University of California Cooperative Extension Fresno County

Vine Lines

Stephen J. Vasquez, Viticulture Farm Advisor

December 2008 Issue

Winter Chilling Requirements for Grapes

Stephen Vasquez and Matthew Fidelibus

The relatively warm weather we've been having has prompted several grape growers to ask whether the San Joaquin Valley will accumulate enough chilling hours, the number of hours with temperatures below 50˚F, this winter. The short answer is "yes". In fact, the San Joaquin Valley typically meets the chilling requirements for grapes by the end of December.

Why are chilling hours important?

As grape canes mature, their buds enter a type of dormancy in which their growth is suppressed despite otherwise favorable conditions. Repeated exposure to cold temperatures dissipates this form of dormancy and once the chilling hour requirement is satisfied, it is only low temperatures which prevent bud burst. The number of chilling hours required by grapes varies among the different varieties, but most grapes only need about 150 chilling hours. This is much less than that required by other temperate fruits such as cherries or peaches which may need up to 800 hours of chilling.

How to Calculate Chilling Hours

In California, we typically calculate chilling hours from November 1st through the end of February. Cumulative chilling hours are calculated by either summing the hours below 45˚F or those between 32-45˚F. The hours can be recorded with your own weather station or by using one of several websites which calculate hours from weather stations nearest your vineyard. One convenient website

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San Joaquin Valley Grape Symposium

January 7, 2009

C.P.D.E.S. Hall
172 W. Jefferson Avenue
Easton, California

Register on-line @ http://ucanr.org/2009_grape_symposium

See insert for more information!

New Nematode Resistant Rootstocks

Cheryl Covert

In January 2008 the University of California released five new UC -patented grape rootstock cultivars developed in Dr. Andy Walker's grape rootstock breeding program in the UC Davis Department of Viticulture and Enology, with the participation of Professor Howard Ferris in the Department of Nematology. The rootstocks were selected for broad resistance to nema -todes. Each was also screened to ensure that it was resistant to phylloxera. Brief descriptions of the new rootstocks are included below. Additional information on the characteristics, trial data, and performance of the new rootstocks can be requested by contacting Dr. Walker by email at *awalker@ucdavis.edu* or by phone at 530-752-0382.

All five cultivars were put through complete disease testing at FPS to qualify them for provisionally-registered status in the CDFA Registration & Certification Program for Grapevines (R&C Program), and pre-release production of mist-propagated plants (MPPs) at FPS ensured that a modest number of plants were ready for delivery to nurseries in spring 2008. The initial release of MPPs to UC-licensed CDFA R&C Program nursery participants occurred at a press conference held at FPS on March 31, 2008, attended by UC dignitaries and representatives of nurseries, industry funding organizations, UCD Viticulture & Enology faculty and the press.

FPS is continuing to produce MPPs on a custom order basis for delivery to official UC licensees. UC Davis Technology Transfer Services (TTS) is currently accepting requests for licensing for the new rootstocks only from current nursery participants in the CDFA R&C Program. For more details or to request licensing, please contact Clint Neagley at TTS by email at *chneagley@ucdavis.edu* or by phone at (530) 754-8720.

UCD GRN-1™ (8909-05)

The most resistant of the five, GRN-1™ is a *Vitis rupestris* x *Muscadinia rotundifolia* hybrid. One of the rare sources of resistance to ring nematode, this cultivar has extremely strong and broad nematode resistance, and is a member of a group of *Vitis species* x *M. rotundifolia* selec-tions currently being tested for their abil -ity to induce fanleaf tolerance. Mother vines have sterile flow-ers, moderately-long shoots with shorter internodes and more laterals than the other rootstocks. Though GRN-1™ was originally thought to be "too rotundifolia-like" to allow it to root well, it has rooted and grafted at 80% success from dormant cuttings. However, its one-year-old canes were damaged by a recent year's 20°F winter temperatures, affecting its rooting ability.

UCD GRN-2™ (9363-16)

GRN-2™ acquires its nematode resistance from *V. rufotomentosa* (highly resistant to *Xiphenema index*) and *V. champinii* 'Dog Ridge' (strong resistance to root-knot and dagger nematodes), and roots and grafts easily because of its *V. riparia* parentage. GRN-2™ is a good mother vine with staminate flowers, long shoots and internodes, and few laterals. It is susceptible to citrus and ring nematodes, but has excellent resistance to root-knot and dagger nematodes.

UCD GRN-3™ (9365-43)

A sibling to GRN-4™, its strong nematode resistance is derived from *V. rufotomentosa*, *V. champinii* 'Dog Ridge' and from c9038, a form of *V. champinii* that appears to intergrade with *V. monticola*. *Vitis monticola* is an unusual species that grows on very dry, gravelly or rocky limestone sites. *Vitis riparia* was used in the cross to impart good rooting and grafting abilities. GRN-3™ has excellent nematode resistance, resists citrus and lesion nematodes, and is moderately susceptible to ring nematodes. Pistillate-flowered, its mother vines have moderate vigor, long straight canes with moderately long internodes and a moderate number of lateral shoots.

UCD GRN-4™ (9365-85)

A sibling to GRN-3™, it shares resistance and rooting characteristics with GRN-3™. With very good resistance to root-knot and dagger nematodes, it also resists citrus and lesion nematodes, but is susceptible to ring nematodes. GRN-4™'s resistance to *Meloidogyne arenaria* HarmA was the most severely impacted by higher temperatures when compared to the other four rootstocks. It is an excellent mother vine with long

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Winter Chilling

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for California's growers is the *Fruit and Nut Research Information* website (see internet address below). It draws on data from the CIMIS weather station network to calculate the chilling hours for several locations in California. Table 1 (page 4) shows the yearly data for the Parlier, CA station over an 11 year period, calculated by using the cumulative hours below 45˚F and those between 32-45˚F. When comparing both summation methods, one can see that at the Parlier station, the required chilling hours for grapes have always been met by the end of December. However, chilling hours for cherries or peaches would not be met until January in most years. You may want to consult the websites listed below for additional information on chilling hours.

Clearly insufficient chilling hours are unlikely to limit growth next spring, but a lack of precipitation could be a problem. Currently, the San Joaquin Valley has only received 1.0 (as of November 26) inches of rain, slightly over half of our normal season to date of 1.79 inches. The dry 2008 spring and hot summer have left our soils dry and few precipitation events to date have not improved the situation. If 2008 continues to be dry, growers may experience grapevine damage caused by freezing temperatures much like that seen during the 2006-07 winter and spring. If you have not already done so, a post-harvest irrigation is recommended.

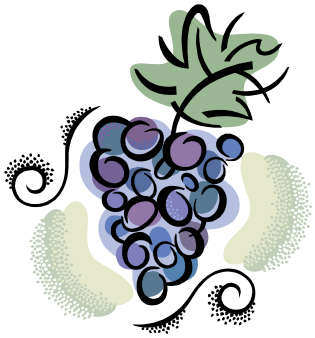
Additional information on chilling requirements at:

Fruit and Nut Research Information:
http://fruitsandnuts.ucdavis.edu/Weather_Services/

UC IPM:
http://ucipm.ucdavis.edu/WEATHER/wxretrieve.html

CA Irrigation Management Information Systems (CIMIS):
http://wwwcimis.water.ca.gov/cimis/welcome.jsp

Stephen Vasquez is the UCCE viticulture farm advisor for Fresno County. Matthew Fidelibus is the UCCE viticulture specialist at UC KAC, Parlier, CA.



Resistant Rootstocks

(continued from page 1)

canes, good internode lengths and few lateral shoots.

UCD GRN-5™ (9407-14)

This selection derives its resistance from *V. champinii* 'Ramsey' and from c9021, a form of *V. champinii* that appears to intergrade with *V. berlandieri*. *Vitis riparia* was used to improve the rooting and grafting of cuttings. GRN-5™ has excellent root-knot and dagger nematode resistance, resists citrus and lesion nematodes, and supports low numbers of ring nematodes. This rootstock supported the highest level of nodosity-based phylloxera (similar to 101-14 Mgt), but research to date has concluded that high nodosity level feeding does not cause vine damage. Mother plants are staminate-flowered with moderate growth, long canes, good internode lengths and few laterals.

Cheryl Covert is the Plant Introduction and Distribution Manager for Foundation Plant Services, UC Davis.

San Joaquin Valley Grape Symposium

Register on-line @
http://ucanr.org/2009_grape_symposium

Table 1. Average cumulative hours for hours accrued below 45F and between 32-45F over an 11 year period

Cumulative Hours Below 45F

	97-98	98-99	99-00	00-01	01-02	02-03	03-04	04-05	05-06	'06-07	07-08	08-09	11 Year Average**
November	80	218	189	313	99	145	230	194	143	122	131	66*	169
December	531	712	635	682	422	464	451	523	380	495	544		531
January	807	1176	858	1066	814	625	718	830	627	956	856		848
February	936	1407	935	1310	1025	813	878	907	839	1123	1052		1020

Cumulative Hours Between 32F and 45F

	97-98	98-99	99-00	00-01	01-02	02-03	03-04	04-05	05-06	'06-07	07-08	08-09	11 Year Average**
November	80	218	189	274	99	154	181	210	146	152	160	66*	169
December	460	564	554	609	408	454	378	482	364	423	470		470
January	727	954	723	925	736	615	625	789	606	721	758		744
February	856	1182	800	1162	922	789	785	866	804	888	954		910

* Hours reflect November 1 - November 23, 2008.

** Average does not include hours from 08-09 season.

Calendar of Events

Local Meetings and Events

Save the Date!
San Joaquin Valley Grape Symposium
January 7, 2009
7:00 a.m.—12:00 p.m.
C.P.D.E.S. Hall
172 W. Jefferson Avenue
Easton, California

UC Grape Day
August 11, 2009
7:00 a.m.—12:00 pm
Kearney Agricultural Center
9240 S. Riverbend Ave.
Parlier, CA 93648

U.C. Davis University Extension Meetings

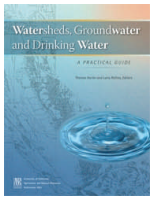
(800) 752-0881

Introduction to Wine Chemistry
January 10-11, 2009
8:30 a.m. — 4:30 p.m.
Da Vinci Building
1632 Da Vinci Ct.
Davis, CA
Instructor: Michael Ramsey
Section: 083VIT205

Introduction to Wine Analysis: Small Scale
February 7, 2009
8:00 a.m. — 6:00 p.m.
1127 North Mondavi Institute for Wine and Food
Old Davis Rd.
Davis, CA
Instructor: Michael Ramsey
Section: 083VIT204

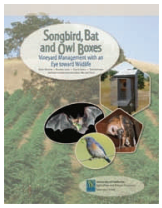
Varietal Winegrape Production Short Course
February 24-26, 2009
8:30 a.m.— 5:00 p.m.
Freeborn Hall, North Quad
Davis, CA
Instructor: UC Faculty
Section: 083VIT200

Publications from the University of California



Watersheds, Groundwater and Drinking Water: A Practical Guide
ANR Publication 3497
Price - $40.00 + tax and shipping

This handy guide is a "must-have" for environmental scientists, water technicians, educators, and students. Water shed and groundwater hydrology fundamentals are discussed.



Songbird, Bat, and Owl Nest Boxes
ANR Publication 21636
Price - $15.00 + tax and shipping

This guide explains the benefits of the biodiversity and aesthetics of songbirds, bats and owls. Methods on how to integrate nest boxes within a vineyard are discussed.

Order Form

Publication	Qty.	Price	Subtotal
Watersheds Guide		$ 40.00	
Songbird, Owl Boxes		$ 15.00	

Shipping – USA Only	
Merchandise Total	Shipping Charge
$1—29.99	$6
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$40—49.99	$9
$50—79.99	$10
$80—99.99	$12
$100+	$15

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Vine Lines

Produced by U. C. Cooperative Extension Farm Advisor Stephen J. Vasquez. Contact me for further article information, or to be added to the mailing list.

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In This Issue:

San Joaquin Valley Grape Symposium Program

Wednesday, January 07, 2009

C.P.D.E.S. Hall
172 W. Jefferson Avenue - Easton, California

Agenda

7:00 a.m. — 8:00 a.m.	Registration - Refreshments *Welcoming remarks*
8:00 a.m. — 8:30 a.m.	Dong Wang, Scientist, USDA-ARS *Vineyard Soil Fumigation: Alternatives to Methyl Bromide*
8:30 a.m. — 9:30 a.m.	Fred Rinder, Biologist, Department of Agriculture, Fresno County *Vertebrate Pest—Law and Regulations*
9:30 a.m. — 9:50 a.m.	Break and Refreshments
9:50 a.m. — 10:20 a.m.	Karen Francone, Deputy Ag Commissioner, Department of Agriculture Fresno County *Drift—Laws and Regulations*
10:20 a.m. — 11:00 a.m.	Walt Bentley, IPM Entomologist, Kearney Ag Center *Vine Mealybug Management*
11:00 a.m. — 11:40 a.m.	Kurt Hembree—Weed Advisor, UCCE, Fresno County *Drift Control—It's Up to You*

CONTINUING EDUCATION PCA AND CCA HOURS HAVE BEEN REQUESTED

Fill out registration form below —OR register & pay on-line at http://ucanr.org/2009_grape_symposium

Company: _____ **Phone:** _____

Address: _____ **City:** _____ **Zip:** _____

Attendee Names

_____ _____

_____ _____

_____ _____

Checks Payable to: UC Regents

Mail payment and registration to:
San Joaquin Valley Grape Symposium
1720 S. Maple Avenue
Fresno, CA 93702

Fee includes meeting and proceedings: $15.00 (Received by Jan. 5, 2009)

Late or at door registration for meeting and proceedings: $20.00 (After Jan.5, 2009)

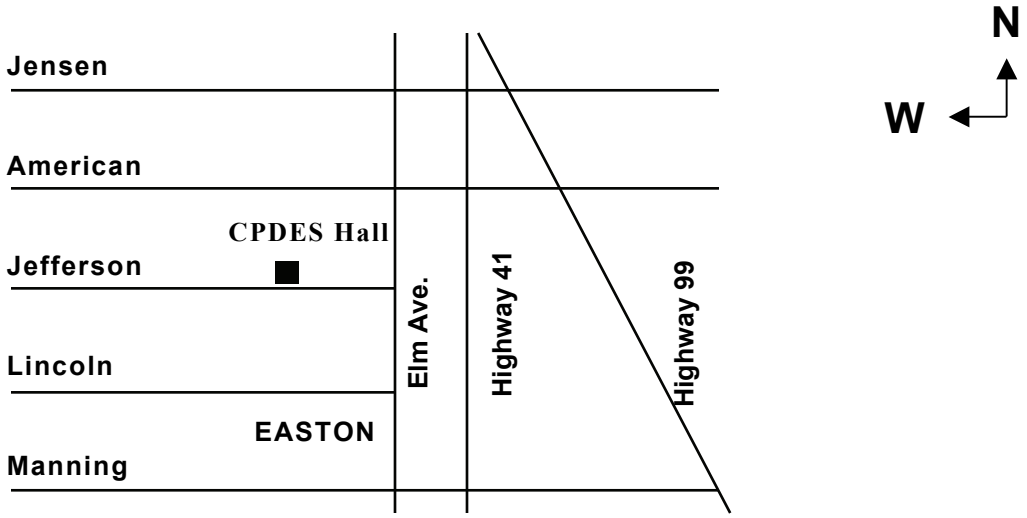
Meeting and Proceedings: _____ ***X $15.00 each = $*** _____

Check Number: _____ ***Amount enclosed $*** _____

San Joaquin Valley Grape Symposium Program

Wednesday, January 7, 2009

C.P.D.E.S. Hall
172 W. Jefferson Avenue
Easton, California



From North of Fresno: Take Highway 99 south to Highway 41 south. Take Highway 41 south to American Avenue. Turn west on American Avenue towards Elm Avenue. Turn south on Elm Avenue towards Jefferson Avenue. Turn west on Jefferson. C.P.D.E.S. Hall will be on your right.

From South of Fresno: Take Highway 99 south to Manning Avenue. Turn west on Manning Avenue to Elm Avenue. Turn north on Elm Avenue towards Jefferson Avenue. Turn west on Jefferson Avenue. C.P.D.E.S. Hall will be on your right.

Register on-line and pay by credit card @
http://ucanr.org/2009_grape_symposium

Our programs are open to all potential participants. Please contact the Fresno County UCCE office (two weeks before the Grape Symposium) at 559-456-7285 if you have any barriers to participation requiring any special accommodations or financial assistance. Financial assistance is available to cover the cost of the meeting and proceedings only.