



# Sustainable Winegrowing Practices

April 2002

## Highlight of the Month: Canopy Management

*The canopy management techniques of leaf removal, shoot positioning, trellises and vine spacing can be used to improve the light and air circulation on the fruit. This helps produce better color, flavor and ripeness of winegrapes, and can also reduce the need to treat for leafhoppers, mites and diseases.*

### Managing Canopy in Windy Conditions at Delicato's San Bernabe

In 1988, the Indelicato family purchased the San Bernabe Vineyard in the central portion of Salinas Valley in Monterey County and began a 10-year replanting program with sustainable winegrowing methods as part of the effort. From cover crops that harbor beneficial insects to the placement of owl-nesting boxes, San Bernabe uses many natural practices in its 8700-acre vineyard. The family's philosophy led them to be one of the founding members of the Central Coast Vineyard Team, a group of area

Canopy management is essential to farming sustainably and achieving high wine quality. At

with canopy growing three- to four-feet up and another three- to four-feet of canopy trained down almost to the ground. No bottom buds are taken off during establishment of the cordon.



Photo courtesy Delicato Vineyards

At Delicato's San Bernabe Vineyard, the Smart-Dyson trellis divides the canopy with upward and downward shoots to reduce crowding, expose fruit to air and light, as well as control disease.

“At San Bernabe, the vines are vigorous and healthy, with enough energy to grow quality fruit, and a canopy that is in balance with the crop load. We practice deficit irrigation, applying only nine inches annually, for our goal is to bring vines to a static condition rather than a vegetative state. We yield about 15 pounds of fruit per vine, about 25 percent less per vine than average.”

Petrovic explains that with trellises that train vines to grow only straight up, the strong winds coming down the Salinas Valley from the Monterey Bay tend to crowd and fold canes over

winegrowers dedicated to finding an environmentally balanced approach to farming.

San Bernabe, Vineyard Manager Bill Petrovic uses the Smart-Dyson trellis because it has proved best for fruit quality, reduction of fungus problems and better spray penetration.

The trellis also does well under windy conditions. The unusual system calls for one 48-inch cordon,

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**Benefits:**

- ⌘ *Increases light exposure on berries to improve winegrape color and quality*
- ⌘ *Leaf pulling lowers leafhopper and mite numbers*
- ⌘ *Reduces incidence of mildew and bunch rot by increasing air circulation around clusters*
- ⌘ *Can decrease need for fungicide sprays*
- ⌘ *Can allow better coverage of sulfur dusts and sprays, making these treatments more effective*
- ⌘ *Improves access and visibility of fruit, particularly during harvest*

**Potential Trade-offs:**

- ⌘ *Excessive leaf removal can delay fruit ripening, expose grapes to sunburn or bleach the color of the fruit*
- ⌘ *Additional labor costs for leaf pulling and shoot positioning*
- ⌘ *Initial costs for trellising equipment and installation*
- ⌘ *Measuring canopy density can be time consuming and labor intensive*
- ⌘ *May not be necessary for some varieties, microclimates and soils*

each other, requiring too much management with wires. By training a portion of the shoots down, Smart-Dyson trellises require less wire management by using the wind to its advantage. Also, because the trellises adequately spread the canes out for air and light circulation, treatments

with sulfur, fungicides or insecticides are less frequent and more effective because of better coverage on the vines.

“Canopy management is the best front line defense against fungal problems,” says Petrovic.

“Fortunately, California is a Garden of Eden with great weather and

soils that are not depleted,” continues Petrovic. “Because the techniques used to manage canopy are site specific, depending upon such things as microclimate, variety and soil, we’re finding that new methods work best with the rich natural resources of the New World.”

### *Managing Canopy on Orfila’s Hillside*

**A**t Orfila Vineyards and Winery, General Manager/Winemaker Leon Santoro practices sustainable winegrowing because he believes it is the means to producing estate wine quality in the dry and mild San Pasqual Valley in San Diego.

Together with owner Alejandro Orfila, the former Argentinean ambassador to the U.S. and the third-generation of a family of winemakers from Argentina, they are helping to bring more prominence to San Diego winegrowing.

Located 15 miles from the Pacific Ocean, the winery’s 40-acre vineyard is an expression of meticulous care and how natural processes are used as much as possible. Terraced and planted with a Zorro Fescue cover crop

between the rows, the vineyard is never tilled, but mowed to prevent erosion. Perches in the vineyards attract the owls that naturally prey on unwelcome rodents. Quadrilateral trellises manage canopy by opening up the vine canopies to a calculated

He harvests a meager one to two tons per acre for the Italian and Rhone varietals he grows instead of the usual four or five tons. To do this, Santoro severely prunes his dormant vines back to one bud per spur each year, rather than the conventional two. Since the original vine spacing

was 8 by 12 feet, Santoro interplanted along the vine rows to lower the crop load and vine vigor by intensifying the competition between the vines. Even then, Santoro drops clusters during the growing

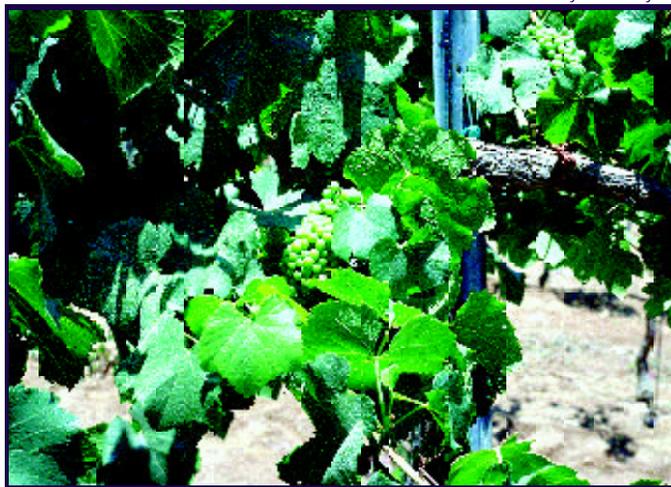


Photo courtesy Orfila Vineyards

At Orfila Vineyards in San Diego, severe pruning, along with pulling two leaves per shoot, provides the proper balance of canopy and fruit load.

amount of air and light on the fruit for better ripening and disease prevention.

Santoro explains that he manages canopy mainly to achieve low-yields with the highest possible grape quality.

season to concentrate the character of the remaining grapes.

Santoro adds that hedging the long shoots has not been necessary because vigor is controlled by deficit irrigation and the poor, sandy, granite soils of

the hillside. He pulls about two leaves per shoot after bloom as soon as the berries are formed so they will adapt to the light without sun burning. He initially pulled three to four leaves per shoot, but discovered that the luminosity of the Southern California light was

greater than the North Coast areas where he used to farm, even though the temperature and duration of the light were the same.

“People tease me by saying that I take the dust off the berries with a toothbrush,” says Santoro. “But this madness works.”

For Santoro, the small

fruit load is balanced with the canopy that he trains and grows from the hillsides. The challenge has paid off. Orfila Vineyards has collected a dozen double gold medals and hundreds of wine competition awards in the last few years.

## Groth’s Canopy Management on the Napa Valley Floor

Celebrating its 20th anniversary this year, Groth Vineyards and Winery has become intimately familiar with its 165 acres located on the floor of Napa Valley in Oakville and Yountville.

“Each and every vine is managed for its individual needs. We prune, thin shoots or leaf pull for balance throughout the vineyard so that all the grapes have uniform ripening and optimum maturity,” says Vineyard Manager Ben Benson. Vine by vine, the winery manages canopy to address both the goal of high wine quality and concern for the environment, he explained.

Through the years, Groth has worked to refine its vineyard properties and replace older vineyards with the best new rootstocks, clones, trellises and vineyard

practices for each site. Near the winery, they replanted and changed the direction of the vineyard rows to a north-south orientation to take advantage of the natural

rot. To further promote air and light exposure, Groth installed a “lyre” quadrilateral trellis system to spread out the canes. The system also matches the vigor of the vines resulting from the deep alluvial soils of the valley floor.

Benson says the new trellis system has reduced the number of leaves pulled to expose the fruit to more air and light. More leaves are pulled on the east side than on the west side where the clusters must be more protected from sunburn during the

long afternoon. Timed properly, leaf pulling can eliminate the first brood of any leafhoppers feeding on the leaves that are removed, curtailing



Groth Vineyard Manager Ben Benson checks vine growth on quadrilateral trellises, established in north-south rows to take advantage of the natural air flow up the Napa Valley.

air flow coming up Napa Valley from the bay each day. If there is a heavy rain, the winds dry out the vineyards to help reduce treatments for mildew or

**Resources:**

- ≈ *Sunlight into wine: a handbook for winegrape canopy management* / Richard Smart and Mike Robinson. Adelaide: Winetitles 1991. 88 p. [http://www.smartvit.com.au/Sunlight\\_Wine.htm](http://www.smartvit.com.au/Sunlight_Wine.htm)
- ≈ *Central Coast Vineyard Team, self-assessment survey on canopy management.* [www.vineyardteam.org/pps/thepps/vmD.htm](http://www.vineyardteam.org/pps/thepps/vmD.htm)
- ≈ *Lodi Winegrower’s Workbook, self assessment of integrated farming practices.* [www.lodiwine.com/winegrowersworkbook1.shtml](http://www.lodiwine.com/winegrowersworkbook1.shtml)
- ≈ *Vineyard Canopy and Fruit Zone Management (Organic),* [www.grapeseek.com/webpages/orgcan.htm](http://www.grapeseek.com/webpages/orgcan.htm)

the population before it lays eggs and diminishing the need for insecticides.

With 871 vines per acre, Benson says they anticipate harvesting about five tons of Cabernet Sauvignon per acre, a crop load that is balanced to the vigor of the vine.

“In our Cabernet, a balanced vine brings out the berry and cassis flavors, rather than the veggie, bell-pepper character,” says Benson. “In the Sauvignon Blancs, it eliminates the intense grassy character and develops the tropical fruit flavor. We’re trying to gain the most desirable taste characteristics through canopy management and crop load.”



# THE CODE OF SUSTAINABLE WINEGROWING PRACTICES



In early 2001, leadership and funding from Wine Institute and the California Association of Winegrape Growers (CAWG) led to the formation of a subcommittee to develop a “Code of Sustainable Winegrowing Practices.” This proposed voluntary program, establishing statewide guidelines for sustainable farming and winemaking, is still under development and is expected to be introduced to the wine community within the coming year.

**Purpose:** The purpose of the project is to enhance the California wine industry’s leadership role in responding to pressures resulting from population growth, public and legislative attitudes, environmental decisions from regulatory and governmental bodies, and other growth-related issues. The new Code, and its implementation, can greatly augment the industry’s collective and unified ability to accommodate these pressures, while assuring that future generations can produce the finest world-class wines. The goal of the Code is to “promote farming and winemaking practices that are sensitive to the environment, responsive to the needs and interests of society-at-large, and economically feasible in practice.” In a recent address to Wine Institute’s Board of Directors John De Luca characterized the proposed Code as “most likely the greatest legacy we can create for the wine community, our larger society, and generations yet unborn.”

**Project Status:** Close to 50 Wine Institute and CAWG members, as well as outside stakeholders such as representatives from Cal/EPA and independent farm advisors, sit on the subcommittee spearheading the project. Subcommittee Chair Michael Honig leads work on this first-ever statewide initiative, which will include a system to measure the voluntary industry input from vineyards and wineries. The data collected from the project will be used to benchmark the wine community’s progress on sustainability and target educational campaigns where needed. The winegrowing portion of the guide book will build upon the successful programs of the Lodi-Woodbridge Winegrape Commission and the Central Coast Vineyard Team. Feedback from regional grower and vintner associations and a wide range of academia, environmental and social equity communities has played an important role in the Code development. Dr. Jeff Dlott of RealToolbox, a sustainable agriculture and resource conservation consulting firm, has been contracted to help oversee the project and measurement system.

**Next Steps:** In March 2002, the Wine Institute Board of Directors provided comment and approved a 150-page draft of eight chapters representing half of the guidelines for the Code of Sustainable Winegrowing Practices. The subcommittee and Institute staff are now going forward to obtain outside review of the approved chapters by environmental groups, university educators, regulators and other industry experts. The remaining chapters are being developed and a complete draft of the Code is planned for presentation at the Annual Meeting in June 2002.

To attract additional implementation funds for this project, the Wine Institute Board also approved the establishment of a 501(c)3 nonprofit, non-lobbying foundation in conjunction with the California Association of Winegrape Growers. This was necessary as many philanthropic organization donate solely to 501(c)3 groups. Named the California Sustainable Winegrowing Alliance, this entity will help advance the adoption of sustainable viticulture and winemaking practices through research and education. For more information on the project, go online to [www.wineinstitute.org/communications/SustainablePractices/vision.htm](http://www.wineinstitute.org/communications/SustainablePractices/vision.htm)

Upcoming topics for “Highlight of the Month” publications are as follows.  
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- ✂ May – “Wildlife Corridors and Habitat” \* ✂ June – “Communicating with Neighbors” ✂ ✂ July – “Increasing Predators and Scouting Pests” \* ✂ August – “Assessing and Reducing Energy Needs” \* ✂ ✂ September – “Composting” \* ✂
  - ✂ October – “Controlling Erosion” \* ✂ ✂ November – “Protecting Air and Water Quality” ✂
  - ✂ December – “Attracting and Retaining Good People” ✂
- ✂ Topics of a seasonal nature are matched to the time of year when the practice takes place.

The practices for “Canopy Management,” highlighted in this issue, pertain to the Code of Sustainable Winegrowing Practices in the following areas: Viticulture; Pest Management; and Wine Quality.

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