L	1,776,426,551	130,851,348	-4.2	-4.3	28,063,701	2,041,422	-7.6	-7.2	5.28	5.34
	3L	43,078,409	2,955,206	-10.1	-14.0	939,014	62,510	-15.8	-18.3	3.82	3.94
	4L	61,675,732	4,550,804	-6.3	-4.7	1,796,925	128,755	-10.1	-9.1	2.86	2.95
	187ML	72,475,618	4,989,115	-21.5	-22.9	792,801	54,104	-22.6	-25.3	7.62	7.68
	375ML	56,253,704	4,449,047	4.9	12.4	219,818	17,414	5.0	14.3	21.33	21.29
BOX SIZES	ex. 4/5L	1,146,044,387	88,152,687	3.4	3.7	19,627,772	1,480,742	1.6	0.8	4.87	4.96
	1L	35,282,709	2,864,408	1.8	1.4	490,715	39,613	-0.3	-0.2	5.99	6.03
	1.5L	15,500,615	1,061,493	-15.8	-22.8	277,362	18,427	-18.0	-25.3	4.66	4.80
	3L	844,328,736	64,192,255	3.3	4.3	15,853,157	1,186,555	1.8	1.3	4.44	4.51
	5L	467,005,947	35,876,606	0.8	0.4	15,357,403	1,141,723	-3.9	-4.5	2.53	2.62
	TETRA	285,969,522	22,780,012	4.7	3.3	3,484,705	273,543	2.2	0.4	6.84	6.94

Source: NIQ

Unfurling the Kinks:

Glass Manufacturers and Suppliers Work to Build a Stronger, More Climate Friendly Glass Supply Chain

ALL PHOTOS COURTESY SAVERGLASS

Katherine Martine

Katherine Martine is the assistant editor for *WineBusiness Monthly.* She joined the company in 2023 and is responsible for assisting the managing editor with production duties for the monthly trade magazine and the website. Katherine has five years' experience working for various weekly news publications in Sonoma and Marin County covering city government, education, natural disasters, local business, public safety and agriculture and wine. Most recently she worked as a beat reporter with *The Ark* newspaper in Tiburon. She earned her Bachelor of Arts in journalism from San Francisco State University.

When it comes to making the glass supply chain, from manufacturing to distribution, more environmentally friendly and resilient, there isn't one silver bullet.

Instead, there are several methods and initiatives that glass manufacturers and suppliers are implementing at various stages to build a stronger, less vulnerable and more climate-friendly supply chain with fewer kinks. These include adjusting the manufacturing process by utilizing hybrid furnaces and recycled glass, lightweighting bottles and establishing reuse programs.

While glass providers have made strides to address the climate side of sustainability, the rampant outbreak of COVID-19 severely affected the glass supply chain and many wineries across the globe saw shortages in packaging, highlighting problems of short-term viability.

"The last two years have been very challenging for the industry," said Felix Lamolinerie, Verallia USA's CEO. "With COVID, the overall worldwide supply chain was—has been—totally disrupted. The fact that we had a slowdown and then a quick recovery completely disorganized the flow in our industry (more) than I believe any industry in the world. It was really difficult and our customers suffered a lot from the delay; from backlog to congestion at the port, (to) the excessive amount of costs that were charged by any freight company. It was really a painful moment for everyone."

The Russian invasion of Ukraine in February 2022 also upset the chain and proved a big disruption, increasing the cost of energy, according to Lamolinerie.

Rich Chapman, senior vice president and chief supply chain officer for Saxco, said he thinks the biggest challenge these events have created has been around capacity.

Chapman said the COVID-related backlog situation was a direct result of demand going up significantly and capacity being constrained.

"A big part of that was because the import market, which helps supply some of the glass in the U.S., was basically squeezed down or almost shut down and because of that all of the demand went to the domestic manufacturers—but they only have a limited amount of capacity so they could not keep up," Chapman noted.

Fixing this particular issue isn't so simple, and Chapman added that one of the key things to understand is that building a glass facility in the U.S. requires a not-insignificant investment and the cost to construct a green plant in the U.S. could run anywhere from $150 million and up, as well as take approximately four to five years to complete. Chapman called it a "long-horizon investment," and said the glass suppliers must sit there and say, "is there going to be demand five years from now to the point that it makes sense to build an $150 million investment in a factory?"

"It's very hard for people to see the crystal ball and understand what demand will be like five years from now," he said.

So, how to deal with capacity, backlog, and other long-term issues? WineBusiness Monthly spoke with several glass providers to look at the aforementioned efforts they're implementing at various stages of the supply chain to better prepare for the future and help build resiliency into the chain.

Adjusting the Process and Equipment to Reduce Emissions

Because the glass industry is energy intensive and produces CO_2 emissions, Verallia wants to disrupt the way they're making glass to reach carbon neutrality. To achieve this, they're light-weighting their product ranges and have a goal to decarbonize the industry.

"We have the strong belief in Verallia that if we do not decarbonize the way we produce glass, this industry will have a hard time to survive in the future of global warming," Lamolinerie said. To decarbonize, the company is looking at the furnaces where the glass is melted and are trying different technologies to reduce emissions.

He said the company's goal is to decrease its CO_2 emissions by 46% from 2019 to 2030–regardless of any growth and any investment in capacity–and to reach carbon neutrality by 2050. Recently, the organization released data on the trend of its progress on that reduction goal from 2019 to 2022, and in that time, they've decreased emissions by 10.8%.

To pursue cleaner energy sources, they're exploring the use of hybrid furnaces; furnaces that are 80% powered by electricity and 20% powered by gas. They're also pursuing 100% electric furnaces; however, they don't yet exist

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Verallia's commitments for a sustainable future

- 46 %*

reduction in 2030 for **scope 1&2** CO2 emissions vs 2019

< 40 %

scope 3 emissions below 40 % of total CO2 emissions in 2030

NET ZERO

in 2050 for **scope 1&2** CO2 emissions

* Validated by Science Based Targets for scope 1&2 (in absolute value)

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at the scale for a glass manufacturer like Verallia, though small furnaces exist for the pharmaceutical industry.

To be consistent with sustainability efforts across the board, he mentioned that the company needs to ensure that the electricity it buys doesn't come from fossil fuels. He said in every country they operate in they're always looking at the type of energy they have and when decarbonized energy isn't an option they're investing in renewable energy. For instance, in Germany, where they use coal to run their electric power plant, Verallia decided to invest into a future offshore wind farm to help make sure that energy is green energy.

These initiatives, of course, are aimed at reducing carbon footprints, however they have implications for production as well. As certain fossil fuels become harder to come by, or even more expensive (as shown in the days following the start of the war in Ukraine), using renewable energy provides a seamless, reliable energy source to run plants.

Verallia Sales and Marketing Manager Corey Henrio noted in an email that reducing carbon footprints helps prevent delays and other issues in the glass supply chain because all of the company's sustainability actions and furnace upgrades are done in a way that limit the impact on their production processes, "so it does not generate any delays or capacity issues on our hands."

Crafting a More Environmentally Friendly Bottle

Recycled Glass

Lamolinerie noted the importance of recycled/broken glass, otherwise known as cullet. He emphasized that the more Verallia is able to put recycled glass into its furnaces to reproduce bottles, the more it will decrease its CO_2 emissions. There are pros and cons to using more recycled glass. On the one hand, it is certainly more environmentally friendly and could potentially speed up production if local cullet is readily available. On the other hand, obtaining clean cullet can be a challenge based on the quality of recycling programs in individual countries.

He explained that the broken glass, or cullet, from bottles that are thrown into bins is separated from other materials, cleaned and sent back to the furnaces for glass manufacturers like Verallia to be put back into production. According to Lamolinerie, using 10% broken glass in a bottle allows you to decrease your CO_2 emissions by 5% and energy consumption by 2.5%.

He said one of the company's goals is to increase the amount of recycled glass used in its furnaces. Currently, 55.7% of that recycled glass is going into its furnaces, but its goal is to achieve 66% by 2030.

He said the challenge is in collecting the bottles back from the consumer, collecting them from the bins and sending them back to the manufacturer.

Alex Winters, chief sustainability officer for Ardagh Glass Packaging, noted in an email that recycled glass can help improve the sustainability of the glass supply chain; by using more recycled glass, we are less dependent upon mined, virgin raw materials. As a bonus, recycled glass takes less energy to melt than virgin raw materials.

Balaji Jayaseelan, vice president of sustainability for Berlin Packaging, said once you go away from a flint glass or a super flint glass and into colors, there is a high probability that they can add a high degree of recycled content into the glass.

He said as a result, identifying the recycled content is critical, whether they're using recycled material internally–meaning scrap generated from the manufacturing process–or buying scrap from a post-consumer application. For that process to happen, a line of traceability needs to be established—where do you get the scrap and how do you get it? He said Berlin basically built an entire traceability process and they'll be able to build up that traceability.

Broken glass, known as cullets, from bottles that are thrown into bins can be separated from other materials, cleaned, and sent back to the furnaces for glass manufacturing and can be a good way to decrease a manufacturer's CO_2 emissions.

WineBusiness Monthly asked Lamolinerie if using recycled glass would've helped with the supply chain disruptions discussed earlier and he said that while it does help create a more climate-friendly supply chain, it wouldn't have had an impact on the overall supply chain, because it would still have to be produced and "then we have a hard time to supply the bottle to deliver the bottle from the factory to the customer." Instead, Lamolinerie pointed to reusable glass as an option that could be more beneficial to the supply chain; and indeed, it might prove to be a good solution.

Extending the Bottle's Life: Considering Reuse Options

Conscious Container, a startup founded by Caren McNamara, washes and sells glass bottles in an effort to reduce carbon emissions and mitigate supply chain issues, and now it's working on designing an industry-standard refillable bottle. McNamara made the announcement during the Napa RISE Wine & Climate Symposium April 5-20 in St. Helena, Calif. and said they're working with a glass manufacturer who is going to design the bottle.

Whether they'd offer the program just in the Napa/Sonoma region or elsewhere, and how they'd want to bring it to market are elements of the new program that still need to be worked out, but she said the goal is that the bottle wouldn't cost any more than a single-use bottle.

One of the reuse services Conscious Container currently provides is contract washing where a customer ships them the bottles, which are then run through a commercial and industrial system for cleaning and then shipped back to the customer for reuse.

"Within the wine industry, we know for sure there's at least three billion glass bottles packaged annually in California and of that, about 1 to 1.5% is wastage

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To optimize transportation efficiency, Saverglass employs co-loading techniques to maximize truck capacity, resulting in fewer deliveries and reduced costs and emissions.

Saverglass provides direct delivery services from its production plants to interested parties, minimizing the distance traveled by their products.

and within that wastage, they are we know at least 20 to 25% of that wastage–based on our experience so far–is perfectly good glass," McNamara said.

The organization is also working on refillable tasting room programs in which the bottles used to pour wine during tastings are sent to Conscious Container, washed and sent back to the winery for reuse; though with this program, the bottles need to have wash off labels.

In terms of how these services benefit the supply chain, McNamara said it helps with the availability of glass for small and medium sized wineries.

"I think there's two categories of wine producers, one is very large wine groups and portfolio groups that order their glass way in advance and they have POs for large quantities, those folks tend to not be so impacted by the supply chain of glass, typically. Where we speak about reuse, it allows medium and small wineries an additional option to obtain glass for shortages," she said, adding, "I believe the supply chain benefits from an availability perspective from a reusable, circular system."

In addition, she said the cost of their glass is not only competitive but in the long term, it will cost less.

"For the supply chain it mitigates some of the risk for glass supply, period. That's a very attractive offer in a world that's a little bit unpredictable," McNamara said.

What about reuse benefits in terms of the carbon footprint? She said in a mature model of refillable glass, data from multiple LCAs states that a refillable glass bottle has an 85% lower carbon footprint than a single-use glass bottle. Currently, she said wineries are saying 25%–and she's seen up to 50%–of their carbon footprint sits in that glass bottle alone.

She said lightweighting the glass definitely begins to "nibble at the edges" of that carbon footprint, maybe by about 8 to 10%.

She said she believes there's more openness in Europe towards the reuse concept and they're ahead of us in terms of setting up and putting refillable programs in place, though they're very small and regional.

Lamolinerie said Verallia is currently trying to implement reuse bottles, and in the U.S. they're about to release a reuse bottle and are engaging to launch a reuse program in the U.S. in the coming weeks and month. He said they'll most likely start this within the Sonoma and Napa region and later extend it to all of the U.S.

While Saxco is not in the reuse market, Lindsay Boudreaux, the company's senior vice president of business development and strategy, said they have previously done reuse bottles in Oregon on the beer side. She said it's about having the right infrastructure and right motivation for the return system locally to get the bottles back.

Boudreaux said, "We didn't see that as much of a success for the manufacturer that actually produced those for that specific market. We do see the buzz words around reusing glass more and more and you do want to also produce those to make sure that they're able to be washed a certain number of times–they have a lifespan to them–but we're not seeing that as prevalent right now in the wine industry."

She added that there is buzz at various sustainability conferences around reuse.

Shipping It Out

Lamolinerie emphasized that the lighter you are, the less energy you'll use and the less energy you'll use to transport that bottle, affecting CO_2 emissions no matter if it's train, truck or by air.

However, to optimize transportation efficiency, Saverglass Inc. employs co-loading techniques to maximize truck capacity, resulting in fewer deliveries and reduced costs and emissions, according to Philippe Barnagaud, president, and general manager.

Saverglass also provides direct delivery services from its production plants to interested parties, minimizing the distance traveled by their products. Additionally, when transporting goods from ports to warehouses, staff utilize a drop and pull method, ensuring trucks do not travel empty in either direction.

Saverglass has also focused on optimizing bottle palletization to maximize weight/volume ratios in containers and truckloads. This effort, which aims to reduce the number of containers and trucks needed for delivery annually, required investment in modern palletizing equipment, new packaging materials and design and modernizing the conveyors to accommodate various pallet sizes and types. The company's warehouses in the U.S. also utilize electric forklifts, contributing to a more sustainable environment.

It has also reduced the weight of its bottles to further decrease costs and emissions.

These various initiatives are part of Saverglass' goal to achieve carbon neutrality by 2050. Its initial milestone is to achieve a 36% reduction in its current CO_2 emissions.

In terms of creating a more sustainable supply chain, Boudreaux noted that now, more than ever, Saxco works closely with its manufacturing partners to try to build enough demand in their closest plants, "so that we can build those kind of minimum order quantities so that they can have production nearby where our customers are, versus them trucking it across the country or even two states away. **WBM**

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The Role of Importers

Lance Cutler

Wine importers provide a critical function in the wine industry. They perform a delicate and intricate dance to build long-term relationships, survive the rigors of international trade, and then deal with the nuts and bolts of wine sales in this country. Hundreds of importers, both large and small, perform this task with aplomb so wine lovers can go to their local restaurant or wine shop and purchase wines from almost anywhere on the planet.

In 2022, over 117 million cases of imported wine were sold in the United States. Total wine sales in that year were $85.5 billion, and imports accounted for one third of that with $27.55 billion in sales. For those imported wines to make their way to the United States, an importer had to find the winery, build a relationship, maneuver their way through the intricacies of government licensing and currency exchange, and manage the logistics of international shipping. Once the wine arrived, that importer had to place the wine with a distributor, develop their own sales team, obtain licenses, and pay and collect bills.

It is counterintuitive that given the expenses and complexities of importing wine, many foreign wines provide better value and quality in given price ranges than their domestic counterparts, yet that is often the case.

Bruce Hunter, managing director of Shaw-Ross International Imports, pointed out, "It's overhead that drives the price of wine up. Frescobaldi has been around for 700 years: they don't worry about paying off their property. They make money. We make money. At the end of the day, the consumer is getting a pretty good deal."

Ed Hogan has served as CEO of the Henry Wine Group, as well as vice president of sales and marketing for Chambers and Chambers Wine Merchants, and he concurred.

"You have these families in Europe that have been growing grapes and making wines for hundreds of years. They don't have big bank loans nor are they paying high interest rates on the land," he said, noting that conditions in California are much different. "You look at vineyard prices in California and marvel at what people have paid. It makes it difficult to get your money out, and it takes a long time."

Even if long-term ownership mitigates costs and expenses, importing wines is not easy, and it is very competitive. Nick Ramkowsky worked as a distributor/broker in the mid-1990s, where he had early success with Catena wines from Argentina, growing California into the second best market in the United States for the brand. He had an idea about opportunities in Argentina, so he partnered with Ed Lehrman and took a trip. They met with Susana Balbo, Pedro Marchevsky, Laura Catena—who was starting her Luca brand—and Ernesto Catena, introducing his Tikal brand. They put together the first premium Argentine portfolio in 1999, named their company Vine Connections and began importing in 2000.

Lehrman ran the business side while Ramkowsky travelled the United States 250 days a year, knocking on doors of both distributors and accounts to tell them why Argentina's wine deserved attention. The stories of the producers and the vintners resonated with buyers. Soon Vine Connections was recognized as a great importer of fine wines from Argentina. In 2002, they added premium Sake to their portfolio, promoting it much like wine by focusing on who the producer was, which rice was used and which prefecture it was grown in. In 2013, Chile had an emerging scene of small producers that made estate-bottled wines, so they created the first premium portfolio of Chilean wine with nine selected producers.

"A good importer will be consistent in the style he represents because they have a palate for what they are looking for," he[CW1] explained. "If consumers

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Mariano Canal, Luca and Darryl Vennard, Vine Connections

identify with that palate, they should be safe finding that same consistency throughout their portfolio."

Darryl Vennard, the Midwest regional sales manager for Vine Connections, is convinced that his boss, Ramkowsky, has the best palate he's ever worked with. Even after 37 years' experience in the wine business, Vennard bubbles over with enthusiasm.

"I wear this company on my sleeve. You need to be evangelical about what you sell. If you are not proud of what you sell, people will sense that, and it will hurt you," he declared. "My favorite part of the job is not sales: it is about representing these people and their hard work and giving a voice to those that deserve it. Our company represents bona fide estates that are organic, sustainable and Biodynamic. They are multi-generationally owned, which makes the job of representing them so much easier."

Matt Hedges is another importer who looked to Argentina first. Since 2004, his Vino del Sol company has focused on terroir-driven wines that over-deliver in value. When selecting wineries for his company to represent, Hedges looked for honest hardworking people who owned and controlled their own vineyards, had real brick and mortar wineries, and who had a sustainable long-term vision. He felt these requirements would lend his portfolio a consistent sense of place, quality, pricing and supply. Instead of importing his wines directly, he gave that responsibility to an import company. Hedges figured a new company like Vino del Sol, focusing on Argentine wines with no distribution network, wouldn't work, so he gave that responsibility to Epic Wines Import Company and instantly gained distribution in 30 states.

After Argentina's economic crisis in 2008-2009, Hedges felt his company needed to be more competitive and more aggressive investing in the market. They had a frank discussion with Epic and negotiated a price that allowed them to purchase the company, so they now own the company that imports their wines.

"Pricing is key to everything," Hedges said. "It is another non-negotiable aspect. Owning our own import company cut out a layer of markups. That

Bruce Hunter, Shaw Ross

allowed our wineries and our company to be sustainable and, at the same time, provided attractive margins for our retailers and distributors."

Hogan explained that importing wines directly from their source is advantageous to their profit margin. Typically, a national importer will take a markup and then sell to the wholesaler who also takes a markup. When you import directly, you get control and own the relationship with the supplier, and that first markup is yours to keep.

Hogan said that to set up direct imports (DI), you must make an investment. The importers doing well with DI go to the wineries three or four times a year, and they visit the same suppliers over and over to build a relationship; they establish trust in the relationship to get the brands, and they maintain them as clients, not just because they sell their wine but also because they see them every year. Hogan added that it takes that investment to build those relationships or acquire new clients.

Billy Weiss has been building relationships with growers and small farmers for more than 25 years through his North Berkeley Imports.

"It's really human capital. You are going to know right away if you get along with the winemaker, and you have a strong sense of the quality of his wine," Weiss noted.

Weiss said his best recommendations come from existing winemakers and grower clients in that they might introduce him to a cousin, a friend from wine school or an intern. Additionally, they have a network of people they work with, including tour guides, restaurateurs and brokers, and they work constantly with these people to see what is up and coming.

"If you hear of a new wine in Burgundy and you are sitting in California, then it has already been discovered by somebody else," Weiss explained. "You need to be ahead of the curve. We have boots on the ground in France and Italy; so if we get a tip or a lead, we can be there quickly."

Weiss believes his best pitch to prospective clients is his existing portfolio and the growers he supports. He buys wine every year, and his relationships go back 20 years. When prospective suppliers see the strength of the North Berkeley Imports portfolio, consider their long-term relationships in the market and with their growers, it builds a compelling case.

"We are really involved with our growers, visiting them three or four times a year. Countries like Spain and Croatia are compelling and interesting, but there is only so much travelling you can do. If you want an intimate, personal relationship, you've got to be present. If I am bouncing around all these other countries, I just don't have enough time."

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Felipe de Solminihac, Eduardo de Solminhac, Darryl Vennard, Vine Connections

There are thousands of producers in France and Italy, but it is challenging for them all to get into the American market. Suppliers will work with smaller direct importers when they have a good relationship. Many of the wineries prefer working with these importers instead of large national firms. Hogan feels that the more independent the importer, the higher quality their wines.

"Every one of their wines is handpicked. They are not representing wines that they didn't choose. You need to believe in the wines that you sell to your customers," he said.

Small importers are enticing; but if you look at it from the producer's side, there are advantages to working with a national importer. First, there is just one bill they need to generate and a single payment to collect. Keeping track of dozens of small importers can become a bookkeeping nightmare. National importers supply instant broad coverage of the products throughout the United States, both on- and off-premise.

Foreign wineries that sell in the United States tend to look for instant gratification, but the business doesn't work that way. It takes time to build a firm foundation with sales representatives to get to the right accounts and to become entrenched in the market. Bruce Hunter brings 48 years of both international and domestic wine industry experience. He insists that honesty is the key when courting suppliers to join an existing national portfolio.

"You can't make outlandish sales promises," Hunter said. "You are better off saying, 'Here's what we are going to do. I can't promise huge volume numbers at first, but I promise we will get distribution and give your brand an opportunity to be in the right places and seen by the right people and consumers.' Then the brand can take off and generate case sales on its own merits."

He sees advantages to both small and large import companies, describing Shaw-Ross as neither boutique nor huge, but comfortably in between at a couple million cases annually.

"Our size is just right," he observed. "We have enough clout to attract quality suppliers and enough to make us important to national accounts. We can service all our customers in the right way as well as our customers and we have a wholesale network that covers every state in the market. We have the types of products that make us bigger fish with our wholesalers, and we are constantly looking to add new products to help maintain our importance to the wholesalers."

According to Ed Hogan, one problem of working with a large national importer for a wholesaler is that they are going to pressure you to take every wine they have in their portfolio. It forces wholesalers to sell wines they have not personally chosen and may not especially like.

"If you look at good importers, they are extremely passionate about wine. They love wine; they collect and drink wine. Some other companies may not have that passion. It often becomes about numbers and boxes and volume of distribution, not about fine wine," Hogan said.

Whether importers are large or small, Nick Ramkowsky points out that it is important to understand each importer's philosophy. He said some importers look more to the business side of the opportunity versus the wine side while others focus on the wine first and the business second.

"It's sort of like, if you build it, they will come. If you select good wines, people are going to buy them," he said.

Darryl Vennard puts it more crudely, "Importers either seek out quality, or they seek out boxes to sell at Piggly Wiggly. We call the people 'spaghetti distributors.' They bring stuff in, throw it against the wall and see what sticks."

Sometimes the maneuvering between small and national importers can have consequences for individual distributors. Dealing with the fallout from that maneuvering can force individual distributors to become their own direct importers. It also provides a good example of how you set up a relationship, deal with logistics and successfully build a brand.

Scott Murphy recently retired from his position as director of sales and marketing for Unique Wine Company in Seattle.

Murphy complained, "Over the years we had dozens of brand departures that were not based on performance, but instead had to do with importer or broker decisions. The final straw for us was when we lost the Vietti Winery from Piedmonte. We had taken that wine from nothing and built it into a powerhouse in our market, moving 1,000 to 2,000 cases per year."

It turns out that Vietti changed its national importer. That importer worked with a different Washington distributor and insisted on moving the wine away from Unique. Due to the years of sales success, Vietti's owner/winemaker Luca Currado had built a great friendship with Murphy, but his hands were tied, and Vietti moved to the other distributor. Murphy had a big hole in his Italian wine section. He needed to fill it. Serendipity intervened. He was approached by Giuseppe Vajra of Barolo.

"We weren't going to invest a ton of work and risk, getting burned again, so we decided to direct import Vajra wines," said Murphy. "Importing our own wine allowed us to take control of our own destiny. We ended up directly importing 20 different wineries. I loved it. We had a direct relationship with the winery and worked together to implement plans and programs which provided a better synergy than having it run through a third party. It didn't guarantee that they would stay, but it removed a layer from the mix."

Murphy and his sales staff built Vajra into a popular local success, often by replacing the more established Vietti offerings. When looking for direct import clients, Murphy would first approach them by email. Some were already in the market but were not doing well. Others had yet to enter the fray. He made no promises until he understood their needs and goals. They would work out terms, cost, promotion and support; there were no contracts, just verbal agreements.

Murphy chuckled, "I was always looking to fill holes in our portfolio. I'd go after certain suppliers to cover specific regions. The wineries had no clue

about how to grow a brand. They just made wine. I taught them what they needed. I pulled out from them what they were capable of doing in terms of free products, sales incentives, large formats or trips. I was acting like a brand manager for several of them because they had no experience. I handled pricing, promotions, etc."

Murphy had a good sense of what would work and what wouldn't in the market. Once he had won over a supplier, he brought in samples for his sales staff to taste. He'd tell the winery story, let them taste the quality for themselves, lay out the pricing and build excitement. If his best sales representatives bought in, then the winery was almost a guaranteed success. Murphy found that involving his sales reps in this way kept them engaged and loyal to the company.

Scott Murphy pointed out an obvious fact: wine is a people business and always will be. Personal relationships are crucial and often outlast business relationships.

"Wineries are looking for performance and sales," he said. "If we do a good job, then we are needed and valuable to them; but when we take the time to socialize, to learn about each other's cultures and to meet each other's families, then it can be fantastic and life-changing."

Importers are in total agreement about the importance of getting salespeople and buyers to meet the producers, preferably on their home territory.

"Bringing distributor salespeople to Argentina to meet our winemakers, see the properties and socialize in Argentina provided the best return on investment of anything we have done," Hedges said. "They fall in love with the families, the hospitality and see how special the wines are. They return home invigorated and educated."

Ramkowsky took groups of people to Argentina every year. "The wineries were very supportive. The fact that we were investing in bringing in key buyers to see what they were doing and who they were was very well received. It became a very important part of what we did every year, especially in the beginning," he explained. "No one knew where Argentina was. Once there, they could see the culture and understand why Buenos Aires is called the 'Paris of South America' with its beautiful architecture, wide boulevards and incredible restaurants. Showing that sophistication was eye-opening, and the people became ambassadors for the country and the wine when they returned."

Murphy detailed a particular sales incentive as an example of building personal relationships. "One winery from Sicily proposed sending people to Sicily, all expenses paid, if we hit certain sales goals. We hit the numbers and got the trip to Sicily. Seeing the winery, meeting the people and getting to know the area was an incredible experience. It kicked off the brand with the sales reps truly engaged and working hard."

The United States has one of the most varied wine markets in the world. For the consumer, rummaging through thousands of selections to consistently find wines that you like can be a daunting task. A trusted guide would be helpful and could save you a lot of money. A wine shop owner who knows your likes and dislikes is the best bet, but they are rare and difficult to drag around to other stores and restaurants.

The next best thing is to know your importers. If you find an imported wine that you like, check the back label and see who brought it into the country. You will often find that if you like a wine from an individual importer, you will like most of them.

Billy Weiss put it this way, "The Bay Area has 30 to 40 importers, and another 100 wineries selling direct. Buyers need to hitch their wagon to somebody. North Berkeley Imports has growers and small farmers. No one is going to know all these little growers. We are the brand. It's us." WBM

The Future is Digital:

Mobile Driver's Licenses for Alcohol Age Verification

Hannah Becker

Hannah Becker is a shareholder with GrayRobinson's national Alcohol Law Team. Her practice concentrates on advising businesses and entrepreneurs in heavily regulated industries, including the beverage alcohol industry, with regard to compliance with federal, state, and local statutes and regulations that govern the manufacturing, importation, distribution, marketing, sale, and consumption of regulated products. She brings exceptional practical experience in drafting and negotiating pivotal agreements, particularly distribution agreements, importation agreements, production agreements, and sponsorship agreements, and providing regulatory support for transformative mergers and acquisitions in the hospitality industry.

The alcohol industry and digital technology are always evolving; it is just a matter of time before digital forms of identification for alcohol age verification become standard practice. As critical as age verification is to the sale of alcohol beverages, so too is, understanding the technology, laws, and best practices applicable to mobile or digital driver's licenses for responsible beverage service.

According to the American Association of Motor Vehicle Administration, a mobile driver's license (MDL) is a driver's license or identification card that resides on a mobile device or requires a mobile device as part of the process to gain access to the related information. An MDL has the same data found on a physical driver's license; however, the data is authenticated and transmitted electronically to businesses or law enforcement.

While the MDL technology has existed for years, it has only been recently that the federal and state governments have started taking steps to implement MDL programs.

On the federal level, the U.S. Department of Homeland Security, the National Institute for Standards and Technology under the U.S. Department of Commerce, and the International Organization for Standardization are working on creating new standards for MDLs. In early 2022, the Transportation Security Administration also began testing MDL acceptance for PreCheck passengers at select trial airports.

At the state level, before alcohol licensees can legally accept MDLs at their licensed establishments, states must first pass legislation deeming MDLs legal. Currently, the following 14 states allow the use and acceptance of MDLs: Alabama, Arizona, Arkansas, Colorado, Delaware, Georgia, Illinois, Louisiana, Maryland, Mississippi, Ohio, Oklahoma, Utah, and Washington, D.C. At least 15 states, including California and Florida, have either conducted MDL pilot programs or legislative studies. Further, at least a handful of MDL bills have been introduced at the state level, including Pennsylvania, Vermont, and Washington, during their respective legislative sessions this year.

Licensees operating in states that authorize MDLs should understand the applicable laws, regulations, and agency enforcement policies relating to a business' acceptance of MDLs, particularly when used for age verification in alcohol sales. There are at least two state alcohol beverage control agencies, including the Colorado Liquor Enforcement Division and the Louisiana Office of Alcohol and Tobacco Control, that have adopted regulations and issued agency enforcement policy and training documents on the subject of MDLs and expressly stated that MDLs are an accepted legal form of personal identification for alcohol sales.1 Other state alcohol beverage control agencies, including the Arizona Department of Liquor Licenses and Control and the Delaware Division of Alcohol and Tobacco Enforcement, have issued non-rule enforcement policies on accepting MDLs for age verification purposes. For purposes of illustration, the aforementioned agencies have provided the following MDL-related guidelines to licensees:

- **Arizona**: Licensees may use the Arizona Department of Transportation (ADOT) Mobile ID app to verify a consumer's age in lieu of checking a physical copy of their driver's license for alcohol sales. No law requires licensees to accept ADOT's Mobile ID app, and ADOT currently recommends consumers carry their physical driver's license. It is at each licensee's discretion to determine the best methods of complying with Arizona's alcohol beverage control laws and preventing underage drinking. However, the ADOT Mobile ID app is the only mobile phone-based ID that is verifiable against ADOT records; thus, the only type of MDL that may be used for age verification.

- **Colorado**: Per Governor Jared Polis' Executive Order B2019-013, licensees are authorized to accept the Colorado Digital ID™ for age verification purposes. While Colorado licensees are encouraged to accept the Colorado Digital ID, it is a complement, not a replacement, to the physical driver's license at this time.

- **Delaware**: Delaware licensees can legally accept the Delaware Mobile ID or MiD as a form of age verification for the sale of alcohol.

- **Louisiana**: It is at the discretion of each business whether they will accept the MDL. However, the LA Wallet is the only acceptable form of MDL. Licensed alcohol businesses required to utilize ID scanners must still request a physical driver's license if the scanners are unable to

will be as if the licensee did not verify the consumer's driver's license or identification. All other rules and guidelines still apply when ensuring an individual is of legal age to purchase and/or consume alcohol products (e.g., recordkeeping).

It is important to note that every state regulates MDLs, and MDLs for alcohol sales age verification differently. Licensees, particularly licensees operating in numerous jurisdictions, should prepare for MDL age verification. To date, while only a minority of states have implemented MDL programs, such state MDL programs and the states' laws, regulations, and agency enforcement policies have demonstrated a lot of commonalities applicable to the acceptance of MDLs for age verification purposes, including the following:

- Licensees can only accept MDLs issued by the state where the licensee is located.
- Licensees are not required to accept MDLs; while encouraged, the acceptance of MDLs is at the licensee's discretion. * MDLs are a complement to physical identification, not a replacement. Consumers must also carry physical identification in case the licensee is unable to verify the MDL, does not accept MDLs, or requests a second form of identification.
- It's recommended that all licensee employee training manuals are updated to include specific MDL guidance.
- MDLs are designed so anyone validating or verifying the information can do so without handling the consumer's phone or app.
- Businesses verifying the MDL only have access to age verification information the consumer consents to share with the business, like date of birth and name.

So what can businesses do to prepare for the use of digital and mobile driver's licenses for alcohol sales age verification? Recommended alcohol licensee preparation should include monitoring MDL legislation and agency regulations in all applicable jurisdictions; updating employee training manuals to include MDL resources, requirements, and restrictions; and implementing MDL-specific employee training sessions—particularly on the subject of age verification, privacy, and security considerations. Licensed alcohol businesses are prohibited from selling or serving alcohol to consumers under 21. Those who do are subject to criminal and civil penalties. Therefore, understanding MDL technology and properly executing MDL policies will ensure licensees are legally operating their businesses. **WBM**

References

1 See 1 CCR 203-2:47-912(A)(1); La. Admin Code. tit. 55, pt VII, § 401; see also Bulletin 19-07, Executive Order Implementing Digital Personal Identification Technology, Colorado Department of Revenue, Liquor and Tobacco Specialized Business Group (Oct. 31, 2019), available at https://sbg.colorado.gov/sites/sbg/files/documents/LED_Bulletin_19-07_Executive_Order_Implementing_Digital_Identification_Technology.pdf; Bulletin 20-18, Colorado Digital ID Resources for Trainers, Colorado Department of Revenue, Liquor and Tobacco Specialized Business Group (Sept. 17, 2020), available at https://sbg.colorado.gov/sites/sbg/files/documents/Bulletin%2020-18%20CO%20Digital%20ID%20%28Updated%20Links%29%208.30.2021.pdf; Accepting Colorado Digital ID as Proof of Identification, Colorado Digital ID Training for Businesses, myColorado (Oct. 2020), available at https://drive.google.com/file/d/19n9M_wjdKM7mIco3e3ijPHKXha2zX6Uc/view (CO) and Responsible Vendor Handbook, 2021 Edition, Serving Alcohol and Tobacco: Digital Identification, Louisiana Office of Alcohol and Tobacco Control, available at https://atc.louisiana.gov/media/oj0kmthz/responsible-vendor-handbook.pdf (LA).

Eight Opportunities to Connect with Future Wine Consumers

Dr. Liz Thach, MW

"We always underestimate the change that will occur in the next 10 years," Bill Gates once said, which underscores why it is prudent for all businesses to set aside time each year to engage in a strategic planning session to identify future trends, threats, and opportunities. This is equally true in the wine industry, especially in times of increasing change.

For the Unified Wine & Grape Symposium, I conducted research on consumer trends that will shape the wine industry and presented them at the 2023 State of the Industry session. This article provides an overview of the results of that research, which revealed eight opportunities: connect with younger multicultural consumers; enhance loyalty efforts with older consumers; consider new grape varieties and regions; provide real numbers to consumers; incorporate growing desire for transparency in food and beverages; engage the no-/low-alcohol consumer; create new purchasing experiences with technology and adopt technological changes for smart packaging.

How the Research Was Conducted

For this research, the methodology used was literature review, document analysis and force-field analysis. This included an extensive review of future trend studies and consumer surveys conducted by a variety of experts, such as the Pew Research Center, the U.S. Census, the National Intelligence Council, McKinsey, Price Waterhouse Coopers, Wine Market Council, Wine Intelligence, Gomberg-Fredrikson, Ethnifacts, Datassential and many other sources. The timeframe was set for predicted changes that will occur from 2023 to 2040.

A force-field analysis of the six major drivers of change for the wine industry was then applied. These drivers are demographics, social trends, technology, environment, economics, and political/regulatory forces. These were applied against predicted future trends to determine which ones may affect wine consumers the most. From this, eight business opportunities emerged.

A caveat is that any study that analyzes future trends cannot be 100% accurate because change is always occurring, and therefore, stronger and/or unexpected forces can emerge that adjust the picture (remember the pandemic). For this reason, it is recommended that wineries review the eight opportunities and select three or four that match their business strategy to consider for potential activation. The opportunities are presented first with the data supporting the trend and then with actions wineries can take to succeed in the future.

OPPORTUNITY #1:

Connect with Younger, Multicultural Consumers

According to U.S. Census projections, the U.S. population will reach 380 million people by 2040, up from 334 million today. By that time, 55% of 30-year-olds will be considered "multi-cultural," and today's minorities will become the majority. Only 29% of those "minority" consumers currently drink wine in

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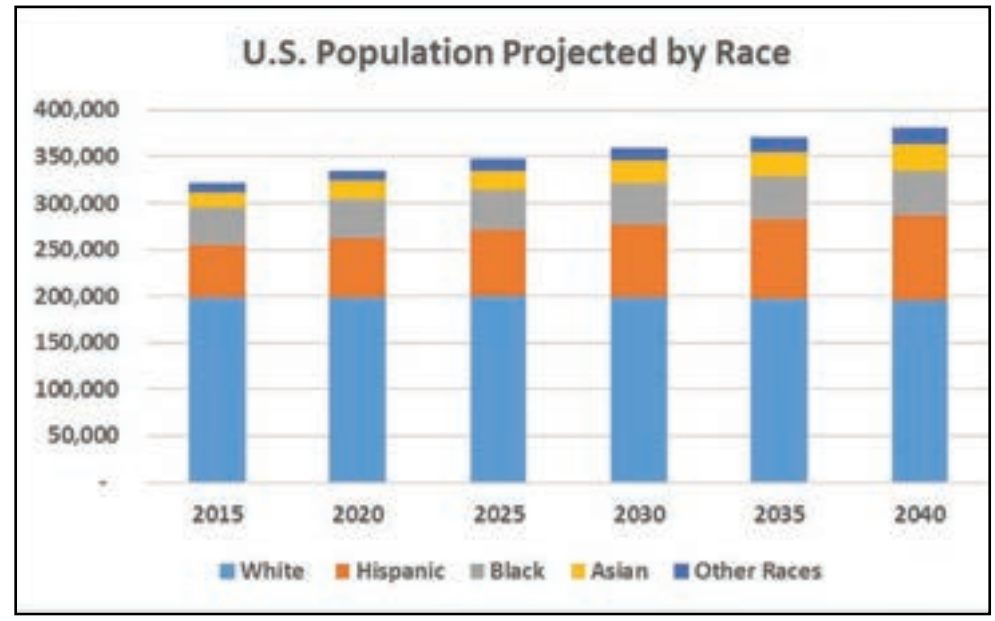
the U.S., according to the *Wine Marketing Council* 2021-2022 *Consumer Benchmark Report*. The report shows that 13% Hispanic, 12% Black and just 4% Asian drinkers currently consume wine.

Furthermore, a joint study conducted by Ethnifacts and Wine Market Council in 2022 found that, "Younger multicultural consumers (aged 21 to 29) are least likely to be weekly wine drinkers." The results showed that the reason many ethnically diverse and younger consumers report for not drinking wine is simply because "they do not like the taste." This is concerning because a 2022 study by Datassential found that 80% of Americans continue to prefer their first alcoholic drink, or some variation of it, as they age. This is even more true if it was a sweet-tasting beverage, such as a sweet wine or cocktail. Also, 60% of consumers who had a negative first experience with a drink do not return to it.

Based on the research, the opportunity to connect with younger, multi-cultural consumers includes:

- Gateway Wines: Produce more "gateway wines" that taste attractive to young, multi-cultural consumers. Ethnifacts research shows that positive first experiences mentioned sweet reds, Moscato and sparkling wines. This also supports Datassential's research findings.
- Inclusive Ads: Make sure marketing materials and ads are inclusive and show younger, multi-cultural consumers.
- Lifestyle Links: Communicate via social platforms how wine enhances everyday occasions for this audience, e.g., to relax, have fun, enjoy poolside, while hiking, during a game night with friends, etc.
- Foreign Partnerships: Consider import partnerships, joint ventures, or acquisitions with international wineries. The Ethnifacts study found that 66% of Hispanic-Americans drink wines from Spain and 25% drink wines from Chile and Argentina; Asian-Americans have a preference for French wines; and African-Americans like to buy wines from South Africa and Australia, in addition to a lot of U.S.-produced wines.



CENSUS BUREAU U.S. POPULATION PROJECTIONS

OPPORTUNITY #2:
Enhance Loyalty Efforts with Older Consumers

According to the U.S. Census, by 2030, Baby Boomers will all have reached the age of 65, and there will be more old people than children in the U.S. AARP shows that by 2040, 1 in 5 Americans will be over 65. Therefore, it is also important that wineries do not forget to focus on their current consumer base—many of which are Baby Boomers—along with inviting younger, multi-cultural consumers to enjoy wine. Opportunities for this trend include:

- **Update Loyalty Programs:** Expand your current direct-to-consumer wine club options and create more innovative ones. This is important because a 2020 Ketchum Survey found that 45% of consumers changed brand preferences during the pandemic. Keep your brand fresh and relevant.
- **Lifestyle Links:** Produce wine styles and ads that match the lifestyles and interests of older consumers, e.g., anniversaries, college graduations for children, travel, healthy options, retirement parties, etc.
- **Thank You Gifts:** Provide thank you gifts to loyal consumers.
- **Feedback from Older Consumers:** Reach out to older wine consumers and ask them what changes they would like to see in your wine offerings and wine club. Then implement some of them.

The neck hanger Veuve Clicquot placed on its bottle lets its consumers know that the bag the bottle is wrapped in is made with 100% recycled plastic.

OPPORTUNITY #3:
Consider New Grape Varieties and Regions

A 2021 Yale University study found that 72% of Americans believe global warming is happening, and 82% (aged 18-34) believe CO_2 emissions should be regulated. NASA and the National Oceanic and Atmospheric Administration (NOAA) have documented 2022 as one of the warmest on record. Even many Americans have heard the news that Bordeaux had its earliest harvest ever in 2022.

Sarah DiMarco, writing on the future of the wine industry, concluded that wine consumers are now open to new grape varieties and wine regions to combat global warming. This is especially true of Millennials, who are naturally variety-seeking consumers, and Gen Z consumers, who are very internationally focused. Opportunities here include:

- **Planting Heat-Loving Varieties:** Wineries should consider planting more heat-loving grape varieties, such as Grenache, Tempranillo, Chenin Blanc, Albariño, Vermentino and others, as well as communicating the reasons for doing this.
- **Using Drought-Resistant Rootstock:** Use more drought-resistant rootstock and communicate the reasons why.
- **New, Cooler Wine Regions:** Consider purchasing or planting vineyards in cooler regions, such as Canada and England, and at higher altitudes, such as New Mexico or Colorado. Explain the thinking to consumers.
- **Communicating CO_2 Reduction Efforts:** In addition to communicating the positive changes above to adapt to global warming, it is equally important to communicate the positive efforts you are taking to reduce your carbon footprint.

OPPORTUNITY #4:

Provide Real Sustainability Numbers to Consumers

Numerous studies show that consumers are interested in purchasing sustainable products from companies that are interested in protecting the environment and employees. A 2021 Wine Intelligence survey found that younger consumers especially seek organic and sustainable wines, and Greenprint (2021) found that 75% of Millennials will pay more for environmentally-friendly products. However, a 2022 McKinsey study found that 50% of Americans say they don't trust companies' claims about protecting the environment.

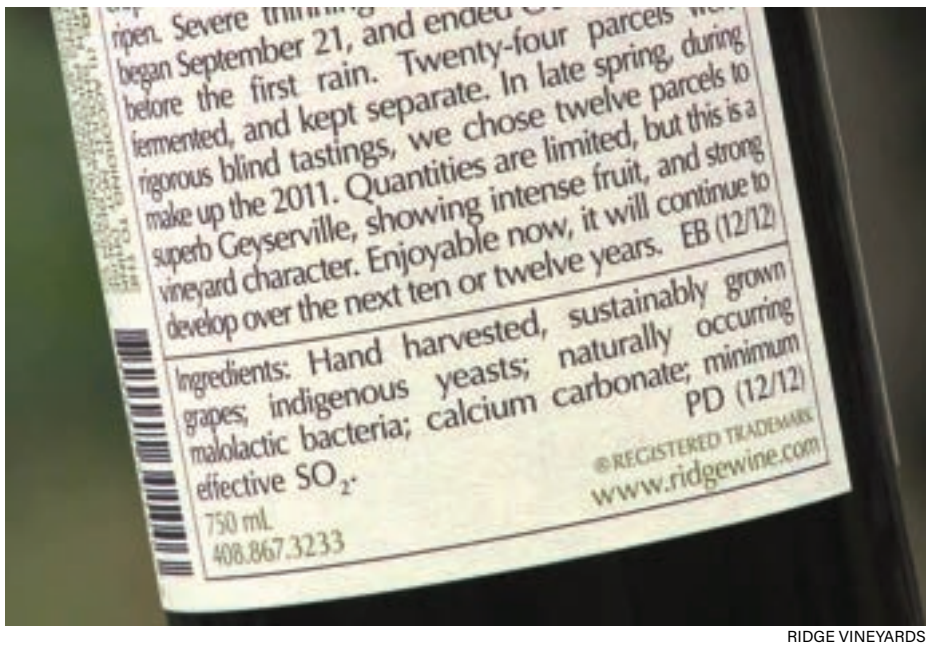
Therefore, opportunities for wineries to enhance their credibility around sustainability claims are:

- **Include Real Statistics:** Provide real numbers about sustainability achievements on wine packaging, as well as in marketing materials and websites. For example, 50% water conserved in grape growing since 2015, reduced energy usage by 25% in cellar since 2018, carbon footprint reduced by 34% since 2020.
- **Sustainability Tab:** Create a separate sustainability tab on your website menu that describes goals and results to-date. This should be easy to find and not hidden under other menu tabs.
- **Explain Certifications:** If you have multiple environmental certifications (e.g., SIP, California Sustainable, Fish Friendly Farming, B-Corp, etc.), explain them on your website in simple language.

OPPORTUNITY #5:

Incorporate Growing Desire for Transparency into Your Messaging

Starting in December 2023, the European Union will require ingredient labeling for wine. The TTB is considering similar requirements after a lawsuit was filed by consumers on this issue, according to Nutrition Insight. A 2022 Wine Market Council study found that 26% of wine consumers want nutrition labeling, 22% want ingredient labeling, and 50% of consumers believe wine has higher sugar than beer or spirits, which is disturbing because it's generally not the case.



RIDGE VINEYARDS

Ridge Vineyards has been listing all ingredients used in its wines since 2011.

NAVARRO VINEYARDS

Navarro Vineyards and Winery has made non-alcoholic grape juice from winegrapes for decades.

Opportunities for wineries to provide more ingredient transparency:

- **Be An Early Adopter:** Get ahead of the curve and add ingredient and nutrition labeling for your wines. Ridge Winery has been doing this since 2011.
- **QR Code/Website Support:** Consider adding information about wine ingredients and nutritional facts (along with calories, carbs, no sugar added, etc.) to a QR code on your bottle that directs consumers to your website where all this information is provided.
- **Use Positive, Honest Terms:** Don't assume that consumers already know the positive attributes about your wine. Tell them and provide descriptions, such as plant-based, no sugar added, only 120 calories, low carb, gluten-free, keto-friendly, vegan-friendly, family owned, locally sourced grapes, etc.

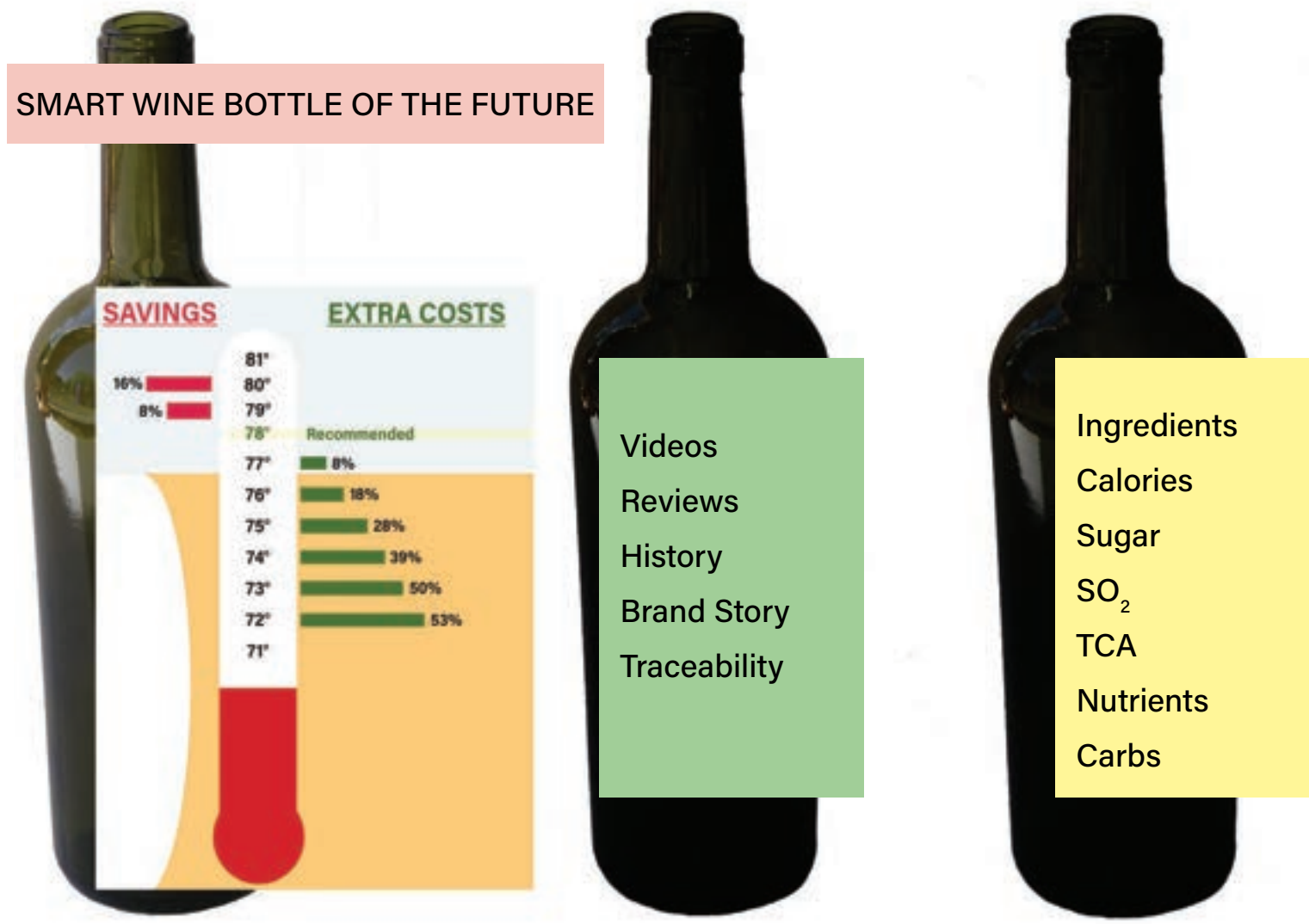
OPPORTUNITY #6:

Engage the No- or Low-Alcohol Consumer

According to a 2022 McKinsey study, 79% of global consumers identify "wellness" as important, with 42% identifying it as a priority. The size of the wellness market is predicted to grow to $9 trillion by 2040—doubling in size from $4.5 trillion today (Delaware North, 2021)—and 54% of consumers are willing to pay more for healthier food/beverage options, according to a 2023 PWC study. A key part of wellness is plant-based foods, and that market is predicted to reach $162 billion by 2030, up from $29 billion today, Bloomberg reported.

More sobering for the wine industry is the news that 39% of consumers are cutting down on all alcohol, not just wine, especially among those aged 18-34, according to a 2021 Wine Intelligence study, in collaboration with the Wine Market Council. Therefore, it is important that the wine industry accepts this fact and takes actions to meet consumers' needs. The following are some opportunities:

- **Consider Offering a Premium Low-/No-Alcohol Option**: If you have not yet developed a low- or no-alcohol wine option, consider adding one to your portfolio.
- **If Already Low Alcohol, Communicate That:** Many wines are already lower alcohol, meaning 11% or less alcohol. Examples include some sparkling wines, Rosés, Sauvignon Blancs, Chenin Blancs and Rieslings.



If you produce one of these, make sure to communicate the lower alcohol level on the bottle and in marketing materials.

- **Research Better Tasting Options**: Some consumers complain that low-/no-alcohol wine doesn't taste as good as low-/no-alcohol beer. The wine industry needs to invest in research to improve the taste of low-/no-alcohol wines. This is possible if enough time, attention and money are paid to the issue.
- **Consider Varietal Grape Juice:** In its report on the Future of Wine & Spirits, Mintel recommended that, "Brand owners need to diversify into the soft drinks space as alcohol declines." Why not produce varietal grape juice, such as Pinot Noir or Chardonnay juice? Navarro Winery in Mendocino has been doing this for decades, and they usually sell out every year.

OPPORTUNITY #7:

Create New Purchasing Experiences with Technology

Advances in technology are providing many new purchasing experiences for consumers, which affect the wine industry. For example, the growth of voice shopping and live-stream shopping via mobile phone exploded during the pandemic and continues today. In 2021, 52% of online shopping was done on a mobile phone, according to Global Payments Report, so making sure you have a good mobile website and shopping cart is critical. Google reports that 53% of mobile sites are abandoned if the loading takes three seconds or longer.

Consumers are abandoning cash and switching to digital wallets to pay for products, including Venmo, Apple Pay, PayPal, etc. In fact, in 2021 44% of purchases were made with digital wallets, whereas only around 30% were on credit card, according to WorldPay.

Euromonitor predicts that by 2030, physical stores, as we know them, will completely change, with consumers doing most of their shopping research online and coming to physical stores to touch, taste, and experience products. According to Pew Research, by 2040, 54% of experts say that the metaverse will be a well-functioning aspect of daily life for .5 billion people globally. Already both Heineken and Jose Cuervo have launched new brands in the metaverse.

Opportunities for wineries include:

- **Ramp Up Virtual Tasting Options:** Just because the pandemic has ended doesn't mean you should stop offering virtual tastings and events. Instead, you should be more creative with your virtual tasting options and make it easy for consumers to purchase the wines online in advance—and buy more afterwards. Creative virtual tasting options include wine-tasting with flower arranging, with spa products, with new fashion products, with new golf drivers, as well as the traditional tastings with the winemaker and/or cooking a recipe to go with the wine. Think outside the box.
- **Ensure a Fast Mobile Website and Online Shopping Cart**
- **Consider Adding a Digital Payment System**
- **Explore Live-Stream and Voice-Shopping for Wine:** Can consumers easily find your wine online by asking Siri or Alexa? Have you considered live-streaming the winemaking or bottling process with consumers? These are new shopping platforms to consider.

- **Explore Metaverse Options:** Begin researching how to transition your current online shopping experience into the metaverse, and hopefully, at least one wine brand will launch a product in the metaverse, so wine doesn't have to be a laggard after beer (Heineken) and spirits (Jose Cuervo).

OPPORTUNITY #8:

Adopt Technological Changes for Smart Packaging

Technology is improving food and beverage packaging in many ways, but smart or intelligent packaging with sensors is probably one of the most important. A 2022 Future Markets Insights survey found that 85% of the younger generation prefers intelligent packaging.

The opportunity for the wine industry is to explore how to develop a smart wine bottle, one that is also a lighter glass bottle to lower the industry carbon footprint. Though alternative packaging will continue to grow and is very appealing to consumers, it is estimated that 75% of wine is still sold in bottle, and it is predicted that will continue, especially for premium wines that can benefit from aging.

Features of the smart wine bottle, with sensor technology and QR codes, are expected to include:

- Temperature (current temperature as well as the temperature best for serving and various temperatures within transit for the collectors)
- Shelf-life
- Distribution tracking
- Ingredient and nutrition data
- Ingredient tracing
- Certification information
- Brand story
- Other product-specific purposes, including reducing counterfeiting and waste.

Finding the Right Opportunities

The future can be quite unpredictable, but savvy businesses always proactively prepare and take steps to capitalize on opportunities. The 2022 Gomberg-Frederickson report showed that wine sales growth flattened in the past year after more than two decades of growth. However, in reviewing sales and consumption patterns over the past 50 years, there have always been ups and downs in the wine industry, and it is usually innovation (remember wine coolers in the 1970s and red blends in the 1990s) that helps to break the downward trend and boost sales growth. It is time to recognize and embrace the changes the future brings and to innovate once again. **WBM**

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Expert

Jake Lorenzo

ILLUSTRATION BY BOB JOHNSON

Jake Lorenzo certainly does not have his finger on the pulse of the public. Crazes come and go with me hardly noticing. This detective has no clue about what makes things successful.

From the time of Bartles and Jaymes wine coolers to current hard seltzers, like Truly and White Claw, I just don't get it. The flavors seem completely artificial with combinations dreamed up by marketing companies tracking influencers like bloodhounds after a scent. None of these beverages taste natural to me. Sometimes they even go out of their way to make things sound unappetizing; hard kombucha, anyone?

If Jake Lorenzo wants a cold, refreshing beverage, especially on a hot day, I might look to beer as a starter. Finding myself lounging on a beach in Mexico, well-made Palomas might be just the ticket. Ducking into a bar on a humid day in New Orleans could cause me to order a Pimm's Cup. No matter the location or weather, Jake Lorenzo is not ordering hard seltzer, sour beer, or flavored vodka.

Whatever drink I opt for, it is just a starting point. Soon, this detective will be reaching for a bottle of wine. I have spent most of my life drinking wine, but even there I have rarely followed public taste. When creamy, oaky Chardonnays were the rage, Jake Lorenzo was sipping dry Gewürztraminer and crisp Sauvignon Blanc. When America turned to high alcohol, over-ripe red wine, this detective discovered Gamay from Beaujolais, Lagrein from Alto Adige, and Malbec from Argentina.

I have been drinking and making wine for most of my life. I love almost everything about wine; wandering through vineyards enthralls me any time of the year and the excitement and tension of harvest exhilarates me. The calm, cool quiet of a cave full of barrels shimmers with beauty. Even bottling lines, especially when they are running at full speed, are a marvel to watch. The pop of a cork, the glug of a pour, the scent rising from the glass, and that first delicious sip fills this detective with pleasure and good memories.

When I started drinking wine, I was satisfied drinking from a gallon of Red Mountain Burgundy. It was a step up exploring inexpensive wines at Trader Joe's. Buying five-gallon carboys of the Premium Red at Fetzer's made us feel like winemakers because we were bottling our own wine. We happily bought cheap wines from places like Bulgaria, Hungary and Chile delighting in the unusual flavors to be found there.

Over the years I've learned a lot about wine. I revel in the glorious scent of violets in a good Lirac or the subtle pepper notes in an inky Syrah. I am delighted when crisp acidity is kept in check in a German Riesling or when the creaminess of malolactic fermentation decorates rather than overpowers a Chardonnay. I truly appreciate the ruby red color of classic Pinot Noir, but also marvel at the deep purple haze of Teraldego. The velvety, mouth-filling resolution of harsh tannins in a well-aged wine is a holy grail for this detective.

Jake Lorenzo has learned to appreciate the glories of wine, but it has been achieved at a cost. Gaining an appreciation of the finer points of good wine has also forced me to confront winemaking mistakes I never used to recognize. I can no longer ignore the volatile notes of VA or the mold-like character of TCA. Over-oaked, flabby Chardonnay makes me gag. The residual sugar in red wines, no matter how much the public likes it, turns me off. Any amount of Brettanomyces is calamitous for this detective's palate.

There is a fine line between knowledge and expertise. Jake Lorenzo learned long ago that it is not a good idea to become an expert in too many of the things you love. The more you know about a subject, the higher your standards for excellence become. Almost everyone loves béarnaise sauce the first time they have it, but over time you realize some are much better than others. Pâté can be a wonder until someone turns you on to foie gras. Once you have tasted birria from Chuy Palacios, every other rendition will leave you wishing for the real thing.

Because of Chuy and the wine business, Jake Lorenzo has made friends with lots of chefs. I enjoy inviting them to the house and cooking for them. Most people are too intimidated to cook for chefs. Not me. I realized early on that chefs rarely get food cooked for them by normal people and they are most appreciative. Chefs would be happy with a simple hot dog if you served it with a cold beer. At our house, we are a bit more elaborate than that.

As a sign of gratitude, chefs who have graced our table offer to show me tricks of the trade. I enjoy cooking, so it was enticing, I admit. Having great chefs show me how to make that perfect béarnaise sauce or the precise method of creating an ethereal savory flan would be exciting and wonderful, but it would come at a cost. Learning about wine forced me to recognize flaws in certain bottles and reduced my pleasure in drinking wine. I certainly didn't want the same thing to happen with my cooking or eating my favorite dishes.

Jake Lorenzo has become adamant about not becoming expert at too many things. When Rusty Staub took me into the clubhouse to meet baseball players, I told him once was enough. I realized some of those guys were jerks and knowing that would interfere with my appreciation of their athletic skills. I've met wine writers who fawn over owners and winemakers but ignore cellar rats and vineyard workers. It makes me less enthralled with their writing. It may reveal my own prejudice, but I remain resentful of rich people visiting Wine Country who have driven prices up so much that Jakelyn's mother and I can rarely afford to go wine tasting or out to dinner.

Still, those chefs who have graced our table insist on showing their gratitude. How about this? One day each week sell all the wines on your list for half-price. Given restaurant markups on wine, you'd still make money, just not as much. Jakelyn's mom and I would be able to afford a meal and have delicious wine to enhance your food. Do it on your slowest night and encourage locals to come. We'd all gain an appreciation of your food and wine choices, but we wouldn't have to be experts in anything except being polite and appreciative customers.

WBM

THE tastingpanel MAGAZINE & THE SOMM JOURNAL

Turning Technical Language into Casual Conversation

Loris Jones-Randolph on Connecting With Guests

Emily Johnston Collins

Loris Jones-Randolph

Loris Jones-Randolph was an actress before she accepted her current position as sommelier and manager at La Boucherie in Los Angeles' InterContinental Hotel. When the pandemic suspended her acting career, she says she found herself "stalking people in the grocery store" to offer them wine advice, gleaned from the experience she gained while working in New York at such fine-dining establishments as Faro, Pearl and Ash, Salvation Burger, and Terroir. There, her role model was Master Sommelier Patrick Cappiello, who sabered Champagne in jeans and a T-shirt during his Renegade Wine Dinners at Pearl and Ash. Being a casual sommelier was fine with Jones-Randolph—but she knew she had value far beyond giving free counsel in supermarket aisles. So, she applied for a Fulton St. Fellowship to attend an intensive program at the Institute of Culinary Education. Now, armed with extensive wine knowledge and a Certified Sommelier pin from the Court of Master Sommeliers, she aims to make wine easy and relatable for her guests.

La Boucherie's wine collection encompasses 1,200 different labels from around the world. Jones-Randolph says that the bulk of her sales can be divided into three main categories: "French, California, and 'Other.'" The latter is the most exciting to her because it invites meaningful interactions.

"Knowing your product and reading your clientele will help you sell [it]," she explained.

While working for Terroir's Paul Grieco—a champion of underdog grapes that might fall under the "Other" heading—she fell in love with the native Piedmontese grape Timorasso. As a result, she traveled to the region to forge her own relationship with a producer that she loves to talk about. For her, it is important to make a personal connection with winemakers, as she believes a sommelier should serve "the wineries we choose to support as well as the [guests]."

Coming from all over the world, Jones-Randolph's clientele is as diverse as her wine list, with varying levels of wine knowledge. However, most guests ultimately want her authentic opinion, so she doesn't hold back from gushing about a wine she loves, nor does she steer clear of using technical terms. Recently, she suggested an Albariño to diners familiar only with Pinot Grigio. She explained how the two grapes share "phenolic bitterness" before describing the sensation it imparts, and her guests responded favorably when they picked up on the sensation themselves. Jones-Randolph wants to start a trend of teaching wine terms to guests so they can learn to ask for what they want more effectively.

Housed in the tallest building west of Chicago, the InterContinental has wine cellars on four different floors. Since it can take time to retrieve the bottles, Jones-Randolph has applied the lesson she learned while working at downtown LA hot spot Bestia that, "the only way to do wine sales at high volume is to stay organized," especially as the only sommelier on the floor, as is the case at La Boucherie. By using an iPad wine list as a tool and presenting it to guests, she's able to make updates with minimal effort and to include information that would not fit onto a printed list, which can buy her the crucial time needed to meet the needs of all of the tables.

Jones-Randolph's approach to service is dependent not only on her guests' needs but also current trends. She is sensitive to the increasing number of non-drinkers she sees, so mocktails are among the first drinks she offers. Other trends that have persisted in recent years are low-intervention, low-sulfur, and low-alcohol wines. Guests cannot always discern which labels meet these criteria from the wine list, so her communication skills are critical to helping them find what they're looking for. Fortunately, she loves discussing wine. As she puts it, "When you're able to transform this really difficult-to-understand language . . . and be able to be a shaman into this magical world of wine, it's the best thing ever in life." WBM

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Wineries & Winemaking

Jennifer Williams

Kelly Fleming Winery has selected Jennifer Williams to serve as its consulting winemaker. With a degree in agriculture from Cal Poly San Luis Obispo, Williams has worked as an enologist at Trefethen Family Vineyards and worked in the wineries and vineyards at Spottswoode Estate and Araujo Estate Wines as well as on the Central Coast and in Washington.

Rachel Smith

Oregon-based Adelsheim Vineyard appointed Rachel Smith as its new club manager and Nancy Vuylsteke as the new director of marketing. In this role Vuylsteke works on brand development, marketing strategies and customer engagement initiatives. Before joining Adelsheim, Vuylsteke was the marketing and public relations director for Cristom Vineyards. Prior to joining Adelshein, Smith managed the wine club at Alpha Omega Winery.

Joseph Czarny

Joseph Czarny replaced Brian Rudin as winemaker for Duckhorn's Canvasback and Greenwing labels in Walla Walla, Wash. after Rudin announced he joined Echolands Winery. Czarny joined Canvasback in 2018 as an enologist and was later promoted to assistant winemaker. As winemaker, Czarny, in addition to other winemaker duties, collaborate with vineyard manager Dick Boushey.

CRU Winery appointed wine industry veteran Matt Mauldin as sales director, west. He oversees all sales on the West Coast and is responsible for building on CRU's success with Southern Glazers Wine & Spirits in California and on opening new markets on the West Coast. With over 20 years of experience in regional and national wine and spirits sales for supplies and distributors, Mauldin most recently worked as the west regional sales manager for Miller Family Wine Company, which recently consolidated into Southern Glazers Wine & Spirits in the Pacific Northwest.

Richard Schumaker

Richard Schumaker is now assistant winemaker of the Washington-based Quilceda Creek winery. In his new role, Schumaker works closely with Paul Golitzin and Winemaker Mark Kaigas in all aspects of winemaking. Prior to joining Quilceda Creek, Schumaker worked at Dierberg & Star Lane Vineyards.

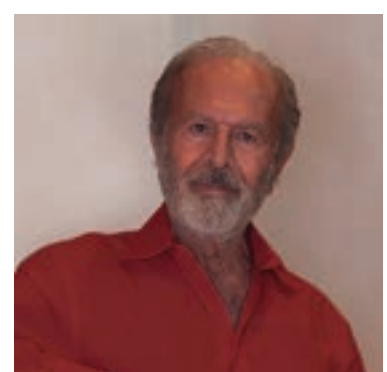
Rob Sands

Constellation Brands, Inc. announced the retirement of Rob Sands from his role of chair of Constellation's Board of Directors. He will not stand for re-election as board chair following the company's annual stockholders meeting on July 18, 2023. Sands will continue in his capacity as a board member for the company. Sands has served as board chair since 2019.

In Memoriam

Paul Dolan, a fourth-generation California vintner and pioneer of the organic, sustainable, biodynamic and regenerative wine movements, died on June 26 after a long battle with cancer. Dolan spent 27 years with Fetzer and laid the groundwork for what would become the successful Bonterra and Fetzer brands. He'd later go on to start his own brand, Paul Dolan Vineyards. In addition to being hailed as a sustainability champion, and among other ventures, he served as chairman of the Wine Institute in 2006.

John W. "Bill" Moffett, who was the publisher of Vineyard & Winery Management Magazine, died on June 3 at the age of 84. He ran the magazine with his wife Hope Merletti Moffett for 28 years. With his wife, Moffett–originally from New York–founded several wine and vineyard trade shows, competitions and seminars including Wineries Unlimited Trade Show, American Association of American Vintners, Eastern Wine Competition, Grand Harvest Awards and the West Coast Wine competition.



Anthony Peju

PEJU Winery founder Anthony "Tony" Peju died on June 10 at the age of 85. A major player in the wine industry, Peju successfully championed the right of winemakers and grape growers to sell wine made from their own grapes. Peju immigrated to the United States in the 1950s and ran flower shops and a nursery with his wife in Southern California. He later moved to Napa and purchased a 30-acre property in Rutherford in 1983 and started making and selling wine.

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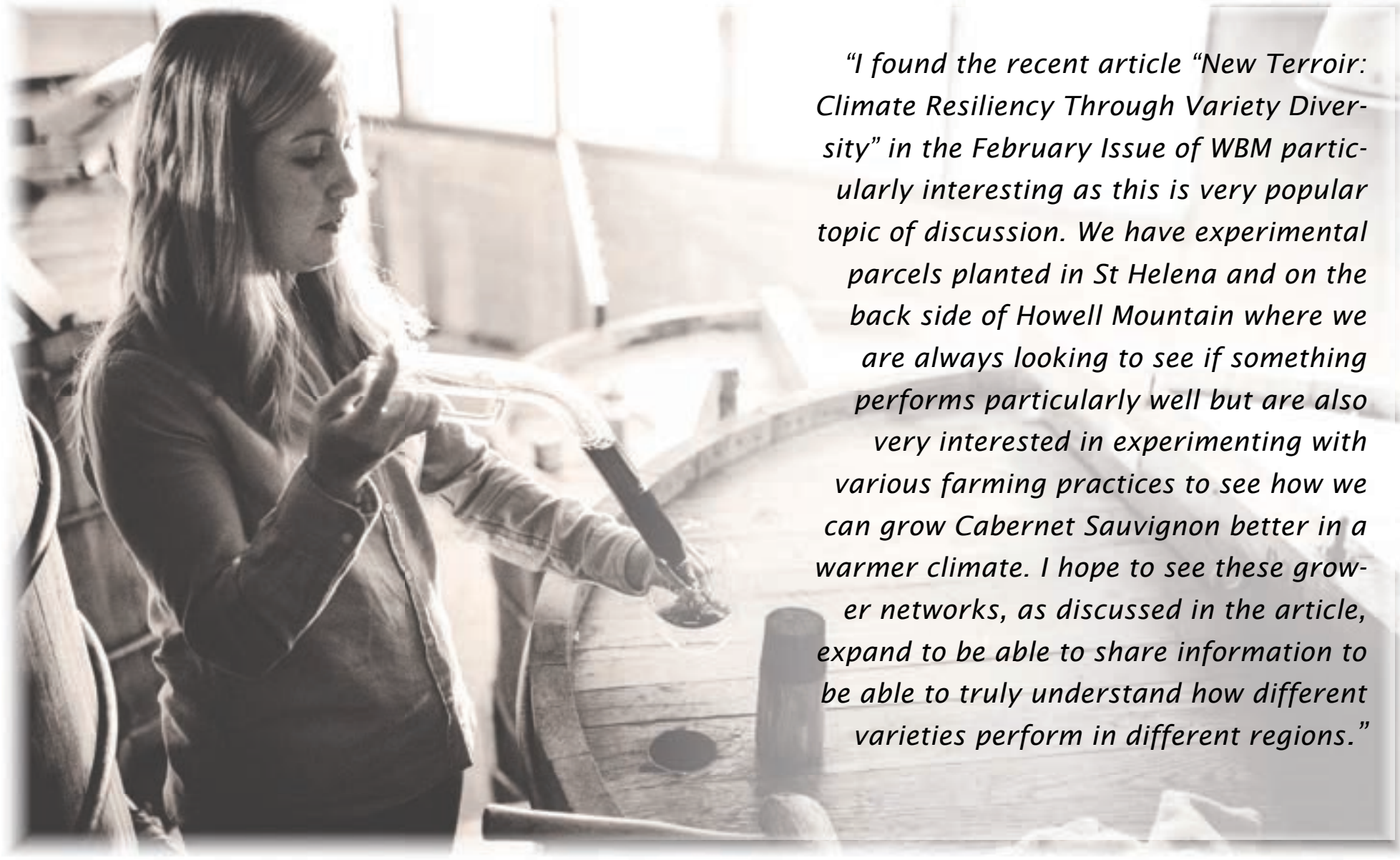
Brittany Sherwood, director of winemaking, Heitz Cellar, St. Helena, CA



"I found the recent article "New Terroir: Climate Resiliency Through Variety Diversity" in the February Issue of WBM particularly interesting as this is very popular topic of discussion. We have experimental parcels planted in St Helena and on the back side of Howell Mountain where we are always looking to see if something performs particularly well but are also very interested in experimenting with various farming practices to see how we can grow Cabernet Sauvignon better in a warmer climate. I hope to see these grower networks, as discussed in the article, expand to be able to share information to be able to truly understand how different varieties perform in different regions."

Winery name and location: Heitz Cellar, St Helena, CA. Established in 1961, we are proud to celebrate over 60 years of winemaking history.

Annual case production: 35,000

Planted acres: 484

Career background: I graduated from UC Davis in 2012 with a degree in viticulture and enology. While in school, I was fortunate to be able to participate in several winery internships as well as participate in a work/study program that allowed me to further my education in the winemaking regions of France, Germany and Switzerland and Spain. Upon graduation, I joined the Heitz Cellar team as a cellar intern. I fell in love with our classic style of winemaking and the care and quality that goes into each bottle of wine. I was honored to be extended a full-time position after harvest and stayed on as the enologist from 2013 through 2015. In 2015, I was promoted to associate winemaker, then winemaker in 2018, and in 2019, was promoted to director of winemaking. It is a privilege of a lifetime to be able craft the wines for Heitz Cellar and I am honored to have recently celebrated my 10 years anniversary working in service for this iconic estate.

What has been your biggest professional challenge? The 2020 vintage has been my biggest winemaking challenge thus far for obvious reasons. This was also an incredible learning opportunity for us to understand and feel more comfortable making decisions in the vineyard and in the winery for us to be able to harvest earlier. Heitz historically always has picked on the earlier side, the 2020 season reinforced our efforts to continue and make improved along that path.

Varietals that your winery is known for: Cabernet Sauvignon and Chardonnay

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