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Phylloxera Resurges in Key Wine Regions as Pest Adapts and Spreads Globally

Recent outbreaks in Washington, Australia, and Spain highlight evolving threats to vineyards despite longstanding management strategies.

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Phylloxera, a small insect native to North America, remains a persistent threat to the global wine industry despite more than a century of management efforts. The pest, Daktulosphaira vitifoliae, attacks grapevine roots and devastated European vineyards in the late 19th century. The crisis led to the widespread adoption of grafting European grapevines onto resistant American rootstocks, a practice that saved the industry and became standard worldwide.

Today, most commercial vineyards use grafted vines as protection against phylloxera. However, recent outbreaks and ongoing research show that the pest is far from eradicated. In Australia, strict quarantine measures have limited phylloxera infestations to about 5% of vineyard areas. Authorities use zoning systems to manage risk:

Phylloxera Infested Zones (PIZ), Phylloxera Exclusion Zones (PEZ), and Phylloxera Risk Zones (PRZ). Despite these controls, new detections continue to occur. In 2006, phylloxera was found in Maroondah in the Yarra Valley, prompting an expansion of the PIZ in 2023.

The United States has also seen renewed threats. In 2019, phylloxera was detected in Washington State's Walla Walla region. Many local vineyards had relied on sandy soils for protection and did not use grafted vines. Michelle Moyer, a professor at Washington State University, reported that further investigation revealed phylloxera was established in most major grape-growing areas of eastern Washington. Older vineyards showed more resilience, while younger plantings suffered higher rates of decline.

In 2025, phylloxera appeared for the first time in Tenerife, Spain's largest Canary Island. The region's isolation had previously kept it free from the pest, and most vines were ungrafted. The detection raised concerns about the vulnerability of other isolated or ungrafted regions.

Chile remains one of the few major wine-producing countries without official reports of phylloxera in recent years. Pablo Prieto, winemaker at Viña Carmen in Chile, notes that global risks persist due to multiple pathways for spread. Nurseries are a significant concern because propagation material can carry pests and diseases across borders. International movement of people, plants, and machinery also increases risk.

Another growing concern is the spread of leaf-feeding populations of phylloxera. Traditionally, two biotypes are recognized: root-feeding and leaf-feeding. While Vitis vinifera was once thought resistant to leaf-infesting forms, recent years have seen outbreaks in Austria, Germany, northern Italy, China, Japan, eastern U.S., and parts of South America. Astrid Forneck, an Austrian researcher specializing in phylloxera, says that climate change may be altering pest behavior and population dynamics. Warmer temperatures could be causing earlier movement and higher survival rates.

The trend toward reduced pesticide use for sustainability may also be contributing to increased phylloxera survival. In Washington State, a shift away from chemical weed management toward mowing or cultivation may have inadvertently helped spread the pest between vineyard blocks. Increased mechanization can also transfer leaf-feeding

insects from infested fields into clean areas.

Managing phylloxera remains challenging because many growers struggle to identify the pest or its symptoms. When leaf-feeding insects cannot find leaves to feed on, they move to vine roots and hibernate until the next season.

Grafting onto resistant rootstocks is still considered the best defense against phylloxera. However, regions with ungrafted vines face difficult choices if infestations occur. Introducing American rootstocks could undermine their unique selling points and regional identity in a competitive market.

There is also evidence that some strains of phylloxera are evolving resistance to previously effective rootstocks. Warren Birchmore from Vinehealth Australia points out that rootstocks like AxR1 have failed before due to new strains of the pest. Australia alone has identified 166 different strains of phylloxera, requiring ongoing development of new rootstocks.

The belief that resistant rootstocks have solved the phylloxera problem may lead to complacency within the industry. The pest continues to adapt and spread through both traditional and new pathways. As climate change alters vineyard environments and sustainable practices become more common, vigilance remains essential for protecting vineyards worldwide from this enduring threat.