

# Lodi Rules-certified wines enter the marketplace

**BY Clifford P. Ohmart,  
Lodi-Woodbridge Winegrape  
Commission**

**W**inegrowers in the Lodi-Woodbridge region, who are implementing environmentally-sustainable farming practices, can now market their wines as certified under the Lodi Rules for Sustainable Winegrowing.

Introduced in 2005 and still the only peer-reviewed standards for sustainable winegrowing in California, the *Lodi Rules* were developed by the Lodi Woodbridge Winegrape Commission. Vineyards following the program receive third-party certification by Protected Harvest, a nonprofit organization ([www.protectedharvest.org](http://www.protectedharvest.org)). A complete description of the *Lodi Rules* program can be found at [www.lodirules.com](http://www.lodirules.com).

Six growers joined the program in 2005, achieving certification on 1,455 vineyard acres. Twelve growers participated in 2006 — six additional growers joined the original growers, certifying 5,424 acres. There are more than 7,000 certified vineyard acres, with five to seven additional growers who joined the program in 2007.

More than 40 wineries currently make wine from certified grapes. In 2007, Michael-David Vineyards (Lodi, CA), became the first winery to offer contracted growers a \$50/ton bonus if they qualified for the *Lodi Rules*-certified program.

Five wineries have received permission from the U.S. Department of the Treasury Alcohol & Tobacco Tax and Trade Bureau to use the *Lodi Rules* logo on wine labels: Herzog Wine Cellars ([www.herzogwinecellars.com](http://www.herzogwinecellars.com)), Bokisch Vineyards & Winery ([www.bokischvineyards.com](http://www.bokischvineyards.com)), LangeTwins Winery & Vineyards ([www.langetwins.com](http://www.langetwins.com)), St. Amant Winery ([\[wines.com\]\(http://www.wines.com\)\), and Lobo Loco Winery \(\[www.lobolocowines.com\]\(http://www.lobolocowines.com\)\).](http://www.stamant</a></p></div><div data-bbox=)

Wines bearing these labels are bottled and entered the marketplace before the end of 2007. Now that *Lodi Rules*-certified wines are available for purchase, what are the sustainable farming practices that growers implement in order to qualify for certification?

## **Qualifying for certification**

Two criteria must be met for a vineyard to qualify for certification, and each vineyard must qualify every year.

First, a grower must address 75 farming standards in six sections of the *Lodi Rules*, which are: Ecosystem Management; Education, Training and Team Building; Soil Management; Water Management; Vineyard Establishment; and Pest Management.

Second, the PEAS (Pesticide Environmental Assessment System) environmental impact units (EIUs) for all pesticides used in the vineyard during the year, whether organically-approved or conventional, cannot exceed 50 (Ohmart et al., 2006; [www.lodirules.com](http://www.lodirules.com)).

This space does not allow discussion of all farming practices that growers use to qualify for certification. Below, to demonstrate what is required, are some practices that three growers use. To be as comprehensive as possible, some practices are described from five sections of the *Lodi Rules* farming standards. No practices in the Vineyard Establishment section are reported because no growers have yet certified a vineyard starting from the date of its establishment.

Growers interviewed were: Markus Bokisch, Bokisch Vineyards & Winery; Aaron Lange, Lange Twins Wine Estates; and Bruce Fry, Mohr-Fry Ranches. Bokisch and Lange have their own wine labels. Mohr-Fry's certified

old vine Zinfandel vineyards provide grapes for several wineries, including St. Amant, which released a *Lodi Rules*-labeled Zinfandel in 2007.

### **Creating a sustainability vision for the farm**

The first standard in the *Lodi Rules* requires each grower to write a sustainable management vision for their farm. This vision provides the foundation for the grower's sustainable wine-growing program. Sustainable wine-growing is more than a laundry list of practices one uses in the vineyard. There must be a vision to ensure the long-term health (economic, environmental, and social), biodiversity, and productivity of the farm.

Once written, each farming practice implemented in the vineyard can be evaluated as to whether it moves the grower toward or away from their vision. However, because a specific practice does not move one toward the vision, does not necessarily mean it should not be done. Just knowing where it fits into the sustainability vision for the farm is important for achieving the goals of the vision.

The process a grower goes through to develop a sustainability vision is important and challenging. One of the requirements for *Lodi Rules* certification is that a grower attend a half-day workshop to learn strategies for developing a vision.

Through a facilitated process, a grower is taken through a series of steps to create a vision, which includes defining their resource base and developing one or more sustainable goals. For each goal, they develop objectives, strategies to achieve them, and a monitoring scheme to determine if the goal has been met.

Ideally, a sustainability vision is developed collectively by key people in the farming operation and then shared with other family members and/or employees. A detailed guide for developing a sustainability vision for one's farm is presented in the *Lodi Rules* Companion Document ([http://www.lodiwine.com/4\\_4\\_The\\_Lodi\\_Rules\\_Companion\\_Document.pdf](http://www.lodiwine.com/4_4_The_Lodi_Rules_Companion_Document.pdf)).

It is difficult for anyone not having experienced the vision-development process to appreciate its importance. I will try and convey this by describing how it has affected the farming operations of Bokisch Vineyards & Winery.

By developing a sustainability vision for his vineyards, Markus Bokisch realized that he held the keys to creating buy-in from all the parties connected to his farming operation, from his family and employees to the financial partners in some of his jointly-owned vineyards.

Bokisch already had sustainability goals prior to joining the *Lodi Rules* program. However, the vision and the process he went through to create it as part of the program helped him to bring all of the people involved in his farming operation together to achieve those goals.

For example, by sharing his vision with financial partners in some of his vineyards, he was able to convince them of the importance of investing in improving wildlife habitat by putting up owl boxes, bat boxes, songbird boxes, and wood duck boxes, and establishing hedgerows around vineyards and planting more oak trees. (Figure II)

Furthermore, by sharing his vision with vineyard workers, he helped them appreciate their vital role in producing the highest quality winegrapes possible. He can trace the effects of the vision to the wine quality produced from certified vineyards because the workers have taken added pride in the work they do, from leaf removal to shoot-thinning, knowing they are major contributors to wine quality.

### **Ecosystem Management**

Development of the sustainability vision helped Bokisch justify to his investors the importance of improving the farm's ecosystem. During past and current vineyard development, existing oak trees have been left with large, unfarmed buffers around them. If trees are 75 feet apart or closer, they are left together with no vines in between them.

Large buffers are left around vernal pools and swales. Bokisch developed a

reforestation plan to establish corridors of native trees and shrubs from local seed sources of blue oak, California buckeye, Valley oaks, redbud, and sycamore. Species will be planted in ecologically-appropriate areas on vineyards. Hedgerows are being planted in strategic locations to attract songbirds.

At LangeTwins Winery & Vineyards, an important part of the Ecosystem Management component of the *Lodi Rules* is restoring riparian habitat along the rivers and creeks on their vineyards. It is also a vital part of their sustainable vision.

Two important waterways cross through some of the property they manage, the Mokelumne River and Gill Creek. Several years ago, they restored riparian habitat along a significant portion of Gill Creek, which is adjacent to a Chardonnay vineyard, and that was entered into the *Lodi Rules* program for acceptance in 2007.

They are currently restoring riparian habitat on a section of the Lower Mokelumne River on their headquarters property. This work includes removing some vineyard acres and re-establishing native riparian plants. It also involves installing a bat "condominium" capable of housing 10,000 bats (Figure III). In recognition for their past and current conservation work, Brad and Randy Lange were awarded the first Leopold Conservation Award for California in December 2006 (<http://sandcounty.net/programs/landholder/LCA/>).

Ecosystem Management is made up of many small steps. After joining the *Lodi Rules* program, Bruce Fry installed owl boxes and bat boxes in all certified vineyards. Furthermore, since there are electrical power lines traversing one site where several of the certified old vine Zinfandel vineyards are located, he convinced the power utility to put up perches on the power poles for red-tailed hawks. Since some birds were injuring themselves on the power lines, he had the company install measures to prevent these injuries from occurring.

### **Education, Training, and Team Building**

This section of the *Lodi Rules* farming standards stimulated Bokisch to better engage and support his employees. For example, meetings occurred with employees in management positions to discuss why things are done, to better visualize what needs to be done, and to then efficiently and effectively carry out the work.

Health care coverage is provided to key employees. Bokisch codified worker training meetings, making them more frequent and consistent, and recorded them for future reference. Developing a sustainability vision has inspired development of quantitative standards within the farming operation that help workers identify what skills they need to acquire in order to move to the next pay level. Furthermore, English classes for his workers and their families will be offered in 2008.

Bokisch concluded that the human element is the single greatest factor in improving wine quality. Having employees share in the sustainability vision results in a more consistent performance of duties, whether it be shoot-thinning, leaf removal, or pruning. Greater attention to detail is achieved through worker satisfaction.

One of the farming standards in the Education, Training, and Team Building section of the *Lodi Rules* is development of a Human Resources Plan. The Langes have always recognized the importance of enhancing human resources as an integral part of a successful business, and participation in the *Lodi Rules* has increased this focus. They have created a staff position devoted to human resources as a part of their Human Resources Plan.

Mohr-Fry Ranches has also long recognized the importance of the human element in farming operations and the production of quality winegrapes. The Frys have strived to create an open communications environment where workers feel free to express their opinions on how tasks are done.

The Frys have paid particular attention to farm safety and are big supporters of and participants in Lodi

Farm Safety Day. This event, that has occurred for 15 years, is planned and carried out by the staff of many Lodi farming companies, including Mohr-Fry. Each year, over 500 employees are trained to be a pesticide applicator.

Seven farm safety modules (taught in English and Spanish), include: pesticide protective equipment, first aid, mixing/loading and cleanup/disposal, leaks and spills, environmental protection, calibration and application equipment, and sulfur stewardship.

Mohr-Fry Ranches is also a sponsor of Ag Safe, a statewide safety organization. They have sent two employees to the annual conference for many years. Mohr-Fry Ranches has two employees dedicated to address human resource issues.

### **Soil Management**

Vineyard floor management is an important element of the Soil Management component in *Lodi Rules* vineyards. The specific strategies used depend on the winegrape variety, vine vigor, and soil type.

In the Bokisch *Lodi Rules* vineyards, the goal is to never expose more than 40% of the soil to discing in any given year. In some tractor rows, an every-row permanent cover crop is maintained while in other vineyards, where the site is less vigorous, an alternate-row cover crop is maintained. Cover-cropped tractor rows are mowed twice per season and the tilled rows are disced two or three times, just enough to break up the soil, while minimizing dust creation.

Bokisch's primary motivation for using cover crops is to create a cleaner, healthier work environment for employees by minimizing the amount of dust generated as a result of farming practices. A secondary goal is maintaining good soil structure with healthy soil microbial communities, and maximizing soil organic matter, all of which are enhanced by permanent cover crops and minimal soil disturbance. The cover crop species are short-stem annual rye, subterranean clovers, and California poppies for a bit of color. There are also permanent

cover crops on vineyard headlands and avenues.

Some of Bokisch's *Lodi Rules* vineyards, which are farmed organically, have wall-to-wall cover crops that are mowed twice per season in tractor rows and up to four times under the vine with a mower developed by the Bokisch mechanics. (The cover crop can be seen in Figure IV, and the mower in Figure V.) The challenge was to develop a mower that cuts cleanly around the base of the vine. The latest version of the mower, built in 2007, appears to have met this challenge (see Figure VI, which shows how good a job the mower does).

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LangeTwins Winery & Vineyards maintains alternate tractor row cover crops in their *Lodi Rules* vineyards. The Langes discovered that maintaining a permanent cover crop in every row was resulting in an unacceptable decline in vine vigor. As does Bokisch Vineyards, the Langes mow the cover-cropped tractor rows twice per season and disc the other tractor rows three times, at most.

Mohr-Fry maintains an every-row permanent cover crop in all of his *Lodi Rules*-certified old vine Zinfandel vineyards. This a particularly challenging situation because the vines are very old, from 60 to over 100 years, and the vines are on their own roots.

The primary reason for using no-till floor management is for dust control, but soil quality and better equipment access during winter months is also important. Mohr-Fry was able to move to no-till floor management in these vineyards when underground drip irrigation systems were installed (see below).

### **Water Management**

From the perspective of sustainability, water management means minimizing water use. From a wine quality perspective, at least in the Lodi region, irrigation is one of the most important tools a grower can use to improve winegrape and wine quality. For example, in the Lange's *Lodi Rules* vineyards,

irrigation management is the primary tool for achieving vine balance.

The Langes do very little leaf removal or shoot-thinning, choosing to manage the vine canopy vigor primarily through careful monitoring of vine water use with neutron probes, the pressure chamber, and in-vineyard weather stations. Using this information, they irrigate to achieve a uniform, balanced canopy with proper fruit exposure. Mechanical pre-pruning will be used in the *Lodi Rules* vineyards after the 2007 harvest.

Mohr-Fry Ranches installed subsurface drip irrigation down the center of tractor rows in all of their *Lodi Rules* old vine Zinfandel vineyards. Managing irrigation in this manner has had multiple positive effects.

First, it has allowed them to grow a permanent cover crop (Merced Rye seeded in 1998), that is mowed three or four times per year, and the vineyards have not been disced since 1998. The cover crop adds organic matter to the soil and non-tillage results in improved soil structure and a healthier soil microbial community.

Second, no irrigation under the vines means that weed pressure has greatly decreased since installation of the subsurface drip. The application of an environmentally problematic pre-emergent herbicide (Simazine), has been replaced by a contact-herbicide program that requires only one winter application of Roundup (Glyphosate) and Chateau (Flumioxazin), and one in-season (May) application of Roundup. Both applications have very low PEAS impact units.

An Enviromist spray dome with a controlled droplet application (CDA) system is used in May. The sprayer has a patented system combining low spray pressure, low volume output, with a spray dome that all combine to minimize spray drift. Moreover, the CDA system uses a spinning disc rotary atomizer to produce optimum size, evenly distributed spray droplets which minimizes chemical waste, spray drift, and operating down time of refilling the sprayer tank.

The presence of a permanent cover crop also allows much better vineyard

access with equipment during wet winter months. (Figure VII — Mohr-Fry DeVries Road vineyard in winter)

All three growers have installed photovoltaic solar power systems to provide electricity not only for the pumps in their *Lodi Rules* vineyards, but also for the shops or houses present on the vineyard sites. (see Figure VIII — solar array and pump)

### **Pest Management**

Pesticide use in *Lodi Rules*-certified vineyards is regulated through the PEAS model requirements. It ensures that only low-risk pesticides are used, whether organic or conventional, and that even a low-risk pesticide, such as sulfur dust, cannot be over used.

In some vineyards, use of the PEAS model has not resulted in a change in pesticide use because growers were already using materials with very low environmental impact, such as sulfur dust and one or two low-risk contact herbicides. However, because the PEAS model provides a quantitative measure of a pesticide's environmental impact, some growers, like Bokisch, pick the materials with the lowest PEAS numbers even though they are under the required PEAS threshold, because they want to lower the environmental impact as much as possible.

On the other hand, pesticide use in some vineyards has changed markedly as a result of joining the *Lodi Rules* program. For example, Bruce Fry was using Namacur in old vine Zinfandel vineyards prior to certifying them. Since these vines are on their own roots, nematodes are a significant problem. However, to qualify under the PEAS model requirements Fry stopped using Namacur. He now manages the nematode problem through a vineyard nutrient program.

The vineyards have been enrolled in a Western Farm Service crop-monitoring program for five years. Petiole samples are taken from each vineyard up to six times each year. Samples are taken in May through July, usually twice each month. Many nutrients are monitored for trends of use by the vines.

By watching the trends year-by-year, Fry can predict when the vines

use certain nutrients. For example, right after bloom, there is a huge demand for nitrogen. A blended application of calcium nitrate, boron, iron, copper, and sulfur is made, through the subsurface irrigation system, just before berry set. By following these trends, the appropriate amount of fertilizer is applied at the correct time of the year, that will have the optimum effect on vine health and grape quality.

Soil samples for fertility and nematode-monitoring are taken and integrated into the crop monitoring program, that is done every three years.

Lange Twins Wine Estates has made a major investment in developing an electrostatic spraying system mounted as a modular unit on an over-the-row grape harvester (see Figure IX). Recognizing that spraying for pests was always going to be a necessity in some vineyards, they realized that sprayers could be developed that reduce the environmental impacts of spraying in many ways:

The sprayer covers four rows per tractor pass, which reduces fuel consumption and dust in the air, particularly when compared to that produced by an air-blast sprayer.

- Soil compaction is reduced because the machine is traveling down every fourth row and the tires are in the middle of a tractor row.
- The per acre rate of many pesticides can be reduced by more than half and still be effective because of better spray coverage.
- Water is applied at 17 gallons per acre so mixing and loading is dramatically reduced.
- The driver is riding in an enclosed cab with a carbon-filtered air conditioning system.
- The technology of the equipment requires a more highly trained operator, who can be paid a better wage to operate it.

### **Conclusion**

This article provides a sample of the many practices Lodi growers use to qualify for certification under the Lodi Rules program. For a complete listing of the practices visit <http://www.lodi>

[wine.com/lodirules\\_farming\\_standards\\_1.shtml](http://www.lodi.com/wine.com/lodirules_farming_standards_1.shtml).

The *Lodi Rules* program has the potential to benefit every part of the value chain from the vineyard to the consumer. It is hoped that Lodi growers will receive a premium for their grapes because of the high quality and practices used to grow them.

Wineries can add value to their wines by using high-quality certified grapes and marketing their wines using the *Lodi Rules* logo on their labels.

Wine gatekeepers can increase wine sales by selling great wines with an interesting story behind them, and the consumer can enjoy great wine and feel good because their purchases help growers farm more sustainably. ■

### **Reference**

Ohmart, C.P., C.P. Storm, and C.M. Benbrook. 2006. "Lodi Rules certification advances sustainable viticulture." *Practical Winery & Vineyard* 27(6): 7-23.