

LODI WINEGRAPE COMMISSION, *est.* 1991

updated January 2020 • lodigrowers.com/growereducation/viruses/

Please note: Thanks to everyone who contributed to today's meeting! The information presented today is intended as educational only. Each person will ultimately manage for mealybugs & viruses on an individual basis according to what makes economic sense for them personally.

FURTHER RESOURCES

VIRUS TESTING LABORATORIES

Agri-Analysis LLC

950 W Chiles Rd, Davis CA 95618 (sample delivery)
PO Box 285, Davis CA 95616 (mailing address)
Dr. Alan Wei | info@agri-analysis.com
800.506.9852 | agri-analysis.com

AL & L Crop Solutions

7769 N Meridian Rd, Vacaville CA 95688
Dr. Anna-Liisa Fabritius | info@allcropsolutions.com
530.387.3270 | allcropsolutions.com

California Seed and Plant

3556 Sankey Rd, Pleasant Grove, CA 95668
Dr. Parm Randhawa | parm.randhawa@csplabs.com
Sukhi Pannu | sukhi.pannu@csplabs.com
916.655.1581 | csplabs.com

eurofins US | EBDI Laboratories

7240 Holsclaw Rd, Gilroy CA 95020
Dr. Raquel Salati | raquelsalati@eurofinsUS.com
408.846.9964 | eurofins.com/biodiagnostics

Foundation Plant Services – Virus Diagnostics

455 Hopkins Road, Davis CA 95616
530.752.3590 | fps.ucdavis.edu/custommain.cfm

Sunburst Plant Disease Clinic Inc.

677 E Olive Ave, Turlock CA 95380
Dr. Bhanu Donda | bdonda@sunburstpdcinc.com
Dr. Sam Livingston | slivingston@sunburstpdcinc.com
209.667.4442 | sunburstpdcinc.com

Wonderful Nurseries – Virus Testing Laboratory

449 N Zerker Rd, Shafter, CA 93263
Tefera Mekuria, PhD | 661.406.9919
tefera.mekuria@wonderful.com | wonderful.com

CDFA Grapevine Registration & Certification Program

1220 N Street, Room 344, Sacramento CA 95814
916.654.0435 | nurseryservices@cdfa.ca.gov
cdfa.ca.gov/plant/pe/nsc/nursery/grapevine.html

VINE MEALYBUG MATING DISRUPTION

Pacific Biocontrol (product in development)

911 Industrial way, Suite A, Lodi CA 95240
Jeannine Lowrimore
jlowrimore@pacificbiocontrol.com
209.603.9244 | pacificbiocontrol.com

Suterra (also our VMB trap donators! thank you!)

2401 E Orangeburg Ave, #675, Modesto CA 95355
20950 NE Talus Pl, Bend OR 97701
Loraine Lee | loraine.lee@suterra.com
Sara Goldman | sara.goldman@suterra.com
209.595.5254 | suterra.com

BENEFICIAL INSECTS

Associates Insectary

PO Box 969, Santa Paula CA 93061
Brett Chandler | info@associatesinsectary.com
805.933.1301 | associatesinsectary.com

FAR, Inc.

550 Foothills Pkwy, Corona CA 92882
Joe Barcinas | farinc@att.net
951.371.0120 | far-inc.com

USDA Tree Assistance Program (TAP)

USDA San Joaquin Co. Farm Service Agency
(Red Blotch Virus & *NEW* Leafroll Virus)
7585 S Longe St, Ste. 100, Stockton CA 95206
Joanne Gomez | joanne.gomez@usda.gov
209.337.2124 | fsa.usda.gov

University of California

Dr. Maher Al Rwahnih

Grapevine Virus Testing Expert
Foundation Plant Services Diagnostics & Research Lab
530.574.5463 | malrwahnih@ucdavis.edu

Dr. Kent Daane

Vine Mealybug Expert
Kearney Agricultural Research & Education Center
559.646.6522 | kdaane@ucanr.edu

Dr. Lucia Varela

Mealybug & Ant Expert
North Coast IPM Advisor, UCCE
707.565.2621 | lgvarela@ucanr.edu

UC Cooperative Extension - San Joaquin County

2101 E Earhart Ave, Suite 200, Stockton CA 95206
Paul Verdegaal (retired) | psverdegaal@ucanr.edu
209.953.6119 | cesanjoaquin.ucanr.edu

EDUCATIONAL RESOURCES

Book: *Leafroll 3 Virus and how to manage it.* Edited by Ruby Andrew, Vaughn Bell, Nick Hoskins, Gerhard Pietersen, and Caine Thompson. New Zealand. 2015. *(copy available to borrow from the Lodi Winegrape Commission)*

Book: *Grapevine Viruses: Molecular Biology, Diagnostics, and Management.* Edited by Baozhong Meng, Giovanni P. Martelli, Deborah A. Golino, and Marc Fuchs. 2017. *(copy available to borrow from the Lodi Winegrape Commission)*

Institute for Grape and Wine Sciences
South Africa | Leafroll Virus Management
Prof. Gerhard Pietersen
igws.co.za/content/fact-sheets/leafroll



Leafroll 3 Virus App from New Zealand
Find it on your app store

Lodi Winegrape Commission

Dr. Stephanie Bolton

Grower Research & Education
2545 W Turner Rd, Lodi CA 95242
209.367.4727 | stephanie@lodiwine.com

Grapevine Virus Resources web page

Videos, Handouts, Links to Articles
Lodi Winegrape Commission
lodigrowers.com/growereducation/viruses/

Mealybug & Virus Outreach Meeting | April 9th, 2020

Stockton Cabral Ag Center
2101 E Earhart Ave, Stockton CA 95206
Hosted by the Lodi Winegrape Commission's Grapevine Virus Research Focus Group
learn more at lodigrowers.com

Grower Booklets available:

- Nursery Ordering 101: Viruses
- Mealybug Management
- Grapevine Virus Testing

You can always learn more about viruses and their vectors (like mealybugs!) at our **CD11 LODI PCA NETWORK BREAKFAST MEETINGS**, held on the first Tuesday morning of every month except February from 8-9:30am at Burgundy Hall, Lodi Grape Festival Grounds, 413 E Lockeford St. Everyone is welcome at these meetings!
RSVP to lwwc@lodiwine.com or 209.367.4727.

Thank you to the LWC Research, Education, & Communications Committee and their Mealybug Biocontrol & Grapevine Virus Research Focus Group volunteers!

Partial funding was provided by the American Vineyard Foundation and the CDFA's PD/GWSS Board as part of a Grapevine Virus Outreach Grant – THANK YOU SO MUCH!

OUR CALIFORNIA GRAPEVINE VIRUS STRATEGY.



Decrease vector populations.



Lower virus inoculum.

Why? The future of our industry depends on what we do today.



We can't beat these viruses alone.



Growers

Education, vector management, and lowering the amount of virus inoculum on each farm.



Nurseries

Providing growers with reliably clean rootstock and scion material.



FPS

Providing nurseries with reliably clean propagation material.



CDFA

Administering an effective Grapevine Certification & Registration Program.



Academia

Scientific research to validate & improve management strategies and new technologies for virus detection & management.



Virus Testing Labs

Providing reliably accurate, efficient, and economical virus testing for plant material.



Wineries

Education and teamwork with growers to beat the virus challenge.



Extension

Virus education outreach and connection to resources needed.



IPM Companies

Vector control that keeps the natural enemies of vine mealybug doing their job.



PCAs/Viticulturists

Education, vector management, virus detection and management.



County Ag Commissioners

Education, vector management, regional organization and leadership.



Regional Associations

Education, vector management, regional organization and leadership.

VINE MEALYBUGS

BY THE NUMBERS



BY: THE LODI WINEGRAPE COMMISSION

In the LODI AVA, our vine mealybugs have 5-7 generations per growing season.
On average, the females lay 300 eggs each, with about half of those eggs being female.

1ST GENERATION

1 female +
1 male mealybug

2ND GENERATION

1 female x 300 eggs
= 300 mealybugs
150 females

3RD GENERATION

150 females x 300 eggs
= 45,000 mealybugs
22,500 females

4TH GENERATION

22,500 females x 300 eggs
= 6,750,000 mealybugs
3,375,000 females

5TH GENERATION

3,375,000 females x 300 eggs
= 1,012,500,000 mealybugs
506,250,000 females

6TH GENERATION

506,250,000 females x 300 eggs
= 151,875,000,000 mealybugs
75,937,500,000 females

7TH GENERATION

by the 7th generation, those 2 original mealybugs are now
75,937,500,000 females x **300** eggs =

22,781,250,000,000 mealybugs

which then overwinter under the bark and in the roots - helped by ants - until the Spring

