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Agriculture and Natural Resources
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Vine Lines

Fresno County

April 2011

Stephen J. Vasquez,
Viticulture Farm Advisor

In This Issue

Determining When to Irrigate, and How Much Water to Apply

Matthew Fidelibus and Stephen Vasquez

To irrigate grapevines effectively, one needs to know when to start irrigating, and then how much water to apply. Withholding irrigation until it is needed is an important cultural practice because it saves water and it enables irrigation to be a useful tool for helping to manage vegetative growth, yield, and fruit quality. In the Raisin Production Manual, William Peacock, UCCE viticulture advisor emeritus, and his colleagues at UC Davis, suggest withholding irrigation until vines have used between 30% and 50% of the available water in the root zone. Available water content of soils at field capacity can be estimated from the soil type and depth, or measurements can be made with various soil-based tools including neutron probes or capacitance sensors. Plant water potential measurements may also be used along, or in place, soil moisture

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Additional Web News

Invasive Pest Severely Impact CA Agriculture

What Are Exotic and Invasive Pests?

Historically, people frequently brought species of plants and animals with them from their native lands to California, either accidentally or intentionally. Some introductions did unexpected damage while others had positive outcomes (food and horticultural crops). Many invasive plant problems began as ornamental plants for sale by nurseries and garden centers or as host for insect pests (ie silver leaf whitefly on poinsettia, vine melaybug on nursery plants). Today, exotic and invasive pests, including plants still make their way into California through commercial nurseries, import trade and national and international travel.

Many exotic and invasive pests are of major concern in California. The glassy-winged sharpshooter (an insect) and purple loosestrife (a weed) are two invasive species that are established in some areas but still threaten to invade other areas.

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Cooperative Extension Enologist Joins UC

The UC Davis Department of Viticulture and Enology is pleased to announce the appointment of Dr. Anita Oberholster as the new UC Cooperative Extension Specialist in Enology. Dr. Oberholster obtained her undergraduate training at Stellenbosch in Chemistry and Biochemistry, and received her PhD from Adelaide University. Her dissertation topic was "Investigation of the Chemical and Sensory Properties of Red Wine Pigments".

The Viticulture and Enology Department will be hosting a welcoming reception on May 13th for Dr. Oberholster to introduce her to California's wine industry. The event will start at 10:00AM and end at 3:00PM. The day's activities will begin with Anita's introduction by the Department Chair, Andrew Waterhouse. Anita will discuss her background, recent research and experience and her vision for her Enology Cooperative Extension program. Wine industry representatives will have an opportunity to ask questions and make suggestions for research topics.

Additionally, Linda Bisson will discuss VENSource and the departments new extension program in enology; Jim Wolpert will discuss the Community of Practice and viticulture extension; Susan Ebeler will talk about the new Agilent Analytical Facility and its implications for future research; and David Mills will talk about the new Professional Masters' Program. The event is an opportunity to bring industry issues and questions to the faculty, and to find out how they envision their role in supporting California's wine industry into the future.

Following the morning presentations, a crowd-favorite Buckhorn-Barbecue lunch will be served to paid participants. After lunch, in-depth tours of the Viticulture & Enology facilities, led by faculty and professional staff, will commence.

Save the Date

When: Friday, May 13, 2011 from 10:00AM—3:00PM

What: Reception to introduce Dr Anita Oberholster, UC Cooperative Extension Enologist

Where: Robert Mondavi Institute for Wine and Food Science, UC Davis

Cost: $29.00 per person

Seating is limited for this event and early signup is suggested.

Registration for this event is available at:

http://ucce.ucdavis.edu/survey/survey.cfm?surveynumber=6177

CA leads Organic Agriculture

California dominates the nation in organic production of agricultural commodities, according to a nationwide survey of organic producers that was analyzed by a UC Davis agricultural economist.

The survey found that California leads the United States in the number of organic farms, the amount of land in organic production and in organic sales. It also showed that the state is home to 19 percent of the nation's organic farms and accounts for 36 percent of the country's organic sales.

The survey analysis was conducted by Karen Klonsky, a UC Cooperative Extension economist in UC Davis' Department of Agricultural and Resource Economics.

Klonsky noted that, in terms of organic production, the state is most prominent in fruits, vegetables, nuts and berries, with lettuce and grapes being the highest-revenue organic crops. In fact, California leads the nation in all major crop categories except field crops. (Field crops include corn, wheat, cotton, soybeans and rice.)

The survey also revealed that California produces more than 90 percent of all U.S. organic sales for 14 different commodities, including 99 percent of the nation's organic walnuts, lemons, figs and artichokes and 100 percent of its organic almonds and dates.

California is also the top producer of organic livestock and livestock products, with broiler chickens and milk from cows the most important livestock commodities.

Klonsky's analysis examined data from the 2008 Organic Pro-

Organic Agriculture

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duction Survey, the first nationwide survey of organic agriculture in the United States. It was administered by the National Agricultural Statistics Service as a follow-up to the 2007 Census of Agriculture.

"About one-third of the farms classified themselves as mixed operations with both organic and conventional production," wrote Klonsky. "This implies that the organic market is an important opportunity for diversification for many conventional farms."

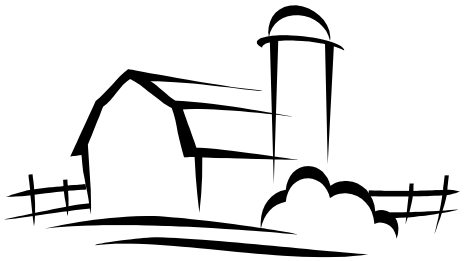
She noted that the vast majority of survey respondents said they planned to maintain or expand their organic production, indicating that this subsector of agricultural remained financially healthy despite the nation's economic downturn. There was no indication, however, that many producers who had both organic and conventional operations had plans to become entirely organic.

"This is an indication that organic continues to be a niche market, albeit a profitable one," Klonsky said.

Contact:

Karen Klonsky, Agricultural and Resource Economics, klonsky@primal.ucdavis.edu

Her analysis can be downloaded from ARE Update, Vol. 14 No. 2



When to Irrigate

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information to indicate the time to commence irrigation. Dr. Larry Williams, Professor of Viticulture and irrigation specialist, generally suggests watering white wine and raisin varieties once their mid-day leaf water potential declines to -10 bars. In years when the season starts with soil at field capacity, the soils of many San Joaquin Valley vineyards may have enough water to supply the vines through bloom.

From the time irrigation has commenced, the goal is to periodically replace the water lost to evapotranspiration (ET), which includes the combined loss of water due to evaporation from the soil surface, and from the vine's leaves. Suggested watering regimes for raisin grapes have been published and are useful management guides. Growers may also develop their own water use estimates to use for comparison purposes or, with experience, as a primary guide. To estimate the water used by vines during a defined period of time, growers need to know the cumulative reference ET (ET_o) from a nearby weather station, which can be accessed from the internet, the crop coefficient (Kc), and the efficiency of their irrigation system. Dr. Ed Hellman, Viticulture Extension Specialist at Texas A&M, has written a useful extension publication describing how growers can create their own crop coefficients based on Dr. William's research findings. The Kc is a function of the percent shaded area in the vineyard, so it changes through the season, and therefore must be recalculated, as the vines grow.

According to the authors of the Raisin Production Manual, it may not be necessary or desireable to replace 100% of the water lost; supplying 70% to 80% of the water used may actually optimize yields. However, the presence or absence of weeds, cover crops, vine health, and other factors may influence the performance of vines subjected to deficit irrigations, so care should be taken when implementing deficit irrigation practices.

Matthew Fidelibus is the Viticulture Extension Specialist, located at the UC Kearney Agriculture Center. Stephen Vasquez is the UC Cooperative Extension Viticulture Farm Advisor in Fresno County.

Invasive Pests

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Invasive species of concern to California's grape industry include European grapevine moth (EGVM) and light brown apple moth (LBAM), have not yet established themselves in all grape growing areas but have already been costly to the state and the grape industry.

Invasive Pests are Costly for Growers

One of the worst invasive insects in California, vine mealybug (*Planococcus ficus*), continues to cost growers substantially in time, management and lost yields. It was first identified in California's Coachella Valley in the early 1990s and continued to spread north into the southern San Joaquin Valley in 1998. Now established in over eighteen counties, VMB control has become a standing insect management cost for growers annually. Vine mealybug (VMB) is also an economic pest of vineyards throughout the world.

All VMB (Fig. 1) life stages can be found year-round in an infested vineyard. During winter months, VMB eggs, crawlers, nymphs, and adults are found under bark, under developing bud scales, and on roots. Most are found on the lower trunk near the soil line and on roots. As temperatures warm in spring, VMB increase in numbers and become more visible. This is due to increased reproduction and movement from the trunk to the cordons and aerial parts of the vine. By late spring and summer, they are found on all parts of the vine: under bark, on trunks and cordons, on first- and second-year canes, leaves, clusters, and roots.

In the Coachella Valley, the numbers of VMB are largest in mid to late spring and decline dramatically (two- to ten-fold) in midsummer. In the San Joaquin Valley, the increase in numbers begins in late spring with peak densities occurring from the end of June through the middle of August. Several species of ants can be found in association with the vine mealybug. The ants have been observed transporting VMB around on the vine, feeding on the honeydew produced, and fending off natural enemies.

Because five different mealybugs impact grapes, it important for growers to know what type is in their vineyard. Each have peculiarities in development and periods of greatest susceptibility to chemical management. Growers should have mealybugs properly identified by their local UC Cooperative Extension office, Agricultural Commissioner or California Department of Agricultural entomologist. Proper identification will ensure that the best management strategies can be implemented for the mealybug of concern (More information can be found in Mealybugs in California Vineyards; ANR 21612)

Invasive Pest Challenges Continue

California's grape industry continues to be challenged by new pest introductions. Light brown apple (LBAM) and European grapevine (EGVM) moths are the most recent insect introductions impacting California grape growers. Although growers have spent money on pesticide applications to manage isolated populations,

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Figure 1. Vine mealybug, *Planococcus ficus,* adult females and crawlers.

Invasive Pest

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grape growers and their industries have mostly been affected by the pest rating that identifies them as quarantine pests (see Table 1). Growers in quarantine areas have worked closely with the USDA, CDFA and the local County Ag Commissioners to comply with the mandated programs so fruit can continue to be harvested and moved to their respective markets.

One pest of most concern for California agriculture and the states residents is the brown marmorated stink bug (BMSB) now found in 33 States. Although not established in California, it has been documented on several occasions in different parts of the state including Los Angeles and Solano Counties. BMBS (Fig. 2) has the ability to fly, which helps it move to new locations outside of infested sites. However, its primary movement into new areas has been through human activity by hitchhiking in vehicles, equipment and anything else that gets shipped over long distances. Native to Asia, its thought that BMSB arrived in packing crates shipped to the Eastern US. It has a large host range that includes grapes and many of the fruits and vegetables grown in California. Damage can be substantial when BMSB populations are not identified early and managed appropriately. Apple growers in the Mid-Atlantic States have reported losses of $37 million representing 18% of their fresh apple market. In addition to physical fruit damage, growers and wineries would also have to contend with the off flavors produced by BMBS that gets crushed for wine or juice. Homeowners in the Mid-Atlantic States also reported large BMBS populations taking refuge in their homes during the winter months and becoming a nuisance when the insects are frightened or smashed, releasing an odor—hence the name “stink bug”. It is important for growers and residents to take odd or unique looking pests to their local university advisor, ag commissioner or state ag department entomologist for proper identification. Identifying invasive pests early is key to protecting California’s billion dollar agricultural industry.

Ratings Used to Designate Pest Status of Organisms in California

Pests vary as to the potential and actual harm they present to California's agriculture; its environment and the general public. Based upon the severity of harm, its economic impacts, and the degree of difficulty to manage such pests, a pest rating system is used nationally to rank agricultural pests. The rating that each pest is assigned will aid the County and State in determining the best course of action to take and prevent or control their establishment. Table 1 shows the definitions outlined by the CDFA that are used to rate invasive pest in California.

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Table 1. CDFA invasive pest ratings.

Rating	Definition
A	An organism of known economic importance subject to state (or commissioner when acting as a state agent) enforced action involving: eradication, quarantine regulation, containment, rejection, or other holding action.
B	An organism of known economic importance subject to: eradication, containment, control or other holding action at the discretion of the individual county agricultural commissioner. Or An organism of known economic importance, subject to state endorsed holding action, and eradication only when found in a nursery.
C	An organism subject to no state enforced action outside of nurseries except to retard spread. Regulations are at the discretion of the county agricultural commissioner. Or An organism subject to no state enforced action except to provide for pest cleanliness in nurseries.
Q	An organism or disorder requiring temporary “A” action pending determination of a permanent rating. The organism is suspected to be of economic importance but its status is uncertain because of incomplete identification or inadequate information.
D	No action (parasites, predators, and organisms of little or no economic importance).

Invasive Pests

(Continued from page 5)

What can be done to stop the spread of exotic and invasive pests?

1. **Don't bring foreign plant or animal material into California** when you travel or spread species from local quarantine areas to non-infested areas.

2. **Learn to identify invasive species new to California**. Contact your local UC Cooperative Extension office or Agricultural Commissioner for help identifying suspected invasive species or look at the UC IPM or CDFA Web site.

2. **Report invasive species in your area**! Contact your local UC Cooperative Extension office or Agricultural Commissioner to report invasives and to get information on controlling invasive species on your property. We will be successful in stopping bests by early detection and management before establishment.

For more information visit the UC IPM Exotics and Invasive Pests page and Pest Notes on Invasive Plants and Woody Weed Invaders.

INFORMATION ON BROWN MARMORATED STINK BUG:

BMSB-Northeastern IPM factsheet: http://ucipm.ucdavis.edu/PDF/MISC/stinkbug_alert.pdf

BMBS-CDFA factsheet: http://www.cdfa.ca.gov/plant/PPD/PDF/Halyomorpha_halys.pdf

BMBS-Congressional Briefing:
http://bartlett.house.gov/UploadedFiles/Congressional_Briefing_Summary.pdf

Video

BMBS-lecture: http://stream.ucanr.org/fps_stinkbug/index.html

Information source: UC IPM, CDFA and Northeastern IPM Center

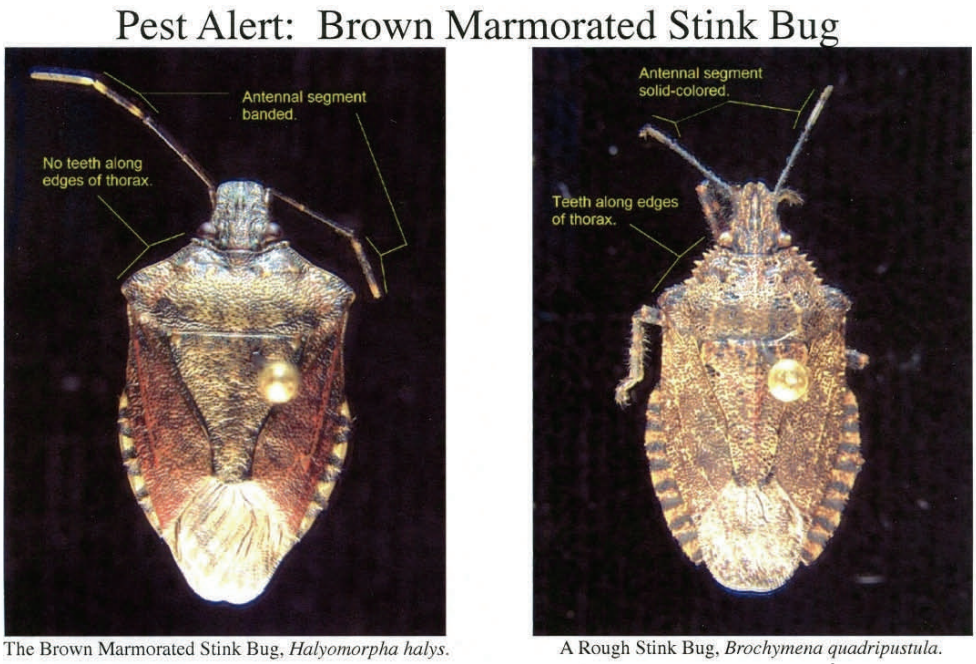


Figure 1. BMSB compared to Rough Stink Bug. Photo: Oregon Department of Agriculture

CALENDAR OF EVENTS

Local Meetings and Events

Kearney Grape Day
August 16, 2011
7:30 a.m. — 12:00 p.m.
Kearney Agricultural Center
9240 S. Riverbend Avenue
Parlier, CA 93648
Contact: Matthew Fidelibus
(559) 646-6500
Cost: $10/person

U.C. Davis University Extension Meetings

(800) 752-0881

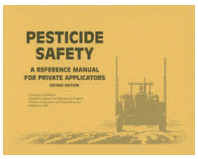
Variety Focus: Chardonnay
May 19, 2011
8:30 a.m. — 5:30 p.m.
Freeborn Hall, North Quad
Davis, CA
Section: 104VIT201

Advanced Tasting Seminar
August 6, 2011
9:00 a.m. — 4:00 p.m.
1632 Da Vinci Ct.
Davis, CA
Section: 111VIT216

Winery Accounting and Finance for Executives
August 12, 2011
8:30 a.m.— 4:30 p.m.
Wine Business Center
899 Adams St. Saint Helena, CA
Section: 111VIT214

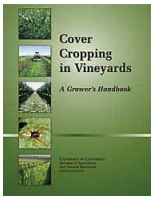
Rootstock Workshop: Identification and Use
August 15, 2011
8:30 a.m.— 4:00 p.m.
UC Davis Plum Room, DANR Building
1 Hopkins Road
Section: 111VIT219

Publications from the University of California



Pesticide Safety: A Reference Manual for Private Applicators
ANR Publication 3383
Price - $7.00 + tax and shipping

Updated in 2006, this manual covers information essential for anyone using pesticides on California farms, including growers, managers and employees. The manual covers pesticide labels, worker safety (handlers and fieldworkers), how to mix and apply pesticides, calibration, the hazards of pesticide use including heat related illness, and pesticide emergencies.



Cover Cropping In Vineyards
ANR Publication 3338
Price - $20.00 + tax and shipping

This guide features cutting-edge methods for using cover crops to enhance vineyard performance. Based on extensive research, this guide details technical and theoretical information on how cover crops affect vineyards and promote ecological stability.

Order Form

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Pesticide Safety		$ 7.00	
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$100+	$15

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