



American Vineyard

Grape Grower & PCA

Vol. 32 • No. 7 • July 2023

**Innovations from the
Vineyard Floor to Winery
Wastewater at LangeTwins**

See story page 4

A photograph of two men standing in a vineyard. The man on the left is wearing a dark button-down shirt and holding a wine bottle. The man on the right is wearing a light blue button-down shirt and also holding a wine bottle. They are both smiling and looking towards each other. The background is filled with green grapevines under bright, natural light.

Generational Farming with Lange Twins Family Winery & Vineyards

Sustainable Innovations from Vineyard Floor to Winery Wastewater

By Melanie Lux

Randall Lange has been environmentally conscious about farming long before it was cool. So long, in fact, that he prefers this name for sustainable agricultural practices: generational farming.

The term is deeply rooted in personal history. The Lange family has been farming in the Lodi region of Central California since the 1870s when great-grandfather Lange arrived from Germany and began growing watermelons. Each new generation farmed and flourished in Lodi, eventually raising wine grapes for their livelihood before passing the land and its possibilities on to their children.

In 1972, Lange and his twin brother, Brad, purchased a tract of land from their father and began farming wine grapes. “We paid four times the worth of the property as the sale was our parents’ retirement,” he says with an easy smile. “It was the best opportunity for us to make a living.”

As the fourth generation of Langes to farm the land, there was

truth in his thinking. However, looking ahead to their own children and grandchildren, the brothers believed there had to be a better way of doing it, one that would ensure future generations could continue to farm and prosper. They broke with accepted practices and set into motion a series of forward-thinking changes with their business, now known as LangeTwins Family Winery & Vineyards.

“For the Lange Family to continue to farm, we felt we had to protect and restore the natural environment and deploy sustainable practices across the operation,” Lange explains. “The decisions we made then and continue to make now on the farm are directed by the impact on our family and the environment. It changed how we think about things.”

One of the first things the Lange brothers did was take part of their vineyard out of production and return it to natural habitat, something other farmers would never dream of doing. “Back then, people cleared their land from boundary line to

boundary line to get the most out of their farm. Yet here we were taking productive farmland out and putting back natural habitat. Today we have native cottonwood trees and oaks you can’t put your arms around and other indigenous plants that attract deer, rabbits, racoons, foxes, mountain lions, and quail,” he says.

“I’m sure there were some who thought we were crazy.”

Since the first habitat project in the early 1980s, the Langes have completed seven such projects spanning approximately 70 acres of prime agriculture real estate. For their efforts, the Lange twins won a Leopold Conservation Award, an international award that recognizes agricultural landowners actively committed to a land ethic. As part of the judging process, an awards committee came to assess the Langes’ work and were awestruck.

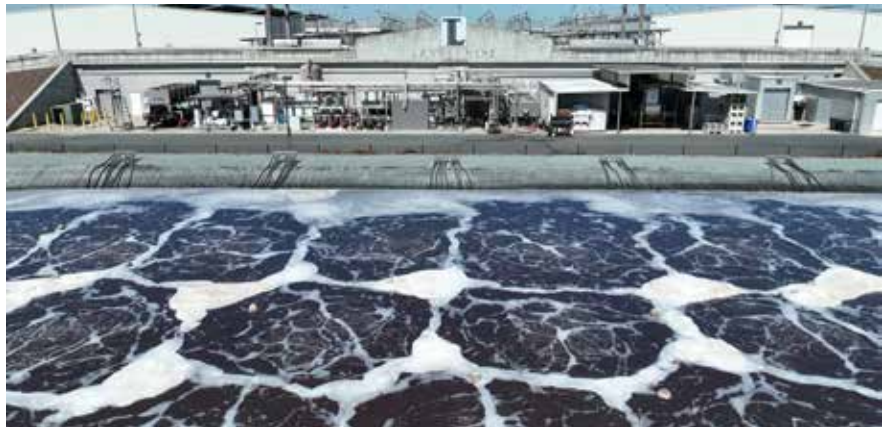
“When they saw the habitat we’d created, they couldn’t believe we had anything to do with it,” recounts Lange. “We had to get out old satellite photos to show them what the land used to look like.”

A Future Shaped by Sheep, a New Winery is Born

Some of the Langes' changes have been low tech with high impact. An example of this is reducing tractor use with sheep to control weeds in the vineyards. "We lease about 1,000 sheep and put 500 to 600 hundred in with the vines at a time," Lange explains. "Sheep eat grass and weeds down to the root, so they are perfect for weed control, frost control and soil enhancement. We also save on diesel, labor, wear and tear on equipment, and reduce our carbon footprint."

He adds, "Sheep don't climb so they leave the vines alone."

In 2006, the brothers made a transformational change in the family business when they moved beyond growing grapes to launching LangeTwins Winery in Acampo, California. Today, the mid-size winery processes 30,000 tons of grapes into chenin



Typically, water processing ponds are located far from vineyards in the event of unpleasant odors. Lange Twins installed its new pond next to the winery, confident a sophisticated aeration system would enable odor-free processing. So far, so good, no odor.

blancs, chardonnays, cabernet sauvignons, moscatos, and other varietals annually. The operation encompasses wine production, bottling, sales and distribution, and a tasting room. The LangeTwins Winery also includes "back office" operations such as water processing. Nothing is more critical to a winery, especially one in the Central Valley of California, than water.

Lange explains. "People don't realize that the Central Valley is a desert. The fact that it's the agricultural breadbasket of California is the result of dammed rivers and canals. Water is a big issue so very early on with our farming then with this winery, we've been very aggressive in our water conservation efforts."

(continued on page 6)

**FIRST THING I'VE GOT TO DO IS
SQUIRREL. THEN I'VE GOTTA
SQUIRREL. AND AFTER SQUIRREL,
I NEED TO SQUIRREL.**

Ground squirrels distracting you from your daily to-dos?
Minimize the squirrel moments with Rozol Ground Squirrel Bait.*



rozol REGISTERED FOR USE
IN CALIFORNIA

*Rozol ground squirrel bait is a restricted use pesticide

LIPHATECHAG

**WE HAVE YOUR BACKS, BARN
AND BOTTOM LINES.**

Lange Twins

(continued from page 5)

Fifty years ago, farmers would flood irrigate massive amounts of water in their vineyards. Today, they employ drip irrigation. “We spoon-feed water to the vineyards only when they need it. Stressing the vines results in smaller clusters of grapes, smaller grapes and a better flavor profile,” Lange says.

On the flipside is wine production, which is water intensive. While no water is added to wine, large volumes are used to keep equipment clean. Every surface that comes in contact with grapes or wine must be constantly sanitized. The winery uses 50,000 to 75,000 gallons of water a day, an amount that swells to 100,000 gallons per day during the harvest season, which runs from July through October.

To counter their voluminous water usage, the Lange brothers were required to capture all the water used in the winery’s operations for processing. While the state of California allows them to use 6.5 gallons of water for every gallon of wine they produce, the Langes require just 3.5 to four gallons to produce a gallon of wine. This level of conservation is a huge advantage for their winery in terms of less water to purchase, process, and discharge back into the environment.

An Unpleasant Problem in Need of a Solution

Why does a winery’s “used” water require processing? The simple answer is that it contains a tremendous amount of biomass: leaves, stems, seeds, and sugar from the grapes. Prior to processing, the water is screened and then channeled into a series of ponds that use bacteria to actively digest the remaining biomass. These bacteria require a specific level of oxygen to break down the organic material and restore the water quality.

If the level of organic matter is



Instead of traditional floating aerators, the Lange Twins deployed Ares aerators from Triplepoint Environmental that are placed on the bottom of the pond. The aerators disburse fine and coarse bubbles that add and mix throughout the pond.

high, so is the biochemical oxygen demand (BOD) of bacteria. Wineries are known for their high levels of BOD. Whereas a typical wastewater lagoon has an incoming BOD of 300, a winery’s incoming BOD can be as high as 5,000. This can lead to unpleasant odors.

The Lange Twins Winery originally had three water processing ponds. For 10 years, the setup was effective in reducing BOD. A few years back, the winery began having odor issues with the ponds, especially during harvest season. “Because of winery expansion, we were overwhelming our digesting systems, which caused BOD to rise. We were close to being out of compliance with the California Water Board,” Lange says. “We determined we needed to add a fourth pond to get our processing back in line and free of odors.”

The original ponds were designed to use the Swanson Integrated Pond system that relies on floating aerators to add oxygen to the water to reduce BOD. According to Lange, the system worked beautifully in the beginning. However, its floating aerators required a lot of maintenance and eventually, were not enough to keep up with the BOD load.

Deciding he wanted a new approach to water processing

technology, Lange began researching different systems. After reviewing several options, he was attracted to the Triplepoint Ares Aerators®. Installed on the bottom of ponds, the Ares combines efficient fine-bubble aeration and robust coarse-bubble mixing. This introduces a massive amount of oxygen into the water that percolates up through the biomass to the pond’s surface. The consistent infusion of oxygen throughout the pond allows bacteria to do their job more effectively.

“No one else was doing water processing this way,” Lange says. Moving forward with Triplepoint, construction of the new pond began in July 2021. The 14-foot-deep pond has a capacity to process one million gallons at a time. It is double lined to prevent water from seeping into the ground along with a pipe at the bottom to test for leakage. Being the first processing pond, the Triplepoint pond has the highest volume of organic matter and thus the greatest demand for oxygen. For this reason, 40 Ares Aerators were installed on the bottom of the pond. The aerators are connected to an onshore blower via heavy flexible aeration tubing. Each Ares unit has a mixing area of influence roughly 125 feet in diameter.

Pond two, three and four complete the water processing, with pond four



Fifty years after purchasing their initial vineyard, Brad and Randall Lange are stepping back from full-time duties knowing LangeTwins is in the able hands of their children and grandchildren.

being the effluent pond, the last stage before the water is safe for discharge on land per the California State Water Board’s requirements. With the goal of generational farming in mind, the Langes reuse the processed water on their pastureland. The water benefits grasses, and what isn’t absorbed by vegetation percolates down through the soil profile.

Going Live Brings Big Wins

The Ares-aerated pond went live late in the 2021 harvest season. According to Lange, it was none too soon. Odor issues were becoming a concern due to high levels of BOD. Pretty quickly, the powerful aeration and mixing of the Ares system got the BOD under control and there were no odor issues for the rest of the year.

The real test came during the 2022 harvest. From July through October, the winery was operating at maximum winemaking capacity, and pumping 100,000 gallons a day and more into their processing system. And.... nothing happened. No Ares aerators went off-line; they kept churning up the pond with oxygen. No maintenance was required. Above all, there was no smell.

When other Lodi wineries caught wind of LangeTwins’ new water processing pond, there were two reactions. First, they were impressed with the effectiveness of the technology. Second, they told Lange: “You gotta be nuts to

put your pond by the winetasting room. It’s going to smell.” So far, so good, no odor.

Better aeration had another significant financial benefit. The winery was having a troubling issue with pH in its ponds and treating it was costing thousands of dollars annually and adding salt to the water, which was not ideal. Today, pH levels are under control with

minimal intervention.

Looking Ahead to Generations Five & Six

Between Randall and Brad Lange, they have five adult children who all work with their fathers in the wine business. Currently, there are 10 grandchildren enjoying life as farmers’ kids. Both brothers are more than pleased with the investment made in the winery’s new water processing system and the impact it’s having on current operations to ensure generational success.

“Water conservation has to be a priority in California,” he says. “We’ve been fighting about it for 150 years and we’ll be fighting about it for another 150 years. But I’m optimistic. Given time and investment, my kids and grandkids will use equipment that is very different from what we use today. Great things are coming.” 