

VIT TIPS

San Joaquin Valley Viticulture Newsletter



UC | **University of California**
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APRIL/MAY 2015

Last summer UC ANR began refilling some long vacant viticulture farm advisor positions, and now we have four new advisors in the San Joaquin Valley: Allison Ferry-Abee (Tulare and Kings), George Zhuang (Fresno), Ashraf El Kereamy (Kern), and Lindsay Jordan (Madera, Merced, and Mariposa). These new hires will increase our applied viticulture research and extension capacity to the highest levels we've had in years. As you'll see in the introductions that follow, our new advisors have strong and diverse backgrounds. Their varied experiences are complimentary, and the four have al-

ready shown that they work well as a team, as evidenced by the planning of several joint research and extension projects, including this newsletter. I had the pleasure of working with Allison and Ashraf in the vineyard last summer, and am looking forward to working with all four this season. In recent weeks we've been exchanging exciting ideas on extension projects, with this newsletter being the first of several planned developments.

—Matthew Fidelibus

Associate Cooperative Extension Specialist
UC Davis Viticulture and Enology
Kearney Agricultural Center

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Introducing the New UC Cooperative Extension Viticulture Farm Advisors

Ashraf El-kereamy, UCCE Kern County

I have an agriculture oriented mind; I graduated from Faculty of Agriculture, Ain Shams University, Egypt with honors in horticulture. After graduation, I finished my masters degree on Flame seedless grape ripening and bud dormancy. At the same time I was working on grape and fruit trees consultation. To enrich my



worked at the University of Guelph, Canada on

experience in grapes, I studied and earned my Ph.D degree on grape ripening from one of the top laboratories in fruit ripening, INPT-ENSAT, in Toulouse, France. Following the PhD., I

plant tolerance to different stress conditions including fungal infection, nitrogen limitation, drought, and heat stress. I have many publications including peer reviewed papers, books and patents related to grape ripening, hormones, genetic and stress tolerance, including how the plant hormone ethylene plays a role in grape coloration and ripening. I am honored to be here working at UCCE Kern County and serve the San Joaquin Valley grape industry. My current program focuses on cultural practices optimization including rootstock evaluation, using PGRs in the new table grape cultivars, and Pierce's disease monitoring in Kern County.

1031 South Mount Vernon Ave

Bakersfield, CA 93307

661-868-6226 ; aelkereamy@ucanr.edu

Introductions continued...

Lindsay Jordan, Madera, Merced & Mariposa Counties

I have been interested in grape growing ever since I took an introductory class my freshman year at college at UC Davis, where I graduated with a BS in Viticulture and Enology in 2011. I then went on to



graduate school at Cornell University where I earned my M.S. in Horticulture in August of 2014. My graduate research focused on using under-vine ground covers as a sustainable alternative to herbicides. I also went to New Zealand to be a part of an under-vine management study in Marlborough for the 2014 growing season. I have worked three harvests with different wineries, including Pernod Ricard Winemakers in Blenheim, New Zealand, and Mumm Napa and Quintessa in the Napa Valley before joining UCCE. I am passionate about promoting the environmental and economic sustainability of viticulture and I am excited to learn from my local growers within my three counties.

328 S. Madera Ave, Madera, CA 93637
559-675-7879 ext 7209
lmjordan@ucanr.edu

Allison Ferry-Abee, Tulare & Kings Counties

I'm very excited to be the new viticulture farm advisor for Tulare and Kings Counties. I'm from Easton, which is a big raisin production area, and my family still lives here in the valley. I got my bachelor's degree in Plant Science at Fresno State and a PhD in plant



pathology at UC Davis. This gave me a wonderful opportunity to do practical disease control research and learn from some of the best diagnosticians in California: Doug Gubler and Mike Davis. In the short-term, I am very interested in post-harvest research for table grapes, as well as disease control methods for the San Joaquin Valley. I'm starting some Botrytis and powdery mildew control trials and I'm also planning on having an IPM grower symposium specifically for grapes in the Southern San Joaquin Valley. I welcome any questions, and would also love to find more growers to collaborate with for field research projects.

4437-B S. Laspina St., Tulare, CA 93274
559-684-3316 ; aeferry@ucanr.edu

George Zhuang, Fresno County

Hello, my name is George Zhuang. I am the new UC Cooperative Extension (UCCE) Viticulture Farm Advisor for Fresno County. I am originally from China



and did my undergraduate studies in Viticulture and Enology at China Agricultural University between 2005 and 2009. After that I began my graduate studies in Horticulture at Michigan State University where I pursued my Master's degree focusing on cool climate viticulture. I then gained additional experience as a viticulture intern at E&J Gallo winery during the 2013 and 2014 seasons. As I begin my career as UCCE's Viticulture Farm Advisor in Fresno County, my focus will be identifying and prioritizing the needs of the industry to shape my program.

550 E. Shaw Avenue, Suite 210-B
Fresno, CA 93710
559-241-7506 ; gzhuang@ucanr.edu

Listening to Grapevine Budbreak, Ashraf El-kereamy, UCCE Kern County



Grapevines undergo a seasonal cycle starting from dormancy, bud break, shoot growth, following year bud development, flowering, fruit set and ripening, and back to dormancy. Winter buds are formed during the shoot growth in the previous season and contain leaves and flower cluster primordia. Grape season started with bud break, a term meaning the opening of the scale of the winter buds and shows wooly buds. This is followed by bud burst in which the green leaf tips start to be more visible. Bud break is the result of the previous season's activities and it should be monitored closely to learn more about the suitability of the current

cultural practices to the current situation. These buds are formed during the previous growing season and their formation and development is influenced by several physiological and environmental factors.

Why care about bud break:

- Timing of bud break helps in planning the current season; an early bud break will be followed by earlier flowering and fruit ripening as well.
- Lower bud break percentage indicates a lower number of clusters per vine, which should be considered when cluster thinning.
- Uneven bud break may indicate a longer than usual harvest period.
- Lower bud break could indicate frost damage or pest infestation.
- Bud break timing, percentage, and characteristics could be used to evaluate the previous season's cultural practices.

What we can learn from bud break about the previous season:

- Excessive nitrogen increases cane diameter or produces flat canes with a higher percentage of bud necrosis.
- Shaded buds on the shoots of vigorous vines have a higher mortality rate and lower bud break in the spring. Canopy management and shoot thinning have to be done to help sunlight penetration within the canopy.
- Higher concentration of Gibberellic Acid (GA) spray at bloom increases bud necrosis. GA concentration varies from one cultivar to another and needs to be reconsidered when lower bud break is observed.
- In some cases, the first five buds have higher chance to suffer from shading and bud necrosis. In this case we need to reconsider training and the pruning systems.
- Excessive irrigation may increase shoot growth and reduce bud break in the following season.
- After harvest irrigation may affect the hormonal balance in the buds causing an increased level of abscisic acid resulting in delayed and uneven bud break.
- Warmer winters result in uneven bud break, consider using any breaking dormancy agents.

2015 San Joaquin Valley Bud Fruitfulness Survey

George Zhuang, UCCE Fresno County

Grape yield per vine is the result of three factors: 1) the number of clusters per vine, 2) the number of berries per cluster, and 3) berry weight. Bud fruitfulness and the number of buds left after winter pruning determine the potential number of clusters per vine, whereas the number of berries per cluster is determined during the period of fruit set, when environmental factors such as temperature and precipitation, and overly vigorous shoot growth may reduce fruit set. Final berry size is affected by many factors, including genetics, water and nutrient availability, crop load, rootstock, and, in table grapes, girdling and the use of certain plant growth regulators. The number of clusters per vine, berries per cluster, and berry weight have the dominating effect on the yield of all grapes, but fruit quality has a major effect on marketable yield of table grapes and soluble solids (sugar) content strongly affects yield and quality of raisins.

For grapevines, the potential number of clusters per node is determined the year before, as cluster primordia are initiated on pre-formed shoots that develop on the buds of green-growing shoots that can be left as spurs or canes in the following season.

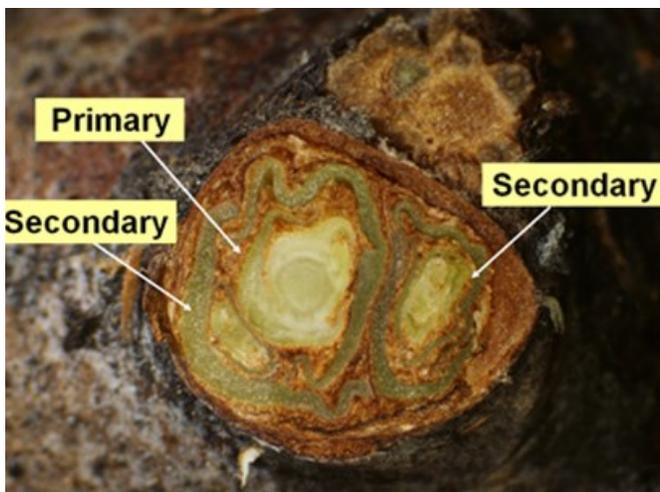


Fig. 1. Primary and secondary bud anatomy (image sourced from Dr. Luis Sanchez)

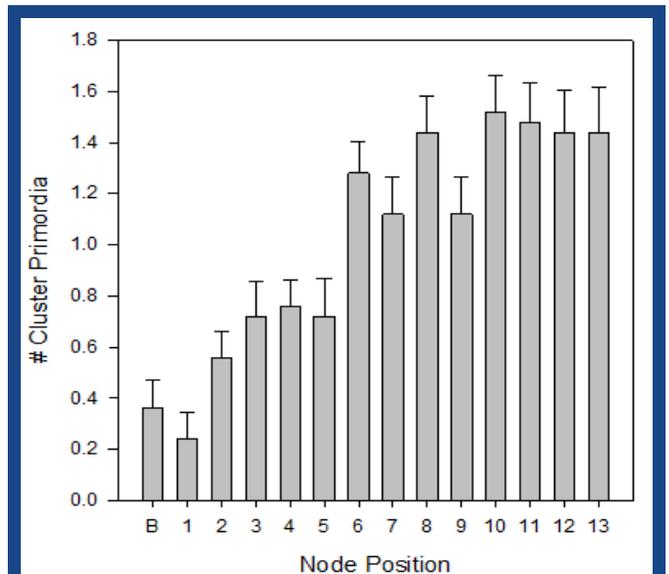


Fig. 2. Selma Pete 2015 buds on nodes from 0 to 5 were not as fruitful as buds on nodes 6 to 13 in Parlier, CA

Good light exposure and optimal (77 °F) temperature increase the number of cluster primordia. Water deficit stress can reduce bud fruitfulness starting from current bloom. Excessive or deficit nutrient supply (especially nitrogen) might also limit the inflorescence initiation.

Grape has a compound bud and one dormant compound bud includes a primary bud and two secondary buds (Fig. 1). In this survey, the potential bud fruitfulness per node included cluster primordia from the primary and secondary buds.

Bud Dissection to Assess Fruitfulness

In order to track the potential fruitfulness of grape vines, I conducted a field survey at the beginning of 2015 for different varieties using bud dissection.

For Selma Pete, buds on nodes from 0 to 5 were not as fruitful as buds on nodes 6 to 13 (Fig. 2). Less than one cluster (0.2 to 0.7) primordia per node was found in each of the first five nodes, whereas nearly 2 cluster primordia per node were found in more apical nodes (6 to 13) on the cane.



Fig. 3. Bud wood collected from the field

The complete data and information about bud fruitfulness can be accessed at <http://ucanr.edu/sites/viticulture-fresno/>.

What's Next?

The usefulness of bud fruitfulness data increases with each year if the data is repeatedly collected from the same vineyard. For example, comparing next year's data with the data from this year will provide some evidence to suggest yields might be similar, higher, or lower, and this information can inform pruning decisions since the data can be collected at any time after harvest. However, actual yield per vine can vary due to any changes of one of three yield components. Therefore, I will continue to collect this data each year, as a service to SJV growers.

I would like to acknowledge the technical support from Dr. Matthew Fidelibus, Dept. of V&E, UC Davis and the SJV grape growers that allowed me to use their vineyards

Look out for...

ETc Etc., An irrigation scheduling tool

Growers and irrigation managers in Fresno, Tulare, Madera and Kings Counties are invited to participate in a trial program aimed at improving access to crop water use information that can be used to more accurately schedule irrigation for key annual and permanent crops. The University of California Cooperative Extension in collaboration with the Department of Water Resources CIMIS program are working to develop real-time regional estimates for crop evapotranspiration (ETc) in grapes, and also alfalfa, almonds, cotton, tomatoes, tree fruit, and walnuts. Water managers are encouraged to sign up for weekly crop water use updates via email for the above crops which are based on the University's best available crop water use information. The weekly updates will include estimates, in inches, of ETc from the prior week as well as recommended water application amounts based on user determined field application efficiency levels. During the course of the year, informational articles related to crop specific water use will support the use of the crop water use data provided weekly. To register for these email/smart phone updates please email your county viticulture advisor and indicate whether you wish to receive updates for 1) permanent crops and/or annual crops and 2) west side and/or east side region (west or east of Kerman).

Fresno County: gzhuang@ucanr.edu

Madera, Merced, Mariposa Counties:

lmjordan@ucanr.edu

Kings and Tulare County:

aeferry@ucanr.edu

Conserving Soil Moisture

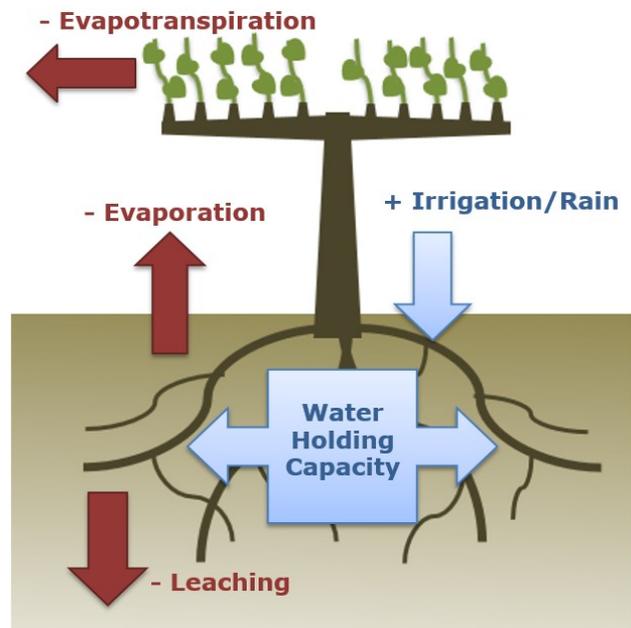
Lindsay Jordan, UCCE Madera, Merced & Mariposa Counties

Evaluating your losses

The first step to conserving water in your soil is to keep it from leaving. Water is drawn out from the soil and lost by transpiration through the leaves of vines. If excessive irrigation allows a large vegetative canopy to grow, more water loss will occur through these leaves during the season. Cover crops and weeds will also cause water loss through transpiration and directly compete with vines for water. It is important to balance the benefits of using a cover crop with the water demands of a vine, especially after budbreak. During a rainfall or irrigation event, if water pools on the surface, there can be significant water loss due to evaporation. Flood, furrow, and sprinkler irrigation will be subject to greater evaporative losses than drip systems. Water may also pool on the surface when it has trouble infiltrating through the soil. Reducing soil salt levels, compaction, and crusting will help water penetrate into the soil. Adjusting irrigation efficiency so that the water applied equals the rate of infiltration will also reduce pooling and therefore evaporative water loss. The water available to vines may also be lost by leaching through the soil profile, but leaching can beneficially flush out salts and recharge groundwater sources.

How to get the most out of your water

During a rainfall or an irrigation event, growers should seek to maximize water infiltration. Cover crops can improve water infiltration into soils and be a valuable tool to maximize the capture of rainfall in the winter. Physically or chemically mowing vineyard floor vegetation after budbreak removes competition with vines, but also creates a mulch which helps maintain soil moisture. Currently, there are no cost effective geotextile or organic mulches for vineyards.



Improving soil water holding capacity

Ultimately to conserve soil moisture, improving the soil structure within a vineyard is critical. Ideally, your soil has many aggregates which readily hold onto water. Tilling beats soil aggregates into finer pieces that cannot as effectively hold onto water. Avoiding compaction, reducing cultivation for weed control, and avoiding tilling when soils are wet are some of the ways to preserve soil aggregates. While very difficult in the warm CA climate, increasing the organic matter content of soils will also enhance soil aggregate formation. Applying composts and manures may introduce salt to the soil that is detrimental to soil aggregate formation, but leaving the plant residue from chemical or physical mowing in the vineyard offers an opportunity to add some organic matter to soils.

Understand your soils

Running soil and well water quality tests regularly will illuminate conditions, like rising soil salinity, which may make enhancing soil moisture levels challenging. A qualified agricultural lab may be able to suggest management practices that can lead to better water management.

UPCOMING EVENTS

UC Davis Viticulture & Enology On the Road @ Parlier March 31, 2015

@ Kearney Agricultural
Research and Extension
Center in Parlier, CA

For information: [http://
wineserver.ucdavis.edu/
education/ontheroad/On-
the-road_Parlier.pdf](http://wineserver.ucdavis.edu/education/ontheroad/On-the-road_Parlier.pdf)

Questions? Email Karen Block
at: kblock@ucdavis.edu

Special Meeting for Grape Growers and Winery Operators in Mariposa, CA

April 1, 2015

@ Casto Oaks Winery, 10
am

Please RSVP to
lmjordan@ucanr.edu

Grape Day

August 11, 2015

@ Kearney Agricultural
Research and Extension
Center in Parlier, CA

More information coming
soon

Happening Now

The Grape Powdery Mildew Risk

Assessment Index

is up and running for
the 2015 season.



Model data is available in Madera,
Fresno, San Joaquin, and El Dorado
counties. To access the risk assessment
index, please visit:

[http://www.ipm.ucdavis.edu/calludt.cgi/
GRAPEPMVIEW1](http://www.ipm.ucdavis.edu/calludt.cgi/GRAPEPMVIEW1)

The PMRAI is made
available to grape
growers by:



Contact Us

**Questions? Con-
cerns? Follow up?
Please feel free to
contact us.**

**Ashraf El-kereamy,
UCCE Kern County**
661-868-6226
aekereamy@ucanr.edu
@ashrafelkereamy

**Allison Ferry-Abee
UCCE Kern**
559-684-3316
aeferry@ucanr.edu
@GrapevineAbee

**George Zhuang
UCCE Fresno**

559-241-7506
gzhuang@ucanr.edu
@ZhuangGeorge

**Lindsay Jordan
UCCE Madera,
Merced & Mariposa**
559-675-7879 ext
7209
lmjordan@ucanr.edu
@LJtheGrape

**Matthew Fidelibus
UCCE, UC Davis V&E**
559-646-6510
mwfidelibus@ucanr.edu
@grapetweets

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special accommodations.*

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