



**Case Study:**

# Pacific Coast Farming Uses SIP-Certified Practices

Reducing environmental impact and creating healthy vines

*Craig Macmillan, Hunter Francis and Mike Lynch*

TODD SPOTH, PARAGON VINEYARD

**Craig Macmillan**, Ph.D. is a wine industry educator and consultant. Previously, he was technical program manager for the Vineyard Team in Atascadero, Calif., where he shared 25 years of experience in viticultural research, education and farming.

**Hunter Francis** is founder/director of the Center for Sustainability, College of Agriculture, Food & Environmental Sciences, California Polytechnic State University, San Luis Obispo, Calif., and serves as a part-time lecturer.

**Mike Lynch** is a partner in Big Bang Wine, a public relations and marketing agency dedicated to the wine industry, based in San Francisco, Calif.

**ERIN AMARAL HAS USED** Sustainable in Practice-certified (SIP) viticultural practices at the Paragon Vineyard (approximately 700 acres) in the Edna Valley AVA for 12 years. She works for Pacific Coast Farming, a vineyard management and development company that oversees more than 1,500 acres in the Edna Valley region of San Luis Obispo County, Calif.

Amaral grew up on a farm in Crows Landing, Calif. and earned a Bachelor of Science degree in plant protection science with a focus on viticulture from California Polytechnic State University, San Luis Obispo.

Paragon Vineyard, owned by Niven Family Wine Estate, is a cool-climate site located 5.4 miles east of the Pacific Ocean. Chardonnay, Pinot Noir, Syrah, Sauvignon Blanc, Albariño, Pinot Gris, Grenache Blanc and Grüner Veltliner vines have historically provided fruit for wines such brands as Baileyana, Tangent, True Myth and Zocker, as well as winery grape buyers.

Below are some of Amaral's solutions to common viticultural challenges, including irrigation, nutrients, erosion, cover crops, canopy management, trellising, bird management, mildew, mealybugs, Red Blotch and weeds. By using SIP-Certified practices, she feels that Paragon Vineyard can enhance vine health, grape quality and the integrity of the local ecosystem.



KRIS BEAL

Erin Amaral oversees more than 1,500 acres in Edna Valley.



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### SIP-Certified

Sustainability in Practice (SIP) Certified is one of the wine industry's oldest sustainability programs and utilizes a block-to-bottle, integrated approach to management, enabling grape growers, wineries and wine-makers to preserve the environment and protect human resources. SIP Certified has strict, non-negotiable requirements and standards based on science, expert input, independent verification, transparency and the absence of conflict of interest.

SIP Certified launched its pilot program in 2008 with 3,700 acres of vines between Monterey and Santa Barbara counties. Today, there are 43,600 acres of vines in California and Michigan, two wineries and more than 40 million bottles of wine that have been SIP Certified.

In January 2020, WX Brands bought the four Niven Family brands: True Myth, Zocker, Baileyana and Tagent. When the Niven Family Wine Estate owned the brands, they incorporated their sustainable certification throughout their branding—from websites to sell sheets. They were one of the first to certify wines in 2008. Of the 40 million bottles certified with the SIP Certified logo, nearly 8 million have come from Niven labels.



### Irrigation

One challenge for Central Coast agriculture in recent years has been water quality. Relatively low rainfall, coupled with intensive agricultural practices, has resulted in the build-up of nitrates in groundwater, which has then led to more stringent water quality regulations.

To assist growers in water protection efforts, SIP Certified requires growers to complete a nutrient budget that accounts for nitrates in irrigation water, plus those added as fertilizer and/or contributed by compost.

For the past four years, Amaral has used sensors from Tule Technologies to help determine seasonal irrigation requirements at Paragon Vineyard. These sensors measure the total evapotranspiration of a field that includes any vegetative ground cover and vine canopy growth. The tool generates weekly irrigation recommendations based on pre-set canopy and fruit development goals. This technology has been a key component in saving water in blocks with quadrilateral trellis systems, yielding as much as a 40 percent reduction in some blocks and fostering better balanced vines.

Another important factor in conserving water is to select clones and rootstocks that require little or no irrigation. For example, Paragon Vineyard selected a Syrah clone that is primarily planted on 101-14 rootstock. With the vineyard's clay soils and cool climate, the canopies tend to be quite vigorous and do not need irrigation. Paragon's Chardonnay is primarily planted on 1103 Paulsen (1103P) rootstock, which is water-efficient in clay soils and has a low nitrogen requirement.



TULE TECHNOLOGIES

One of 10 Tule sensors at Paragon Vineyard that provide measurements of vineyard water use, vineyard water stress, applied irrigation and irrigation recommendations.



## Nutrients

Soil analyses are conducted to monitor soil nutrient status both pre- and post-planting to ensure that fertilizers are only applied to meet vine requirements. Soil samples are taken from 12-inch and 24-inch depths, or within each distinct soil horizon down to 36 inches during pre-plant investigation.

After planting, soils are sampled at a depth of 12 inches every three to five years. Vine nutritional status is monitored with leaf blade and petiole analysis from samples taken at bloom. Information from annual tissue analysis and semi-annual soil analysis is used to calculate macro- and micro-nutrient fertilizer requirements to achieve healthy vines.



KRIS BEAL

Dwarf cover crop mix in the vine row includes Dundale peas and UC142 oats.

## Erosion and Cover Crops

SIP Certified requires an erosion control plan to be put in place to foster best management practices and minimize off-site movement of soil. To facilitate this requirement, cover crops are seeded in tractor rows, and filter strips of natural vegetation grow beyond the vine row end posts. Sensitive areas are planted with a blend of seeds to protect them from erosion during the winter months. Cooler spring conditions warrant the need for early mowing as a form of passive frost protection in the tractor rows. This has led to seeding dwarf cover crop mixes, including UC937 barley, Dundale peas and UC142 oats.

To maintain cover crops in tractor rows during the growing season, it is common to combine tractor jobs to minimize vineyard passes. A Radius weed knife from Clemens Vineyard Equipment is used, which is mid-mounted on a tractor with a mower or chisel on the rear of the tractor. This helps reduce compaction and fossil fuel consumption. When ripping alternate tractor rows every year after harvest, a yeoman's plow is used that only penetrates up to 18 inches and is less disruptive to the soil profile. Amaral finds the yeoman's plow is good for the heavy soils found in the area, Cropley clays, Los Osos Diablo Complex, Diablo clays and Tierra sandy loams.

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KRIS BEAL

A 7-foot wide Farmax rotary spader operating at a ground speed of 2 to 3 mph and a depth of 12 inches is used in lieu of one or two disking passes, greatly decreasing soil compaction by a reduction in passes. The spader's action breaks up pre-existing, compacted soil to the working depth.

## Canopy

Vine canopy is managed to increase light penetration, air flow and improve spray coverage. The primary trellis is vertical shoot positioned (VSP). Canopy management operations include shoot-thinning, shoot-positioning, wire moving, leaf removal and hedging. Older blocks have traditionally been spur-pruned, but newer blocks are cane-pruned to achieve better bud fruitfulness.

An early spring shoot-thinning pass around the crown increases light infiltration and pushes healthy growth for next year's cane selections. After fruit set, a manual basal leaf removal pass exposes clusters early to sunlight and air movement in all grape varieties. This improves fungicide penetration and disease prevention. A second leaf removal pass is done on the Sauvignon Blanc 10 to 14 days prior to harvest to help reduce any methoxypyrazine character in the grapes.

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## Trellising

Chardonnay and Pinot Noir are primarily cane-pruned on a VSP trellis system to achieve proper balance of vine vigor with crop load and improve bud fruitfulness in the cool climate of the Edna Valley. The height of the trellis is sized to grow a taller, balanced vine canopy panel that captures enough light for photosynthesis without having to be hedged to control vigor. The Chardonnay cordon height is approximately 28 to 30 inches above ground, with the top of the stake reaching 70 to 72 inches. Pinot Noir is similar, with the cordon height at approximately 32 inches above ground and the top of the stake at 72 inches.

Leaves are removed around the sides of the clusters, leaving a slight umbrella on top to avoid over-exposing the fruit during peak sun hours. This pass is performed on the “morning sun” side of the vine. For Pinot Noir, a green drop is performed at 90 percent *veraison* to encourage uniform ripening within the blocks.

A quadrilateral trellis system is used for Sauvignon Blanc to achieve balanced vine vigor and the ability to carry a bigger crop load. In new plantings, vine rows are oriented on a north-south axis to promote even ripening on both sides of the vine.

Like Chardonnay and Pinot Noir, Sauvignon Blanc receives an early spring shoot-thinning pass. After fruit set, a manual leaf removal pass exposes clusters to sunlight and air movement to improve fungicide penetration and disease prevention. Within two weeks before harvest, an additional manual leaf removal pass is performed, if needed, to help reduce methoxy pyrazine components in the fruit.

## Phylloxera

Phylloxera has been an issue for all of the own-rooted vines planted in the 1970s. Phylloxera pressure on those vines has increased in recent years due to extended drought conditions. This has necessitated vine removal from a large portion of the acreage. Those acres are typically replanted with 1103P or 101-14 rootstocks after lying fallow for one to two years. No cover crop is planted. These blocks are farmed to SIP Certified standards although they are not certified during the fallow period.

## Bird Management

Starlings and house finches are problematic during the ripening period leading up to harvest. At Paragon, a falconer deters these birds from settling in the vineyard with both a flying Gyrfalcon, which simulates predation, and general hazing. This method has proven to be very effective, according to Amaral.

## Mildew

Sprayers must be calibrated, and regular scouting of pest hot spots in the vineyard must be recorded. One of the worst pest problems is powdery mildew, which is common in the temperate climate of the Edna Valley. Given the high pressure of this pest, a 14-day preventative spray schedule is maintained, starting at bud break and continuing into *veraison*.



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The fungicide program begins with a stilet oil and copper tank-mix application at bud break. The mode of action of synthetic fungicides is alternated to ensure that four to eight weeks pass before the same material is applied again. Wettable sulfur is introduced into the program in combination with other materials mid-season, stopping prior to *veraison*.

## Mealybug and Red Blotch

Vine mealybug and Grapevine Red Blotch-associated Virus (GRBaV) present ongoing pest management issues at Paragon Vineyard.

Vine mealybug produces multiple generations in just one growing season. It is particularly a challenge with vines that have Grapevine Leaf Roll-associated Virus-3 (GLRaV3), which is easily transmitted vine-to-vine by vine mealybugs. In infested blocks, chemical control practices are assisted by parasitism of vine mealybugs by *Anagyrus pseudococci* that were released over several years. Releases were discontinued for several years because of the continued presence of parasitized mealybug mummies being found.

In 2018, supplemental releases of *A. pseudococci* began again and will continue, as needed, to maintain the established parasitoid population. Pheromone-mating disruptors are placed in parts of the vineyard where there is a low-moderate presence of the vine mealybug. It not only disrupts the mating cycle of the pest but also keeps the *A. pseudococci* around. *Scymnus* beetle larvae are found feeding on the mealybug nymphs under the bark.

Red Blotch virus is an increasing challenge for growers as they plant vineyards. Amaral's team is doing their due diligence by only purchasing vines from a nursery that offers Certified 2010 Protocol rootstocks and scions that have been propagated on virgin ground.

## Weeds

Weeds are a constant challenge in Paragon Vineyard. SIP Certified encourages the use of cover crops to out-compete undesirable weeds. Seeding of cover crops was successful in reducing the population of noxious Russian knapweed. In the early summer, the cover crop will get knocked down with weed whackers to reduce competition with the vines while still maintaining a weed barrier. Herbicide application has been discontinued on 40 percent of the acreage through use of weeding implements, such as the Clemens weed knife. With additional implements, Amaral hopes to increase that acreage significantly in the future.

Weed control in the vine row is primarily done with a Clemens cultivator. Amaral has observed more manageable grasses since the elimination of herbicides and also improved water penetration during irrigation. For Albariño and Syrah blocks, unwanted weeds do not germinate or grow as readily due to lower irrigation requirements.

## Impact of SIP-Certified Viticultural Practices at Paragon Vineyard

According to Amaral, the SIP Certified experience has proven to be a positive one for both the health and prosperity of the Paragon Vineyard and Amaral's professional development. It has provided an excellent framework for improving efficiency, tracking quality and trouble-shooting challenges—all while increasing consumer recognition of the vineyard's sustainable growing practices. **WBM**

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