

# Come Attend a SWP Workbook Workshop

The SWP workbook program is a monumental achievement for the California wine industry and LWWC growers have played in integral part in its conception and development. However, the real work on the SWP project has just started, and that is getting the workbook into the hands of winegrowers and vintners as a tool for improving their operation's sustainability. From this point on I will be using the SWP workbook in all LWWC workbook workshops. During this fall and winter I will be re-convening workshops that were held during the fall winter of 2000/2001 so those of you that attended those workshops will be hearing from me. I encourage you to attend one of these workshops. The true value of the workbook is to use it do a vineyard evaluation periodically so you remind yourself where you are at in your vineyard operations and re-acquaint yourself with where you are headed. At these new workshops all attendees will receive a copy of the SWP workbook for use in evaluating your vineyard operations. I also hope to help facilitate workshops for wineries in the Lodi area. If you are interested in attending a workshop, whether for winery operations or vineyard operations please contact me to find out when the next one is near you. Even if you have done a Lodi Winegrower's Workbook workshop in the last 12 months I encourage you to attend a new workshop and get the SWP workbook.

## UPCOMING MEETINGS AND COURSES

**JANUARY 28 - 30, 2003:**

### **UNIFIED WINE & GRAPE SYMPOSIUM**

Sacramento Convention Center.

For more information call (916) 932-2244 or visit

[www.unifiedsymposium.org](http://www.unifiedsymposium.org).

**FEB. 4-6, 2003**

### **VARIETAL WINEGRAPE PRODUCTION**

#### **SHORT COURSE**

University of California Davis.

For more information call (800) 752-0881.

**FEB. 18, 2003**

### **LWVC BREAKFAST MEETING**

Dr. Deborah Golino, UC Davis and

Paul Verdegaal, UC Farm Advisor speaking

on winegrape viruses emphasizing fanleaf virus.

8:00am-9:30am. Central Valley Waste Management

1333 East Turner Rd., Lodi.

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# RESEARCH • IPM NEWSLETTER

## *The Role of Cover Crops in Vine Stress and Nitrogen Management*

BY: CHUCK INGELS <sup>1</sup>  
ALISON BERRY <sup>2</sup>  
TERRY PRICHARD <sup>3</sup>

Many growers use or have tried vineyard cover crops to obtain economic or environmental benefits. Typical benefits include increased water penetration, reduced erosion and runoff, improved vineyard accessibility on wet soils, addition of organic matter and nitrogen, and enhanced juice and wine quality. An increasing number of growers are using cover crops as a way of achieving the latter benefit. In a blind tasting of Merlot wines made from a Sacramento County cover crop study, none of the 11 tasters chose wine from the disked control treatment as their favorite, and this wine also received the lowest rating (see LWWC Research/IPM Newsletter, Aug. 2001). Of course, there are also drawbacks to using cover crops, and the decision to plant them depends on whether the expected benefits outweigh the drawbacks.

### COVER CROPPING AS COMPONENT OF A DEFICIT IRRIGATION PROGRAM

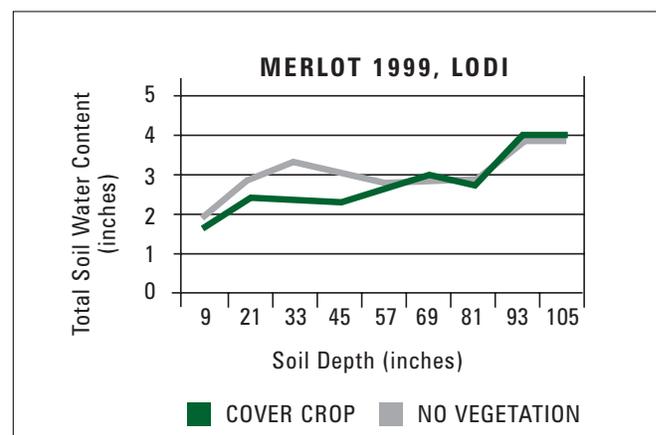
An important benefit of cover crops, which could also be a drawback, is the ability of cover crops to use soil moisture in the early spring. Our LWWC-funded research has shown that moderate pre-veraison water stress can improve red wine quality (T. Prichard and P. Verdegaal, unpublished data). On soils that can hold enough soil moisture to prevent water stress until after veraison, cover crops can help deplete the soil profile by bringing on water stress earlier, thus helping to reduce vegetative growth. In a mature, drip-irrigated Merlot vineyard in Lodi, a cover crop of annual ryegrass reduced soil moisture at budbreak by nearly 2 in. over the 105-inch soil depth measured in 1999, the third year of the experiment (see figure). The bulk of the differences occurred within the top 48 inches. In 1999 there was about 14 inches of winter rainfall.

In this trial, a comparison was made between cover crop vs. no cover crop in a standard deficit treatment. The irrigation regime for both was non-irrigation until the vines reached -13 bars leaf water potential (stress) then irrigated weekly using 60% of the full vine water requirement. This irrigation regime resulted in about 18 in. of vine water use for both treatments,

of which 7 in. was applied as irrigation. Vine shoot growth was significantly reduced in the cover crop treatment, with a maximum shoot length reduction of 15% in June and July.

Harvest dates, sugar content, and juice pH were very similar. The malate (malic acid) content of the juice was significantly reduced in the cover crop (1600 vs. 2125 ppm) owing to less vegetative growth and more light to the fruit. This in turn resulted in a lower titratable acidity (4.8 vs. 8.4 g/L), of which malic acid is a component. Titratable acidity of the wine was much higher in the cover crop than the control due to the fermentation of the higher malic acid in the control. The wine color intensity was significantly higher in the cover crop wine at all measured spectrums. Hue was also improved.

Cover crops grow very actively in the spring, using soil moisture in proportion to their biomass and ambient warmth. Therefore, the larger and later a cover crop grows, the more water it uses, and the rate of water use can be regulated by choosing low biomass species and/or by mowing or tilling in the spring. The annual ryegrass used above is a vigorous, late-maturing cover crop that died out in late spring due to lack of water, before it reseeded. This species would likely resemble several tall-growing perennial grasses in its water use. Another key factor in water use is the width of the herbicide (or cultivated) strip: the closer the cover crop grows to the vine row, the greater the competition with the vines for water and nutrients. Water use (and costs and frost hazard) can also be reduced by sowing alternate rows.



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#### COVER CROPPING AND NITROGEN CYCLING

Annual legume cover crops can be a valuable source of nitrogen for vines. Nitrogen is released rapidly through decomposition of leaf litter from the legume hay after mowing and/or tilling. Over time, soil productivity will also be enhanced. In a vineyard, the use of a cover crop mix that includes legumes could mean that most if not all of the annual grapevine N demand can be met.

The effectiveness of cover crops as a source of nitrogen depends on the timing of nitrogen release from the cover crop, which must coincide with the period of nitrogen uptake and use by the grapevine. One critical period when cover crop N is needed by the vines is during rapid shoot growth and early fruit set. Our LWWC-funded research in a drip irrigated vineyard in Sacramento County has shown that the N content of vine leaves increased by 15 to 20% in the first 2 to 4 weeks after mowing or tilling (R. Smith, A. Patrick, and A.M. Berry, unpublished data). Using natural isotopes of N as tracers, we also showed that the N derived from the cover crop accounted for 20 to

30% of the leaf N. We are currently measuring the amount of cover crop N taken up by grapevines over the entire growing season in order to develop an appropriate vineyard N budget and management schedule.

Nitrogen fertilization is a delicate balance, since over-fertilization during grape maturation can negatively affect wine quality. If the amount of cover crop N applied and the timing of N release is managed in a consistent manner, legumes in the cover crop mix can provide reliable N inputs, along with the other benefits to the soil and the wine grapes that cover crops provide.

#### SUMMARY:

The choice of cover crop depends on the main benefits desired. Legumes are used mainly to add N, but grasses have far more extensive root systems that may use more soil moisture. Regardless of the species used, be sure to monitor vines to ensure that the cover crop is not reducing vine water status excessively or reducing or adding too much Nitrogen.

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## WINE INSTITUTE & CAWG UNVEIL *Statewide Self Assessment Workbook modeled after the Lodi Winegrower's Workbook*



BY CLIFF OHMART

On October 29 at the Crown Room atop the Fairmont Hotel in San Francisco Wine Institute (WI) and CAWG (California Association of Winegrape Growers) convened a press conference to release the Code of Sustainable Winegrowing Practices (SWP) Self-Assessment Workbook. You will likely see articles about this project and the workbook release in trade journals and other media over the next couple of months. Articles have already appeared about it in the Sacramento Bee (Sept. 6), the Wall Street Journal (Oct. 23) and the Stockton Record (Oct. 30). This project began over a year and a half ago and was directed by a joint committee of over 50 WI and CAWG members. Early in the project the committee decided, after receiving permission from LWWC, to use the Lodi Winegrower's Workbook as a model. Moreover, it was decided that

an entire new set of chapters would be created to deal with sustainable issues inside the winery. Therefore, the workbook deals with winemaking from the soil to the bottle. I was on the consulting team that drafted the document and was responsible for the content adapted from the Lodi Winegrower's Workbook. Winegrowers from around California read the Lodi workbook, made suggestions as to how various issues could be adapted to their regions and these were incorporated into the vineyard chapters of the SWP workbook so that it now has statewide applicability and the benefit of valuable additions from these very experienced winegrowers.

The first five chapters of the SWP workbook are Viticulture, Soil Management, Vineyard Water Management, Pest Management and Wine Quality and are direct adaptations from the Lodi Winegrower's Workbook. The chapter dealing with habitat issues, authored by Kent Reeves and Jeff Dlott, is titled Ecosystem Management and has been greatly expanded from the Lodi workbook. The 5 chapters devoted to sustainable winery issues are Energy Efficiency, Winery Water Conservation and Quality, Material Handling, Solid

Waste Reduction and Management and Environmentally Preferred Purchasing. The winery chapters are followed by the Human Resources chapter, written by Liz Tach, a wine industry human resources expert, and the last chapter deals with Neighbors and Community issues.

WI and CAWG have formed a non-profit organization, the California Sustainable Winegrowing Alliance (CSWA), to raise money for statewide implementation of the SWP. The CSWA Board of Directors is made up of 7 WI members and 7 CAWG members. At the first CSWA Board meeting on Oct. 29 Paul Dolan of Fetzer Vineyards was elected chairman, Steve Quashnick of LWWC was elected vice chairman, Jim Unti of Canandaigua Winery was elected secretary and Randy Lange of LWWC was elected treasurer. Regional vintner and winegrower groups throughout the state will now begin implementing the SWP by holding small workshops assisting winegrowers and vintners in filling out the parts of the workbook that pertain to their operations (e.g. in the winery or in the vineyard), much in the same way as LWWC has been convening Lodi Winegrower Workbook workshops for the last 2 years.

The 2002 season confirmed that the grape over supply which began last year is still lowering grape prices. Although unharvested grapes were a more widespread problem, the total amount of fruit left hanging was not a lot more than last year for the district. Crop loads were about average across varieties, but there was variability. Grape prices were also variable, but much lower than "normal". Prices ranged from \$65 per ton to well over \$1,000 for a few selected lots. The vast majority of grapes were sold between \$85 and \$350 per ton. As expected there were marketing problems from the field to the delivery stand, tank space was limited and wine sales, although not declining were not ahead of the grape supply.

While 2002 was not a "viticulural Chernobyl", some growers had real hardship, and others had a good year with everything in between. Two positive notes were: market conditions were better here than farther south and the quality of fruit was very good to excellent. The 2002 vintage holds good potential for wine quality, which although a poor compensation for low prices, provides some hope, as quality and value will help marketing efforts. More vineyard designated wines and more labels will help the Lodi District maintain the tremendous progress of the recent eight great years, from 1993 to 2000. As with last year, the challenge now more than ever is to not only maintain quality, but to increase it.

The 2002 vintage started about

normal in mid August. Across varieties, sugars increased quickly to high levels; rot incidence was low, acid levels and pH good, colors excellent and fruit flavors very good. Crop yields were generally average, but total production increased with new acres coming into production and young vineyards maturing. A cool and dry spring was interrupted with a late May rain that brought hail and some scattered crop loss. Overall the year was about normal for total degree days but alternated with cool and hot periods during the season that caused some vine and fruit stress. Rot problems seemed to be in check this year, but powdery mildew and mites did flare up late in the season. Overall, conditions seemed to provide the opportunity for another very good vintage, at least from the perspective of fruit quality.

The harvest began slow then developed quickly and progressed very fast, with almost all varieties maturing in a short time. This was similar to last year, but maybe even worse in some cases. Chardonnay, Zinfandel, Cabernet Sauvignon, Merlot, some Sauvignon blanc and Syrah closely overlapped during harvest. Red Zinfandel blocks were harvested later this year than the mid August surprises of 2001, but still went fast.

With the second year of downward pricing, it becomes even more tempting, if not necessary to consider cutting corners. The danger is that it is all too easy to negatively affect quality, which in turn can force prices even lower.

Fortunately for wine grapes they don't require the inputs that other crops do. This past year was a good example with irrigation management. Deficit irrigation is becoming a more common practice, which has been good for quality and saves some money. I did see some vine and fruit stress late in the year during the periods of extreme heat. Less water is generally better, but attention to meet vine needs is still important. Following a reasonable irrigation schedule using ET demand and newer technology such as pressure bombs or just monitoring actual hours and amounts of water application will help take out some of the mystery about vine water needs.

After this challenging harvest, year end considerations include: evaluating your fertilization program, problem soil conditions, vine balance by measuring pruning weights (see LWWC Newsletter December 2000), infected vines for removal and irrigation system evaluation for uniformity and identifying leaf roll virus infected vines for removal. There have been more problems as many of the new vineyards planted the last five years mature and indicate problems. Besides the Glassy Winged Sharp Shooter (GWSS), we now have to be on the look out for sudden and severe infestations of mealy bugs. Any rapid infestations and extremely messy vines might indicate the appearance of Vine Mealy bug (VMB) instead of the less troublesome grape mealy bug (GMB).

If you have any questions talk to your PCA or give me a call. We will be hearing more about fighting this new invasive pest. In and out of agriculture challenges can provide opportunities to build on hard earned strengths.

## LWWC HIRES NEW SUSTAINABLE VITICULTURE TECHNICAL COORDINATOR

In the last newsletter it was announced that Lisa May left the LWWC to take a job in grower relations and viticulture with the Wine Group. In the meantime LWWC has recruited a replacement for her. On January 2, 2003, Chris Storm will begin working as LWWC's new Sustainable Viticulture Technical Coordinator. Chris has a Bachelor's of Science degree in Plant Biology from California State University Chico, and will by the end of the year have finished a Master's of Science degree from Washington State University. His thesis topic is integrated pest management of the grape leafhopper. Chris grew up in a farming family in Salinas and comes with excellent credentials in viticulture and pest management, experience in working with growers, and great recommendations from his advisors at WSU. Come to a grower meeting early in 2003 and meet him.