

# Winery wastewater a viable water source for vineyards

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Former UC Davis postdoc Kim Mosse digs through soil for sampling at a vineyard. A UC Davis study says winery wastewater is a viable option to irrigate vineyards. Credit: Maya Buelow/UC Davis

Making wine requires water beyond what it takes to grow grapes. There are bottles to wash, barrels to scrub and floors to clean. But what if the

water left over from all that cleaning was treated and reused to irrigate vineyards? It sounds like a promising practice, especially during a drought, but would it hurt the vines, the soil or even the wine?

To find out, scientists at the University of California, Davis, assessed winery wastewater samples monthly over two years at 18 wineries in the Napa and Lodi regions of California. In two recently published studies, they conclude that, under the right conditions, winery wastewater is a viable water source to irrigate vineyards.

The research provides the first data to support the California wine industry's reuse of treated winery wastewater, and it describes recommended conditions for the practice, with a key focus on salinity issues.

"This is a good baseline data set to look at and say, 'Now we know what's in our wastewater and what we can do to deal with it before we put it on the grapes,'" said lead author and UC Davis researcher Maya Buelow. "Vines are a high cash crop, and growers need to proceed with caution and gather site-specific soil and wastewater data, but there are wineries successfully doing this."

## **Salt water solution?**

The researchers learned that most wineries in the study were already doing a good job of treating their wastewater through a series of retention ponds and other treatment systems. Salts, however, remain a challenge.

Salt concentrations affect how [water](#) moves through the soil. Salts are usually introduced into the wastewater by cleaning agents, and they are not removed by treatment systems.

However, the study found that levels of salts at the wineries were usually below thresholds for most wine grape rootstocks and [soil salinity](#) hazards.

There's also a trend within the wine industry to switch from sodium-based to potassium-based cleaners. The study examined the risks and benefits of such a shift for specific soil types. The scientists emphasize that further research is needed to develop best management guidelines, but their results indicate that:

- Soils dominated by montmorillonite, a clay mineral, could benefit from shifting to potassium-based cleaners.
- Both types of cleaners may negatively affect soils dominated by vermiculite.
- Neither type of cleaner reduced infiltration rates in soils with kaolinite, also a clay mineral.

## Not just grapes

"This is very applicable to nearly every agricultural system out there," Buelow said. Many other segments of the food industry produce significant amounts of wastewater, such as dairy, pig, poultry and food processing operations. "There are opportunities for them to reuse wastewater, as well," she said.

The winery wastewater survey was published in the *American Journal of Enology and Viticulture*.

The salinity and [soil](#) study was published in the journal *Agriculture Water Management*.

**More information:** "The effect of mineral-ion interactions on soil hydraulic conductivity," *Agricultural Water Management*, Volume 152,

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[dx.doi.org/10.1016/j.agwat.2015.01.015](https://doi.org/10.1016/j.agwat.2015.01.015)

"A California Winery Wastewater Survey: Assessing the Salinity Challenge for Wastewater Reuse." *Am. J. Enol. Vitic.* ajev.2015.14110; published ahead of print June 19, 2015, [DOI: 10.5344/aje.2015.14110](https://doi.org/10.5344/aje.2015.14110)

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