



2011 LODI WINEGRAPE GROWER SURVEY: REPORT OF RESULTS

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Introduction

The Lodi Winegrape Commission has a long history of advancing Lodi agriculture. Over the years the LWC's policies and programs have evolved in response to the ever-changing economic, environmental, political, and social climate of California agriculture. The LWC was worked to support the changing needs of Lodi growers. The 1998 and 2003 grower surveys played important roles in guiding this evolution by providing a scientific and empirical basis for evaluating outreach and education programs, identifying grower needs, understanding grower perceptions and opinions, and tracking grower adoption of innovative agricultural practices. Survey research continues to play an important role as we look toward the future of Lodi agriculture.

This newsletter article will provide some important background information about the 2011 survey and briefly communicate key results. We hope these results will be useful to the LWC in meeting the needs of Lodi growers. This is not a comprehensive report. More extensive analysis and thorough explanations are available on the authors' website¹ or by contacting the lead author, Matthew Hoffman. The April Breakfast Meeting will be another opportunity to hear about the results and communicate directly with the authors who will be presenting the results at the meeting. Please join us!

Summary of results

The LWC and the outreach and education programs it provides are largely well received by Lodi growers, and these programs have been successful at facilitating innovation in Lodi agriculture. Growers participate in the entire spectrum of LWC outreach and education activities, but we see more participation in activities that require low relative investment of resources.

The majority of Lodi growers are supportive of the Sustainable Winegrowing Program and Lodi Rules certification program. Grower participation in sustainability-oriented and other outreach and education activities are associated with increased grower adoption of "sustainability practices"². Growers perceive these programs to be successful at realizing environmental objectives, but less so at economic objectives. Growers report that personal experience and personal relationships are their most important information resources for learning about vineyard management. Finally, we find that growers who are also outreach professionals³ are valuable resources for learning about vineyard management. These individuals are best positioned in the social network to spread and access information and to be aware of growers needs.

History of Lodi grower surveys

As you might already be aware, the first Lodi grower surveys were conducted in 1998 and 2003. The three surveys span a 14-year timeframe. Research projects of agricultural communities with such breadth are rare, and the LWC and Lodi growers can be proud of this accomplishment. In this article we only report only the results from the 2011 survey. For those interested in comparing the 2011 results to those from 1998 and 2003, please reference the "2003 and 1998 Report of Results"⁴.

The LWC's early outreach and education programs focused on Integrated Pest Management (IPM). The first two surveys, titled the 1998 and 2003 Lodi Grower IPM Questionnaires, asked growers questions related to IPM. LWC programs have since shifted focus, at least conceptually, away from IPM and toward sustainability. Consequently, the 2011 survey asked growers to report on sustainability-related items.

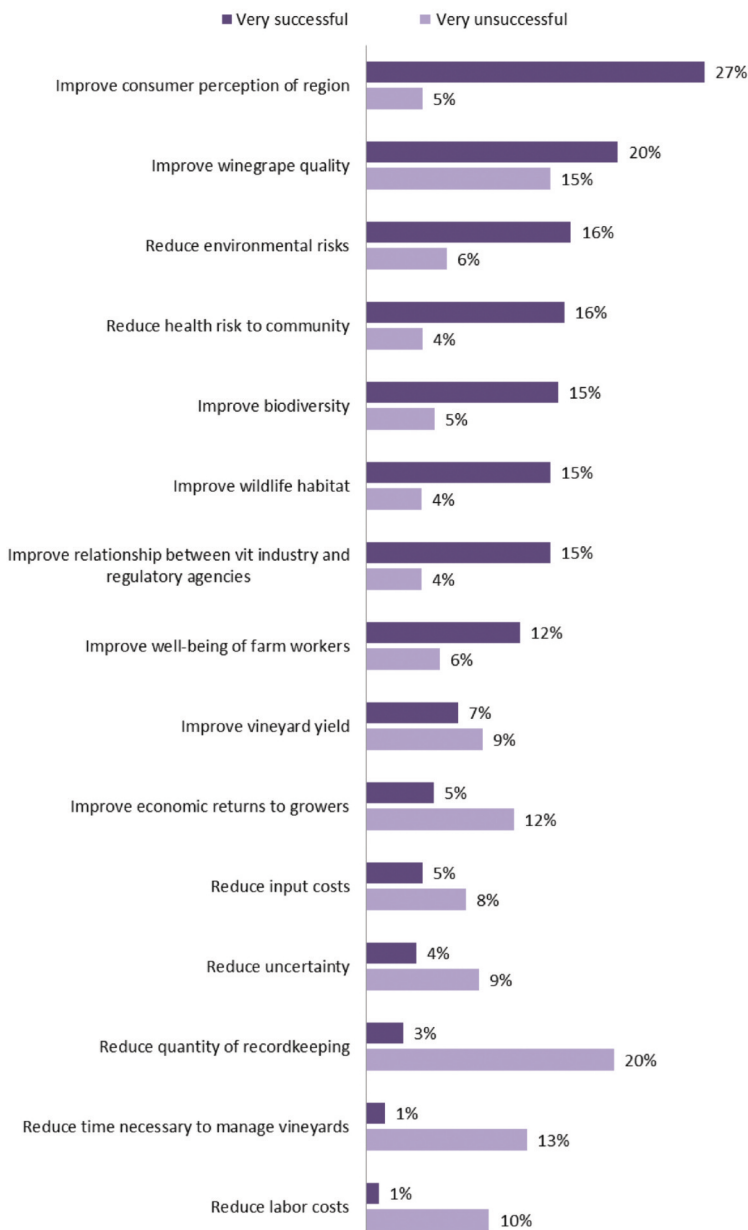
About the 2011 Lodi Winegrape Grower Survey

The 2011 Lodi Winegrape Grower Survey is part of a larger California-wide study of winegrape grower and winery manager

Figure 1:
How do growers rank their support for the Lodi Rules and SWP?



Figure 2:
In growers' opinions, how successful has the SWP been at achieving these goals?



adoption of innovative practices, the effectiveness of local outreach and education programs at achieving various goals, and the role social networks of knowledge sharing among growers, winery managers, and outreach professionals play in learning about vineyard and winery management. The geographical scope of the study includes the Lodi, Napa Valley, and the Central Coast regions. Together, these grower and winery surveys comprise one of the most extensive studies of California's viticulture and wine industry. The authors worked with a 25-person advisory council made up of winegrape growers, winery managers, industry experts, and organization leaders from across California to design the surveys. The Lodi survey was delivered during the winter of 2011, and the Napa and Central Coast versions are being delivered during the winter of 2012. The winery survey will be delivered during the spring of 2012. Funding for this study comes from the National Science Foundation and the UC Sustainable Agriculture Research and Education Program.

Methods

We conducted a mail survey and follow-up telephone calls of 500 Lodi winegrape growers in the Lodi region, who were identified through 2009 San Joaquin and Sacramento County Agricultural Commissioner Pesticide Use Reports. We collected a total of 210 survey responses, for a response rate of 49%.

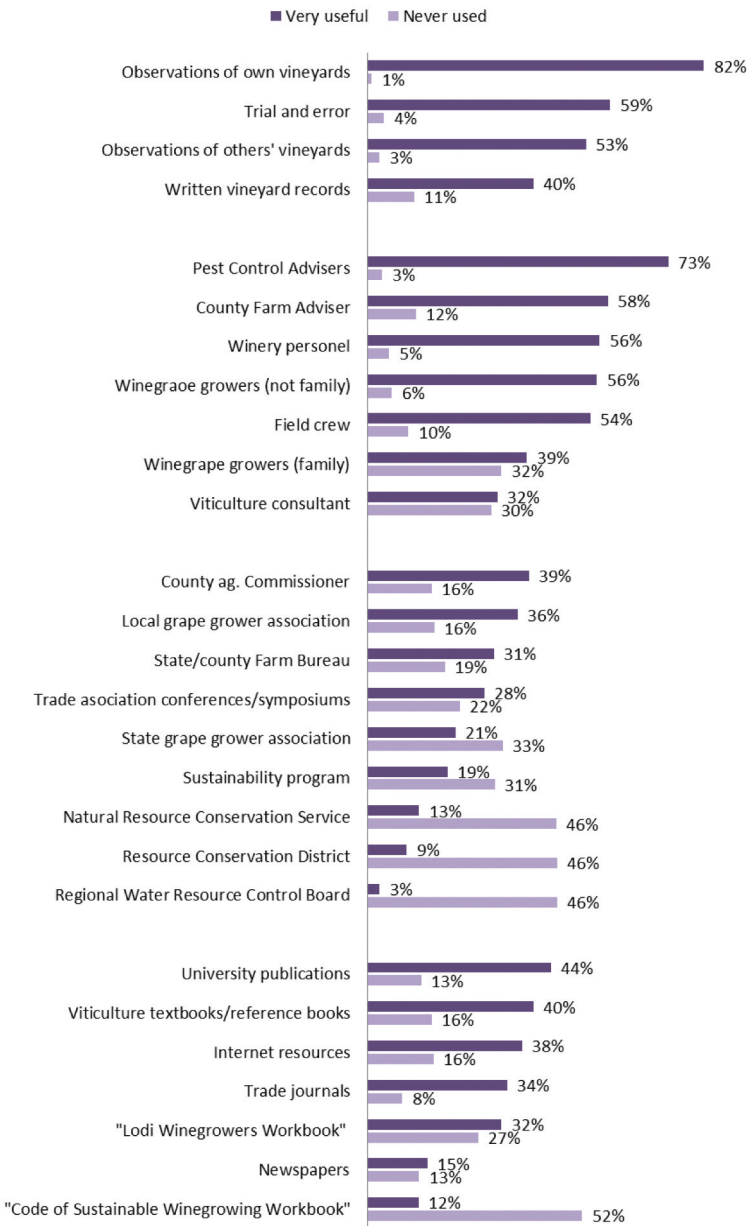
Key findings

The following paragraphs will briefly introduce some key findings from the 2011 survey. We have interpreted the results in a way that we hope will be useful to Lodi growers in self-reflection about their own vineyard management and useful to the LWC in shaping their policies and programs.

A large majority of Lodi growers are supportive of the LWC's Sustainable Winegrowing Program (SWP) and Lodi Rules for Sustainable Winegrowing certification program. Growers were asked to rate their level of support on a 5-point scale ranging from "strongly oppose" to "strongly support", with a "don't know" option. **Figure 1** shows the percentage of growers that selected each rating category. This strong support suggests that Lodi growers see value in the LWC's outreach and education programs as institutions, regardless of any uncertainty around sustainability as a concept.

In general, Lodi growers perceive the SWP to be more successful at realizing environmental objectives than economic objectives. Growers report the SWP at being most successful at improving consumer perception of the Lodi region. There is also a considerable amount of uncertainty around whether the program has achieved various objectives. Growers were asked to rate the success of the SWP at achieving a range of 15 environmental, social, and economic objectives on a 5-point scale ranging from "very unsuccessful" to "very successful", with a "don't know" option. **Figure 2** shows the percentage of growers that selected "very successful" and "very unsuccessful". Objectives are ordered on the "very successful" category with

Figure 3:
How useful do growers think these information resources are for learning about vineyard management?



most success at top. “Don’t know” responses were not included in this figure. The average percent of growers reporting “don’t know” was 22% across all 15 objectives. Given that the SWP grew from the IPM program, higher success with environmental objectives is no surprise. While growers rate the SWP as less successful at realizing economic objectives, it is important to recognize that global and national-level market forces, which the LWC is not capable of leveraging, dictate many economic variables, especially the prices of commodity winegrapes. The considerable number of “don’t know” responses suggests that the LWC might benefit from opening more lines of communication with Lodi growers about the SWP.

Lodi growers rank personal experience and personal relationships as their most important information resources for learning about vineyard management. Growers were asked to rate 29 different information resources on a 3-point scale ranging from “not useful” to “very useful”, with a “never used” option. Figure 3 shows the percent of growers reporting “very useful” and “never used” for each information resource. “Not useful” and “somewhat useful” responses were excluded. In the figure, individual information resources are grouped according to resource type: personal experience, personal relationships, agricultural organizations, and published material. The groups are ordered from most useful (top) to least useful (bottom). This finding suggests that learning about vineyard management is driven by the hands-on practice of farming itself and by participating in a network of other growers and outreach professionals. Outreach and education programs should consider personal experience and social networks as legitimate and effective modes of effective modes of supporting the learning process, and should design educational programs with this in mind.

Growers participate more in LWC outreach and education activities that require a low relative investment of resources such as time, energy, attention, or money. For example, reading the LWC newsletter requires much less investment of resources than participating in the Lodi Rules program. Growers were asked to indicate whether they had participated in 10 different activities in the last five years. Answer options included “yes”, “no”, or “never heard of” the

Figure 4:
Have growers participated in these outreach and education activities in the past 5 years?

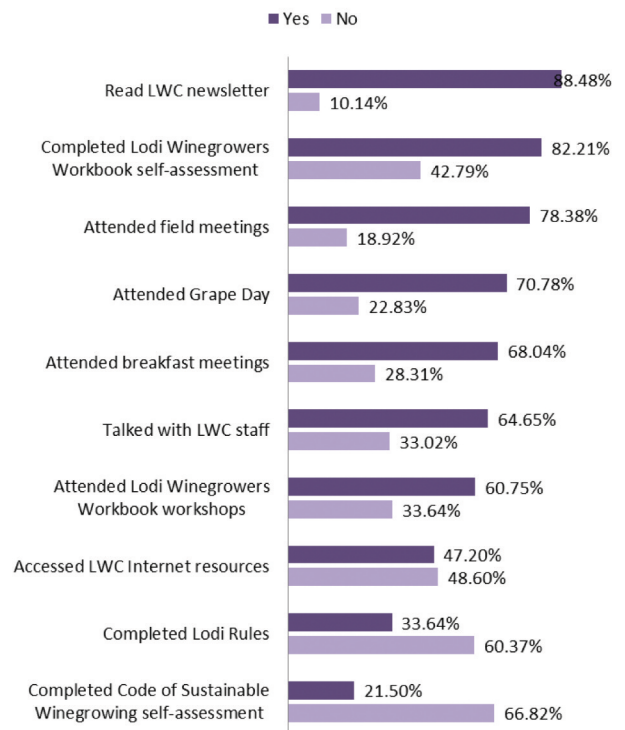


Figure 5:

Relationship between grower participation in outreach and education activities and adoption of sustainability practices

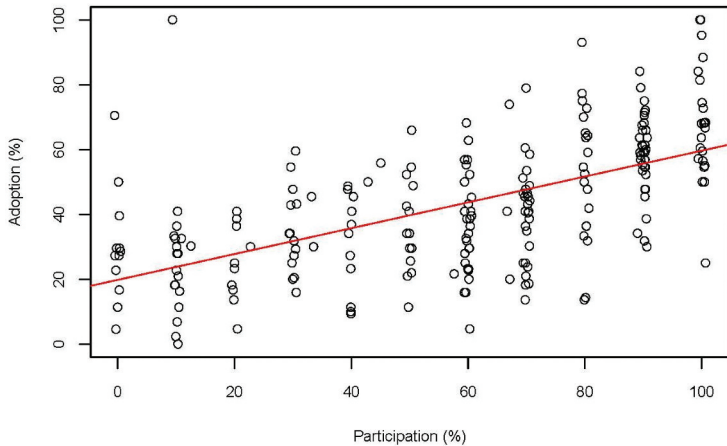


Figure 6

How often is achieving each goal a major priority in growers' vineyard management decisions?



activity. Figure 4 shows the percentage of growers who responded with “yes” and “no” for each activity. “Never heard of” responses were excluded. These findings suggest that taking measures to reduce the resource investment necessary for grower participation may be an effective strategy for increasing participation in targeted activities. Additionally, those activities with high rates of participation are likely the most effective modes of communicating with growers.

Among Lodi growers, there is a positive association between participation in outreach and education activities and adoption of sustainability practices. On average, the more a grower participates in activities (the same practices listed in Table 4), the more likely they are to implement sustainability practices in their vineyards. Growers were asked whether they “regularly use”, “tried and discontinued”, or “never used” 44 different practices. In Figure 5, each point represents an individual grower, which is placed on the graph according to the percentage of activities they participate in and the percentage of total practices they “regularly use”. The red line symbolizes the positive relationship between the two. Growers who do not participate in any program activities use 20% of practices while growers who participate in all 10 of activities use almost 60% of practices, on average. One of the chief objectives of the LWC is to promote the adoption of viticultural practices that address the economic, environmental, and social wellbeing of Lodi agriculture. We find support that the LWC’s outreach and education programs are effectively facilitating grower adoption of such practices.

In general, Lodi growers prioritize the financial objectives of vineyard management over the environmental objectives of vineyard management. Growers were asked to indicate, from a list of 14 different management goals, whether they “always”, “often”, “sometimes”, or “never” make each goal a major priority in vineyard management decisions. Figure 6 depicts the percentage of growers reporting that they “always” and “never” prioritize each goal. “Often” and “sometimes” responses were excluded. Growers’ prioritization of economic objectives over environmental objectives is understandable considering the economic realities of modern agriculture. However, environmental objectives such as increasing biodiversity and wildlife habitat provide critical collective benefits to the greater agricultural system. Agricultural institutions can play an important role by incentivizing such objectives.

Lodi growers who are also outreach professionals are best positioned in the social network to spread and access information about vineyard management and to be aware of growers needs. Individuals who are most “central” in the social network of knowledge sharing have the greatest potential to be aware of others opinions and insights about viticultural management because they are in communication with many others. They may also be able to rapidly spread information through the entire network because they are connected to others who themselves are connected to many others. Growers were asked to share the names of other growers and outreach professionals who they communicate about vineyard management. Using a technique called social

network analysis, we calculated each individual's centrality, thereby quantifying his or her ability to access and spread information. Growers who are also outreach professionals (i.e. grower+PCA or grower+input sales rep) have centrality scores about 50% higher than those who are exclusively growers and about 35% higher than those who are exclusively outreach professionals. Their professional experience as viticultural "experts" and their practical experience as growers mean that they might be the richest resources of viticultural knowledge. This, in combination with their high connectedness to the network means that they are well positioned to spread their knowledge.

Figure 7 visualizes Lodi's knowledge network, where points represent individuals and lines represent knowledge sharing between individuals. Individuals who have higher centrality scores are physically located closer to the center of the network

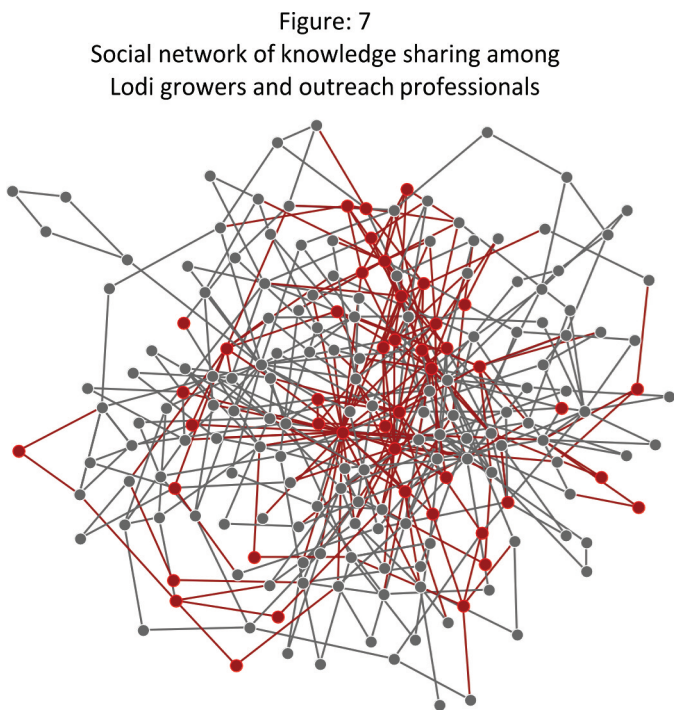


diagram. Those who are both growers and outreach professionals are colored red.

We suggest that the LWC capitalize on the social nature of learning about vineyard management by actively cultivating knowledge sharing among growers and outreach professionals, rather than only broadcasting information. Growers might access new insights and solutions to pressing viticultural problems by engaging in conversation with individuals outside of their normal network. For the LWC and Lodi growers, individuals who are both growers and outreach professionals ought to be considered allies with broad viticultural experience and far-reaching networks that can be tapped when fishing for solutions. Capitalizing on the social nature of learning can be achieved through outreach and education programs that focus on relationship building to maximize the benefits of social learning.

Future directions

Lodi growers have largely supported the LWC and its outreach and education programs, and the programs have been effective at encouraging grower adoption of innovative viticultural practices. In looking toward the future, we emphasize the importance of continually evolving these programs. The LWC is nationally recognized for programs such as BIFS, SWP, and Lodi Rules. Continuing this tradition will require pushing the envelope of program design. We encourage the LWC to take seriously our research showing that grower learning about vineyard management is primarily driven by personal experience with farming and engagement in a social network of knowledge sharing with other growers and outreach professionals. Several strategies for facilitating experiential and social learning exist, and leading agricultural institutions across the U.S. have recently begun to experiment with these approaches. Our research team will continue to explore these possibilities and we welcome opportunities to help advance Lodi agriculture by working alongside the LWC and Lodi growers.

1 UC Davis Center for Environmental Policy and Behavior: <http://environmentalpolicy.ucdavis.edu/project/sustainable-viticulture-practice-adoption-and-social-networks>

2 "Sustainability practices" are defined as viticultural practices included in the Lodi Winegrowers Workbook and the Code for Sustainable Winegrowing Workbook.

3 "Outreach professionals" are defined as individuals whose job it is to help winegrape growers make vineyard management decisions by providing some type of expert advice. Examples include, but are not limited to, PCAs, consultants, farm input company representatives, or County Farm Advisers.

4 "2003 and 1993 Report of Results": http://www.lodiwine.com/Grower_Survey_LWWC_Final_report.pdf



LWC IN THE VINEYARD

RAINFALL, SPRING, WEEDS, INVASIVE PESTS, IRRIGATION

- PAUL VERDEGAAL

After three years of drought (2007-09) and two wet years (2010-11) another very dry year is shaping up. There were two decent rains that somewhat recharged the soil profile, unfortunately they occurred as the 2011 harvest wrapped up. Those were followed by one rain in November and a shower in December, which provided much of the fall rainfall total (about 45% of average). January did not add much more and a good number of vineyards received winter irrigation.

The total rainfall total for the months of October, November and December around ended up at 3.0 inches for the North

YEAR	TOTAL INCHES	OCT NOV DEC	JAN	FEB	MAR	APR	MAY	JUN
2005	24.7	10.4	3.2	3.3	3.5	1.4	1.3	
2006	23.7	7.1	5.4	1.1	5.2	3.8	0.8	
2007	12.1	4.6	0.3	4.3	0.6	2.3	T	
2008	13.6	4.5	7.3	1.8	0.1	0	0	
2009	15.1	4.0	1.9	5.3	1.9	0.7	1.3	
2010	19.2	6.1	4.5	3.6	1.8	2.9	0.3	
2011	24.8	12.1*	1.4	4.1	5.8	0.2	1.2	1.3
2012	6.4	3.0	2.9	0.5				
AVG.	18.0	6.5	3.4	3.0	2.7	1.6	0.9	0.2

* 1.7 INCHES ON OCTOBER 23 & 24

County and well below average for the South County around 1.7 total inches for the fall period (average 5.0). Not since 1976-77 has it been this dry, especially as December was the third driest on record. Dry conditions look to continue and another irrigation is probably a good investment right now. Grapes are a low demand crop for water and nitrogen, compared to most other fruits and nuts, but extremely dry conditions can affect the strength and uniformity of bud push in addition to negatively affecting the final development phases of this year's fruit buds.

With that in mind, even if you put on a good solid irrigation of 24 to 36 hours or more last month, it would not hurt to put another 24 hours or so, depending on your emitter spacing, size of the emitters, soil type and variety/rootstock. Although this won't recharge deep soil profiles, we still have a ways to go before the "rainy" season ends and things can turn around very fast. So it's easy enough to apply some more water at or after bud break, if the drought continues.

Checking out the irrigation system is neither a bad idea nor a waste of time. And checking out the soil profile with an auger or even a just a little digging with a shovel may help confirm how good a recharge the winter rains and irrigation may have done your soil profile. Overall it seems there is decent moisture in the top two or three feet in most vineyards, but that is about it.

Even though January was close to average in total rainfall, seasonal totals are falling behind again. As of the first week in February the North County is still above average at 6.1 inches (44%) and the South County is just at 3.2 total inches (approximately 37%). Last year at this time there was a total of 13.5 inches of rain in the Lodi area.

As budbreak approaches monitor soil moisture either with soil

moisture probes or a quick check by auger or even shovel in sandy sites, traditionally dry areas of your vineyard(s), and especially if cover crops are present. If winter cover or cover crop is present vines have only been using about 0.10 of an inch of water (or very “seat-of-the-pants”, about 2 hours of worth if irrigation time) per week. That will increase soon with warmer weather. That considered, it good to stay ahead of vine demand even if you are on a strict Regulated Deficit Irrigation regime and avoid using deep soil moisture early. That deep moisture is good to have available for late summer and early fall during hot spells. The dry year makes it easier to control vines, but it will be good to be earlier rather than later in starting irrigations for 2012.

The curious weather pattern this winter (besides extreme dryness) is that most day time maximum temperatures have been slightly above average, while most night time minimums have been well below average; giving the area a summer like day with winter like nights.

Chilling hours have been above average and for a second year in a row, fog has been a more common occurrence as in the “Good Old” days when the sun often disappeared for three to four weeks at a time. Chilling hours (hours below 45 F) has totaled 1044 hours at this point compared to the long term average of 778 hours (Fruit and Nut Center, UC Davis). ET of winter cover and weeds has been low. Most mornings have seen light to substantial frost, which is a little worrisome for the coming spring. But I better not say any more at this point.

During the last 5 years there were some scattered frost events in 2011, 2009 and 2008. Just to review last year’s reminder of comparison for soil conditions and cold, to hopefully renew the good luck:

Firm bare ground, that is wet	+2° F
Firm bare ground, that is dry	---
Freshly disked soil	-2° degrees colder
High cover crop (24 to 30 inches)	-2° to 4° (possibly 6 to 8°)
Low cover crop (less than 24 inches)	-1° to 3° degrees colder
Mowed cover crop	-½° F

Weed growth seems to be less than last year as temperatures have been cold with many foggy days, and very cold frosty mornings (18 in January; 5 in February). Good weed control should be achievable with some normal rainfall patterns. And there are some newer materials available. Rotation of herbicides for particular weed species continues to be important and should be considered. If you have related questions, check in at www.ipm.ucdavis.edu or www.wric.ucdavis.edu.

As spring and budbreak approach, it appears the European Grape Vine Moth (EGVM) will be determined to be eradicated in San Joaquin County, as there were no other finds last year. Scott Hudson and his staff have done a lot of work and have been helped by all growers to speed the delisting of EGVM. That’s the good news.

The bad news is, now Light Brown apple Moth (LBAM), continues to spread and is scattered around the County. It’s still under a quarantine protocol. The other good news is; it’s easy to control. It is a Lepidoptera pest very similar to the OLR and it seems to be susceptible to the same biological control of our native beneficial insect predators and parasites. If you are within a mile of a commercial nursery you probably are in a quarantine zone. If you haven’t been contacted by the Ag Commissioner’s office, you should check.

Spotted Wing Drosophila (SWD) doesn’t seem to do well in vineyard situations. At this point it is a concern for cherry growers, but not grape growers. If you do have cherries next door, it might be good to keep an eye out if you do suspect some of the Sour Rot seen last year was a problem in your vineyard. I did do some trapping in vineyards with elevated levels of rot, but did not catch any SWD. Also, Oriental Fruit Fly was found in urban Stockton, so vineyards close to Stockton might be in a quarantine area, but OFF is more of a concern for fresh fruit market crops.



CALENDAR

MARCH 27, 2012 - VINEYARD MECHANIZATION SYMPOSIUM

8am – Noon, Jackson Hall, Lodi Grape Festival

Vineyard mechanization has been a topic of interest since 1967 in the Lodi District. Machine Harvesting is standard practice for a majority of new vineyard operations, but current economics and future labor supply will require more widespread utilization of mechanized systems and strategies. The morning will include presentations on recent research in mechanization systems, evaluation of some of these strategies and a discussion by a grower/winery panel to cover past experiences with vineyard mechanization, some recent developments in machines and strategies, more acceptance of machine systems and winery interest in their adoption. Possible future systems for complete mechanization of most, if not all vineyard operations will also be discussed.

A few selected wine lots from recent evaluations will be available for tasting. The morning will be followed by lunch sponsored by LWC and local businesses.

APRIL 17, 2012 - LODI GROWER SURVEY PRESENTATION

9am – 10am, Burgundy Hall, Lodi Grape Festival

2545 W. TURNER RD.
LODI, CA 95242

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WINEGRAPE
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