



Welcome to Foothill Grape Day 2010!





Special Thanks To

El Dorado Grape Growers Association

Greg Biaochohi

Sheila Bush

Bob Clark

Don Lahey

Doug Leisz

Margaret and Bill Leitz

Jim Sauber

Bob Witters

Sogno Winery

Donating wineries, Bagatelle Catering, Dedrick's Cheese, Beyond Baked

UCCE staff: **Robin Cleveland***, Nancy Starr**

UC County Director Scott Oneto

All of our speakers!

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*Making a Difference
for California*

Please RECYCLE the plastic water bottles (water found in the big cooler).
No recycling in trash please!!



Use the pen to write
your name on *your*
bottle!

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For your calendar

- AWGGA “Farming for Excellence” Series begins with Stan Grant, Progressive Viticulture, speaking about a pro-active nutritional management program.

Next Thursday, June 10 @ 3 p.m. Shenandoah Schoolhouse.

- Wednesday, August 4: Doug Gubler’s annual Powdery Mildew field day @ Herzog Ranch in Clarksburg. 95 materials tested. Free and Lunch included. Must RSVP.

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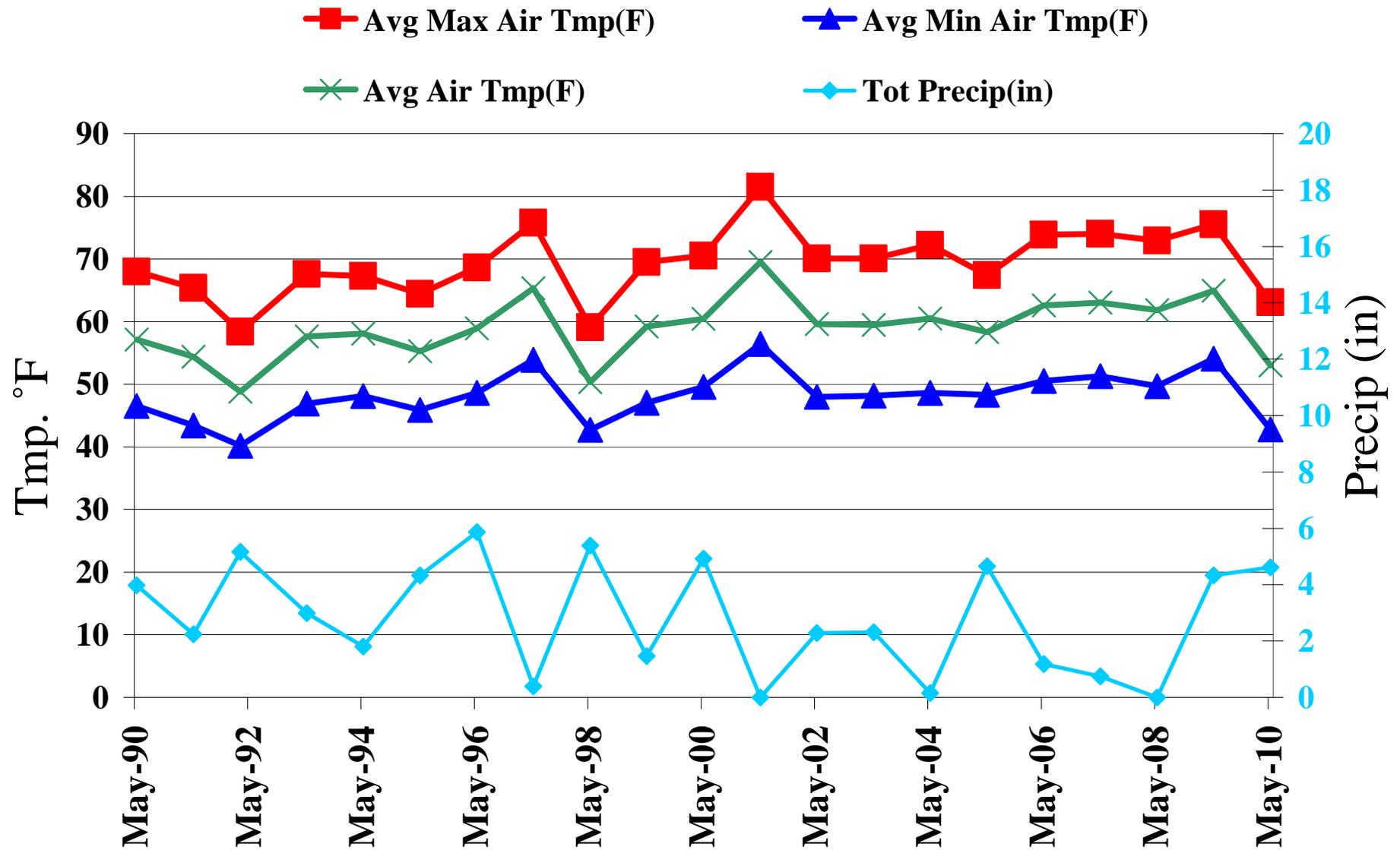
What's happening locally: Weather

Annual Precipitation Totals 2003-May2010

Camino CIMIS station data

Month	03-04 Inches	04-05 Inches	05-06 Inches	06-07 Inches	07-08 Inches	08-09 Inches	09-10 Inches
July	0.00	0.00	0.00	0.00	0.00	0.00	0.00
August	0.35	0.00	0.04	0.00	0.00	0.00	0.00
September	0.04	0.83	0.63	0.00	0.71	0.00	0.2
October	0.04	6.61	0.75	0.67	2.20	0.87	2.28
November	0.83	4.49	2.72	3.43	1.26	1.57	1.73
December	8.86	0.00	20.63	6.73	6.50	4.84	5.35
January	4.21	0.28	7.20	2.09	8.46	4.09	8.19
February	8.58	0.59	5.31	9.92	4.53	9.09	5.47
March	1.77	1.03	14.21	1.77	1.02	5.79	4.41
April	0.55	1.23	11.61	3.15	0.31	2.13	7.40
May	0.16	4.65	1.18	0.75	0.00	4.33	4.61
June	0.04	2.28	0.00	0.04	0.00	0.04	
Totals	25.43	21.99	64.28	28.55	24.99	32.75	39.64
Average	3.91	3.38	9.89	4.39	3.84	5.04	

Average Max Air Temp, Average Min Air Temp, Average Air Temp (all °F) and Total Precipitation (in.) for the month of May 1990-2010.
Camino CIMIS station data.



Foothill Grape Day 2010:
Biology and management of Gill's mealybug,
***Ferrisia gilli* (Gullan)**



Lynn Wunderlich*, Monica Cooper, and Kent Daane
*UC Cooperative Extension-El Dorado and Amador Counties,
UC Cooperative Extension-Napa County
UC Berkeley/Kearney Ag. Center

funded by the American Vineyard Foundation and Viticulture Consortium West

Gill's mealybug, *Ferrisia gilli*, a pest of pistachio, almond, and... grapes.



Gill's mealybug on pistachio

1990s: first noticed; confused with striped mealybug, *F. virgata*.

2003: 200 acres in Tulare;

Gullan et.al. publish description.

2005: 3,000 acres across 8 counties;

2006: 11 counties



Gill's mealybug on grapes

2003: first record in EDC backyard grapes;

2004: commercial vineyard, eradication attempted.

2007: at least 12 vineyards (180 acres)

2009: at least 300 acres

Currently a “B” rated pest.

Gill's mealybug found on
Escalonia landscape plants
in EDH





Adult female Gill's mealybug, *Ferrisia gilli*, bearing live crawlers.



Adult male Gill's mealybug



Grape mealybug, *Pseudococcus maritimus*.



Grape mealybug egg sac.



Vine mealybug, *Planococcus ficus*.





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RESEARCH ARTICLE

California mealybugs can spread grapevine leafroll disease

Deborah A. Golino
Susan T. Sim
Raymond Gill
Adib Rowhani

UC Davis's Foundation Plant Materials Service (FPMS) maintains the disease-tested, professionally identified collection of grape scion and rootstock varieties, which is the core of the California Grapevine Registration and Certification Program. In 1992, newly developed serological testing techniques revealed the presence of grapevine





Grapevine Leafroll Associated Viruses and their known vectors

GLRaV-1: Grape mealybug, soft scale

**GLRaV-2

**GLRaV-2 RG

**GLRaV-3: Longtailed mealybug, Citrus mealybug, Obscure mealybug, Grape mealybug, soft scale

GLRaV-4

**GLRaV-5: Longtailed mealybug, Grape Mealybug

GLRaV-6

GLRaV-7

GLRaV-9

** confirmed present in the foothills

We still do not know if Gill's mealybug transmits LR, but seems likely.

Gill's mealybug studies on wine grapes in El Dorado County, CA. (2008-present).

1. Seasonal phenology.

When is the crawler stage present and most susceptible to sprays?

2. Crop damage.

How serious of a potential pest is this?

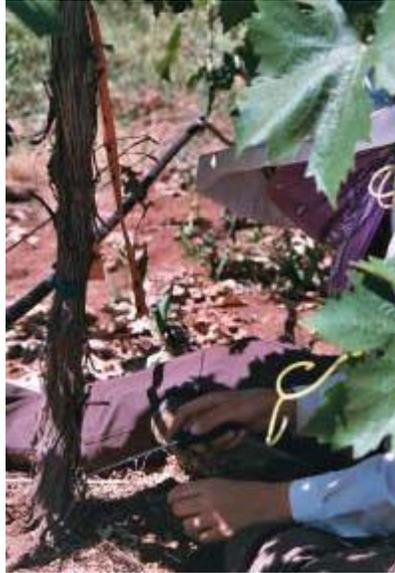
3. Natural enemies.

Any parasitoids? How abundant?

4. Insecticide controls.

How well will pesticides work to manage this insect?

Seasonal phenology: nondestructive sampling for Gill's mealybug in untreated vines.



Trunk base



Trunk



Armpit/under cordon



Old Spur



New Spur

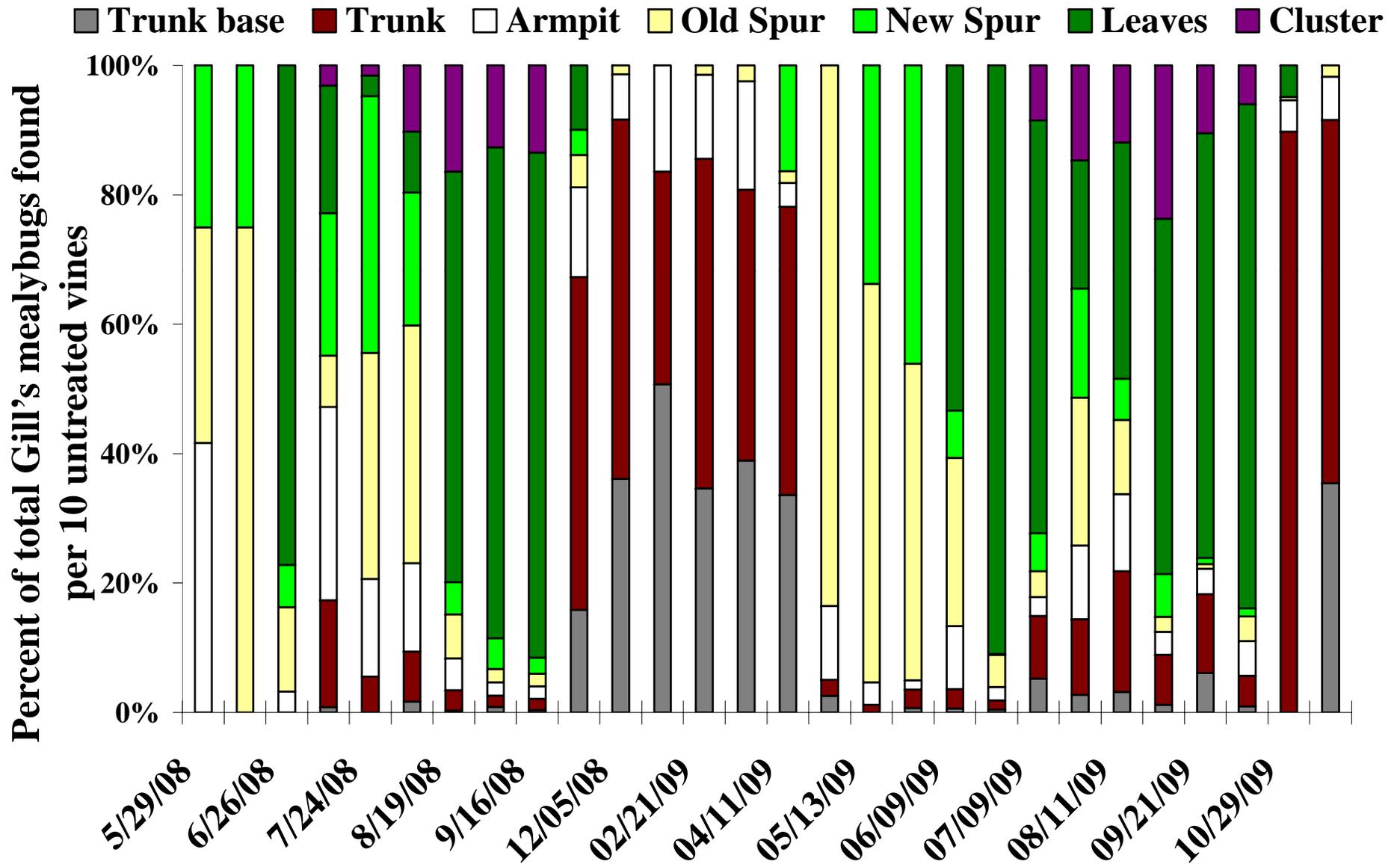


Leaves

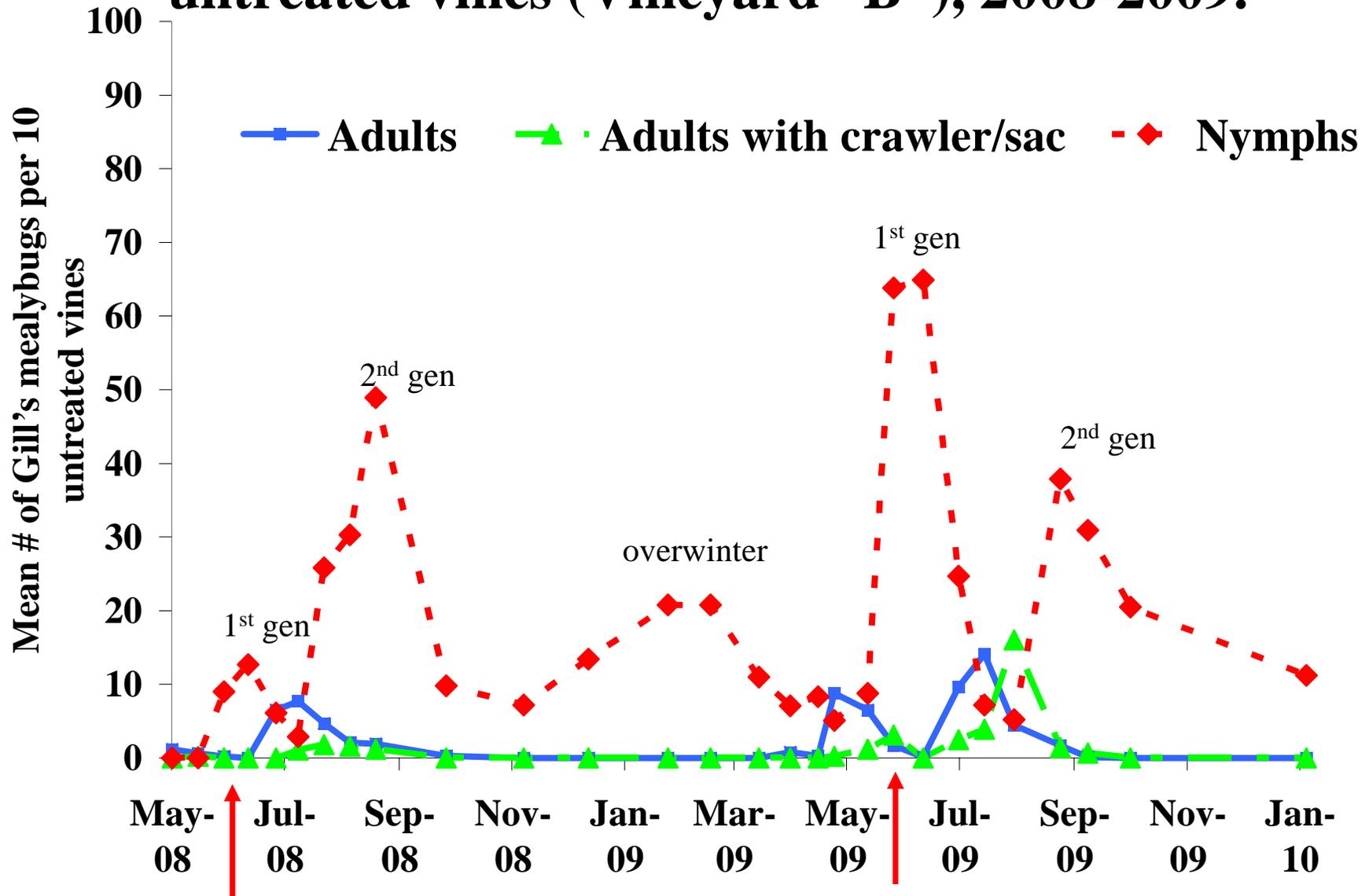


Clusters

Percent of total number of Gill's mealybugs, by vine section, found on ten untreated vines (Vineyard "B"), 2008-2009.



Mean number of Gill's mealybugs, by stage, per ten untreated vines (Vineyard 'B'), 2008-2009.





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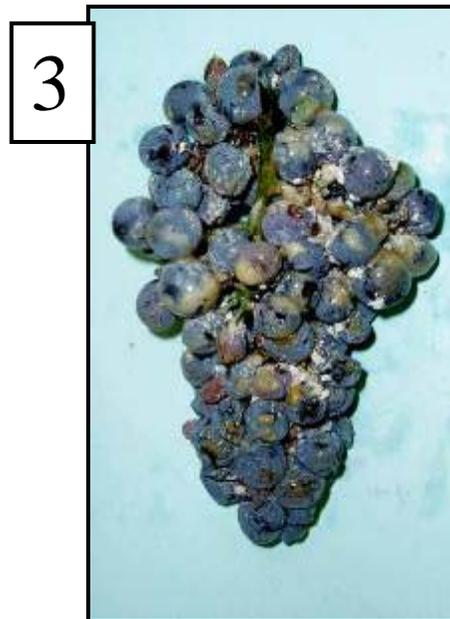
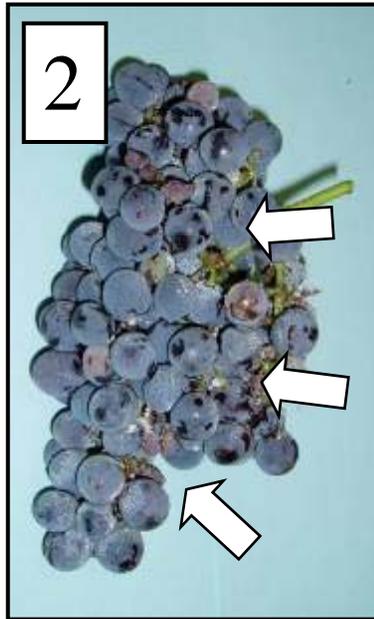
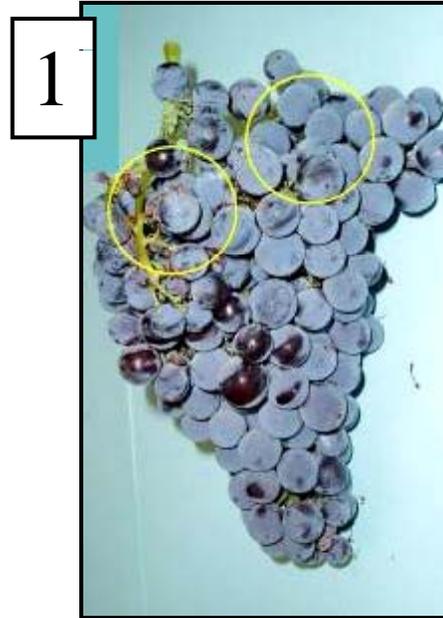
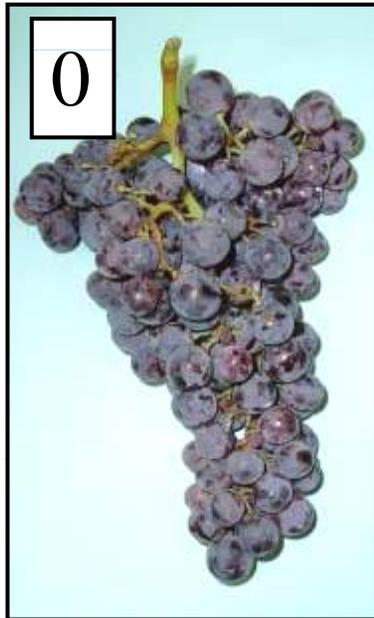


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Cluster Damage Rating



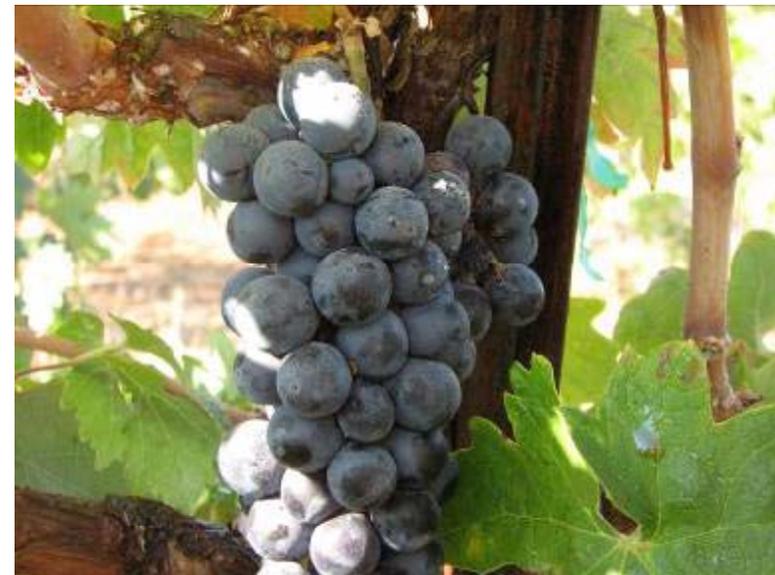
Cluster rating

0 = no damage

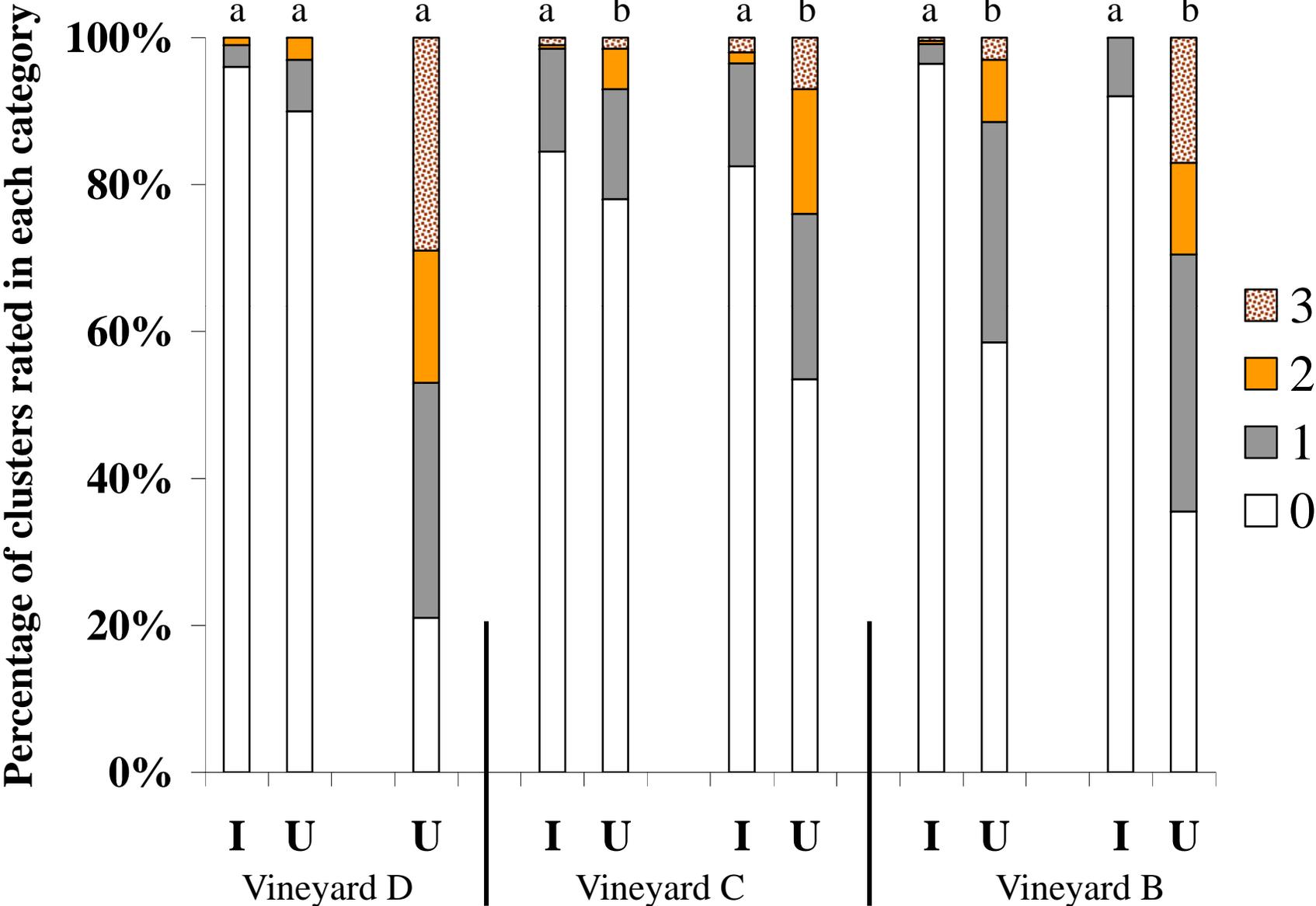
**1 = honeydew and/or
less than 10 mealybugs.**

**2 = more than 10
mealybugs.**

3 = unmarketable



Cluster ratings at harvest in insecticide treated and untreated blocks (2008 and 2009).



Insecticide trials in 2009

2 separate vineyard field trials with 5-6 replicates, RBD

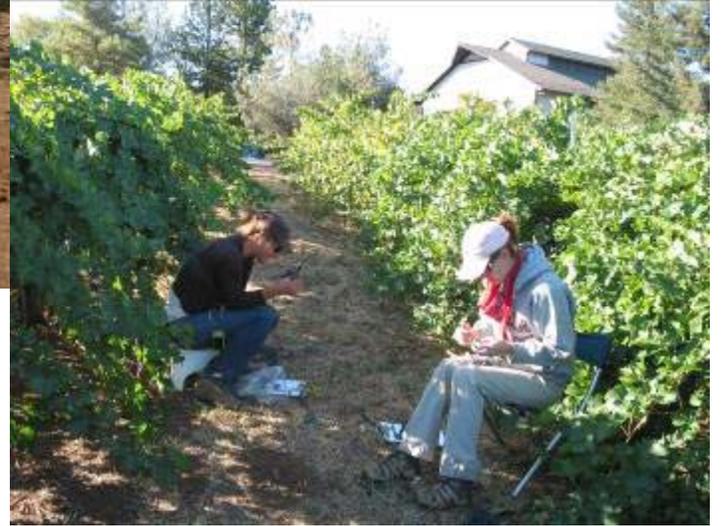
Grower applied treatments timed for 1st gen. crawler stage

Calibrated air blast sprayers: 100 gal/ac (@ 3.2 mph, 125 gal/ac @ 2.6 mph)

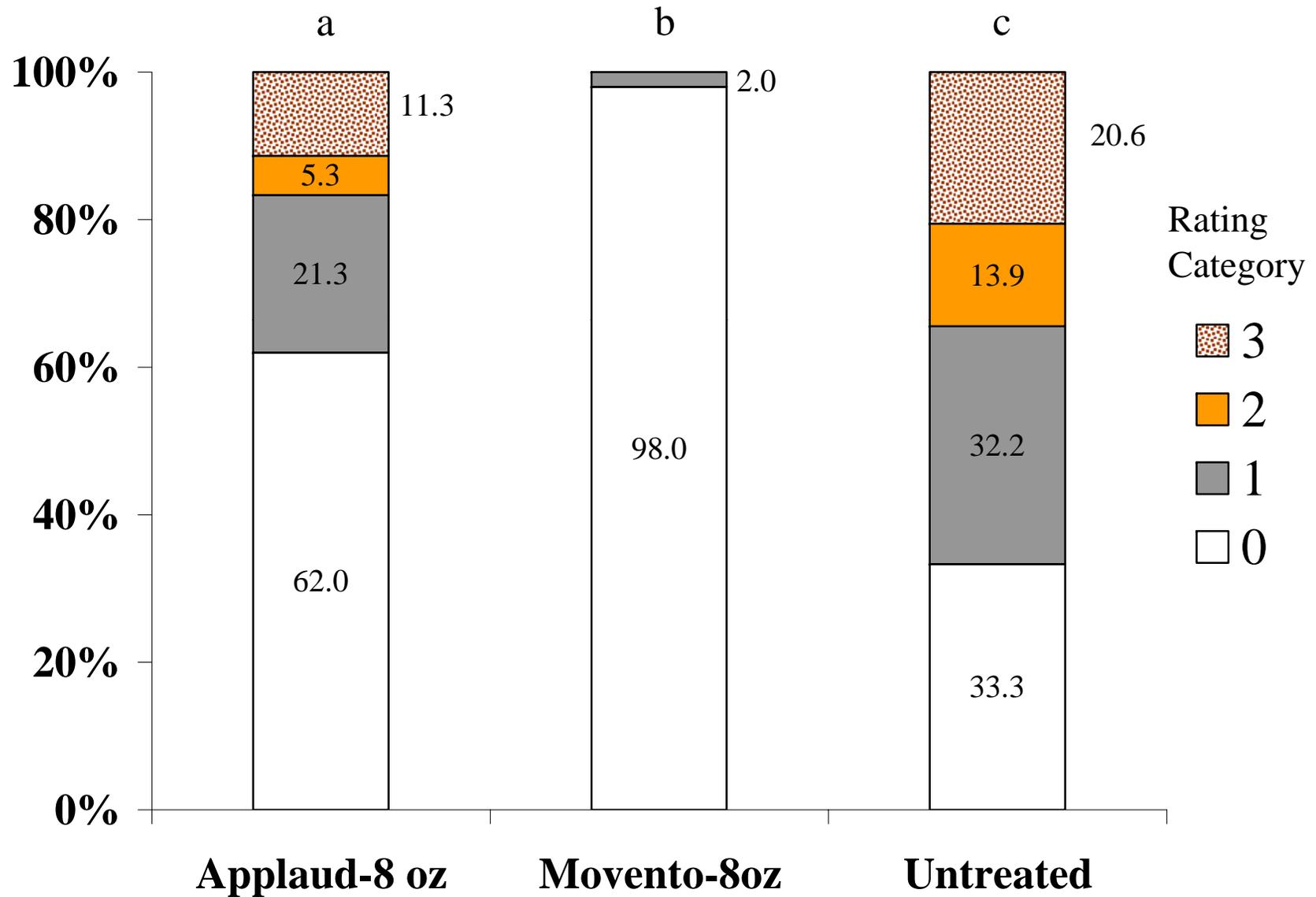
- Movento (Spirotetramat) @ 8 oz (full rate) w/ 0.125% Syl-tac
 - Applaud (Buprofezin) w/0.25% R-11, applied one time
@ 12 oz.(full rate) or @ 8 oz
 - Assail (Acetamiprid) @ 1.1oz w/ 0.125% Syl-tac (1 trial only)
 - Untreated
-

Evaluated with whole vine ratings, basal leaf counts, and/or timed counts

□ **Cluster ratings prior to harvest, Chi-square test w/ pairwise comparison**

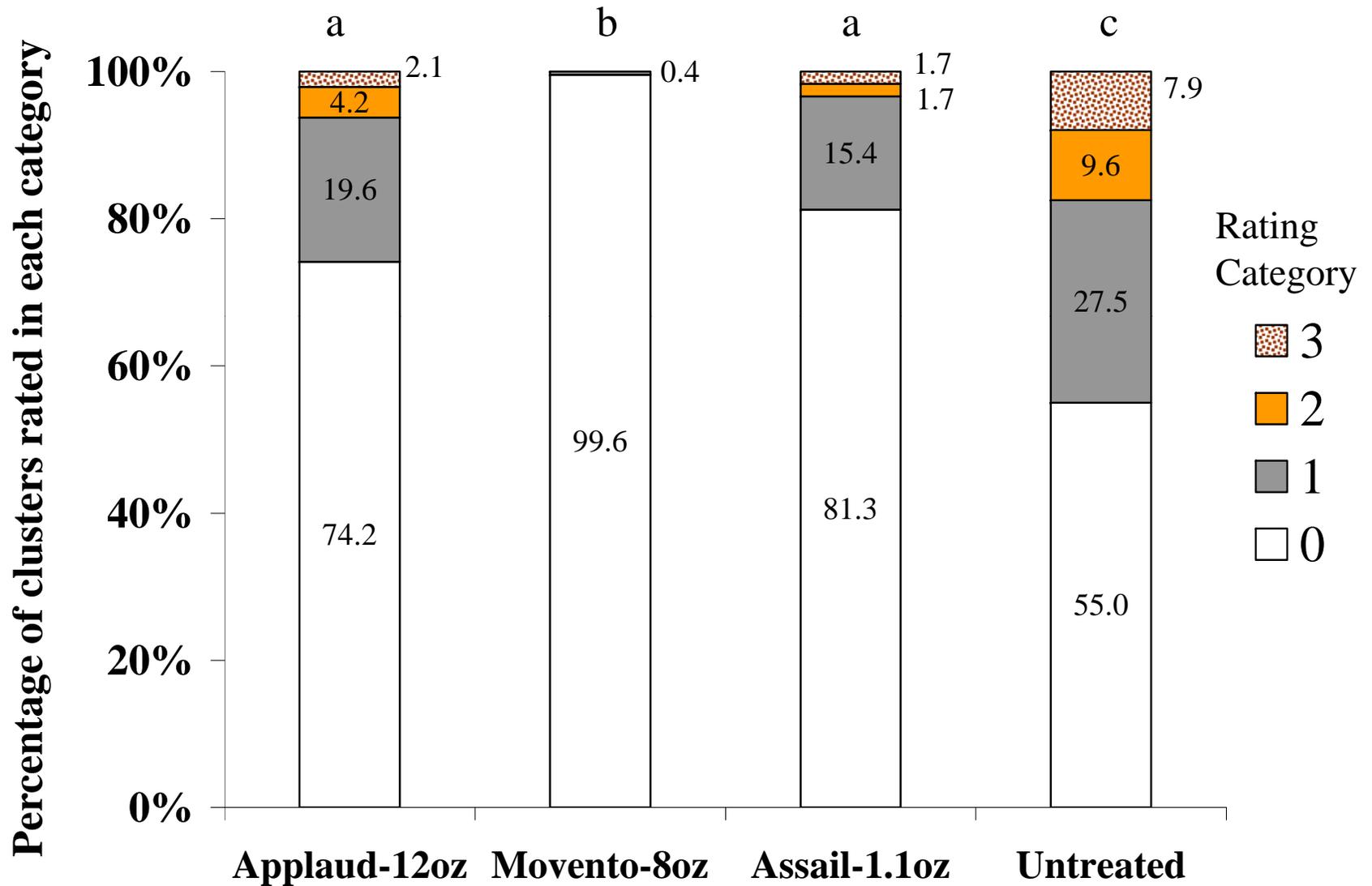


Percent of clusters in each rating category by treatment,
Vineyard "N", 2009.



Chi-Square $F=148.19$, $DF=6$, $P<0.001$ (all); $P<0.0167$ (pairwise comparison)

Percent of clusters in each rating category by treatment,
Vineyard "L" 2009.



Contingency table analysis (pairwise separation $P < 0.007$)



Natural enemies

- Many generalist N.E. observed-numbers too low to impact Gill's population.
- Mummies (parasitized Gill's MB) collected from all sites- but mostly from untreated areas and numbers are low.
- *Acerophagus* identified so far.

Mealybug "mummy"



Anagyrus pseudococci



Acerophagus notativentris



Experiments planned for 2010

1. Repeat insecticide experiment targeting crawler stage:

Untreated control

Applaud @ 12 oz., applied twice

Assail @ 1.1 oz

Clutch (Clothianidin) in place of Movento



2. “Organic” option trial; applied earlier, targeting overwintering instars on shoots:

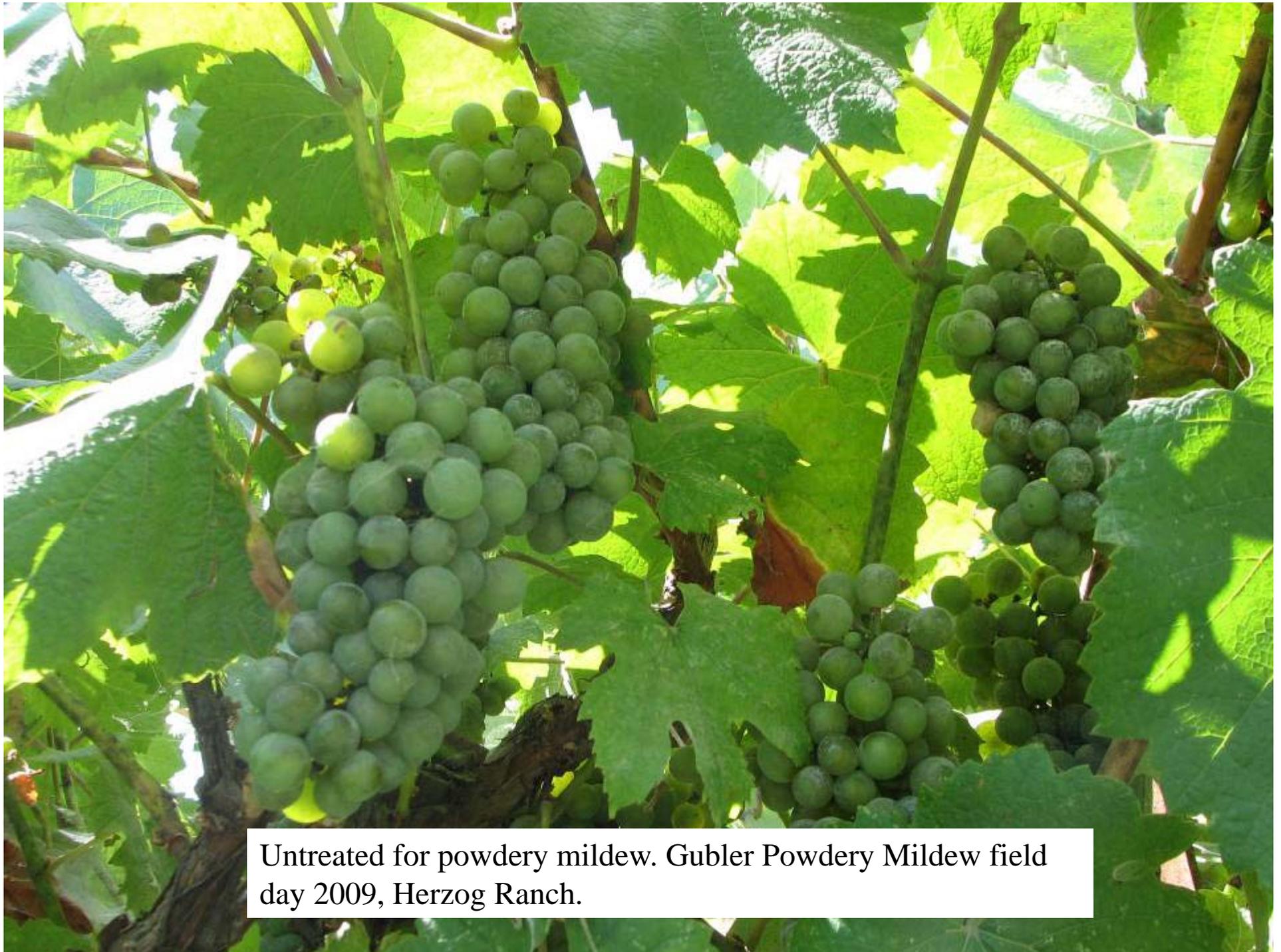
Untreated control (+ mildew material)

JMS Organic Stylet Oil (97.1% paraffinic oil) @ 2% (+ mildew material)

Ecotech (10% rosemary oil, 2% peppermint oil) @0.5% (+ mildew material)

treatments repeated 7-14 days, 2-3 times

****Look for field day announcement late summer/fall to look at trial results**



Untreated for powdery mildew. Gubler Powdery Mildew field day 2009, Herzog Ranch.



JMS Stylet Oil @ 1% applied every 14 days for mildew control
(Gubler Powdery Mildew field day 2009, Herzog Ranch)

Gill's mealybug project summary

Key times for Gill's seasonal development:

- Spring (May): look for adults on young new spurs, shoots.
- Early Summer (late June in foothills): Treat first generation crawlers on leaves-before they enter clusters.
 - Exact treatment timing depends on location: monitor!
- July-August: Gill's entering clusters.
- Mid-Sept.: 2nd generation produced. More honeydew obvious. Ants tending.
- Overwinter: as nymphs (2nds-3rds) under bark.

Gill's mealybug project summary

- Cluster damage ratings showed that if left untreated, Gill's mealybug can build to undesirable damage.
- All insecticide treatments targeting first generation crawlers were effective in reducing damage in clusters as compared to untreated controls. 8 oz. Movento > 12 oz. Applaud = 1.1 oz. Assail > 8 oz. Applaud. 2 applications of Applaud?
- Parasitized Gill's mealybugs were found, however numbers were very low and found mainly in untreated blocks. Effect of insecticides on N.E.?
- We do not yet know if Gill's mealybug has the capacity to transmit leafroll virus.

Thanks to:
Collaborating growers,
Industry partners,
My field crew: Kelly Brehm, Laurel Schwarzbach, Toni
Laubach and Robin Cleveland;
and to the Berkeley field crew.

