



Lake County Winegrape Growers

Sustainable Winegrowing Newsletter

Vine Mealybug Update – 2005

By Chuck Morse, Deputy Agricultural Commissioner

Another year of trapping for the Vine Mealybug (VMB) has come to a conclusion. There are many positive items to report from this program. No male VMB's were trapped countywide during this year's summer and fall trapping season. The increased trapping we had in the vicinity of last year's find also came up negative for VMB. This is very encouraging, as it tends to indicate that an active infestation has not been established. We had a very good response from the grape growers as far as deploying and returning VMB traps that were made available by the Department of Agriculture. There were 22 growers, representing 2,000 + acres, which had 103 traps deployed at any given time during the season. We strongly encourage grape growers to continue to participate in this program next year (or start next year if you didn't participate this past season). The traps, pheromone, and reading of the traps are free and it serves as a tool to detect a potentially devastating pest early, thereby increasing the chances of control and possible eradication. The Department of Agriculture also deployed an additional 85 traps into roughly 70 different blocks for 47 more growers. This program covered 3,000 + acres of vineyards.

The Department of Agriculture also drafted a reminder letter to all Lake County wine grape growers about the VMB and things to think about during harvest. The Lake County Wine Grape Commission (LCWGC) was very helpful in getting this letter out to all their members via their e-mail list and we thank them for doing that. The Agriculture Department also sent a letter to all wineries operating in Lake County discussing the issue of how to handle stems, skins, and other winery debris. Grapes coming into the county pose a possible risk of introducing the VMB into Lake County vineyards through the mishandling of infested crush debris.

The VMB meeting held in May was very well attended by growers and field workers alike. Lots of good information was made available and the hands-on inspection/ID portion of the meeting was also very valuable. The Lake County UCCE office is maintaining a good resource of information about VMB on their website. Visit them at <http://celake.ucdavis.edu>, and click on the Viticulture icon.

We look forward to working with the wine grape industry as a whole next year to continue to improve our trapping and detection efforts for this serious pest.

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NRCS Cost Share Deadline by Korinn Smith, NRCS

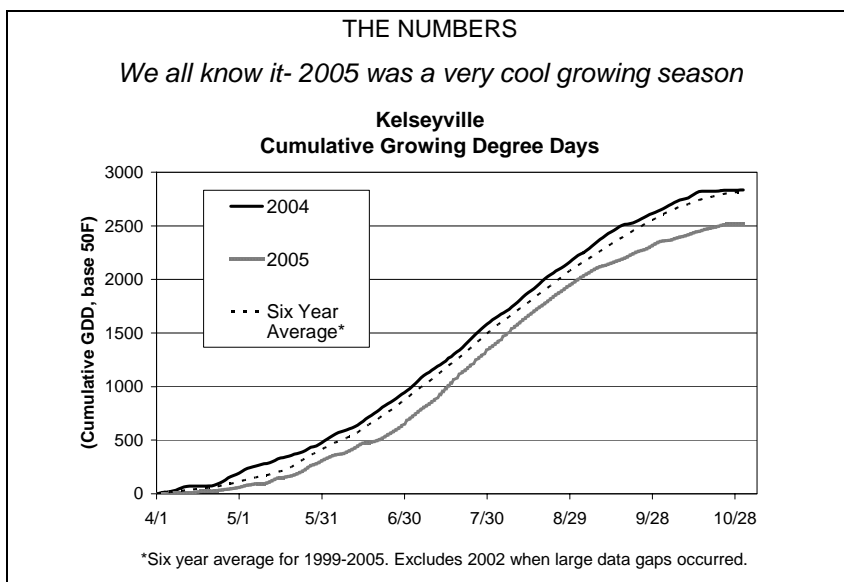
Larry Brewer of the Lake County Natural Resources Conservation Service has announced that applications are now being accepted from Lake County farmers and ranchers wishing to participate in the 2006 Environmental Quality Incentives Program (EQIP). The Lake County cut-off deadline for accepting applications is December 2, 2005.

The EQIP program's objective is to promote agricultural production and environmental quality as compatible national goals. The EQIP program offers funds on a cost-share basis to agricultural producers for conservation practices that address locally important natural resource concerns. The primary resource concerns being addressed in Lake County this year include soil erosion from gullies and hillside cropland, management of livestock grazing, pest management on cropland, management of irrigation water, and cropland nutrient management. If funds are available after funding the high priority applications, secondary resource concerns may be funded which include inefficient irrigation systems, invasive weeds, and streambank erosion.

Applications are screened, scored, and ranked based on a locally modified scoring system striving to get the best environmental benefits for limited funds that are available to the county.

Last year, Lake County farmers and ranchers were awarded EQIP program contracts totaling \$353,996 to address the priority resource concerns.

Landowners wanting more information about EQIP and how it can be used to install conservation measures on their property should contact their local NRCS office. In Lake County, the NRCS office is located at 889 Lakeport Blvd, Lakeport. Specific information about EQIP in Lake County will also be available on the internet at www.ca.nrcs.usda.gov, under programs, then EQIP.



A Recent Innovation in Grapevine Pruning for Disease Management

By DeWitt Garlock

Viticulturist and Owner, DeWitt Garlock Vineyard Consulting Services, LLC

It is true in Lake County, just as it is true in any other wine growing region in the world, that pruning is the most important activity performed in the vineyard to establish the proper balance between canopy growth and crop set in any given season. Since Roman times (and arguably going back further to the Etruscan culture) where vines have been cultivated, vineyardists first discovered and (like myself thousands of years later) were taught that when a measured amount of seasonal growth is removed from the vine during the dormancy period, the resultant production of fruit is more predictable and this fruit

ultimately produces better wine. Finally, the vineyard is maintained in a healthier status.

This last point of vine health is the topic that I want to address more fully in this article because there is a technique that is ever more commonly in use in the industry that only a few years ago was not practiced at all. This technique serves to help maintain vine health where there is constant and real disease pressure. The name of the disease is *Eutypa lata* (dying arm), and the technique available to help combat it is called pre-pruning.

You may be aware that *Eutypa* is a wound entry disease that causes infection when the fungus establishes colonies on open and unhealed pruning wounds. This part of the infection cycle is particularly robust when strong winter storms pass through the North Coast bringing copious amounts of relatively warm precipitation and lots of wind energy. These are the so called "Pineapple express" storms that occur periodically in the months of

December, January, and February which also coincide with the peak of the winter pruning season. When cankers from dying tissue are fully developed the asexual stage (ascospores) are formed within sacs in the older woody tissues of the vine. These are called perithecia. These perithecia which contain hundreds of mature ascospores are stimulated to release these spores when a major rain event like those described above occurs. Carried by wind they can and do find an ideal growth medium in the sap exudates of pruning wounds (larger cuts being more susceptible than smaller cuts primarily because they dry slower), and a new infection site is created. Sporulation occurs and a new canker eventually develops which repeats the cycle. Ultimately the growth of the canker will kill spurs and main woody tissues of the vine albeit slowly (hence the name dying arm disease and *Eutypa* dieback) and when given enough time, will eventually kill the entire vine. One of the control practices given over the years by the University of California has been to delay pruning until the month of March when the sporulation release has subsided. This is a fine technique when the grower is managing a moderate number of acres that require a two to three week season which starts and ends in March. But what about the larger grower who has much larger acreages that for reasons of logistics and good viticulture has to be pruned after the first of the year?

The answer to this last question is the technique of pre-pruning, either by hand or mechanically. This technique allows removal of most of the pruning material right after leaf drop (and presumably in the “red zone” for *Eutypa* infection). However, as it will be pointed out later, any infection that occurs is inconsequential.

The pre-pruning operation is ideal in cordon trained and spur pruned vineyards. The first pass requires the pruner to remove all of the brush from the wires after cuts are made 2-4 node positions above the point where the 2 bud spur will be cut (longer shoots are left if more than 2 buds are desired). All shoots are cut the same way and it is important that no cut be made close to the older wood (this includes suckers or non count shoots). This pass can be made in December through late February or earlier if most leaves have become non functional and/or have senesced. The second pass is the finish pass when spur counts and lengths are adjusted and non count shoots are “cut close”. The bet is of course that most of the strong storms are done and the *Eutypa* risk is reduced when the final cuts are made. Also, because *Eutypa* does not move very far in the phloem stream (some have suggested only 1-2 inches) any infections that establish on the ends of pre-pruned shoots will be removed and destroyed when the second pass is made.

The additional cost of sending a crew through to pre-prune can be reduced. Some managers have successfully used a piece rate form of payment for hand pre-pruning which assures high production per acre and a predictable cost. There may be a savings in the total per acre cost if the finish pruning pass can also be done by piece rate.

The pre-pruning pass can also be done mechanically with a tractor mounted pre-pruner machine. Pellenc® and Binger® make very reliable pre-pruners that do a very good job of brush removal and leaving the proper length of the retained shoots. One downside to the machine is the initial cost which is relatively high. However, many vineyard owners I have worked with who have purchased and used the machine pre-pruner have reported that they have saved money in their bottom line pruning costs. This has depended upon the number of acres pre-pruned but some managers have recouped their investment cost in one year. The main reason for this is that brush removal is the most time consuming part of cordon pruning and when this job is essentially eliminated by the machine, pruning production goes up and worker fatigue goes down. The other downside is the weight of the machine. They are not useful in wet soil conditions where the reliance is on a rubber tire tractor. However, in wet ground conditions I have seen the machine mounted on an ASV™ type tractor with rubber cleats which helps prevent excessive compaction (or worse!). This combination is very effective.

The pre-pruning pass in cane pruned vineyards necessitates that the work be done by hand and requires more skill and time. If it is not feasible to pre-prune a cane system vineyard it may not have to be delayed much past the first part of February. I say this because cane pruned vineyards **tend** to have less *Eutypa* due to the annual regeneration of two year old wood and fewer cuts. Therefore it may be prudent for the vineyard manager to prioritize cane pruned blocks ahead of cordon blocks with or without pre-pruning.

Pre-pruning your vineyard is a useful technique that will help to manage *Eutypa* and thereby help to extend the life of your vineyard from this formidable disease. There may be an additional advantage in lowering pruning costs. It has also been reported that when mechanical pre-pruning is done, the risk of worker back injuries is reduced or eliminated. Lastly, when there is a gap in the post harvest work schedule and it is desirable to keep the labor force active, this work can be done anytime after leaf fall.

Grower Profile- Jim Smith



Jim Smith farms forty acres of old vine Zinfandel at Nova Vineyards on the Kelseyville benches. Growing up in Santa Rosa, Jim says his only experience with vineyards was driving by in a car. Eight years ago when his in-laws Milton and Ellen Heath were looking for a new vineyard manager, Jim and his wife Jill decided to try it. Jim's first season was 1998, an El Niño year, and at the end of the year after battling rot and "just breaking even", he was almost ready to give it up.

Today, however, Jim says there is nothing else he would rather do. "I enjoy building something from the ground up, and that includes the vineyard and Lake County as a growing region." Jim serves on the Board of Directors of the Lake County Winegrape Commission, where he participates in the marketing committee, and starting in 2004 he became a licensed broker for winegrapes and bulk wine. Jim has shared his success in marketing grapes and Lake County in grower meetings, and he was elected Grower of the Year in 2003.

In 2005 Nova Vineyards had 32 acres that were certified organic by CCOF, and in 2006 it will be 100% organic. Jim has found organic management to be relatively trouble free. He and his family live at the vineyard, and he is glad not to

be using potentially dangerous chemicals. Powdery mildew control at Nova Vineyards includes maintaining an open canopy and using sulfur dust, and weeds are controlled with a dual Clemens weed knife in the vine row and disking in the middles. Jim has not had to control leafhoppers or mites, although this year mites were a problem for the first time. He responded with foliar potassium sprays and found that "harvest came in beautiful". Since he has kept a flock of chickens in the vineyard, cutworms have not been a problem. Jim finds that irrigation management is an important aspect of high quality winegrape production. He holds off on irrigating until the vines are experiencing water stress, and this helps to keep berry size down.

Jim feels that his success in selling his grapes in the ultra premium winegrape market comes from several factors; the vines are 40 years old, and 99% own rooted, they are certified organic, and the 20 acres of head trained vines are especially in demand. Managing for high quality rather than tons has enabled Jim to keep his customers coming back year after year. As a grower and broker selling to ultrapremium wineries, Jim has had many opportunities to promote Lake County. One of his strategies is to work with wineries to put Lake County and Nova Vineyards on the label. This year his grapes will be in seven Sonoma and Napa County wineries with Lake County on the label, and four of these are vineyard designates. Jim's optimism may also be a key ingredient to his success: "I enjoy the challenge of having to prove ourselves and improve management. That's what makes this job exciting for me."

Lake County Irrigation Demonstrations 2005

Two irrigation demonstrations were started in 2004, one in a valley Sauvignon blanc vineyard, one in a hillside Cabernet Sauvignon vineyard. The objectives of these demonstrations were to show how different irrigation timing and rates affect vine canopy growth, yield and juice chemistry. The irrigation regimes used were 1. the grower's standard irrigation (GS), 2. ½ the grower's standard irrigation (1/2 GS), 3. double the grower's standard irrigation (2 GS), 4. early start to irrigation followed by the grower's standard irrigation (E GS), and 5. early start to irrigation followed by the double the grower's standard irrigation E 2 GS. Each treatment was applied to a single plot.

Some of the results from these demonstrations are presented below, and the full methods and results will be posted on the LCWC website in the Lake County Winegrowing section in December.

Sauvignon Blanc, Big Valley

Vineyard Information	
Sauvignon blanc clone 1 on 5BB rootstock	Trellis: quadrilateral, open lyre
Soil series: Cole clay loam, drained	2, ½ gallon emitters per vine in GS
Spacing: 6' x 10'	

The early treatments received water from July 8 through 28, 2005, and on July 29, 2005 irrigation was initiated on all of the treatments. It is likely that vine water use from the soil and from rainfall was substantially greater than the applied water. (See Table 1.) Available soil water at this site, measured in 2004, was 6.5 inches. In addition in 2005 there were 4 inches of effective rainfall (rainfall greater than 0.2 inches per day) from April through June.

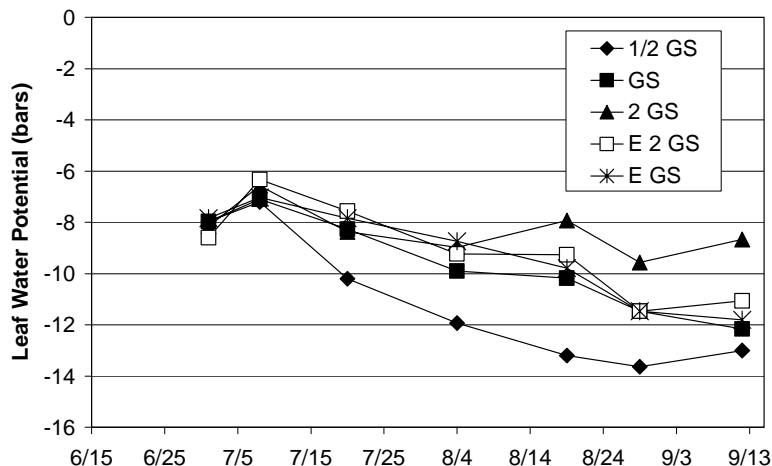
Table 1. Applied water and % of full vine water use applied for the time period from the start of irrigation, July 8, 2005, through harvest, September 22, 2005.

Irrigation Treatments	Total applied water (gallons/vine)	Total applied water (inches)	Average % of full vine water use applied*
1/2 GS	25	0.67	4.5%
GS	50	1.34	9.0%
2 GS	100	2.67	17.9%
E GS	89.9	4.81	32.2%
E 2 GS	179.8	2.40	16.1%

*Potential evapotranspiration, ETo, from the Kelseyville station and a crop coefficient of 0.767 (45% shade at solar noon) were used to calculate full vine water use.

RESULTS

**Sauvignon Blanc Irrigation Trial 2005
Leaf Water Potential**



- Remember- leaf water potentials above -8 to -10 bars indicate little or no vine water deficit.
- Starting in July, the 1/2 GS treatment vines experienced greater water deficits than the other treatments.
- Only the 2 GS treatment showed no vine water deficit throughout the season.
- Perhaps there are soil differences between the E2 GS and 2 GS plots leading to increased vine water stress in E 2 GS relative to 2 GS.

- Yields were down in 2005 relative to 2004 due to poor fruit set and shatter.
- The 1/2 GS treatment had the lowest yield while the other treatments had similar yields in 2005.
- These yields in the range of 14-22 lbs/vine are equivalent to 4.4-6.9 tons/acre.
- Cluster number was very similar in all treatments, so differences in yield are due to cluster weights.
- The two treatments receiving early irrigation had somewhat smaller reductions in yield from 2004 to 2005 than the other treatments.

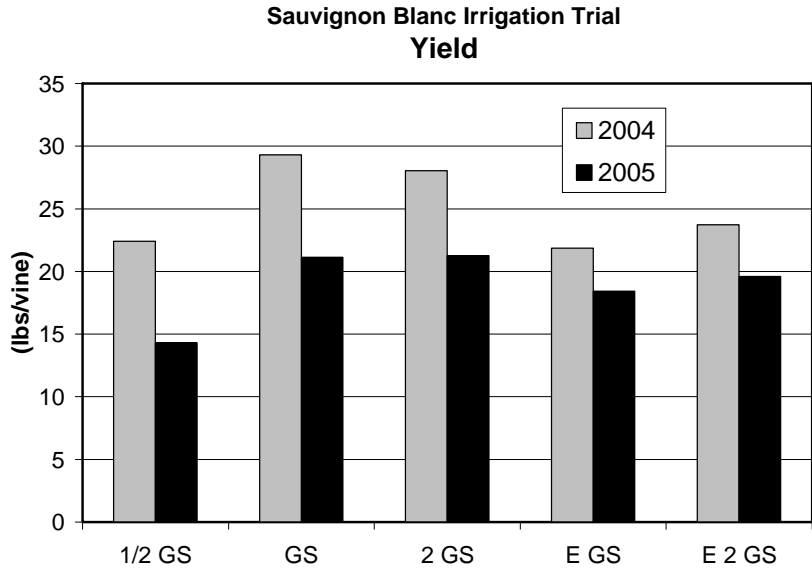


Table 2. Juice chemistry at harvest, Sauvignon Blanc, September 22, 2005

Irrigation Treatments	pH	°Brix	TA (g/100ml)
1/2 GS	3.43	24.3	0.873
GS	3.37	23.8	0.767
2 GS	3.33	23.6	0.850
E 2 GS	3.44	23.3	0.842
E GS	3.42	23.7	0.875

- There was a slight trend toward higher sugar levels in the treatments receiving less water.
- Otherwise, juice chemistry was similar among the treatments.

Cabernet Sauvignon, Red Hills

Vineyard Information	
Cabernet Sauvignon clone 337 on 101-14	Spacing: 5' X 8'
Trellis: VSP	2, ½ gallon emitters per vine in GS
Soil Series: Neice-Sobrante-Hambright Complex, loam, well-drained, 15-30% slopes	

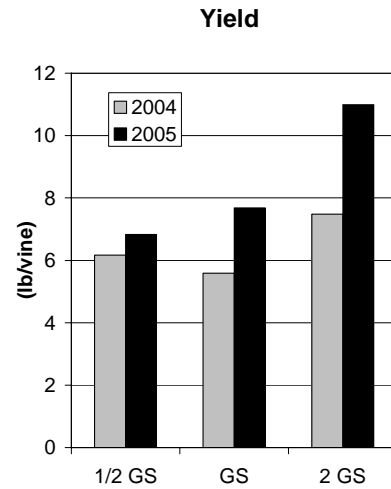
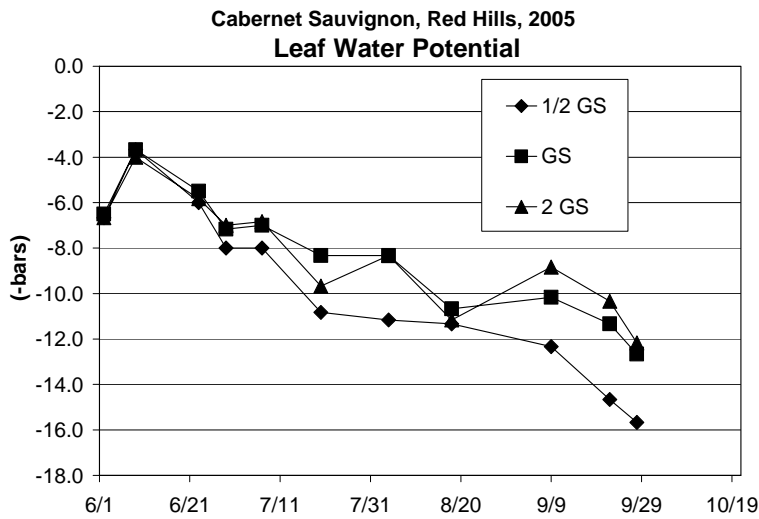
In 2005, due to rain during the early growing season, no early irrigation water was applied at this site. Therefore data from only three treatments is presented. In addition to applied water, available soil water is 3-4 inches at this site and April through June rainfall was substantial.

Table 3. Applied water and % of full vine water use applied for the time period from the start of irrigation, July 8, 2005 through harvest, October 10, 2005.

Irrigation Treatments	Total applied water (gallons/vine)	Total applied water (inches)	Average % of full vine water use applied*
1/2 GS	50.5	2.03	18
GS	101	4.05	36
2 GS	202	8.10	72

* ETo from the Red Hills station and a crop coefficient of 0.563 (33% shade) were used to calculate full vine water use.

RESULTS



- Starting in late June (prior to the start of irrigation) the 1/2 GS treatment experienced greater water stress than the other two treatments.
- Significant water stress (below -10 bars) in GS and 2 GS occurred only at the end of the season.
- The effect of the irrigation treatments on yield appeared to be more pronounced following two years of applying the treatments.
- Differences in treatment yields were due primarily to differences in cluster weight as cluster number was similar among the treatments.

Table 4. Juice chemistry and berry weights at harvest, Cabernet Sauvignon, October 10, 2005

Irrigation Treatments	°Brix	T.A.	pH	Berry wt. (g)	Malic acid (mg/L)	
					2005	2004
1/2 GS	26.7	0.545	3.58	0.79	2445	1544
GS	26.0	0.644	3.46	0.90	3475	2208
2 GS	25.0	0.746	3.44	0.94	4233	2138

- Soluble solids (°Brix) and pH increased with decreasing water applications.
- Titratable acidity decreased with lower water applications, and much of this decrease was likely due to malic acid.
- Malic acid was substantially higher in 2005 than 2004, while °Brix, T.A. and pH were similar. (2004 data not shown.)
- Ideal malic acid levels are 2000 - 2500 mg/L. At levels higher than this malolactic fermentation may lead to a large increase in pH.
- Reductions in malic acid with reduced irrigation may be due to increased fruit exposure and temperature.



More berry shrivel (west side only) and more yellow leaves in the fruit zone were evident in 1/2 GS than in the other treatments.

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Calendar of Local Events

Sustainable Winegrowing Self Assessment and Ecosystem Management Workshop December 12, 2005. After filling out vineyard assessments using the Code of Sustainable Winegrowing Practices Workbooks, growers will learn about ecosystem management including watershed, habitat and wildlife, and pest management. Funding and regulations on watershed, habitat and wildlife management will be covered as well. Sponsored by the Lake County Winegrape Commission and the California Sustainable Winegrowing Alliance. Free of charge. Coffee and pastries and lunch will be served. Registration starts at 7:30 a.m., meeting at 8:00 a.m. Location: Clear Lake Grange, 1510 Big Valley Rd., Finley.

Lake County Terroir- Geology, Soils and Wine January 10, 2005. In the first of a series on Lake County terroir learn about local geology and soil formation, and taste Lake County wines. Sponsored by the Lake County Winegrape Commission. Mark your calendars, location and time TBA.

Fifth Annual Lake County Pruning Contest and Workshop February 8, 2006



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