

BENZIGER FAMILY WINERY

Glen Ellen, CA



TERTIARY WATER RECYCLING SYSTEM
COMPOST & COVER CROPS
WATER CONSERVATION EDUCATION
MINIMUM TILLAGE

The Benziger Family

Preserving the history and beauty of their Sonoma Mountain winery is a high priority for the Benziger Family. The 85-acre ranch, purchased in 1980, features 42 acres of wine grapes and 40 acres of gardens, wetlands, ponds, and olive groves. Driven by a concern over the decline in wildlife and insect populations on their conventionally farmed ranch, coupled with inconsistent fermentations in their wine production, they decided to research strategies to repair the health of their property. As family member Mike Benziger explains, “Through our research we found that biodynamics was the form of agriculture that had the ability to heal the land the fastest and continuously.” They began using biodynamic farming practices in 1996.

Biodynamic farming focuses on creating healthy soil and plants with deep root systems, which helps vines better tolerate drought. As Mike explains, this is important because, “Let’s face it, the number one problem that we see going forward in our area is water supply. The water tables are dropping quite a bit on Sonoma Mountain here, our wells are producing less water every year and we have to be very efficient in the way we grow our plants.”

Additionally, in the process of converting to biodynamic farming, the family decided to develop a tertiary wastewater treatment system with constructed wetlands to cleanse the winery wastewater for reuse in irrigating the vineyards and gardens. Water recycled through the treatment system supplies 50 to 60 percent of their irrigation needs.

WATER-SAVING PRACTICES

- Benziger Winery recycles water used in the harvest and wine making process through constructed wetlands and a pond treatment system. The recycled water is used to irrigate vineyards, landscaping, and gardens.
- Winery workers receive education on water conservation. “We are becoming much more efficient on the front end,” explains Mike. “When we started out in 1998, we were using about 7 or 8 gallons of water for every gallon of wine. Now we are down to around 3 gallons.”
- The biodynamic farming system includes cover crops and compost use, which help with water infiltration, soil moisture holding capacity, and reduction of runoff. “Our plants have to become as self-sufficient as possible. We do that by growing deep root systems



Primary treatment lagoon

with the philosophy of never feeding the plant, but taking care of the soil. The plant feeds from the soil when it needs to,” Mike describes.

- They are able to use less water through a “fine tuned tillage program.” “A well-timed tillage is comparable to an irrigation,” says Mike.

Constructed wetlands tertiary treatment system

Wastewater from the wine production facilities flows via gravity into a “balance tank” that collects wastewater. A rotary sieve separates solids - skins, seeds, stems - for use as compost. The remaining water flows into a facultative lagoon for aerobic and anaerobic processing. After 60-80 days, the treated water filters through constructed wetlands - reeds and aquatic plants that serve as a habitat for microorganisms that further treat the water. The final pond stores the treated water until it is recycled as vineyard and garden irrigation. Azola, an aquatic fern, covers this holding pond - preventing algae growth that can clog filtration equipment and drip emitters.

BENEFITS

- Benziger Winery recycles an average of 2 million gallons of water a year using the constructed wetlands.¹
- The wetlands increase biodiversity and provide an improved aesthetic to the winery.
- The compost application has helped reduce erosion, which was a significant issue at the winery.
- The constructed wetlands clean wastewater to a very high level, resulting in water with a low nutrient content. Reducing the nutrient content provides them with more control over plant growth, reduces odors, and reduces reliance on wastewater pond aerators and associated energy use.
- The constructed wetlands provide habitat for beneficial insects, birds, and other wildlife. “It completes the arrangement of habitat areas on the property to make a self-regulating insect population doable,” says Mike.

¹ The amount of water that they recycle ranges from 1_ to 3 million gallons of water per year depending on how many grapes they process. Additionally, the amount of water that they are recycling has decreased due to their conservation practices at the source.

COSTS

- Installation costs for the constructed wetlands - including consulting and contractor fees - were about \$80,000.
- The constructed wetlands require very limited maintenance and have low operating costs.
- According to Matt Atkinson, Benziger’s Ranch Manager, “The only downside is that it has a big footprint, which cuts down on vineyard planting.”

LESSONS LEARNED

- **Look to the long-term.** “People need to realize that water is going to become an incredibly rare commodity. We are not going to have access to water like we have in the past. Meaningful conservation practices are a long-term investment. It takes several years to implement these kinds of strategies, so the sooner people get a water conservation plan together, the better it will be for their business,” notes Mike.
- **Conservation results in improved quality.** “From my perspective, [water conservation and biodynamic farming] have made us much more conscientious about the way we farm. That has had a pay off in higher quality olives, higher quality vegetables that we produce, less disease in the animals that we raise here and, most important, higher quality wine,” says Mike.

“We know that we are running out of water and we know that in the big picture of things that we have to be able to create plants that have a very conservative demand for water.”

—Mike Benziger



Constructed wetlands