

Goodbye cabernet sauvignon. How climate change will end wine as we know it.

Don't get too attached to that pinot noir. New research suggests switching grapes to avoid climate catastrophe.

By **Laura Reiley**

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The prospect of hotter summers, warmer winters, drought and violent weather events have caused experts to warn of coming wine shortages and price increases, changing varietal character and, in some dire predictions, the extinction of some wines altogether.

Maybe there's a fix, says a research paper in the journal Proceedings of the National Academy of Sciences.

The scientists' computer models show that if we do nothing, global warming of 2 degrees Celsius would wipe out 56 percent of current wine-growing land; increase that to 4 degrees and an estimated 85 percent of grapes won't be viable.

This team of researchers investigated whether using more heat-tolerant grapes would allow vineyards to adapt. They found that by reshuffling where certain grape varieties are grown, potential losses at 2 degrees of warming could be halved, and cut by a third if warming reached 4 degrees.

The researchers, led by Ignacio Morales-Castilla at the University of Alcalá in Spain and Elizabeth Wolkovich at the University of British Columbia at Vancouver, focused on 11 varieties of wine grapes including cabernet sauvignon, chardonnay, merlot, pinot noir, riesling, sauvignon blanc and syrah, as well as lesser-known varieties chasselas, grenache, monastrell (also known as mourvedre) and ugni blanc. Together, these account for a third of the total area planted to wine grapes and represent important parts of the wine industry in France, Australia, New Zealand and Chile.

The team used vintner and researcher archives to build a model for when each would bud, flower and ripen in wine-growing regions around the world under three different warming scenarios. Then it used climate change projections to see where those varieties would be viable in the future.

“Each variety has a different sensitivity to the climate,” says Ben Cook, one of the study’s authors and a professor at Columbia University’s Lamont-Doherty Earth Observatory and the NASA Goddard Institute for Space Studies. “Basically, replacing varieties with more climatically suitable varieties, called cultivar turnover, increases resilience to climate change. It’s a story of mitigation and adaptation.”

In the study's modeling, the biggest losses are in Spain, Italy and parts of California that are already quite warm. But there are winners in warming scenarios: In Germany, northern Europe and the Pacific Northwest of the United States, where in some years they struggle to get enough sun hours to facilitate budding, fruit set and ripening, a warming trend might produce dramatically better wines.

Cook says that changing out grape varieties isn't the only solution to pushing back against the effects of climate change. Many vineyards are topographically complex and will allow microclimates, especially if vineyards move to higher ground. Moving vineyards to north-facing slopes might also slow the effects. And in France, Cook says, where irrigation is not utilized, watering could be employed.

"We wanted to give a different perspective on all those apocalyptic takes," Cook says. "Winemakers are becoming more interested and aware of climate change and a lot of them are really concerned. They are seeing things they haven't seen before, with storms and heat waves. But what you do about it is a complicated thing."

Geoff Kruth, the president of GuildSomm, an international organization for sommeliers, says wineries are understandably concerned about the uncertainties of climate change, "but it's important to remember that there are dozens human decisions — rootstocks, trellising, timing of vineyard work, etc. — that have significant impacts on how a vine reacts to a climate."

Many wine industry experts have pointed to increased ripeness in grapes and higher alcohol levels as indications of climate change.

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“The real reason wines got riper is that people wanted them to get riper. Generally, if you look at wines from the 2000s, you see more sugar in the grapes and more alcohol in the wines,” Kruth says. “People have been quick to associate this with climate change, when in reality it was conscious human decisions. Now you see the alcohols are dropping. It’s a consumer trend. The grower and winemaker have a strong hand in all of these things.”

Mike Heny, a longtime Virginia winemaker who makes wine for 15 vineyards in the state, points to steps that already have been taken around the world to address climate change.

“It’s a multipronged approach,” Henry says. “In Napa, people are removing the primary grape cluster so the secondary one is the one that gets turned into wine so you can push off ripening, which allows for lower potential alcohol and greater physiological maturity so you get greater flavors. People are leaving a bit more canopy, carrying a bigger fruit crop to delay ripening, picking earlier.”

Champagne is looking at England as a new venue for high-quality sparkling wines. In July, Bordeaux allowed a number of new grapes to be planted, he says. It was previously illegal to plant anything but the five main historic grapes. And in Italy, a new VCR program is working to breed traditional vinifera grapes like merlot with hybrids that are hardier and exhibit more resistance.

The question for Heny and other winemakers is whether consumers will be amenable to these changes.

“A mutt is better than a purebred when the going gets tough,” Heny says. “But people aren’t into drinking the mutt wines as much. At the end of the day, we have to make wines that people love.”

Laura Reiley

Laura Reiley is the business of food reporter. She was previously a food critic at the Tampa Bay Times, San Francisco Chronicle and Baltimore Sun. She has authored four books, has cooked professionally and is a graduate of the California Culinary Academy. She is a two-time James Beard finalist and in 2017 was a Pulitzer finalist. Follow 

