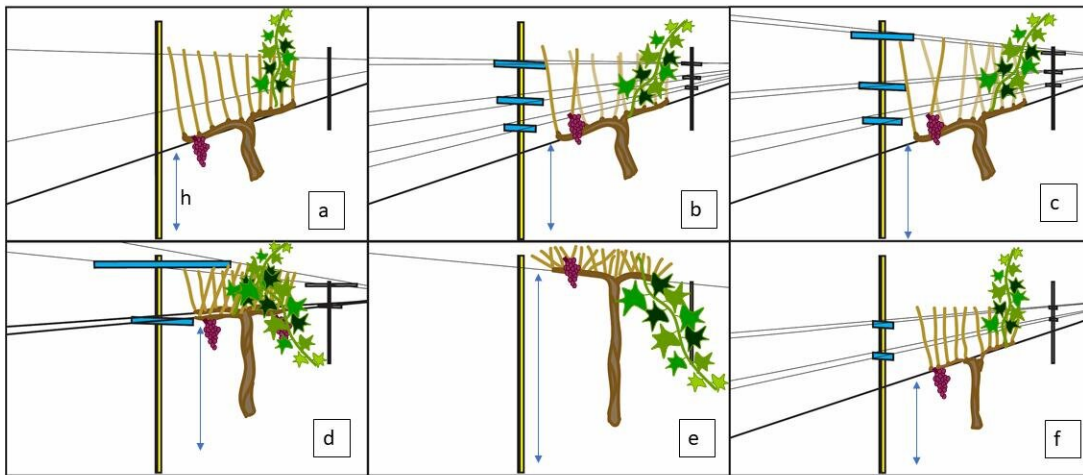


# Study shows cabernet grapes can survive climate change

September 29 2022, by Amy Quinton



Amy Quinton Illustrations of the different types of grapevine trellis systems that were tested. A through C are vertical shoot position systems grown traditionally, and at 60 and 80 degrees. D is a high-quadrilateral trellis, E is a single high-wire trellis, and F is a Guyot-pruned vertical shoot position. Credit: UC Davis

Exposing wine grapes to sunlight was the key to making a good quality cabernet. But even the toughest grapes may not withstand the extreme heat that comes with climate change. Too much heat, like California has

experienced with recent heat waves, can lead to jarringly jam-like wines that are high in alcohol and sugar and lacking in acidity.

Researchers at the University of California, Davis, have spent the last six years trying to find ways to solve this problem by examining different types of grapevine trellises and water amounts. A new study finds that switching away from one of the most common and widely used trellis systems could alleviate the effects of extreme temperatures on cabernet and other grapes. The study was published in the journal *Frontiers in Plant Science*.

Vertical shoot position, or VSP, trellises are traditionally used systems where vine shoots are trained to grow up in vertical, narrow rows with the fruit growing lower to the ground, allowing for greater exposure to sunlight. The study found these systems detrimental to grapes.

"We're finding that there is no shortage of solar radiation in California. During these [heat waves](#), these VSP trellises provide zero protection," said lead author Kaan Kurtural, professor of viticulture and enology and an extension specialist at UC Davis. "Because the fruit is low to the ground, you also get [heat](#) reflecting back into the canopy and clusters."

Kurtural said VSP trellises have a greater chance of yielding fewer grapes, with a higher likelihood of sunburnt berries and poor color.

## **Protecting wine grapes from heat**

The study finds that single high-wire trellis systems instead allow the vine leaves to shade the grapes. These trellises, which are about 5 1/2 feet tall, also reduce direct solar radiation. The study finds the reduced sunlight did not affect the grapes' color or quality.

"We ended up with almost twice the amount of anthocyanins in the berry

skin due to lack of degradation from hot summer sun," Kurtural said. Anthocyanins are chemicals in the plant that provide red grapes their color and protect against UV rays. "The effect is similar to a good shade cloth but more economical. The high-wire systems also make it easy to harvest grapes with machines, which can save on labor costs."

The study, which examined six different types of trellis systems and three different watering amounts also found the VSP trellises required the most water.

"We found that with the single high-wire trellis systems, growers get a more marketable yield for the amount of water they would have to apply because the system has the most ideal leaf area to fruit ratio," Kurtural said.

Kurtural said growers could easily switch to these high-wire trellis systems without having to replant an entire vineyard. The conversion might take about 18 months.

"This seems like a great way to move into the next century of [grape](#) growing," Kurtural said.

**More information:** Runze Yu et al, Adapting Wine Grape Production to Climate Change through Canopy Architecture Manipulation and Irrigation in Warm Climates, *Frontiers in Plant Science* (2022). [DOI: 10.3389/fpls.2022.1015574](https://doi.org/10.3389/fpls.2022.1015574)

Provided by UC Davis

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