

# Grapevine Insect Pests

What should you be doing  
at this time?

Carmen Gispert

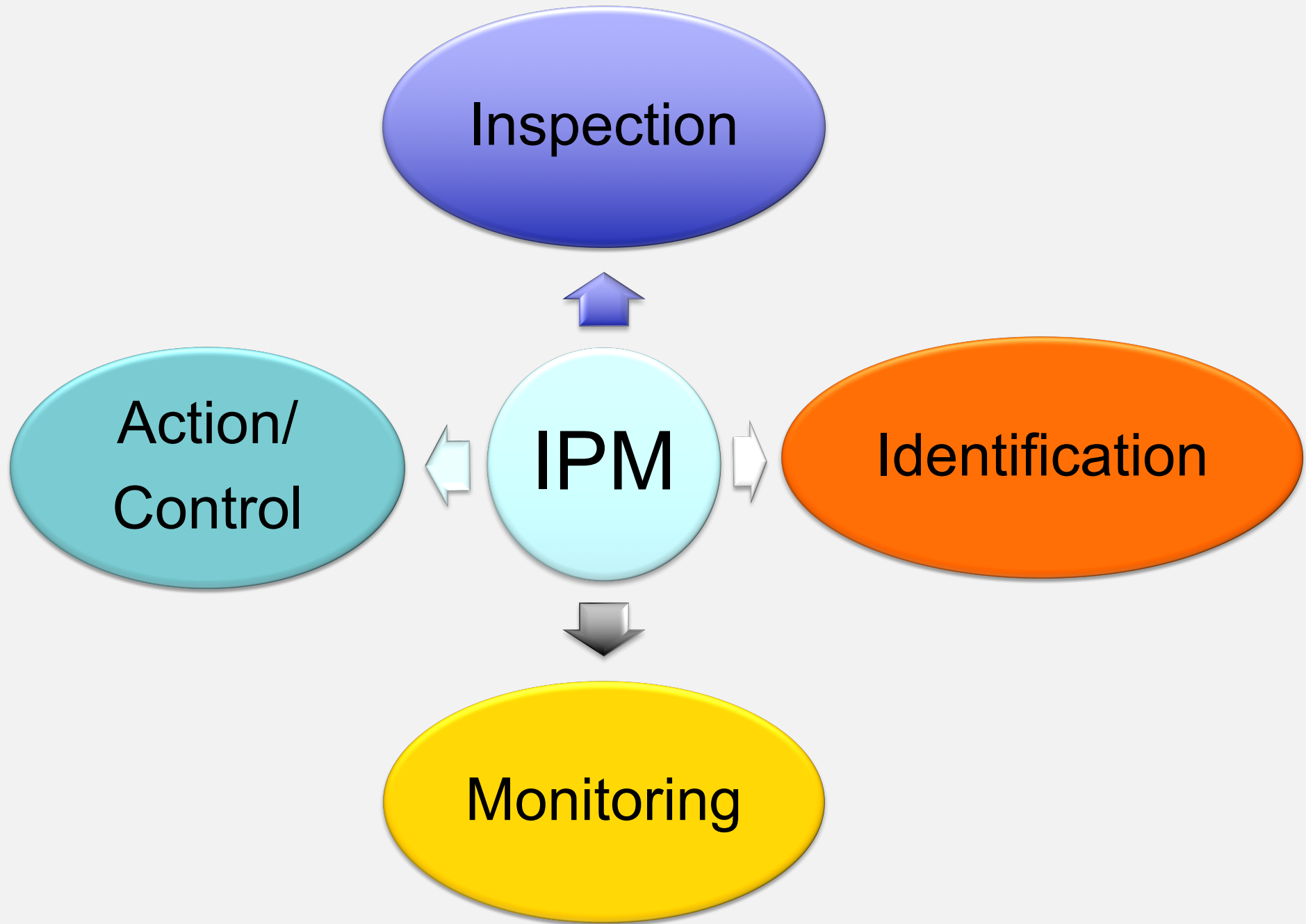
Viticulture Advisor

University *of* California

Cooperative Extension

April 8, 2019

[cgispert@ucanr.edu](mailto:cgispert@ucanr.edu)



- Monitor caterpillars if they have been a problem in the past:
- Western grapeleaf skeletonizer
- Grape leaffolder
- Omnivorous leafroller
- Map areas of concern for bloom monitoring.



# Western Grapeleaf Skeletonizer





# Life Cycle

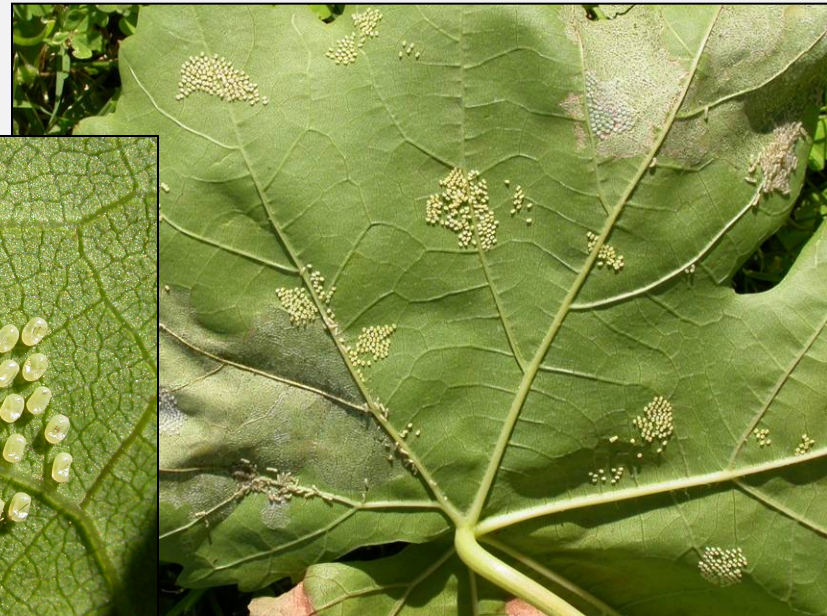
Pupae



Adult



Eggs





# Life Cycle- larvae

First instar



Second instar



Fifth instar

Fourth instar



Third instar



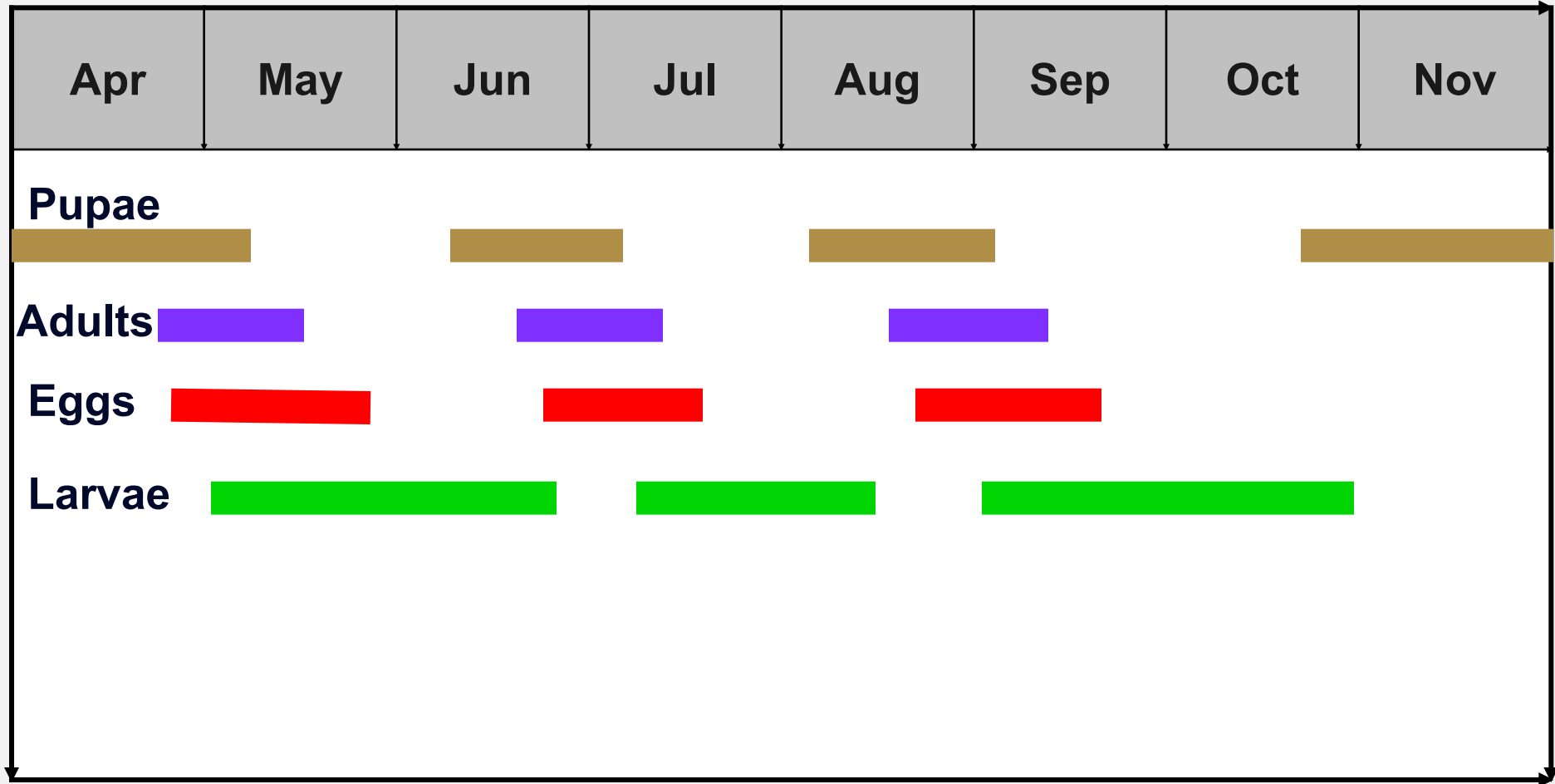
# Skeletonizer Damage



- Defoliation
- Sunburn
- Cluster contamination
- Nuisance for harvesters



# Seasonal Biology of Western Grapeleaf Skeletonizer



# Virus infection



- Scattered eggs
- Less eggs
- Eggs fail to hatch





# Virus symptoms

- Abnormal growth
  - Discoloration
  - Larvae shrink and/or die
  - Hang onto leaf or fall to the ground
- Abnormal feeding
  - Peppery patches





## Natural Enemies

*Ametadoria misella*

Tachinid fly



*Apanteles harrisinae*

Parasitic wasp



# Cutworms





# Leaf rollers & Leaf folder



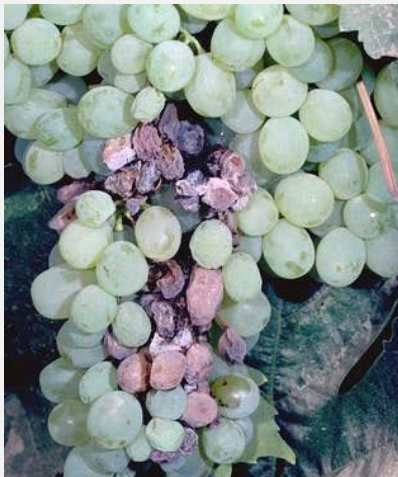


# Omnivorous Leaf roller

- Overwinters as larvae in mummified clusters or weeds
- 4 to 6 generations/year



# Omnivorous Leaf roller Damage



## MONITOR

- Monitor vineyards with a history of OLR damage
- Examine clusters for signs of OLR beginning pre-bloom and continue weekly
- Pheromone traps can be used to determine flight activity



# Grape Leaf Folder



- Overwinters in the pupal stage in the vineyard floor
- Three generations a year



# Grape Leaf Folder Damage



UC Statewide IPM Project  
© 2000 Regents, University of California

## DAMAGE

- Reduce leaf surface due to leaf roll, defoliation may occur by the third generation



## MONITOR

- As larvae begin making rolls examine vineyard twice a week

# Parasite

## *Bracon cushmani*





# Leafhoppers

## Grape Leafhopper



## Variegated



## Virginia Creeper LH



# Leafhopper Damage



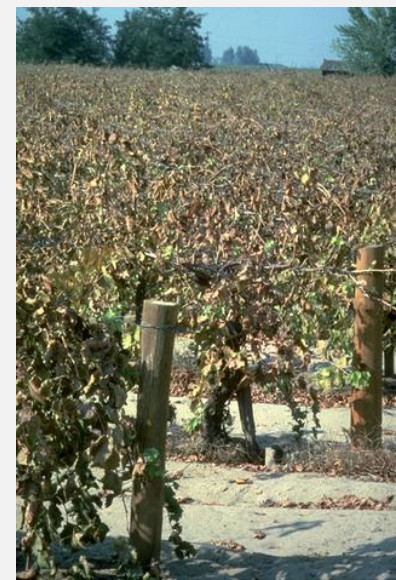
UC Statewide IPM Project  
© 2000 Regents, University of California

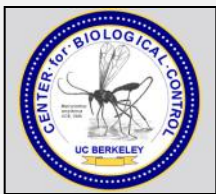


# Variegated Leafhopper



- Similar biology to GLH
- Appears in the vineyard slightly after GLH
- Two to four generations a year
- Causes more damage than GLH.

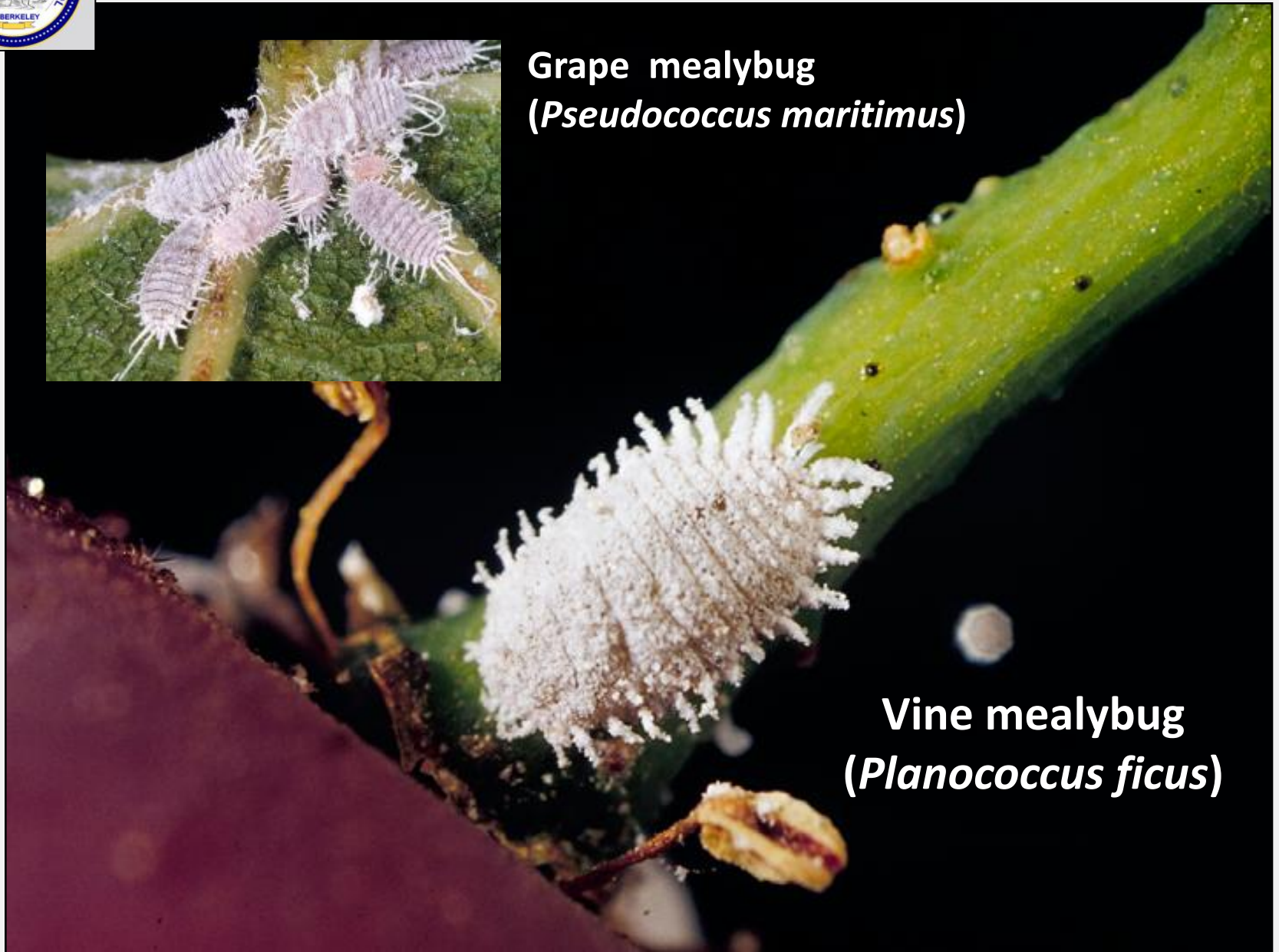




# Grape Mealybug and Vine Mealybug



**Grape mealybug**  
(*Pseudococcus maritimus*)



**Vine mealybug**  
(*Planococcus ficus*)











# Recognize Signs of Mealybug Infested Vines:

- If trap catch numbers warrant, then start walking your vine rows.
- Follow the ants and watch where they go
- If ants are not present, then look for wet trunks
- Recognize mealybug life stages on trunks and leaves
- Look for honeydew and sooty mold

# To Detect New Infestations Monitor Vineyards for VMB Males



Photo: Kent Daane



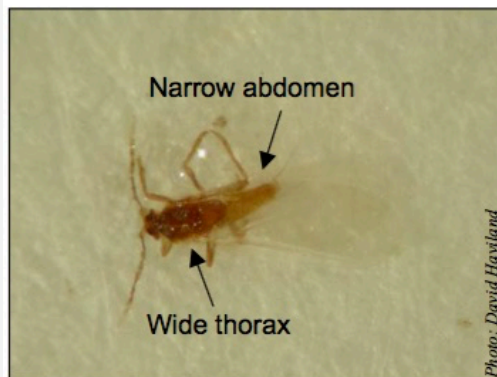
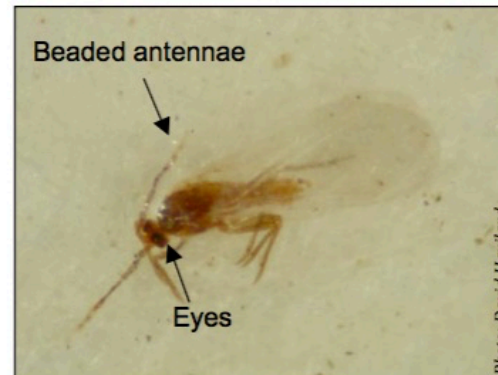
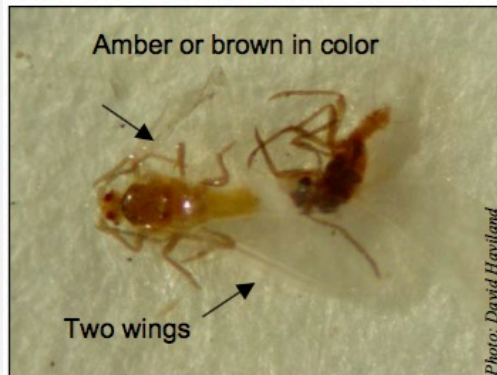






## Male Vine Mealybug Identification Sheet

These photographs are of male vine mealybug (*Planococcus ficus*) as they appear on a sticky trap. Use of a stereo microscope with 30X magnification will greatly aid in identification. The male vine mealybug is small (approximately 0.7 mm long) and amber brown in color. It has one pair of wings, but sometimes they are not visible because they are embedded in the stickum. The antennae are beaded, the trunk (thorax) is wider than the abdomen and there are four caudal setae (tail filaments), which usually appear as only two.

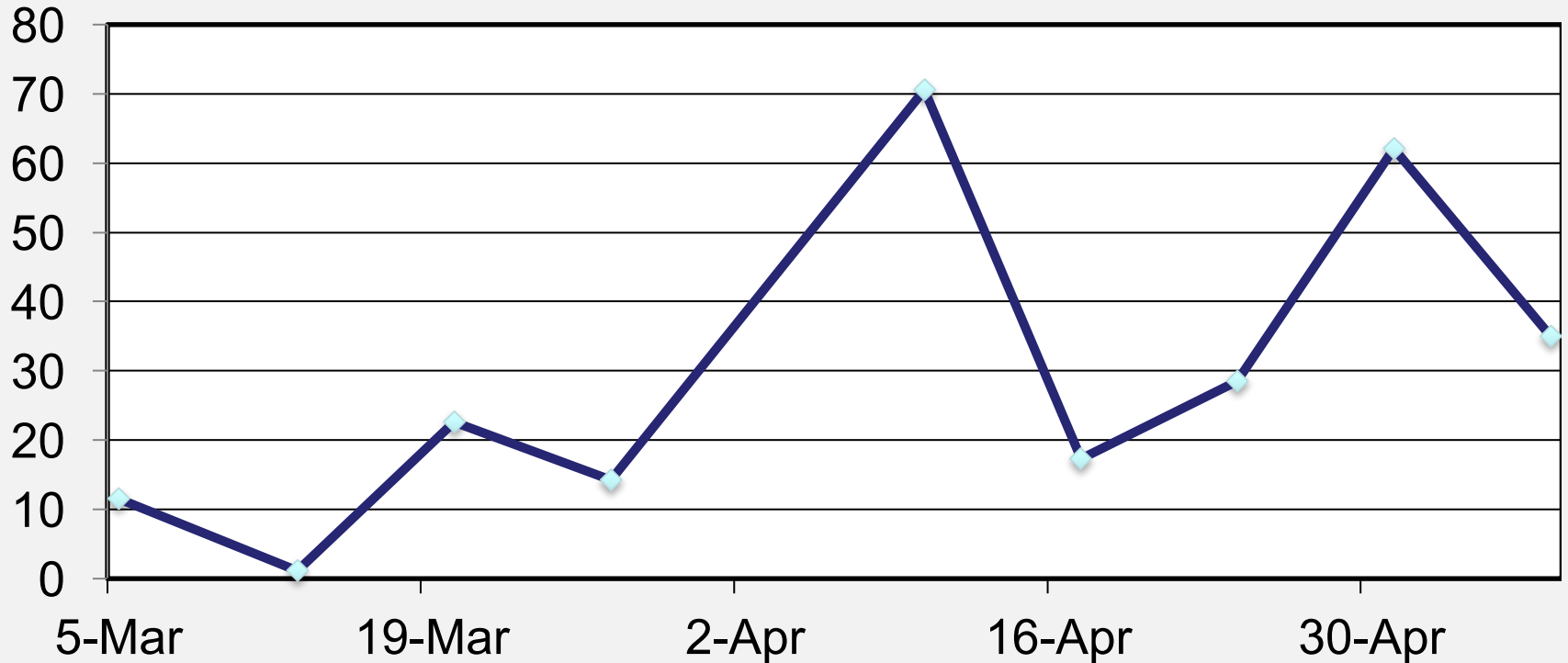




# Pheromone Trapping

- Indicates the presence of an infestation and mealybug male activity
- A ground survey will be necessary to determine size and spatial distribution of the infestation

# TOTAL #Males trapped Temecula 2017

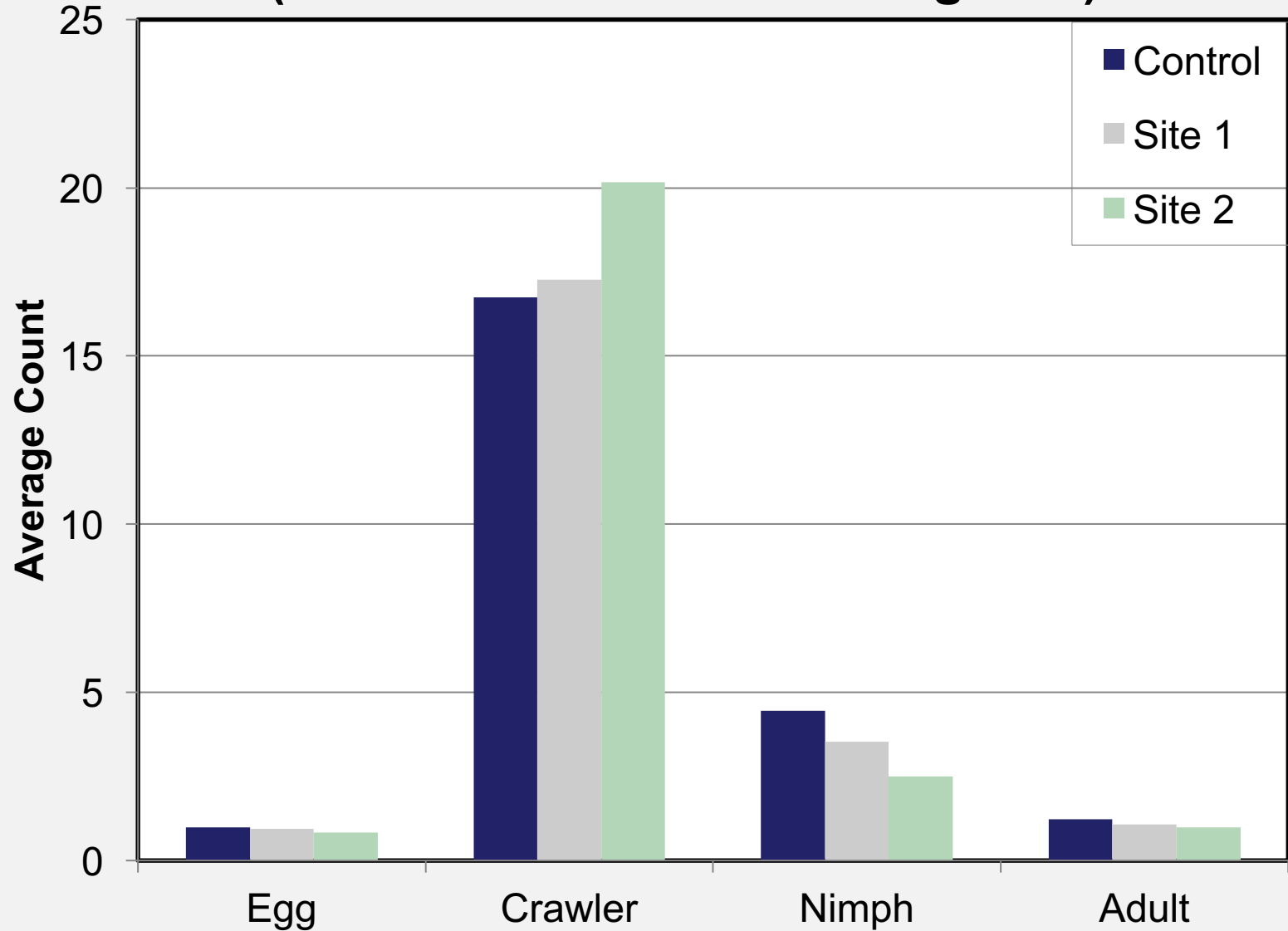


	5-Mar	13-Mar	20-Mar	27-Mar	10-Apr	17-Apr	24-Apr	1-May	8-May
MALES	12	1	23	14	71	17	29	62	35



# Average Vine Mealybug Count By Site

## (Period: 24Mar2017 - 02Aug2017)



# Chemical Control

- **Organophosphates:**
  - Chlorpyrifos (Lorsban 4E)
- **IGRs:** Insect Growth Regulator
  - Buprofezin (Applaud 70WP)
- **Neonicotinoids:** Imidacloprid (Admire 2F)
- **Movento:** Lipid biosynthesis inhibitor
  - Spirotetramat



# AVERAGE BY SITE BY DATE - SITE 1

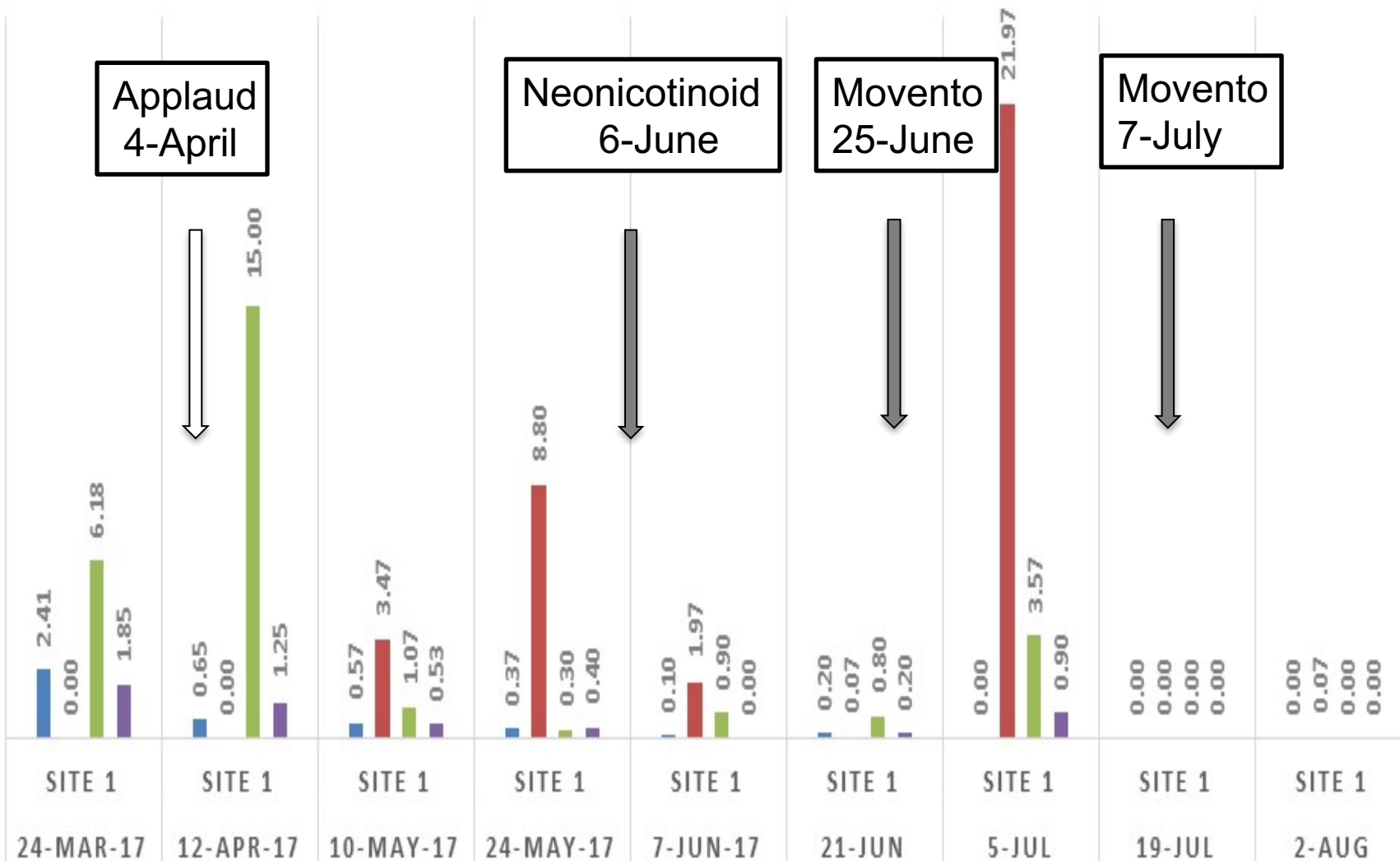
■ Egg ■ Crawler ■ Nymph ■ Adult

Applaud  
4-April

Neonicotinoid  
6-June

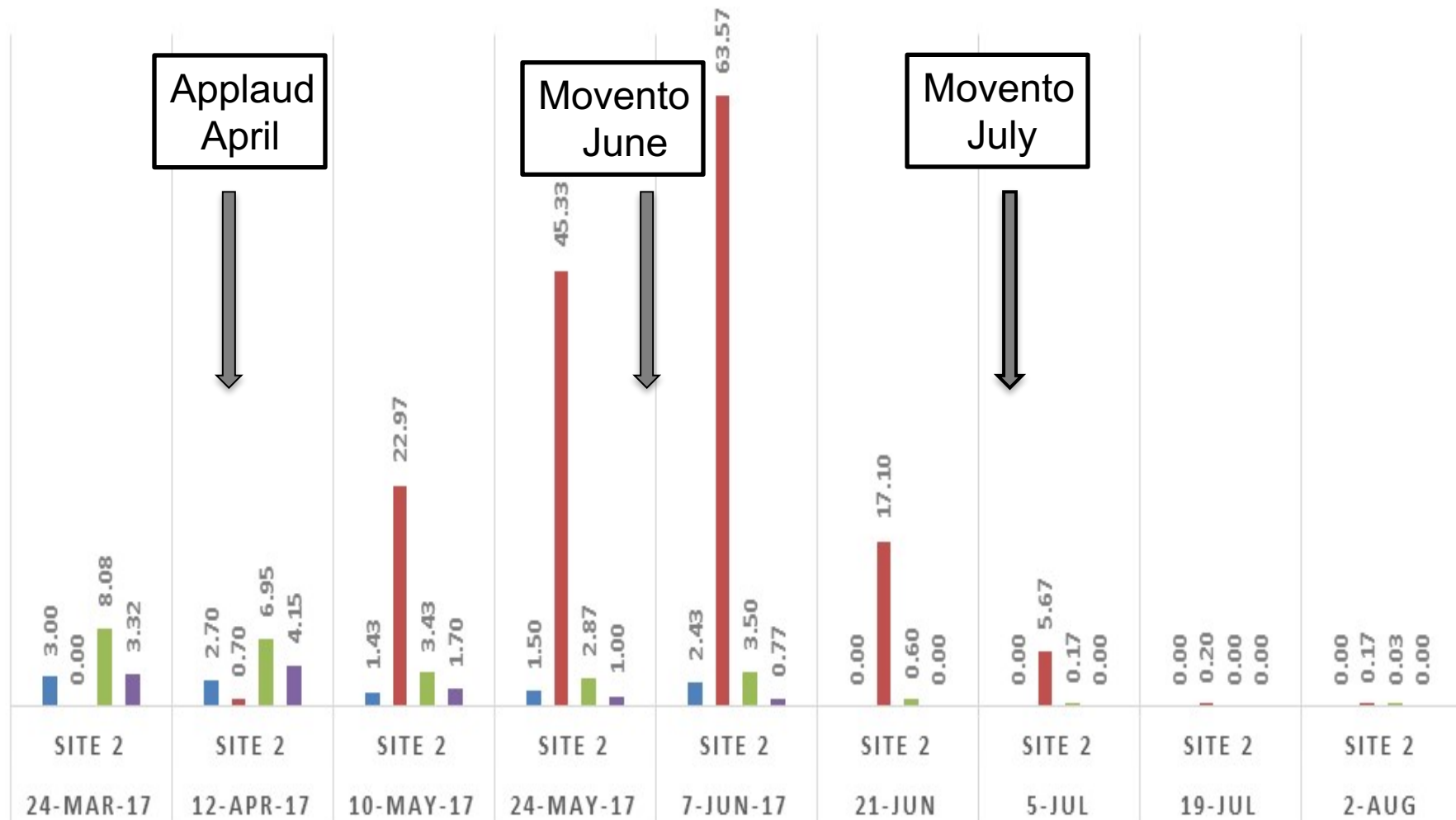
Movento  
25-June

Movento  
7-July



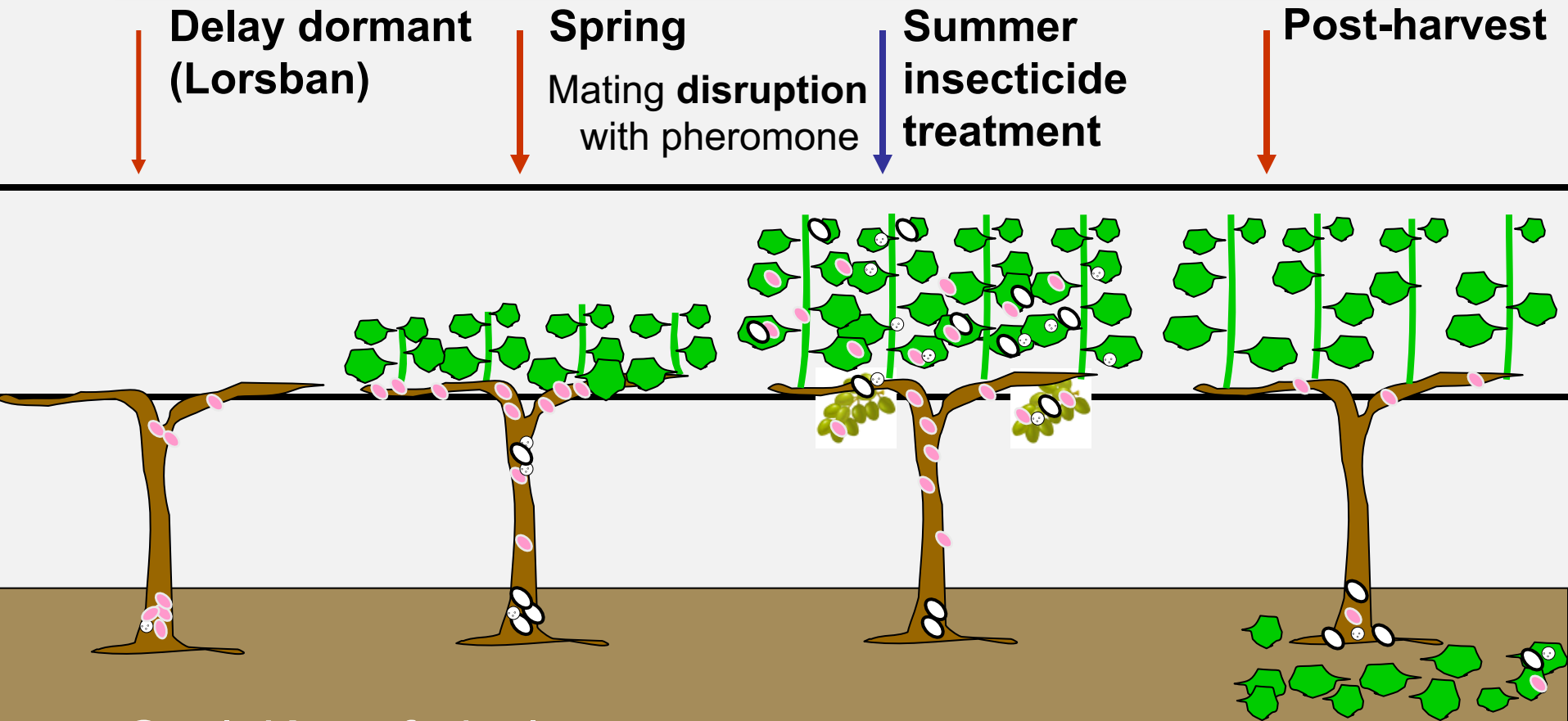
## AVERAGE BY SITE BY DATE SITE 2

■ Egg ■ Crawler ■ Nymph ■ Adult





# Vine Mealybug Control Timing



Goal: Keep fruit clean

- Avoid development of populations in the canopy
- Avoid spread of mealybugs at harvest

# Harvest Precautions

- Mealybug populations are higher at harvest
- Wash equipment before it enters your vineyard
- In an infested vineyard, harvest first the clean areas and then move workers to the infested areas





# Pierce's Disease







# Recommendations Pierce's Disease Management

The following three actions are recommended:

- Apply a systemic insecticide such as imidacloprid or one of the chemicals listed below at the recommended concentration in mid-May.
- Monitor the vineyard for diseased vines at the end of the growing season (when symptoms are readily observable) and remove them.
- Monitor your area to prevent population outbreaks of GWSS. Cooperative management programs in a growing area are essential.



# Viticulture Resources

- MG Handbook pp. 417-429.
- Home Orchard Website
  - <http://homeorchard.ucdavis.edu/>
- UCIPM PestNotes
  - <http://www.ipm.ucdavis.edu>
- UC Viticulture Online
  - <http://groups.ucanr.org/iv/>
- UCD Extension classes (Small Vineyard Series)
- ANR publications: Cover Cropping, Varieties
  - **2<sup>nd</sup> Edition of Grape Pest Management**