



University of California
Agriculture and Natural Resources

Cooperative Extension



Welcome to Foothill Grape Day 2017!

“Improving Your Vineyard Culture”

Thanks to:

**Robin Cleveland
Nancy Starr
Mary Tran and Dave Hale**

All of our speakers

**Amador Fairgrounds
Andrae's Bakery and Vintage Market**

All of you!

P.S. Drinking water is in large red Igloo in back...

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Cover Cropping

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Irrigation Workshop

Mushroom Cultivation

On-the-road workshop

Small Farm Planning

Tree Fruit Meeting Presentations

Vittorino Novello Italian Varieties Presentations

Farm Advisor Lynn Wunderlich

Christmas Trees

Cost Studies

Grape Day Presentations

Foothill Grape Day is an annual educational event for wine grape growers sponsored and organized by the Central Sierra University of California Cooperative Extension. Foothill Grape Day features presentations by University of California Farm Advisors, Faculty and researchers on the latest information for successful wine grape growing. Growers have the chance to network with speakers during lunch and wine tasting following the program. Click on the links below to view previous Foothill Grape Day agendas and powerpoint presentations.

2016 Foothill Grape Day "Healthy Vines, Fine Wines" Agenda

- [Welcome. Foothill update. How much water do vines really use?](#), Lynn Wunderlich, UCCE Central Sierra Farm Advisor
- [The effect of cultural practices on winegrape composition.](#), Kaan Kurtural, UCCE Viticulture Specialist
- [Grapevine plant pathology: highlights of 33 years of extension research and outreach.](#), Doug Gubler, UCCE Plant Pathology Specialist
- [Red Blotch vector update.](#), Brian Bahder, UC Davis Entomology Post-Doctoral Researcher
- [The effect of red blotch virus on winegrape and wine composition.](#), Anita Oberholster, UCCE Enology Specialist
- [The status of leafroll and red blotch virus in the foothills.](#), Lynn Wunderlich
- [Cooperation is the key to combat grapevine viruses.](#), Neil McRoberts, Dept. of Plant Pathology, UC Davis

2014 Foothill Grape Day "Back to Zin!" Agenda

- [The Powdery Mildew Stations: How do we learn to use the Index?](#)
[2013 Powdery mildew trial results and 2014 update.](#), Lynn Wunderlich, UC Cooperative Extension Central Sierra Farm Advisor & Brianna McGuire, Plant Pathology Graduate Student, UC Davis
- [Developing an agroecosystem approach to noxious weed management in foothill vineyards. Introducing our Calaveras study.](#) Ruby Stahl, USDA, ARS Biological Sciences Technician

cecentralsierra.ucanr.edu/Agriculture/Foothill_Fodder/
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Foothill Fodder

Using the disease triangle and PMI to decide how to start your seasonal mildew program

Hi Foothill Fodder Family! This week temperatures warmed up enough to begin the powdery mildew index in all of our 7 foothill PMI (powdery mildew index) stations-the information is publicly available on our UCIPM website here, with links on my webpages here. What does the index mean and how can we best use this information to begin our powdery mildew treatments? I like to start by thinking of the disease "triangle": the 3 things needed for disease to happen. The key...

[Continue Reading](#)

What makes a "bad" disease year?

Host-green tissue present, variety susceptibility



Pathogen-sources of inoculum, site history, neighbors, resistance

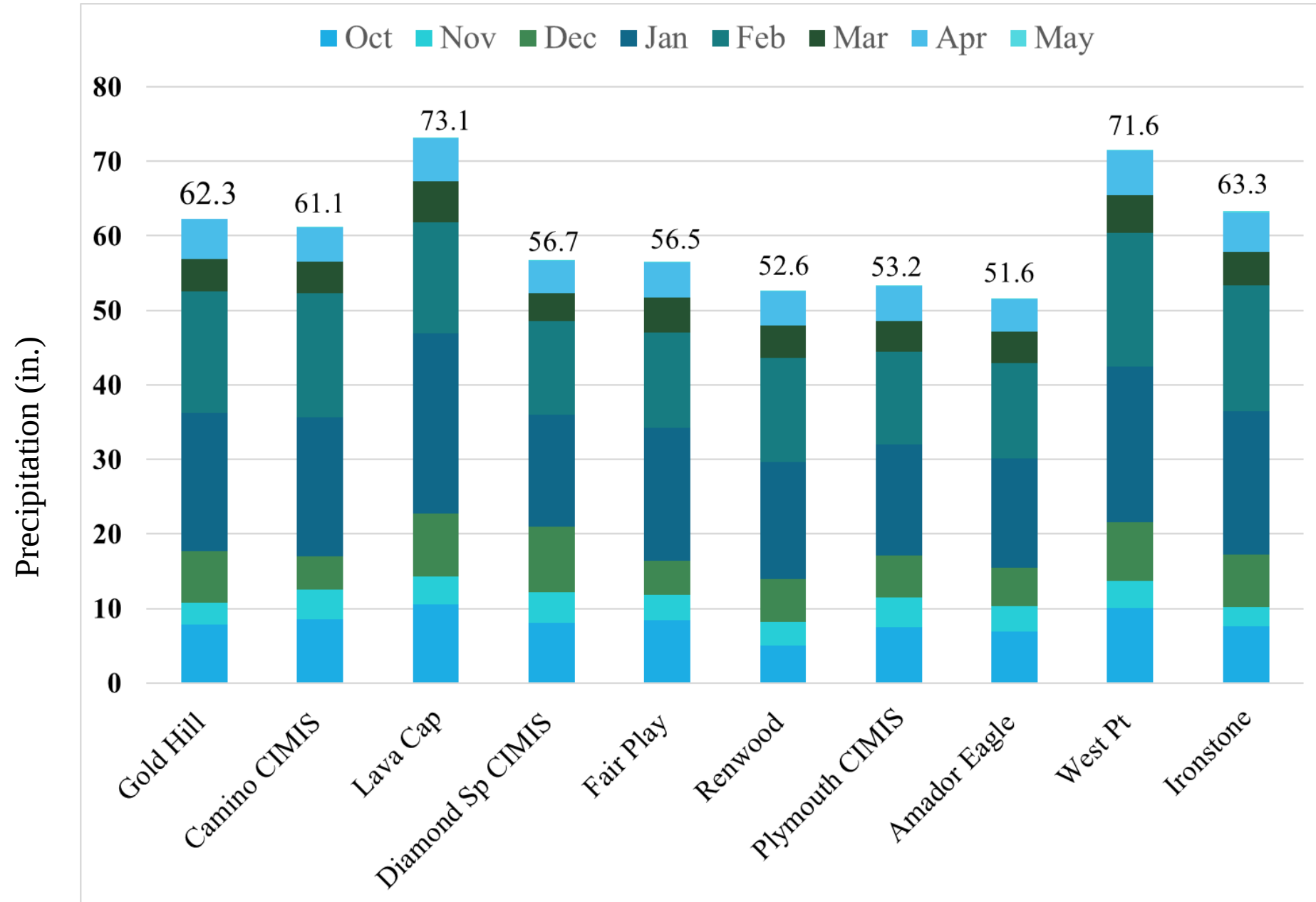
Environmental conditions-that are right for the pathogen to develop. Clumpy, temperature monitoring, manipulation. Effect of air and light.

Kurtural Team Attacks "On the Go" Vineyard Management

Greetings Fodder Folks, In early April I participated in the "National

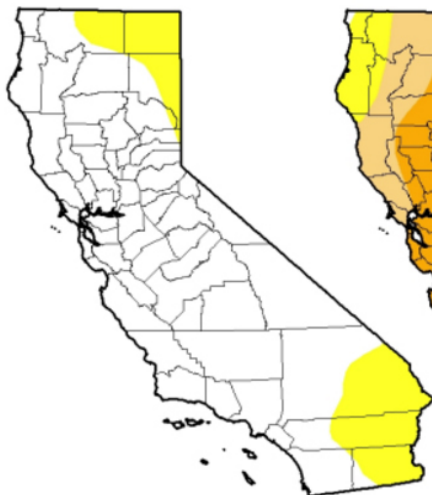
- My talk topics today:
- Precip Stats
- Powdery mildew, the index and station access
Phomopsis too
- Red blotch

Foothill station recorded precipitation, by month, Oct. 1-May 8, 2017.

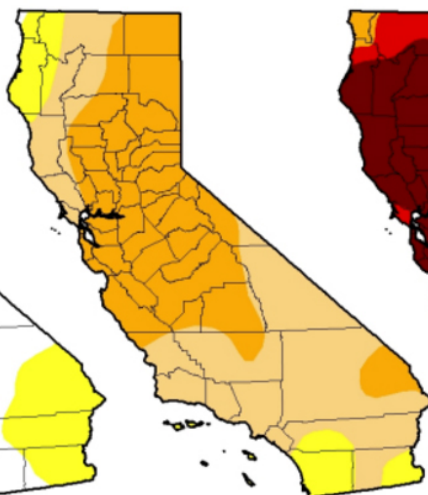


U.S. Drought Monitor California

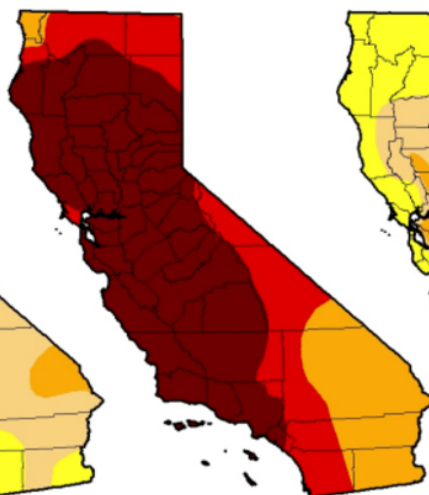
December 6, 2011
(Released Thursday, Dec. 8, 2011)
Valid 7 a.m. EST



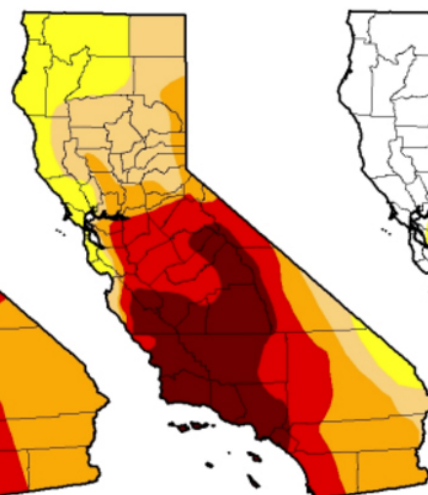
March 13, 2012
(Released Thursday, Mar. 15, 2012)
Valid 7 a.m. EST



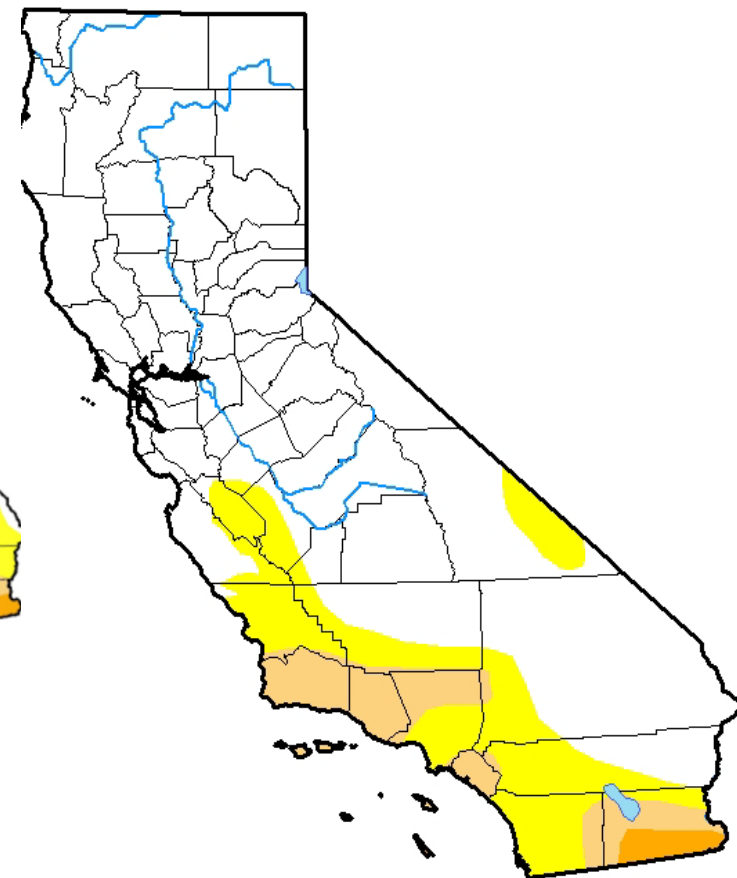
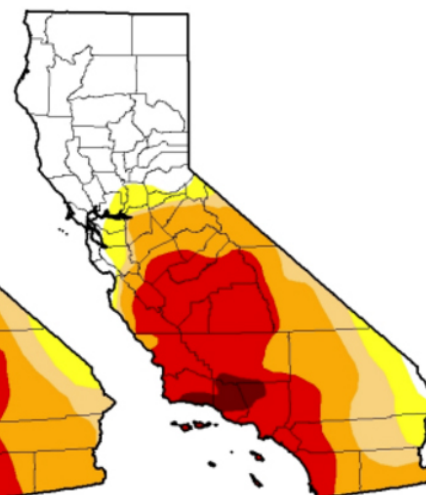
July 29, 2014
(Released Thursday, Jul. 31, 2014)
Valid 8 a.m. EDT



September 27, 2016
(Released Thursday, Sep. 29, 2016)
Valid 8 a.m. EDT



January 10, 2017
(Released Thursday, Jan. 12, 2017)
Valid 7 a.m. EST



Hans Reiner Schultz, Geisenheim University, Germany:

Global change, sustainability and challenges for grape and wine production

- Riesling (1958 ice wine) today difficult to produce because not cold enough
- Climate change:
 - Increase in CO₂ common effect
 - Temperatures increase



➤ **Precipitation patterns differ vastly, and temporally (between and within years)**

- **Regional diversity of effects (drought/flood)**
- Effect on grape characteristics such as accelerated sugar accumulation, phenolic composition and wine quality

We now have 7 Powdery Mildew Stations (PMI) up. Thank you to all of the sponsors and hosts:

**Calaveras Wine Alliance-
CA. Specialty Crop Grants
El Dorado Wine Grape Growers
Fish Friendly Farming-
Sierra Nevada Conservancy**

**Ironstone
Lava Cap
Naylor Vineyards
Oso Loco Vineyards
Saurel Vineyards
Screaming Eagle
Renwood
UCIPM**

Google Earth



MOBILE APPS For YOU!

Tabular Display of Foothill Western Weather Stations

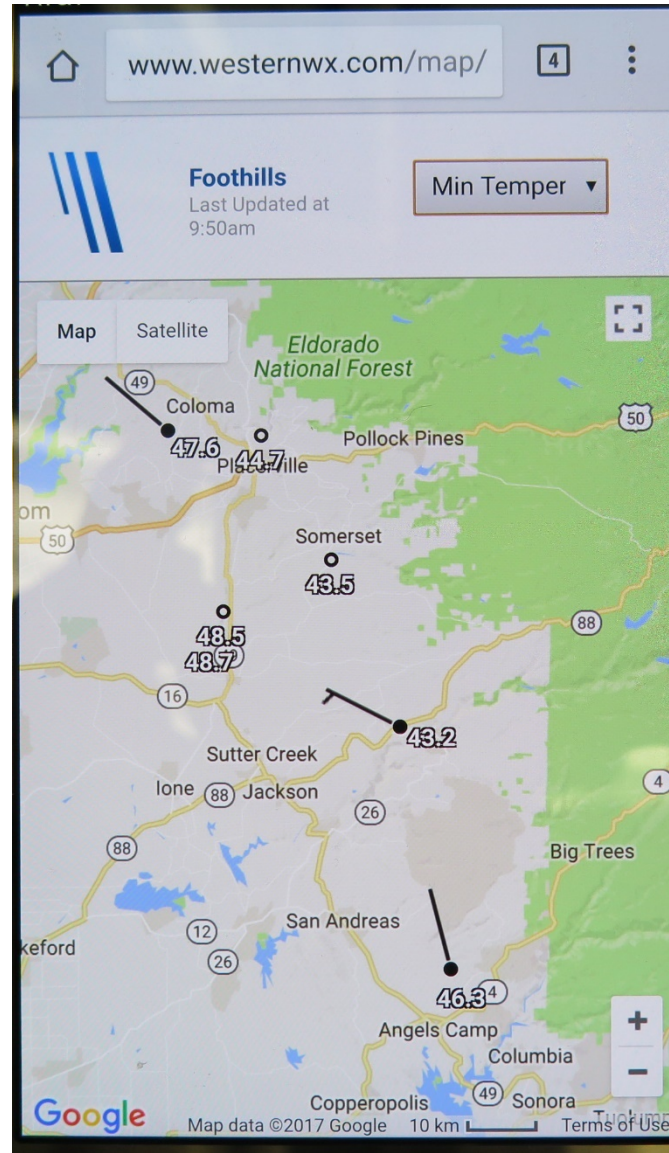
<http://www.westernwx.com/mobile/?group=foothills>



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Google Map Display

<http://www.westernwx.com/map/?g=foothills>



POWDERY MILDEW



07/12/2013

Grape Powdery Mildew Stations

As of Spring 2017, we now have SEVEN grape powdery mildew stations running in the foothills!

View the current index for the foothill stations now at the [UC IPM website Grape Powdery Mildew Risk Assessment Index](#). View directions to get the powdery mildew index online [4 steps to pm online](#).

You can also access the guidelines for grape powdery mildew, including the index table at the [UC IPM Grape Pest Management web page](#).

- For more information on the powdery mildew index view the [Using the Powdery Mildew Index Presentation](#).
- Need more information on management and control? See the [Powdery mildew webpage](#).
- The [Annual Efficacy Bulletin](#) has up-to-date information: Efficacy and timing of fungicides, bactericides, and biologicals for deciduous tree fruit, nut, strawberry and vine crops.
- [Foothill Grape Day presentations](#), including talks on mildew by Doug Gubler and updates by Lynn, are good sources of information.
- [Comparing station data summary](#) includes information on how to start using the index.

Thank you to the following station sponsors:
Calaveras Wine Alliance-Ca. Specialty Crop grant
El Dorado Wine Grape Growers Association
Fish Friendly Farming-Sierra Conservancy grant



Amador E



Amador Re



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UC IPM

Statewide Integrated Pest Management Program

How to Manage Pests

Interactive Tools and Models: Grape Powdery Mildew Risk Assessment Index

The grape powdery mildew risk assessment index (RAI) is useful for determining disease pressure and how often you need to spray to protect the vines. For information on how to use the RAI, see the [pest management guideline](#).

Powdery mildew risk for stations in counties:
[Fresno](#) | [Lake](#) | [Madera](#) | [Amador](#) | [Calaveras](#) | [El Dorado](#) | [San Joaquin](#) |

RAIs are based on actual weather data for stations that take appropriate readings.

County	Active weather stations (Click on station for year-to-date graph/daily data)	RAI* for 05/15/2017	Disease pressure	Pathogen status
Amador (map)	Based on bud break, March 30, in Zinfandel, you may need to adjust for other cultivars that emerge earlier than the indicated date.			
	Amador Eagle-01.P, EAG1, Screaming Eagle	40	intermediate	reproduces every 15 days
	Amador Renwood-01.P, REN1, Renwood Winery	40	intermediate	reproduces every 15 days
Calaveras (map)	Based on bud break, March 30, in Chardonnay, you may need to adjust for other cultivars that emerge earlier than the indicated date.			
	Ironstone-01.P, IRN1, Ironstone	50	intermediate	reproduces every 15 days
	West Point-01.P, WES1, West Point	50	intermediate	reproduces every 15 days
El Dorado (map)	Based on bud break, March 30, in Chardonnay, you may need to adjust for other cultivars that emerge earlier than the indicated date.			
	Fair Play-01.P, FAI1, Fair Play	20	low	is present
	Gold Hill-01.P, GLD1, Gold Hill, Saureel Vineyards	40	intermediate	reproduces every 15 days
	Lava Cap-02.P, LAV2, Lava Cap	50	intermediate	reproduces every 15 days

Mobile-friendly view				
County	Active weather stations (Click on station for year-to-date graph/daily data)	RAI* for 05/16/2017	Disease pressure	Pathogen status
Amador (map)	Based on bud break, March 30, in Zinfandel, you may need to adjust for other cultivars that emerge earlier than the indicated date.			
	Amador Eagle-01.P EAG1, Screaming Eagle	30	intermediate	reproduce every 15 days
	Amador Renwood-01.P REN1, Renwood Winery	30	intermediate	reproduce every 15 days
Veritas (map)	Based on bud break, March 30, in Chardonnay, you may need to adjust for other cultivars that emerge earlier than the indicated date.			
	Ironstone-01.P IRN1, Ironstone	40	intermediate	reproduce every 15 days
	West Point-01.P WES1, West Point	40	intermediate	reproduce every 15 days
Prado (map)	Based on bud break, March 30, in Chardonnay, you may need to adjust for other cultivars that emerge earlier than the indicated date.			
	Fair Play-01.P FAI1			

3 ways the PMI stations can help save a spray* (\$ \$):

- First spray of the season *delayed*
- Spray *intervals lengthened* (so fewer sprays per season)
- *High temperature* periods drop PMI

*“clean” blocks only, not susceptible varieties



Powdery mildew (*Erysiphe necator*) disease cycle

Overwintering spores (ascospores)

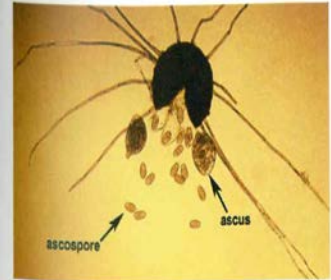


Figure 21.13 Chasmothecia showing asci and ascospores. Photo: W. D. Gubler.

In-season spores (conidia)

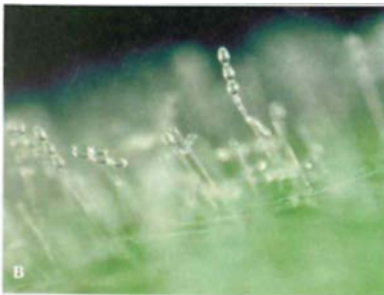
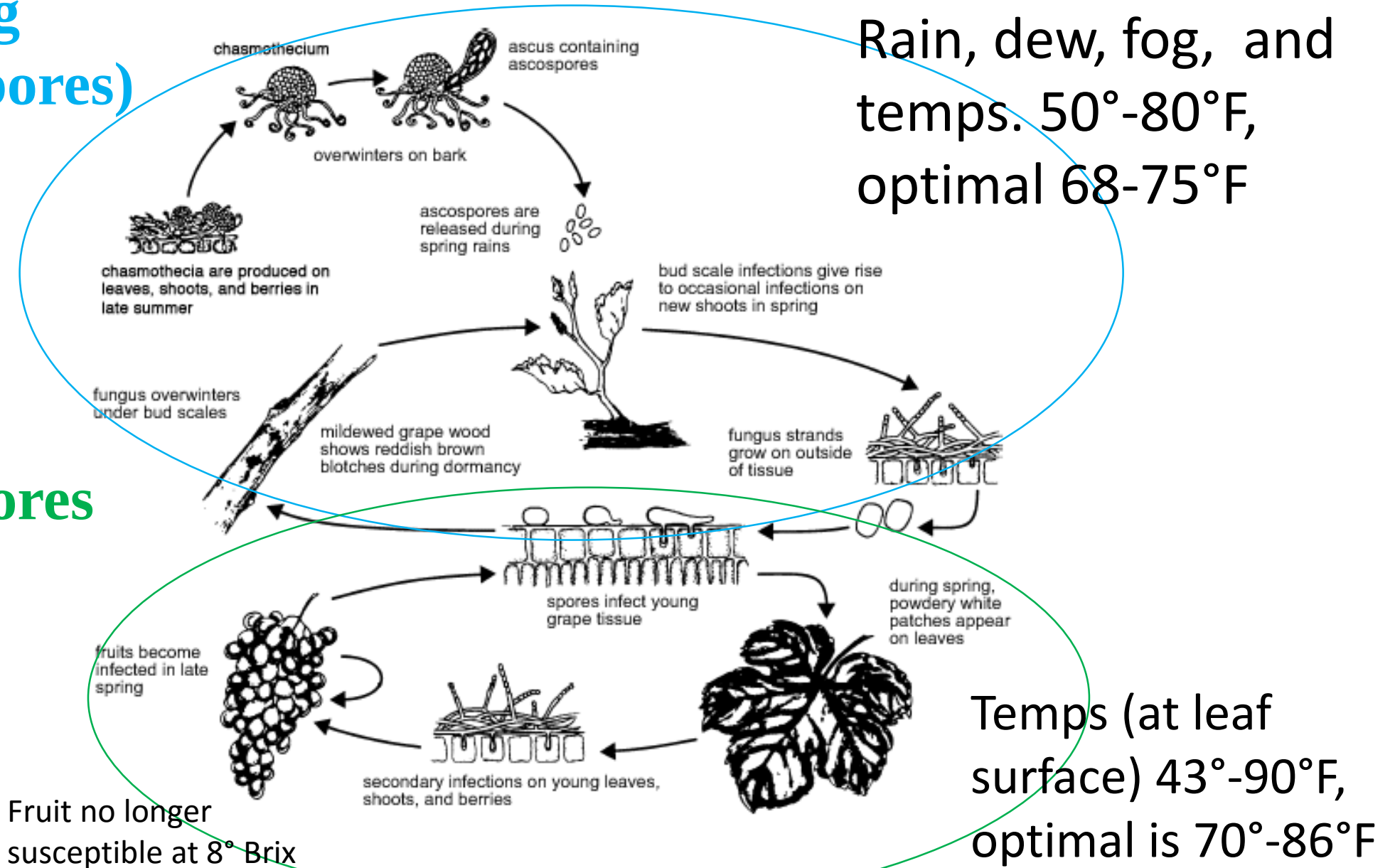


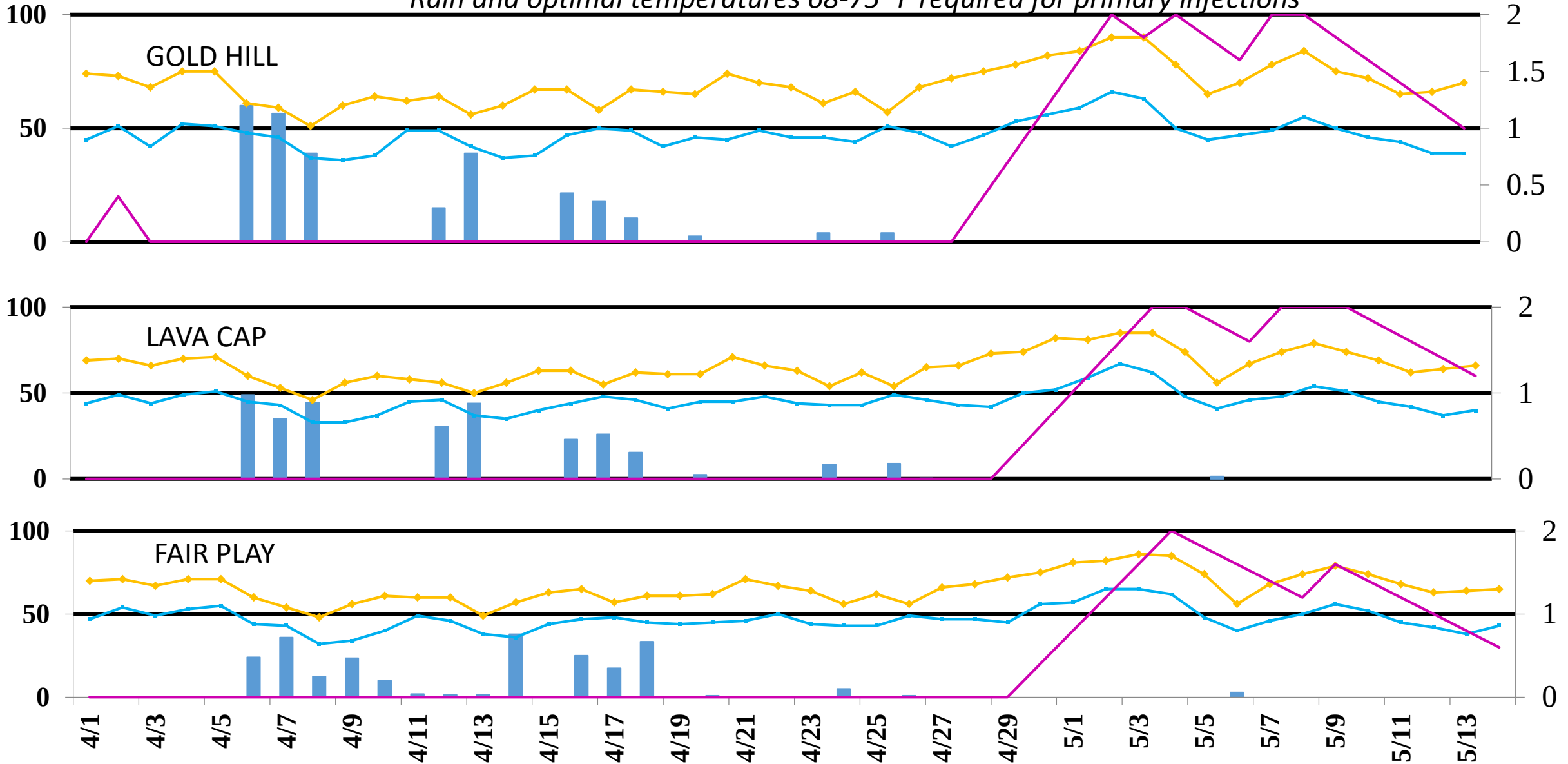
Figure 21.3 Mildew spores are formed on short stalks (A) and are borne in chains of three or four (B). Photos: J. K. Clark.



El Dorado PMI Station Comparison: Spring 2017

BUDBREAK set at March 31

Precip Air max Air min PMI
Rain and optimal temperatures 68-75° F required for primary infections



2014 Powdery Mildew Trial : Distacio Ranch-Amador Eagle.

Pat Rohan, Collaborator.

Date	Grower Std. 1	Grower Std. 2	PMI	Time post-treat	Scouted (645 leaves)	Spore trap
3/24/2014	BUDBREAK	BUDBREAK	0			
3/31/2014			0			2 out
4/7/2014			20			changed
4/21/14			90		No mildew found	changed
4/22/14	5 lb sulfur 2 2/3 pint Champ 4 oz/50 gal Nu film	5 lb sulfur 2 2/3 pint Champ 4 oz/50 gal Nu film	80			
4/29/14			40	1 week later		
4/30/14			60		No mildew found	
5/1/14			50			changed
5/6/14	4 oz. Sovran 5 lb. Microthiol 4 oz. Nu film	4 oz. Rally 5 lb. Microthiol 4 oz Nu film	30	2 week interval		
5/8/14			10			changed
5/13/14			30	1 week later	No mildew found	
5/20/14			0	2 weeks later		
5/27/14			30	3 weeks later	No mildew found	NO SPORES TRAPPED YET
6/5/14	4 oz. Rally 5 lb. Microthiol 4 oz Nu film	4 oz. Sovran 5 lb. Microthiol 4 oz. Nu film	90	30 days later		



Mildew in untreated 6/11; 1% infection

How the mildew index accumulates points.

Once wetness and initial ascospore infection occurs, rest of the season is conidial infection.

Based on temperature (canopy), and to a lesser degree RH. Scale is 0-100.

- 6 or more **continuous** hours between 70°F-85°F:

Add 20 points

- Less than 6 continuous hours between 70°F-85°F:

Subtract 10 points

- If 95°F or higher for 15 minutes or more:

Subtract 10 points

SPRAY INTERVALS BASED ON DISEASE PRESSURE USING THE POWDERY MILDEW INDEX

Index	Disease pressure	Pathogen status	Suggested spray schedule			
			Biologicals and SARs (i.e. Serenade, Messenger, etc.)	Sulfur	Sterol-inhibitors (i.e. Rally, etc.)	Strobilurins (i.e. Pristine, etc.)
0-30	low	present	7- to 14-day interval	14- to 21-day interval	21-day interval or label interval	21-day interval or label interval
30-50	intermediate	reproduces every 15 days	7-day interval	10- to 17-day interval	21-day interval	21-day interval
60 or above	high	reproduces every 5 days	use not recommended	7-day interval	10- to 14-day interval	14-day interval

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How to Manage Pests

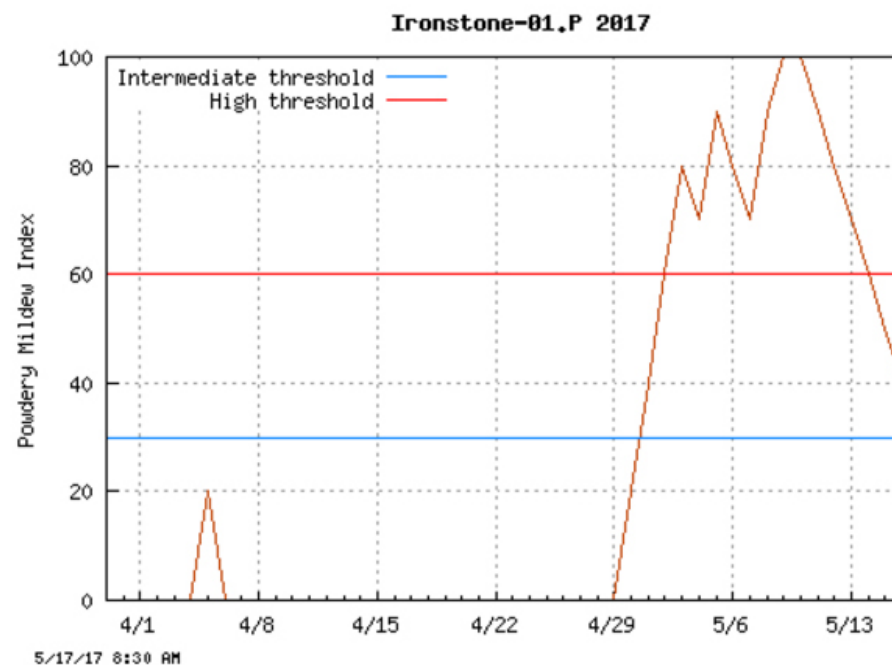
Interactive Tools and Models: Grape Powdery Mildew Risk Assessment Index

RAI report for Ironstone-01.P (IRN1, Ironstone)

[| Station description](#) | Previous: [Amador_Renwood-01.P](#) | Next: [West_Point-01.P](#) |

Time period: March 30, 2017, to May 16, 2017,
retrieved on May 17, 2017.

Choose year

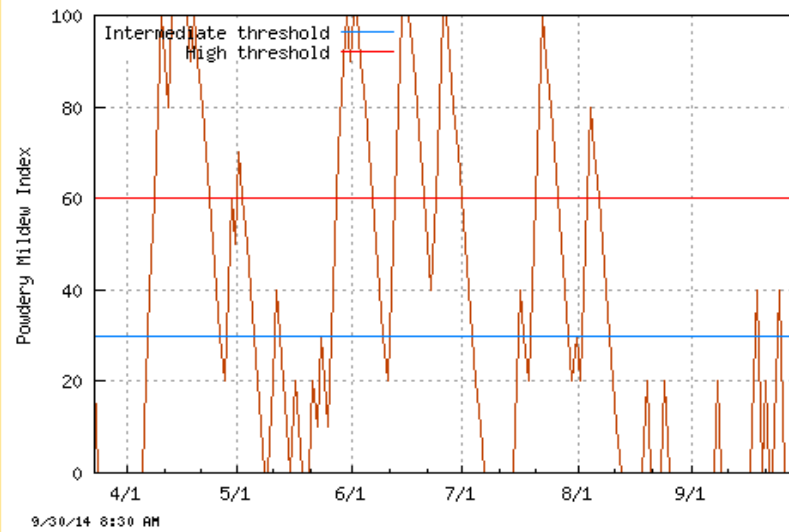


Jump to last day in: [April](#), [March](#)

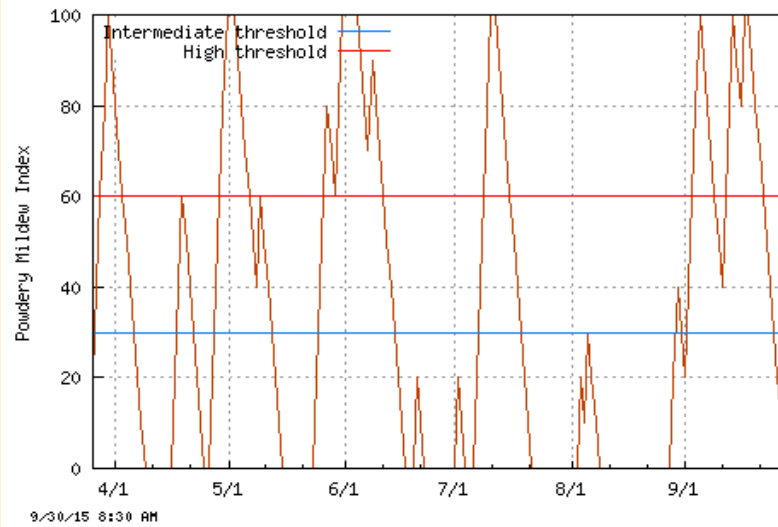
Date	RAI	Disease pressure	Pathogen status	Hours 70° ≤ Temp ≤ 85°	Hours Temp > 95°	Notes
03/30/2017	0	n/a	no infection	0.0	0.00	
03/31/2017	0	n/a	no infection	0.1	0.00	

PMI 2014-2016: Amador Eagle and Renwood

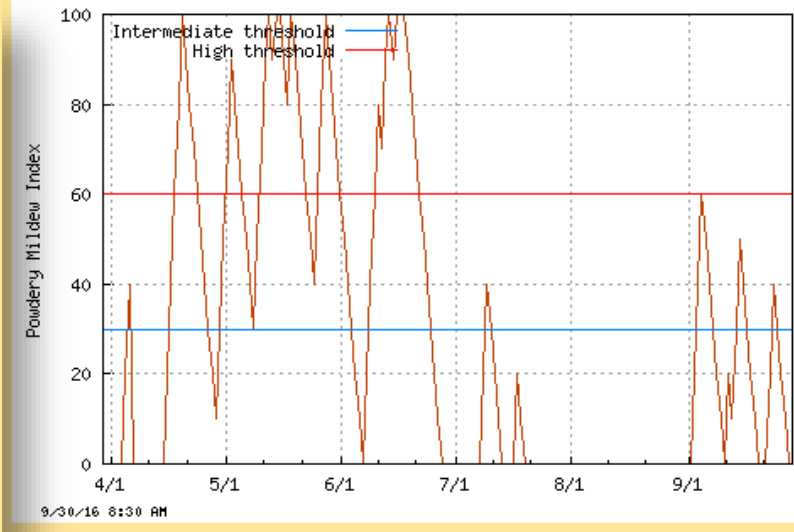
Amador_Eagle-01.P 2014



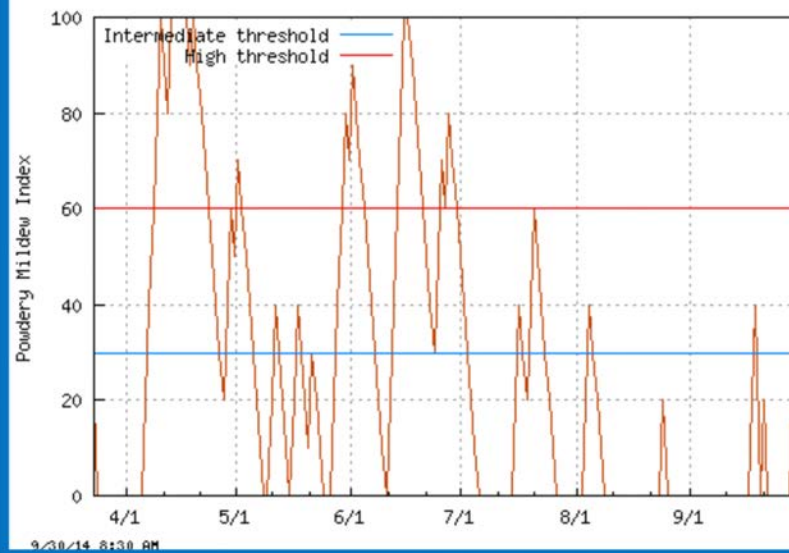
Amador_Eagle-01.P 2015



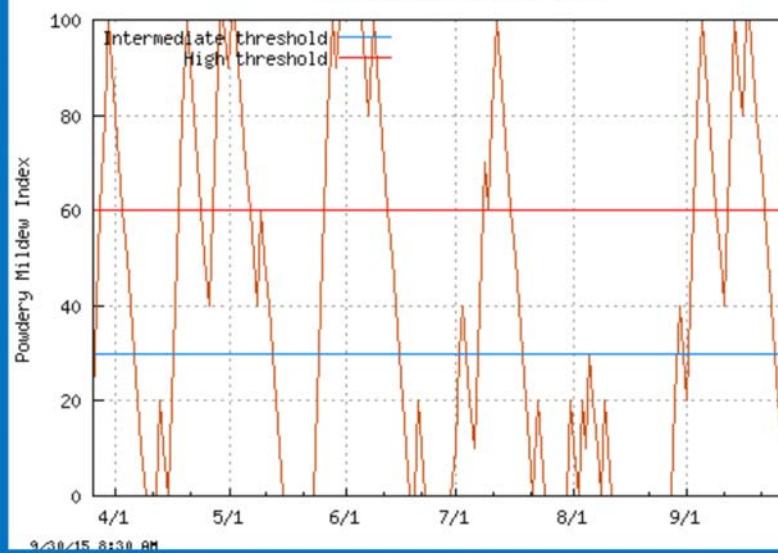
Amador_Eagle-01.P 2016



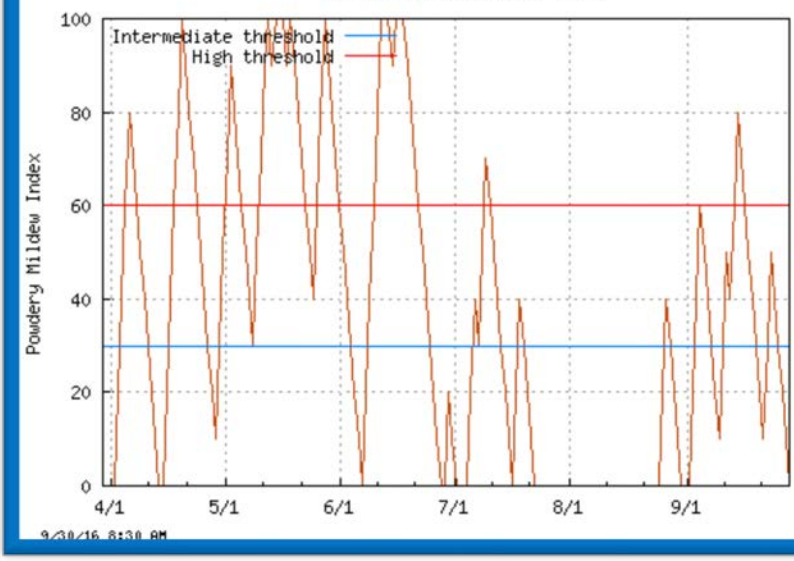
Amador_Renwood-01.P 2014



Amador_Renwood-01.P 2015

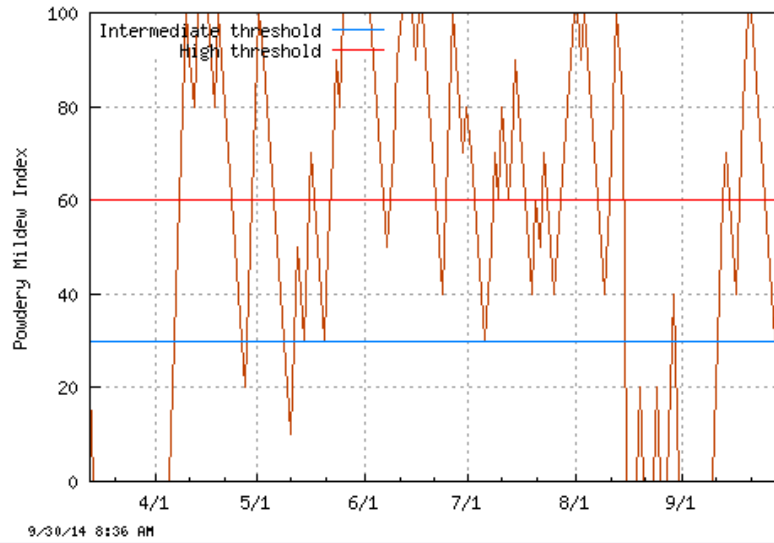


Amador_Renwood-01.P 2016

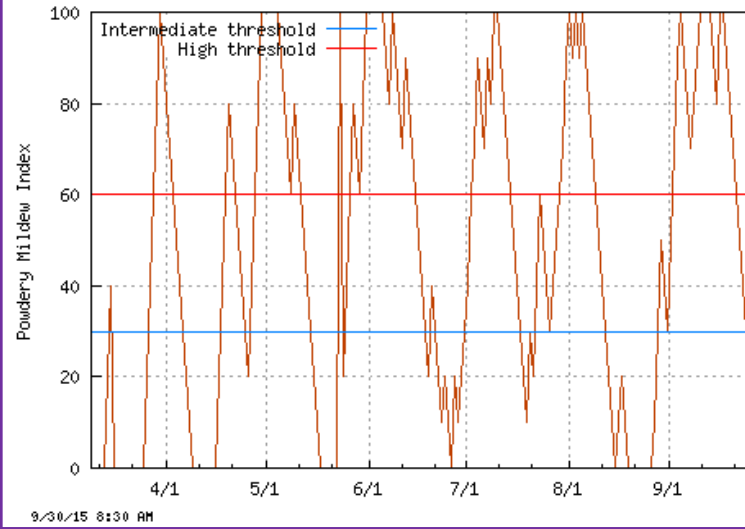


PMI 2014-2016: Lava Cap and Fair Play

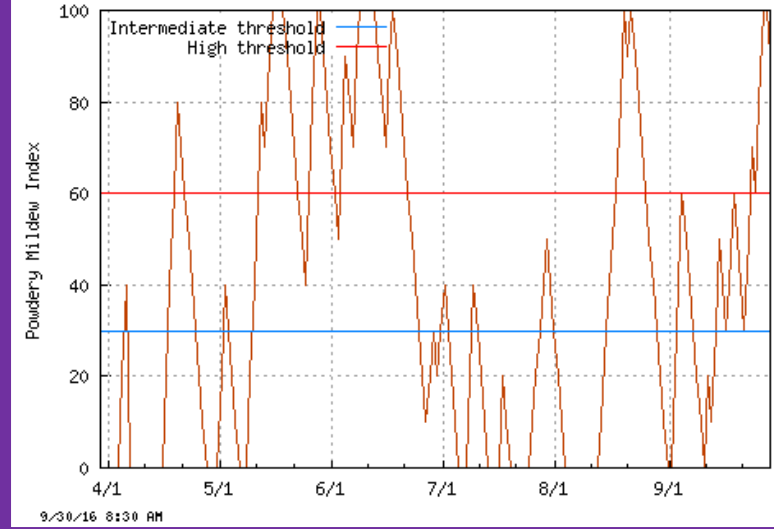
Lava_Cap-02.P 2014



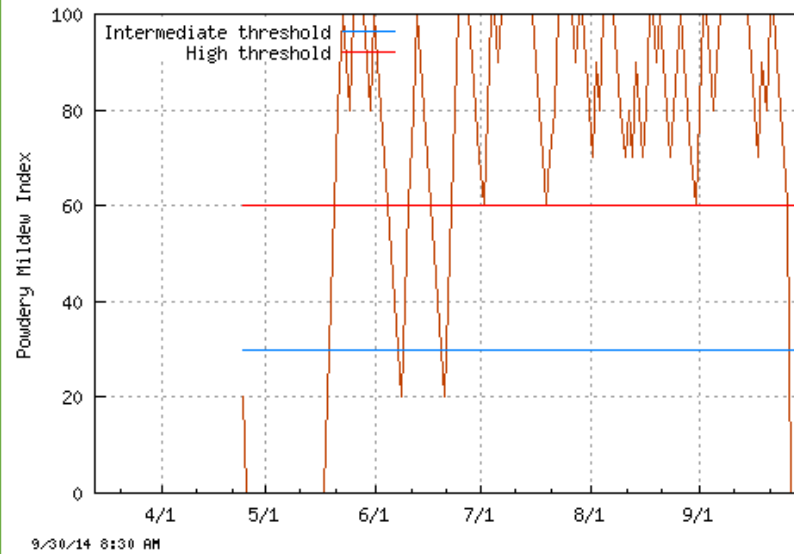
Lava_Cap-02.P 2015



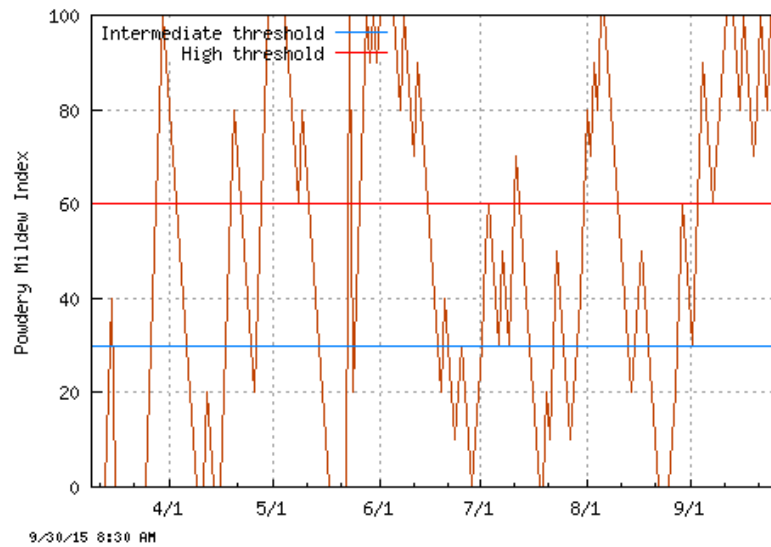
Lava_Cap-02.P 2016



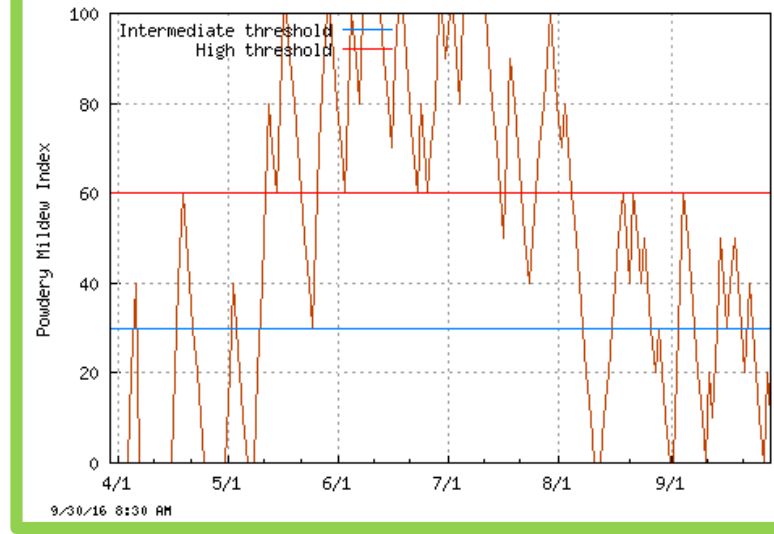
Fair_Play-01.P 2014



Fair_Play-01.P 2015

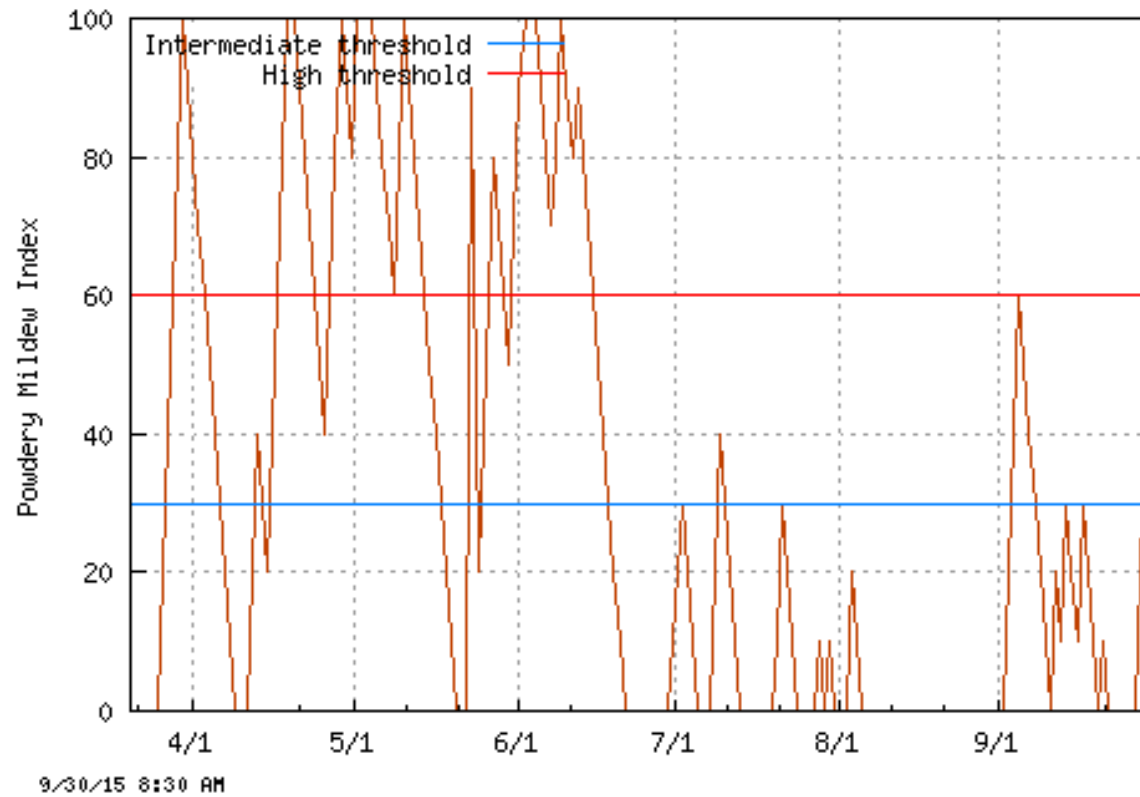


Fair_Play-01.P 2016

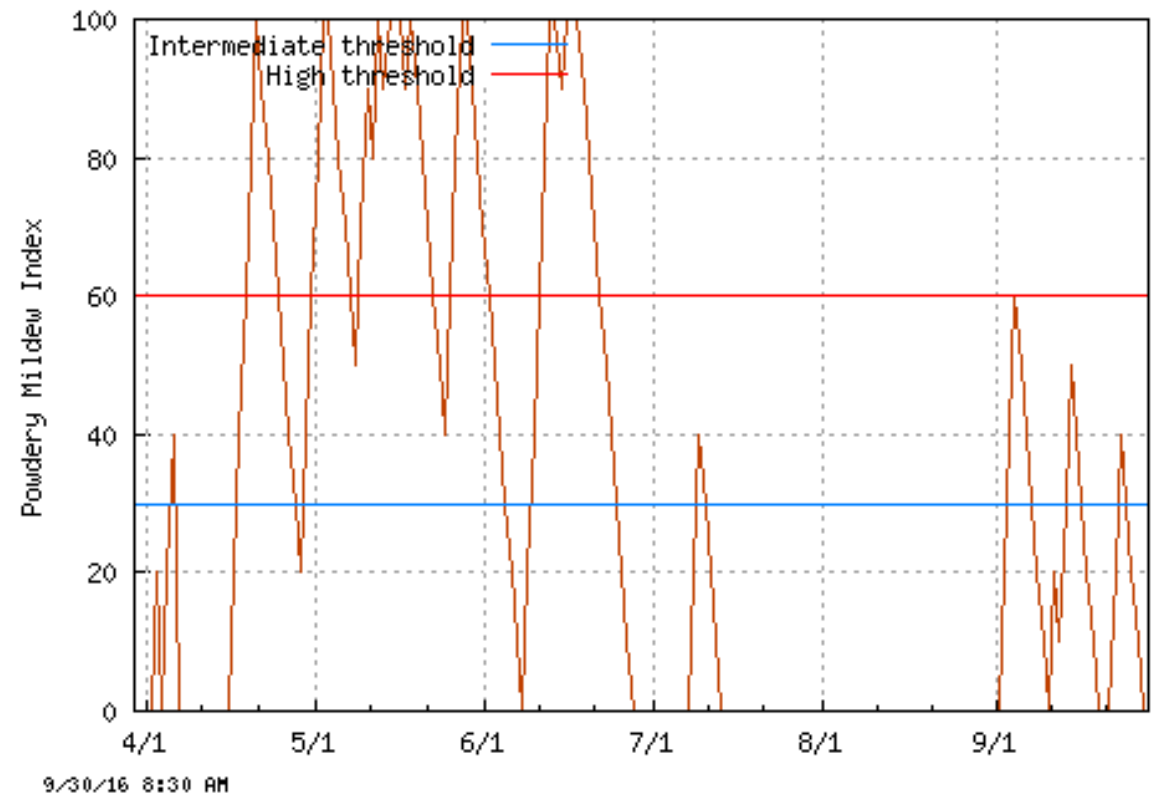


PMI 2015-2016: Ironstone

Ironstone-01.P 2015



Ironstone-01.P 2016





06/16/2016



05/02/2017

**Rust colored patches
on canes indicate
previous mildew**

**Black bumps and
bleached areas are
likely Phomopsis**

05/02/2017



**Phomopsis
occurs in wet,
cool springs**

05/08/2014



Phomopsis can deform leaves too-don't confuse this with powdery mildew!

Photo credit: [Virginia Grape Disease Updates](#)

Grape Disease Management Tips from Mizuho Nita (Grape Pathologist at Virginia Tech)

Phomopsis control:

Sanitation: burn prunings

Early control during wet springs:

Dormant lime sulfur

Early sprays of Sovran, Abound (group 11)

GRAPE NOTES

Information for grape growers in San Luis Obispo and Santa Barbara Counties



Downy Mildew appearing in Central Coast vineyards



Author: Mark Battany

Published on: May 11, 2017

The warm and wet spring following the earlier wet winter has created perfect conditions for a very uncommon appearance of Downy Mildew in vineyards of both San Luis Obispo and Santa Barbara Counties. Downy Mildew is a very aggressive disease that has the potential to cause large amounts of damage if not controlled.

The weather forecast for possible light precipitation over the next several days will create conditions conducive to rapid spread of infections. Growers in the coastal areas should pay extra attention to scouting for this disease and treat it accordingly if found. Infections have also been observed in other areas including Paso Robles, thus growers throughout the Central Coast should be on the lookout for this...

[Read More](#)



Figure 1. Downy Mildew infections create yellow patches on the upper side of the leaves.

ERINEUM MITE



Grapevine Red
Blotch
Associated
Virus-identified
in 2012

10/16/2013





08/18/2015



08/31/2015

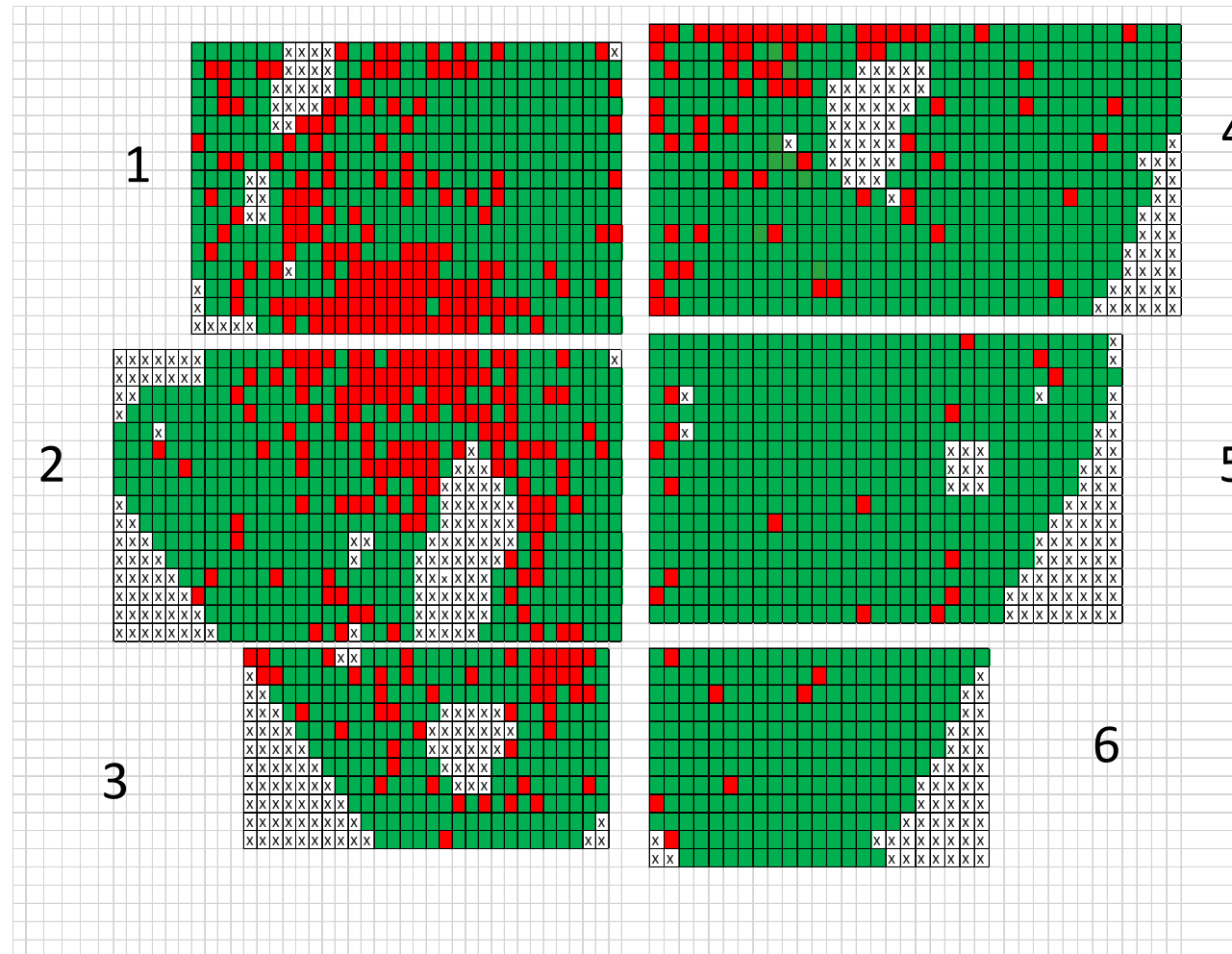
INVESTIGATING THE SPREAD AND EFFECT OF GRAPEVINE RED BLOTCH-ASSOCIATED VIRUS IN CALIFORNIA-GROWN ZINFANDEL

Lynn R. WUNDERLICH¹, Michael L. BOLLINGER², Meredith SHAFFER³, Cindy R. PRETO², Brian BAHDER⁴, Frank G. ZALOM² and Mysore SUDARSHANA³



Amador Red Blotch Study Site: 2015 map. Own rooted Zinfandel-dry farmed.
Blocks 4, 5 and 6 were planted in 1987 with cuttings from a 1923 block located about ¼ N.

Blocks 1, 2 and 3 were planted in 1998 with cuttings from blocks 4-6.
Grower first started noticing symptoms in 2009.



FOOTHILL FODDER

Food for thought (Ag news) from a U.C. Cooperative Extension Farm Advisor in the Sierra foothills.



Bahder discovers Red Blotch vector!



Author: Lynn Wunderlich

Published on: February 27, 2016



The 3 cornered alfalfa treehopper has been shown to transmit Red Blotch virus in greenhouse tests.

Brian Bahder, UC Davis Entomology post-doc, and [Frank Zalom](#), UC Davis Entomology Professor, made an exciting revelation during the Feb. 26 Red Blotch Pest Alert [webinar](#): they have confirmed the three-cornered alfalfa treehopper (*Spissistilus festinus*) as able to transmit [Red Blotch Associated Virus](#) (RBAV) to grapevines in greenhouse tests. **Their discovery is the first confirmation of a vector for RBAV.**

Bahder and Zalom have been working as a team with [Mysore "Sudhi" Sudarshana](#) (USDA virologist) and several farm advisors and UC researchers, including [Rhonda Smith](#) (UCCE Sonoma), Mike Anderson (Oakville station) and myself, to monitor and map vineyards where patterns of

red blotch spread are evident. Bahder narrowed the candidates of suspect vectors to those insects he found in common present in vineyards with pattern of red blotch spread from locations across the state. He then conducted arduous greenhouse tests consisting of rearing suspect vectors in completely virus free cages; placing them on RBAV infected vines, and moving them, a single insect per cage, onto virus-free vines to allow them to feed and possibly infect. He then used a highly sensitive PCR test, which allows detection of very small amounts of virus, to look for virus periodically in the vines after insect feeding. He found the virus in his greenhouse controlled vines that the three cornered alfalfa leafhopper had fed on **4 months after initial feeding** (and transmission) took place.

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- Nebbiolo: the Wine of Kings and the King of Wine!

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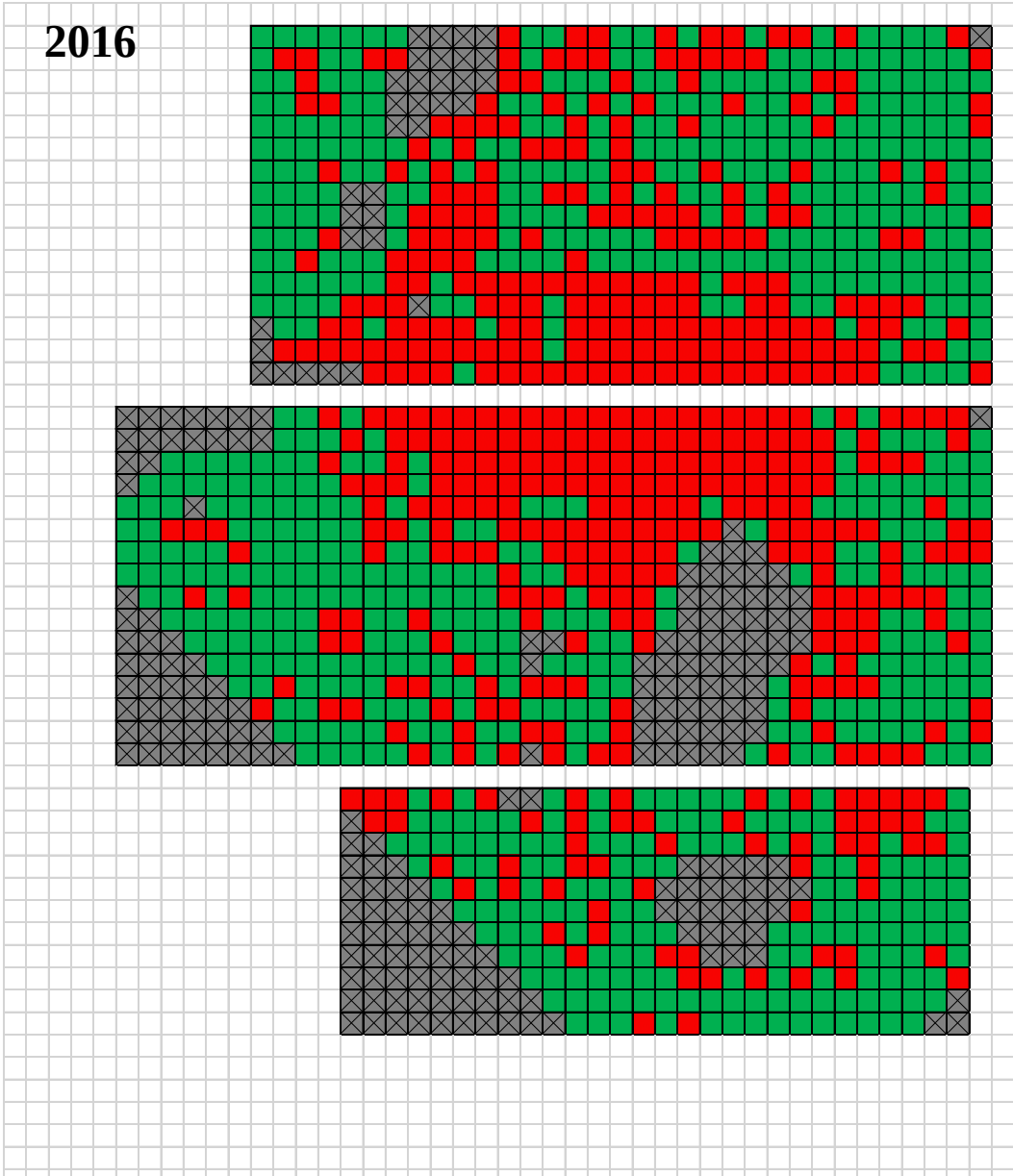
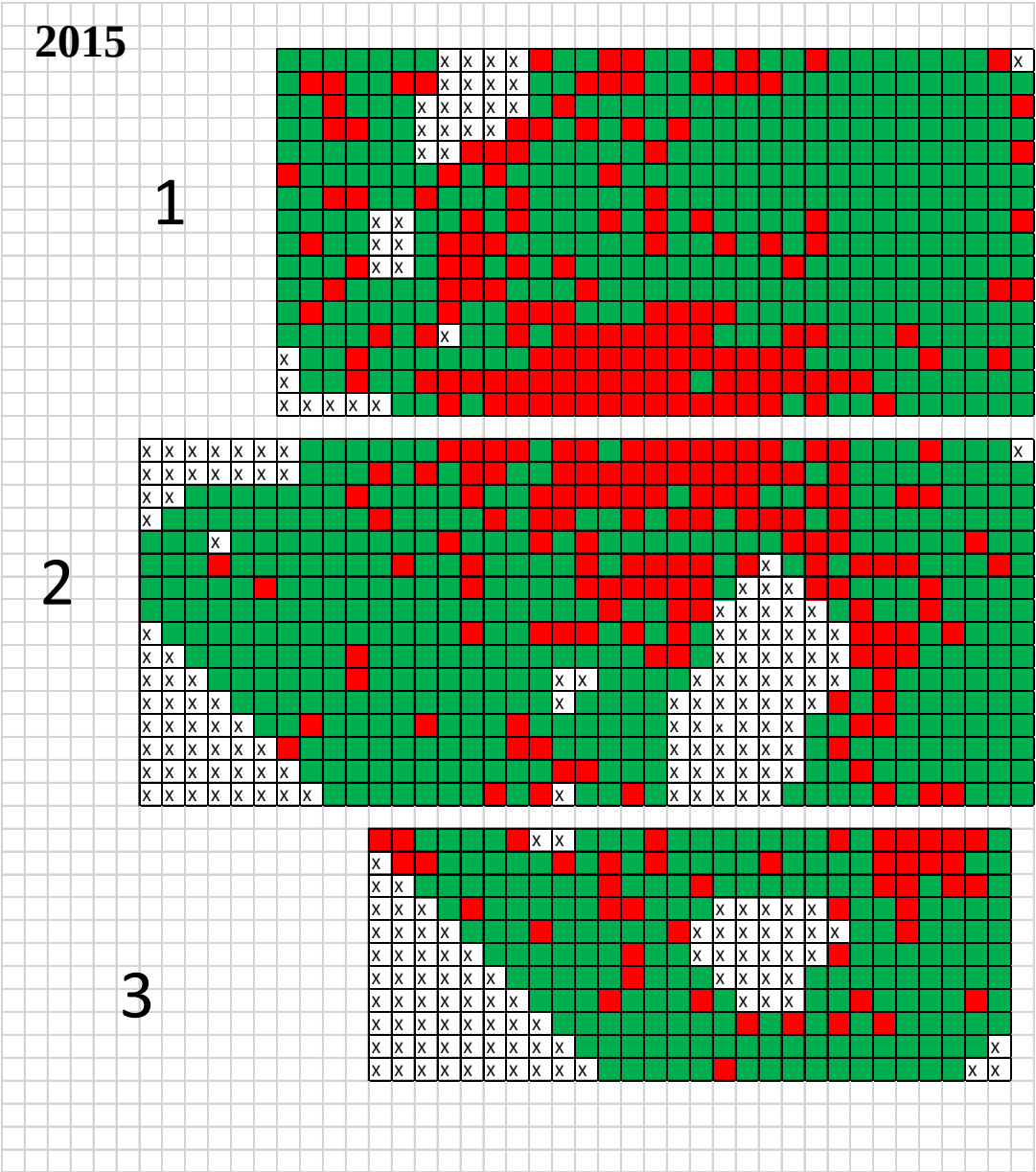
- Doug, thank you. As you are my...
- Lynn, this is a fantastic...

Archives

[All Archives](#)

- May 2017
- April 2017
- February 2017
- December 2016
- August 2016

Overall red blotch infection in 2015 was rated 24.7%; and increases observed visually in 2016 were 18.2%, 19.9%, and 7.1% for blocks 1, 2 and 3, respectively.

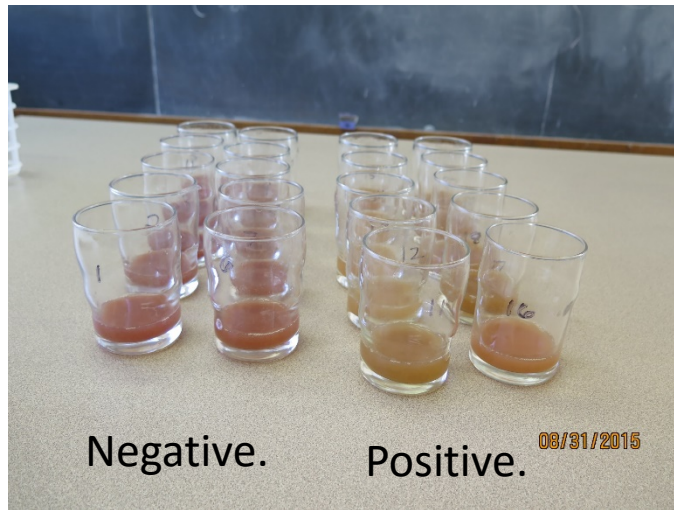


2015 And 2016 Red Blotch Juice Samples

Dry farmed Zinfandel.

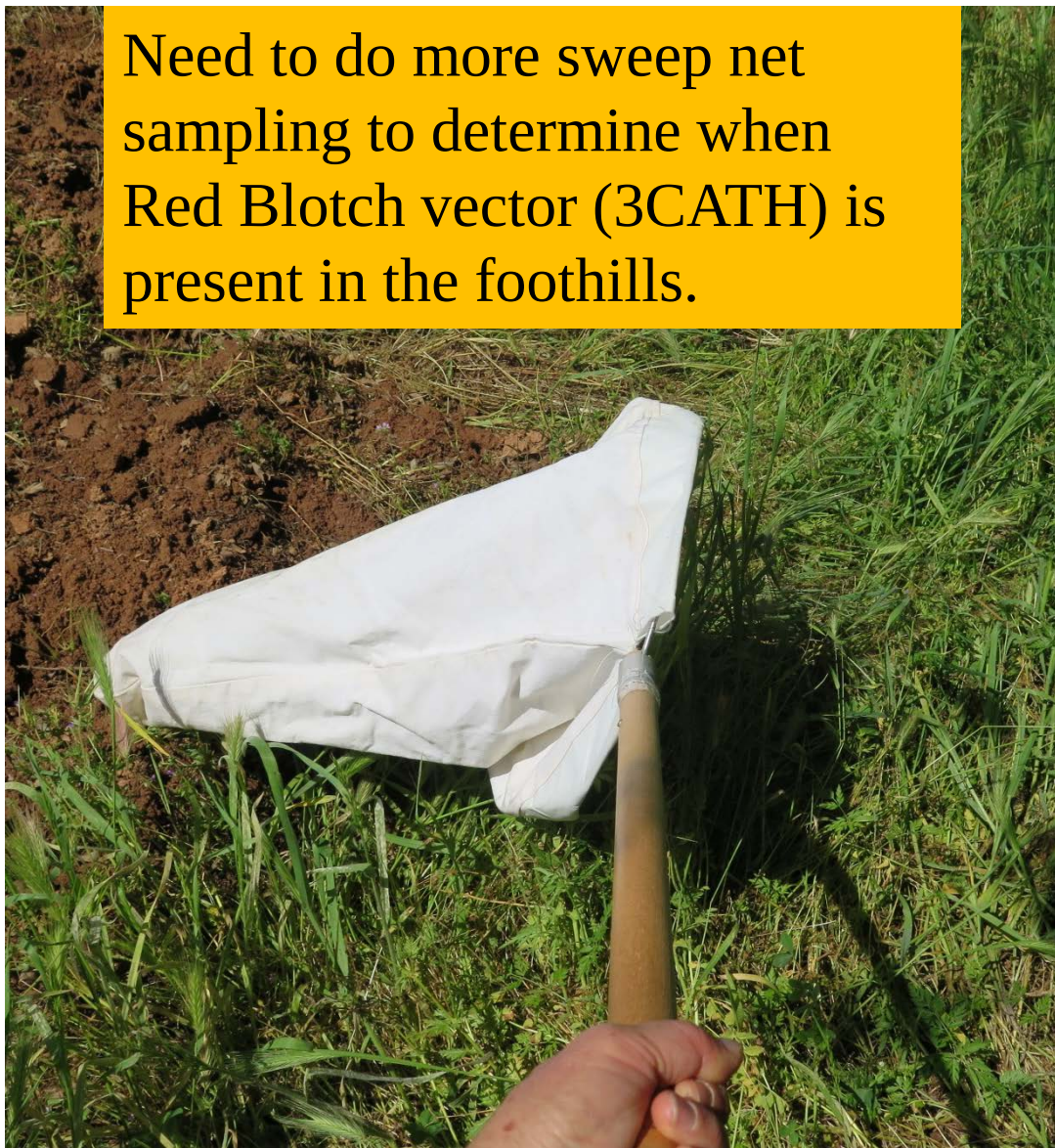
L.R. Wunderlich

(unpublished data).



	Ave. Brix (SE) N=10		Ave.pH N=10		Ave. Berry weight (g). (SE) N=30	
	2015	2016	2015	2016	2015	2016
Pos	21.75 (0.6)	22.73 (0.7)	3.28	3.44	56.0 (2.1)	68.6 (2.0)
Neg	29.5 (0.5)	27.07 (0.3)	3.37	3.5	44.4 (1.1)	64.29 (2.0)

Need to do more sweep net sampling to determine when Red Blotch vector (3CATH) is present in the foothills.



NOT the Red Blotch vector!



RED
BLOTCH –
PCR
Confirmed;
P deficiency

10/04/2016

MAY-JUNE 1983
Volume 37 Numbers 5 and 6

California Agriculture



*New findings on phosphorus
deficiency in vineyards*

UPCOMING EVENTS:

Friday, June 2: Calaveras Vineyard Tour with Glenn McGourty

<http://calaveraswines.org/annual-vineyard-tour-bbq/>

Thursday, June 8: Amador Winegrowers Tailgate meeting. Location TBD.

Sunday, June 25: El Dorado Wine Grape Growers Association First Annual Fundraiser And Viticulture Fair, Pilot Hill. <http://www.eldoradograpes.com/>

UCDavis Enology and Viticulture “On the Road”: coming this Fall.





Thank you!