

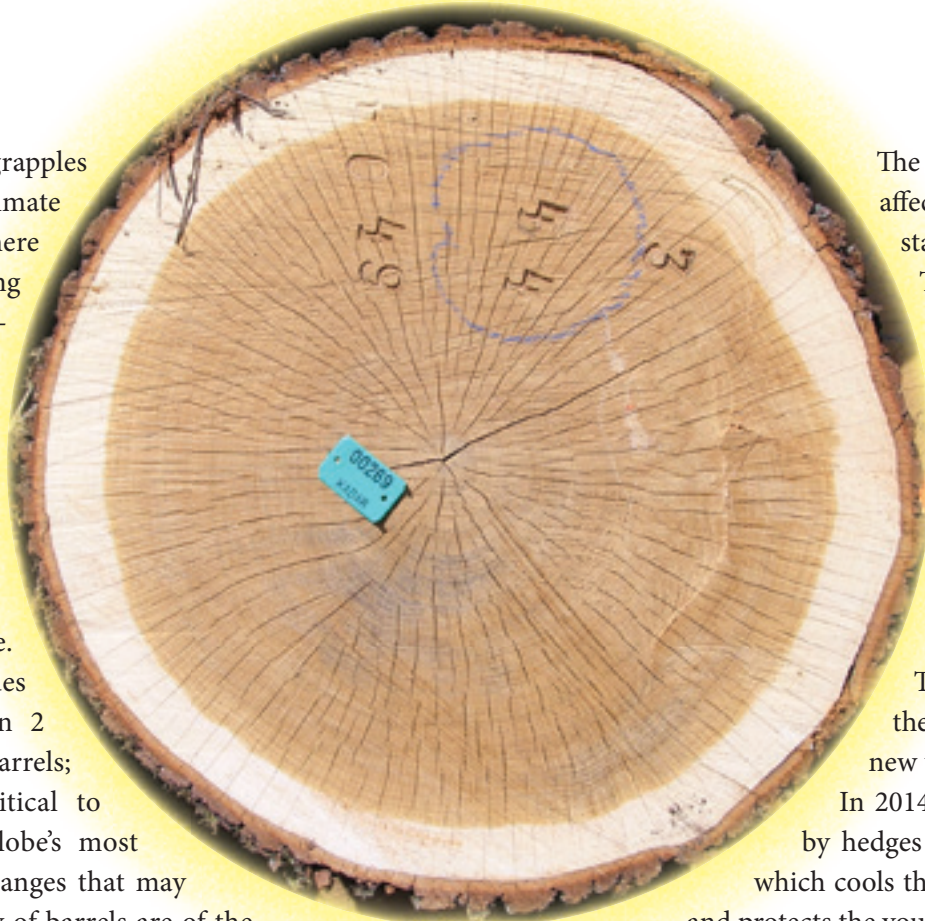
Save the Oaks: Impact of Climate Change on European Oak

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AS THE WINE INDUSTRY grapples with the wide-ranging effects of climate change on vineyards and wineries here in the U.S., there are far-reaching implications for one of the key wine-making tools sourced from forests half a world away. While the immediate impact to vineyards is much more prevalent and visible to winemakers, we cannot underestimate the impact to European oak forests and how that may affect barrel sourcing and quality in the future. According to the Office National des Forêts (ONF) in France, less than 2 percent of the world's wine uses barrels; however, barrel aging remains critical to the production of some of the globe's most prestigious wines. Therefore, the changes that may influence the availability and quality of barrels are of the utmost importance to many winemakers, and climate change has manifested itself in many ways to affect the barrel industry.

Temperature has important effects on several distinct parts of oak for barrels. The first is the growth of the tree itself. Some of the most sought-after barrels are very fine-grained, meaning the tree has grown very slowly and thus has growth rings that are very close together. Slow growth usually occurs best in cool forests. Warmer forests tend to have faster growth and thus less tight of a grain. In speaking with Georges Milcan, general manager of Vicard Generation 7, he said that new methods of tree management by the ONF will help forests adapt; however, it may become more difficult to produce very fine-grained barrels. In regard to the future, Milcan noted, "Chances are the majority of the wood will be fine to mid-fine grain."

Hungarian oak producers have specific challenges when it comes to sourcing oak and the effects of temperature. "In Hungary, log falling is possible only in the [winter] season while the soil is frozen," Andras Kalydy of Kadar Cooperage pointed out. Over the past decade this period of opportunity has become shorter and shorter, resulting in less time to harvest the oak for barrels since harvesting wood at other times of the year may damage young saplings, which are critical to healthy forest rejuvenation.



The third way changes in temperature can affect oak for barrels comes at the seasoning stage after the staves have been milled. This seasoning takes place in open stave yards to allow the air, water and temperature to bring the stave to the correct water content for barrel production. Therefore, the staves are unprotected from extreme heat events, such as what occurred during the summer of 2003 in France. Young staves can be very fragile, according to Guillaume de Pracomtal of Tonnellerie Taransaud. The cooperage has adjusted their aging techniques by not introducing new wood to the stave yards in the summer. In 2014, they created a "nursery" surrounded by hedges of hornbeam and countryside maple, which cools the area inside the yard via transpiration and protects the young staves from severe dry winds.

An Increase in Temperature Means an Increase in Extreme Threats

With the change in temperature also comes the risk of detrimental pests and diseases, particularly those that may not have previously existed in an area but whose range has increased or moved as a result. One only has to look at Pine Wilt Disease (PWD) to understand how dramatically these issues could affect critical forests. A 2017 study by Akiko Hirata, et al., published in PLOS One, looks at the effect of climate change on the distribution of the Pine Wood Nematode (*Bursaphelenchus xylophilus*) and the weather that exacerbates the disease (high temperatures and drought). The conclusions were striking. "Overall, our study suggests that future climate change scenarios are likely to result in serious PWD-related damage and habitat degradation to global Pinus forests," the authors wrote. A 2020 study conducted by The Morton Arboretum in Lisle, Illinois, found that nearly one-third of all oak species globally are threatened with extinction, primarily in Asia, Latin America and the United States. While these impacts may not have reached Europe, the lessons learned from both the PDW study and the state of oak species globally can help inform decisions to protect European forests going forward.

One of the most visible factors that affect forests and the barrel industry, in general, is the extreme weather that comes from a changing climate. Drought can severely affect the health of forests. Major storms, such as the one that impacted the forest of Versailles in 1999, can be devastating. During that incident, 10,000 of the 200,000 trees in the forest were damaged or uprooted completely. “The climate change is affecting the balance of all vegetal and animal species, and the main challenge for the future will be to continue to get a good source of supply in quality and quantity,” Milcan stated. Since many of the trees that are used for barrels cannot be harvested until they are at least 200 years old, protecting the forests from these extreme weather events is critical.

Finding Solutions to the Problem

However, there is a silver lining to these issues, and that is the rebirth of and focus on forest management.

According to Guillaume de Pracomtal, president of Canton Cooperage, the surface of planted forests in France has been growing since 1985, and 67 percent of those forests are hard wood. Taransaud also has a tree planting program and only buys wood from sustainable sources. Both Taransaud and Vicard use 100 percent of the wood that they buy, not only for barrels but for other aspects of production around their cooperage. Milcan noted that it is critical to educate consumers and communicate the value of sustain-

able forestry as is done through the ONF. Even in California, discussions around more forest management and controlled burns have had new life breathed into them as society works to navigate our “new normal.”

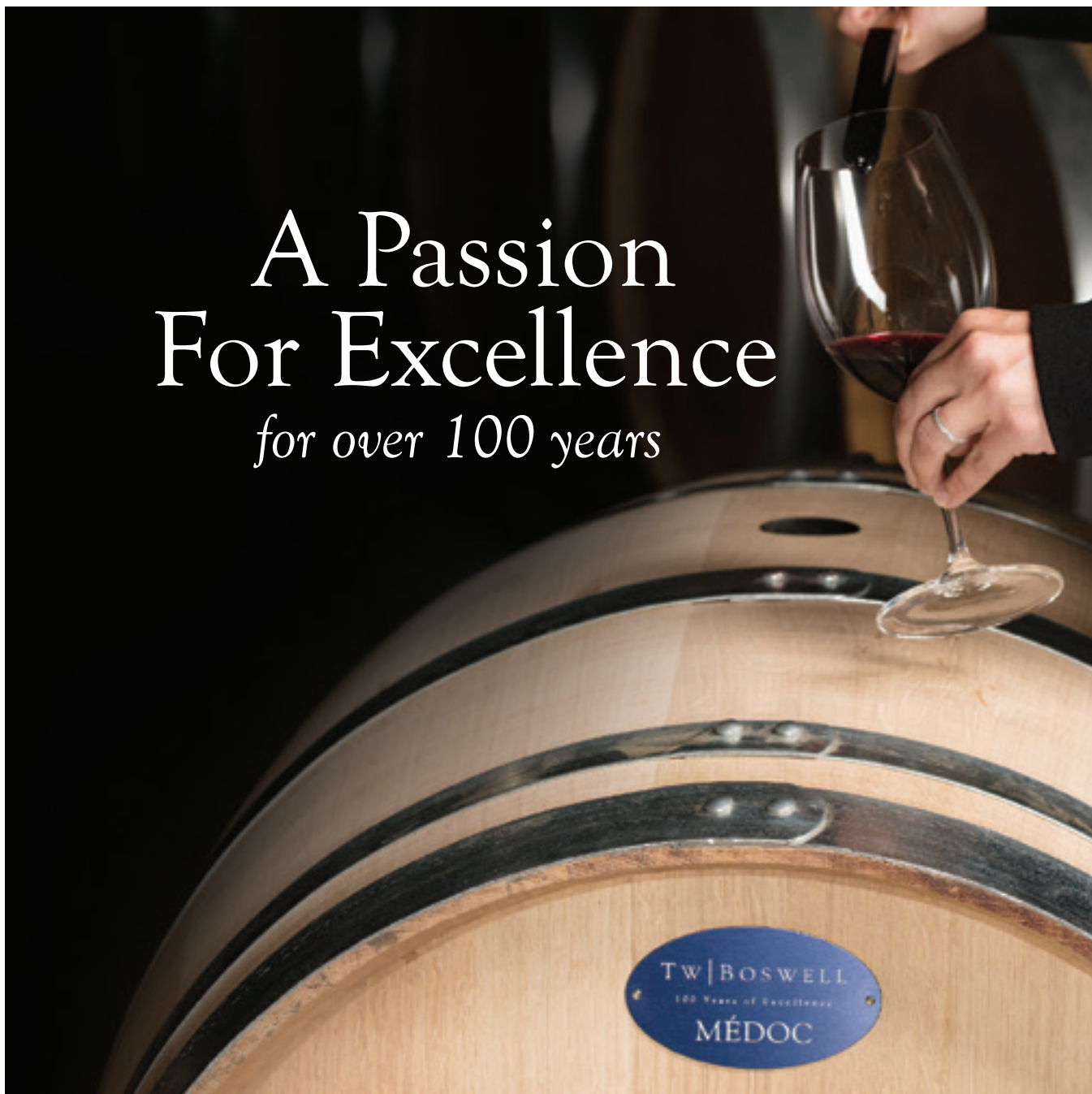
Another often overlooked aspect of climate change that affects the barrel industry is changing wine-making styles to adapt to different ripening patterns in the vineyard. Richer, riper styles with massive tannins require a very different barrel profile than wines that are more restrained and delicate. Coopers are looking to develop barrels that will help enhance these new styles. De Pracomtal points to the development of Taransaud’s Pure-T line, which is designed to bring additional freshness to the wine without as heavy an oak impact. There is also a trend towards larger formats of oak, which help balance overtly ripe fruit with subtle characters due to the lower surface area to wine ratio than would be found with traditional barriques. Vicard’s G7 line focuses on measuring tannin potential in the raw staves. These are separated into low, medium and high to carefully craft barrels that match the wine to create a harmonious marriage between the two. As the climate changes for winemakers, coopers are adapting their processes to help support them.

Fortunately, the European cooperage industry is skilled in adapting to new challenges and is supported by strong governmental forestry programs to ensure that there is enough quality oak to meet demand for decades to come. **WBM**



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