



## Workshops Demonstrate Vineyard Technology for Sustainability

Low-drift sprayers, weed steamers and mechanical pruners—these were just a few of the 10 pieces of equipment demonstrated in the vineyards at Fresno State during a recent California Sustainable Winegrowing Alliance (CSWA) workshop. It was held in conjunction with the university and the Central California Winegrowers, with support from Constellation Wines U.S., E. & J. Gallo Winery and Allied Grape Growers.

The educational field day gave winegrowers a chance to see the equipment in action and talk to sales people and other winegrowers. It was one of dozens of CSWA workshops conducted this year

on sustainable winegrowing topics.

Demonstrations at the Fresno workshop showed how weed management equipment could reduce some air and water quality concerns. An optical weed-control sprayer sensed the chlorophyll in weeds with infrared technology and automatically delivered a precise spray targeting only the weed instead of bare ground. The equipment reduces weed-control costs by up to 80 percent. Wineries have reported a return on the initial equipment investment in a year through the savings.

Attendees also watched large over-the-vine sprayers treat two or three vine rows at a time. The star configuration of the sprayers provides better canopy cover-



Using infrared technology, an optical weed control sensor, mounted on an ATV, emits a pinpoint spray only on weeds, not bare ground, resulting in cost-savings up to 80 percent for weed control.

age and containment of the spray.

“The spray is deposited more efficiently within the canopy, preventing drift to surrounding areas,” says Joe Browde, CSWA project manager who helped conduct the workshop. “Less spray volume and potentially less active ingredients can be used. These technologies can save costs, help protect the environment, and show good stewardship to neighbors—balancing the three E’s of sustainability.”

Another machine created steam with water and propane to steam out weeds without damage to drip lines or vines. The need for tillage or herbicides can be reduced or eliminated. It is possible for the weed steamer to go

down six-foot wide vine rows at four miles per hour.

Other equipment items performed multiple functions to decrease passes through the vineyard, reducing soil compaction, dust being dispersed into the air and impacts on labor. For example, a new cane cutter pruned two rows at a time with a GPS mapping unit within the equipment to help determine how to balance the cane cutting in a specific vineyard. Another demonstration showed how an under-the-vine cultivator knocks out weeds, cultivates and sweeps in one pass at four miles per hour.

Participants attending the workshop applied for PCA/PA credits through Fresno’s Department of Viticulture and Enology.

Photos by Gladys Horiuchi



A weed steamer eradicates weeds without pesticides, tillage or damage to irrigation lines.

Please share this newsletter with your entire staff. It is also available online in pdf format on Wine Institute’s website at: [www.wineinstitute.org/communications/highlights/vineyardtechnology2006.pdf](http://www.wineinstitute.org/communications/highlights/vineyardtechnology2006.pdf).

**Some suggestions from Jim Cuneo:**

- Smaller, narrower, rubber-tracked crawler tractor.
- Custom-built 100-gallon spray rigs pulled by six-wheel ATVs.
- Overhead booms to cover two rows at once.
- Electro-static sprayers to pinpoint applications.
- Drip irrigation to reduce water use and cut down on soil erosion.
- UC Davis Powdery Mildew Risk Assessment Model: <http://www.ipm.ucdavis.edu/DISEASE/DATABASE/grapepowderymildew.html>.

*Photo courtesy of Robert Young Vineyards*



*A six-wheel ATV that pulls a double-boom sprayer was one of the winery's custom solutions for treating more acreage more quickly without compressing down the soil or cover crops.*

***Equipment Selection Helps Expand Sustainable Practices at Robert Young Vineyards***

For nearly 150 years, the Young family has farmed the same land in Sonoma County's Alexander Valley. Their philosophy from the beginning in 1858 is as strong today as it was then—having an uncompromising respect for the land.

Sustainable winegrowing practices are a natural extension of the family's philosophy. At Robert Young Vineyards, they grow 300-plus acres of premium winegrapes and have preserved 200 acres as open space and pasture-land to help create more biodiversity and wildlife habitat.

Assistant vineyard manager Jim Cuneo said sustainability is emphasized throughout the farming operations. One way that he accomplishes this is through equipment selection.

During the extremely wet weather last winter and spring, many vineyard operations in California



*Photo courtesy of Robert Young Vineyards*

*The rubber-track footprint of the crawler tractor, shown above with prepruner attachments, reduces soil compaction and passes, and allows the crew access to the Robert Young Vineyards after rains.*

were severely hampered by the wet conditions. At Robert Young, the work could be performed because of equipment specifically designed to cause less soil compaction than traditional machinery.

"Last fall, we purchased what I believe will be the next generation of vineyard equipment—a rubber-tracked crawler tractor that allowed us to get into the vineyards right after a rainstorm without compacting the soil or creating any ruts," Cuneo said. "Quite honestly, with a wheel-type tractor, we could not have done that, and we would have been far behind with our vineyard operations."

The vineyard also uses two custom-built 100-gallon spray rigs that are pulled behind six-wheel ATVs. Cuneo explained that this set-up also allows crews to make the needed

applications without having to drive a heavy tractor and spray rig through the vineyard. A special overhead boom that is fitted to the top of the spray rigs allows applications to two rows at once so drivers can skip every other row, thus reducing soil compaction. The sprayers provide better coverage with a lower volume of water.

"We can cover more acreage more quickly with this equipment than with a traditional tractor-sprayer rig and we do it without trampling our cover crops or creating ruts," he said.

Cuneo predicted that Robert Young Vineyards would likely embrace even more mechanization in the future.

"The Youngs are not hesitant to spend money on technology or methods that have been proven to increase winegrape quality and sustain the land."

## *New Equipment Is Part of the IPM Strategy at Foster's Wine Estates Americas*

For the past 15 years, Drew Johnson has focused much of his energy on sustainable winegrowing practices, including finding ways to reduce pesticide use and switch to “softer” chemicals for the North Coast vineyards of Foster’s Wine Estates.

Johnson is director of vineyard technical services for the winery’s vineyards in Napa, Sonoma and Lake counties.

“This is what I call smart farming,” explained Johnson from his office at Beringer Vineyards in St. Helena. “No one wants to make these huge invest-



*Using an over-the-row sprayer in a targeted manner, Drew Johnson and the Beringer viticulture team reduce the use of both water and materials by 50-75 percent in their applications.*

*Photo courtesy of Foster's Wine Estates*

ments in vineyards and vineyard development without taking good care of the land so it will be productive for our lifetimes and hopefully into the next. We strive to use materials and methods that promote the natural environment and reduce any unnecessary stress during the growing cycle.”

He cites the grape leafhopper as a good

example of how control methods have changed. In years past, vineyard managers would act early and aggressively to knock out leafhoppers before their numbers multiplied. The materials that were available to control the insects worked very slowly and were not always effective.

“But the education has changed and now I feel very comfortable in the knowledge that large populations of leafhoppers are not detrimental to the grapevines or fruit quality. We put up with much higher populations because we know we can. Also, we

have materials now that are more targeted and with much softer chemistry.”

“Our commitment to sustainability and the environment is real. We are focusing on our resources to make sure we are doing things in a balanced way that minimizes any adverse impact the work in our vineyards may have on the land.”

One area of sustainability that Johnson pays particular attention to is mechanization. He advises vineyard managers to “keep an open mind” and check out the latest equipment innovations.

“There are some very strange looking things appearing in vineyards and they are all worth looking at on some level,” he said.

One piece of equipment that Johnson encourages other vineyard operators to examine is a low-volume spray rig.

“We’re moving in the direction of using low-volume sprayers exclusively on all of our vineyards because they give us very good control with a much lower application of materials and less water than with other sprayers,” he said.

He has also experimented with the steamer method of weed control using propane-powered steamers. But “the jury’s still out” on that method, he said, because of the amount of propane required to produce the steam. “I’ve never seen a really good study on the impact of burning that much propane vs. using a miniscule amount of Roundup.”

Johnson readily confirms his belief in sustainable farming. “Sustainable agriculture is much more accepted now than it was 10, 15 or 20 years ago. We need to take care of this land so that it will remain productive for a long, long time.”

### *Sustainable farming practices at Foster's Wine Estates include:*

- Cover crops between vineyard rows to provide habitat for beneficial predacious insects to reduce dust, soil compaction and erosion, and to act as a filter to protect water quality.
- Composted grape pomace used as fertilizer to enrich the soil with nitrogen and increase its organic content.
- Integrated pest management strategies to allow beneficial insects to control pests whenever possible.
- Precision irrigation scheduling to reduce water requirements.
- Labor-intensive techniques to reduce the possibility of mildew and botrytis. These include shoot positioning, leaf-pulling, and mechanical solutions such as vertical trellising to mitigate the need for fungicides.
- Seeding of land with winter sods and other germinating products to prevent erosion.
- Natural riparian corridors maintained to provide animals access to creeks and streams.



# California's Sustainable Winegrowing Program

The Sustainable Winegrowing Program (SWP), introduced in 2002 by members of Wine Institute and the California Association of Winegrape Growers (CAWG), has earned the California wine community a reputation as the wine world's leader in the adoption of practices that are environmentally sensitive, socially responsible and economically feasible. The organizations formed the California Sustainable Winegrowing Alliance (CSWA), a 501(c)(3) nonprofit organization a year later to advance the program.

CSWA has held over 145 educational workshops throughout the state, attended by several thousand winery and vineyard enterprises. More than 1,300 workshop participants have evaluated their operations using a 490-page workbook of best management practices, developed by the Joint Committee of 50 members from Wine Institute, CAWG and other key stakeholders.

In October 2004, CSWA issued its inaugural report measuring the level of sustainable practices among vintners and growers statewide. The report is the first

time an entire industry sector has used a common assessment tool to document the adoption of sustainable practices among its members and reported the results publicly. The evaluation results collected from the initial round of workshops are contained in the report, and represent 40 percent of California's 260 million case production and 25 percent of its 529,000 wine acres.

The SWP program is now using the lessons learned to improve implementation, add more sustainable practices content, build new and existing partnerships, and continue measuring the adoption of the practices.

**WORKSHOPS.** In addition to ongoing SWP workshops, action plan workshops are now being held to help vintners and growers increase SWP adoption and improve scores in individual chapter areas. Grants for workshops and related activities have been provided by: American Farmland Trust for integrated pest management; Natural Resources Conservation Service (NRCS) to address air and water quality; National Fish and Wildlife to undertake ecosystem management; and PG&E for energy efficiency.

**PARTNERSHIPS.** Wine Institute, CAWG and CSWA are reaching out to potential partner organizations to seek funding, share resources and knowledge, and develop incentives for SWP participants. In addition,

the 2004 Sustainability Report findings will be reviewed with viticulture and enology research institutions to identify priority research gaps and encourage mission-driven research that speeds SWP adoption.

**WORKBOOK.** The development of a new chapter on air quality, funded by the NRCS grant, involved the Joint Committee and internal and external reviewers of the SWP workbook. The next edition of the workbook will include the new air quality chapter, as well as updates. An online version of the workbook is also under development.

**REPORTING.** By publicly documenting winegrowing practices through the publication of interim and full sustainability reports, the SWP program can demonstrate progress and challenges, and serve as a model for other sectors.

Governor Arnold Schwarzenegger awarded CSWA the state's top environmental award, the Governor's Environmental and Economic Leadership Award in 2004. California Council for Environment and Economic Balance also named Wine Institute, CAWG and CSWA recipients of the 2005 Edmund G. "Pat" Brown Award for the program's demonstration of the ideals of environmental and economic balance.

For information, visit [www.sustainablewinegrowing.org](http://www.sustainablewinegrowing.org), [www.wineinstitute.org](http://www.wineinstitute.org), or [www.cawg.org](http://www.cawg.org). Information is also available by calling Wine Institute: 415/356-7535.



Wine Institute recently issued Certificates of Participation to those completing a self-assessment through the Sustainable Winegrowing Program. Ideal for tasting room and event display, the certificate acknowledges a winery's environmental and community efforts.

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