

A Dire Threat to Grapevines

Esca and other vine-trunk diseases are infecting vines around the globe, threatening an epidemic



Photo by: Courtesy Kendra Baumgartner

A Merlot leaf in Bordeaux shows the symptoms of Esca. Leaves wither and fruit fails to ripen.

Suzanne Mustacich

Posted: August 18, 2015

[JOIN WINESPECTATOR.COM](#)



Nearly every month, David Gramaje gives a seminar lecture on the same topic. But the plant pathologist at the Research Centre of the Vine and Wine in Rioja never lacks for an audience of worried Spanish winegrowers. They've come to hear about combating esca and other vine-trunk diseases, a threat they fear will be the defining vine blight of the 21st century—a scourge on the scale of phylloxera, the pest that nearly destroyed winemaking in 19th-century Europe.

The Spaniards are not alone. From California to Switzerland, Australia to France, vintners are reporting a rapid rise in the fungal diseases spreading insidiously through grapevine trunks, inflicting significant financial losses. They are working with scientists who are looking to pinpoint the cause and find a solution, but are worried they are running out of time. "Some people have compared the present situation to the phylloxera crisis," said vine expert Richard Smart, referring to the root louse that killed more than 6 million acres of vines in France alone. "I am one of those people."

The situation is urgent, confirmed Dr. Kendra Baumgartner at U.C. Davis. "Every single vineyard in California becomes infected by one or more trunk diseases," Baumgartner told *Wine Spectator*. "They may be infected to different degrees, but they will become infected at some point. It is inevitable. That's how it was with phylloxera."

Esca is a disease caused by the fungi *Phaeoaniella chlamydospora* and *Togninia minima*, which release microscopic spores that travel by wind and rain splash. "Esca pathogens and the other trunk-disease pathogens primarily enter grapevines through pruning wounds during the vine's dormant season," said Baumgartner. "They need an entry point, an open door into the plant, so to speak."

Esca usually appears alongside two equally pernicious trunk fungal diseases, black dead arm and eutypa dieback. "It's rare to find a vine that is only infected by esca or eutypa dieback. Maybe one will predominate, but these are chronic infections, they don't go away," said Baumgartner. "They infect the grapevine wood and keep the vine from moving nutrients and water from the roots to the shoots, and they prevent the leaves, where photosynthesis is happening, from sending sugars into the fruits and the rest of the vine. It causes a general decline, and [the vines] carry less and less fruit each year."

The symptoms of infection are most visible during July and August, when dark red and yellow splotches appear on the leaves. Severely affected plants lose entire leaves. Tiny round dark spots appear on the berries. But the signs don't normally appear until the vine approaches its prime production years, usually at 10 years old or more.

Baumgartner says that fruit grown on the shoots with symptomatic leaves will never ripen properly. "When I find esca in the vineyard, I tell the grower, don't harvest these grapes. They won't ripen properly

and they could potentially add off flavors to your wine."

The economic impact is enormous. The French estimate that 12 percent of the country's vineyards are nonproductive due to these diseases, and 5 to 6 percent must be replanted each year. All told, the diseases cost the country 1 billion euros a year. "That includes grubbing up, replanting and the loss in volume," said Régis Cailleau, a spokesperson for the French Vine Institute. And it's a big increase from just a few years ago.

More than two hundred people representing all of France's wine regions gathered in Paris in July for the first national symposium on vine-trunk diseases. Their goal is to develop a national, and potentially pan-European, strategy. "This was a big departure," said Cailleau. "Right now, people are going in all different directions. We need to decide on the most effective approach."

A solution might be easier to find if anyone could determine why the spread of esca has spiked in recent years. There are multiple suspects. Scientists are examining whether water stress—common during the recent hotter, drier summers in Europe—plays a role in the spread of the disease.

In France, some growers blame the 2001 ban on the pesticide sodium arsenite, a powerful carcinogen, for the outbreak. But scientists in other nations dispute that sodium arsenite was ever truly effective against esca. "A Swiss winegrower told us that they have never used sodium arsenite in Switzerland and they have as much trunk-vine disease as everyone else," said Cailleau.

Another controversial suspect: modern commercial nurseries. They supply clones, taken from mother vineyards and grafted onto phylloxera-resistant American rootstocks, potentially selling infected stock and spreading disease, Smart told *Wine Spectator*. "We have a situation that verges on being a scandal. The nurseries are ignoring the symptoms."

Gramaje echoes that assertion. "Investigations have led to the conclusion that planting material used in young vineyards is already infected, either systemically from infected mother vines or by contamination during the propagation process," he said.

But grafting specialist Marc Birebent says the greater problem is modern, mechanized "omega" grafting, used widely since the 1970s, which causes vascular damage to the plant. "It lowers costs but it leaves the vine more vulnerable to fungal disease. The best grafting creates maximum contact between the pieces of wood and a small wound," said Birebent. "We used to plant vineyards for three generations, now we plant for 25 years. We have to ask ourselves why."

Others are examining how grapevines are pruned before the start of each growing season, and whether vulnerable pruning wounds are allowing the spores in. "We advise the growers to wait as long as possible in the year to prune," said Baumgartner. "Even a few degrees in temperature can boost the plant's ability to heal more quickly, thereby reducing the risk of infection."

There's also a lack of agreement on options for treatment. Some are training vineyard workers to treat wounds with mastic, a resin with anti-fungal properties, after pruning. Others advocate organic and biodynamic principles, such as employing biodiversity by planting wild leeks, which they believe protect the vines from fungi.

Smart and other scientists are rethinking how we train and prune vines. He argues that winter pruning wounds should be protected with approved fungicides. He is also advocating a system called "timely trunk renewal", where growers can replace a diseased vine trunk with a new healthy sucker growing from the base of the trunk, saving the vine. This is an old technique in California and other regions, now being promoted as a way to stop the spread of diseases quickly, before entire vineyards are infected. Because symptoms can take years to appear, growers often realize they have a problem after most of their vines are infected—and at that point the only solution is to replant.

Phylloxera reshaped the wine world, killing most old vines and eliminating certain grape varieties. Now many worry that without more action, history will repeat itself.

