Vine Mealybug: Managing a Key Grape Pest

Walt Bentley, Kent Danne, David Haviland, Steve Vasquez, Andrew Molinar

University of California, Cooperative Extension

Mealybug Species


Vine Mealybug


Longtailed Mealybug


Grape and Obscure Mealybugs


Pink Hibiscus Mealybug

Gills Mealybug

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Grape mealybug

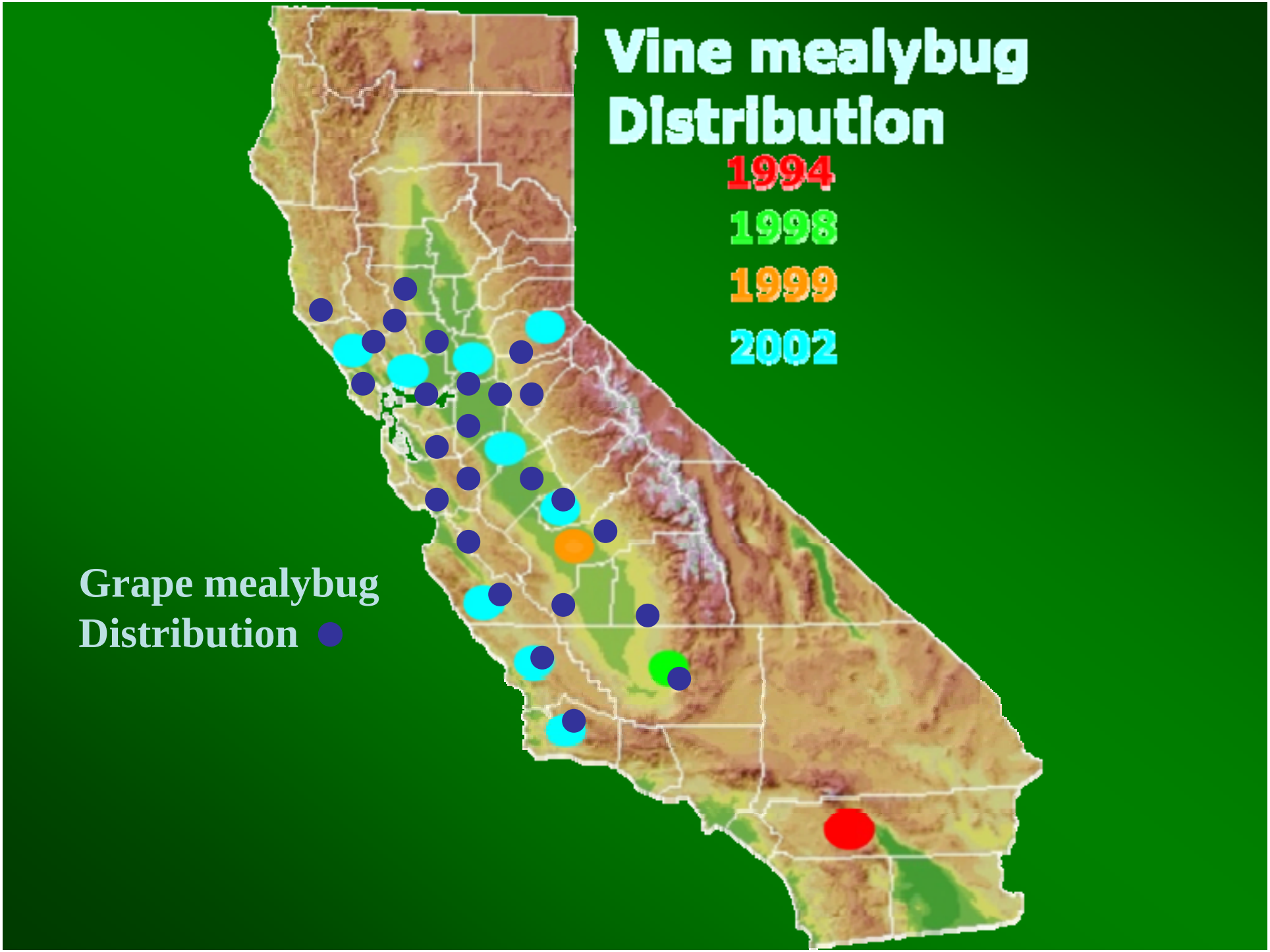
Vine mealybug

Leaf Role Virus Symptoms on Red-Fruited Grapes

- Red leaves in fall
- "Rolled under" leaves

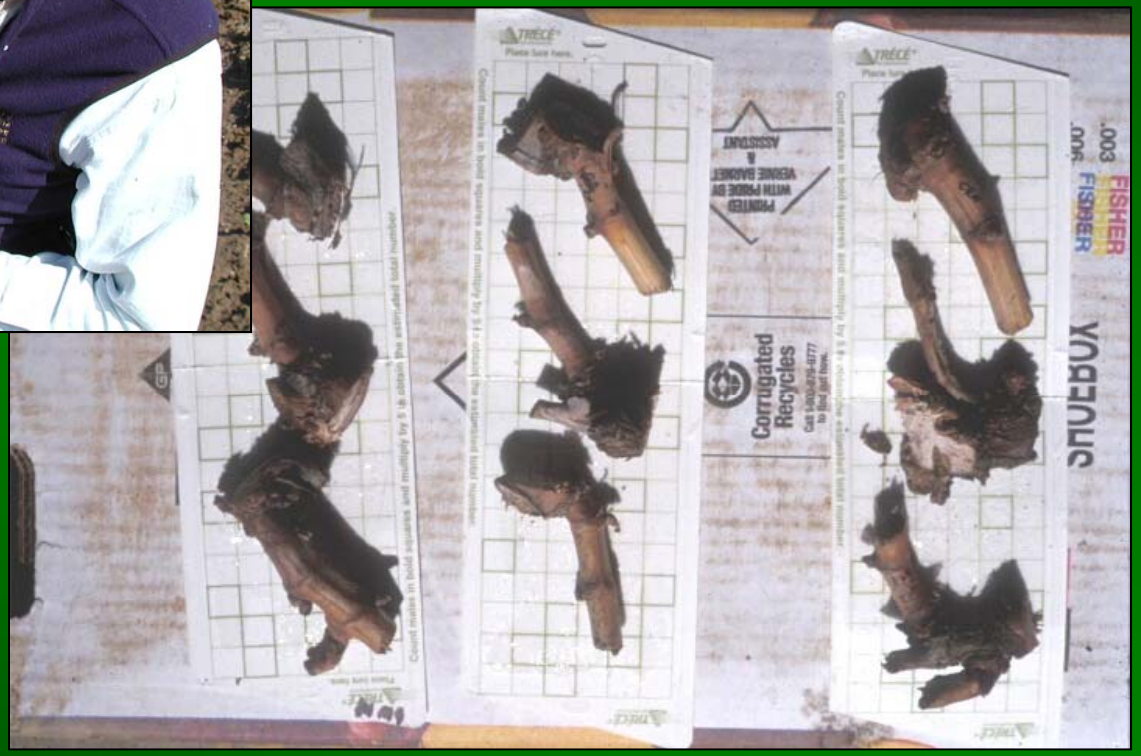
Vine Mealybug

An Invasive Exotic Pest of Grapes in California

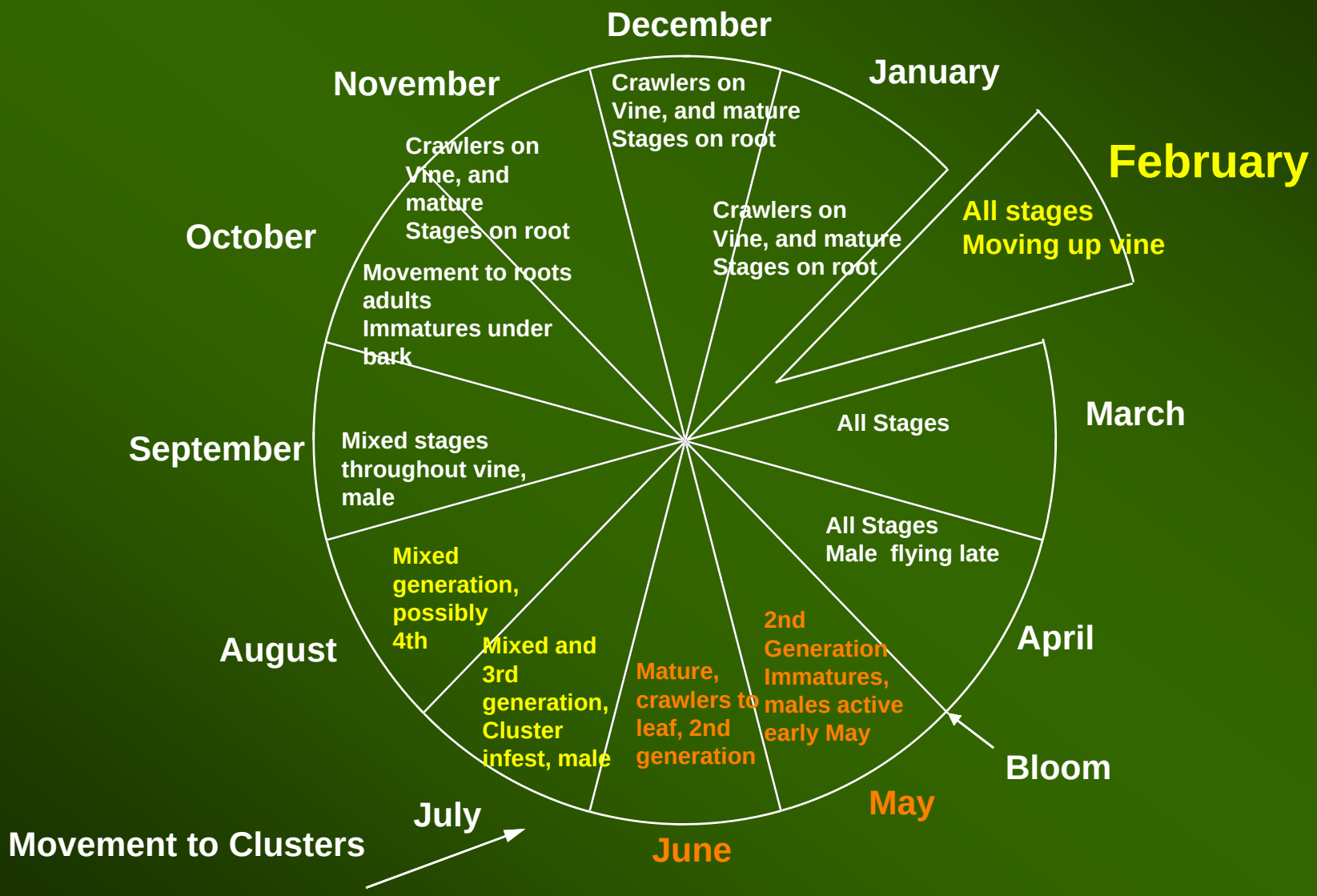

Vine mealybug
Distribution
1994
1998
1999
2002
Grape mealybug
Distribution

Infested Nursery Plants

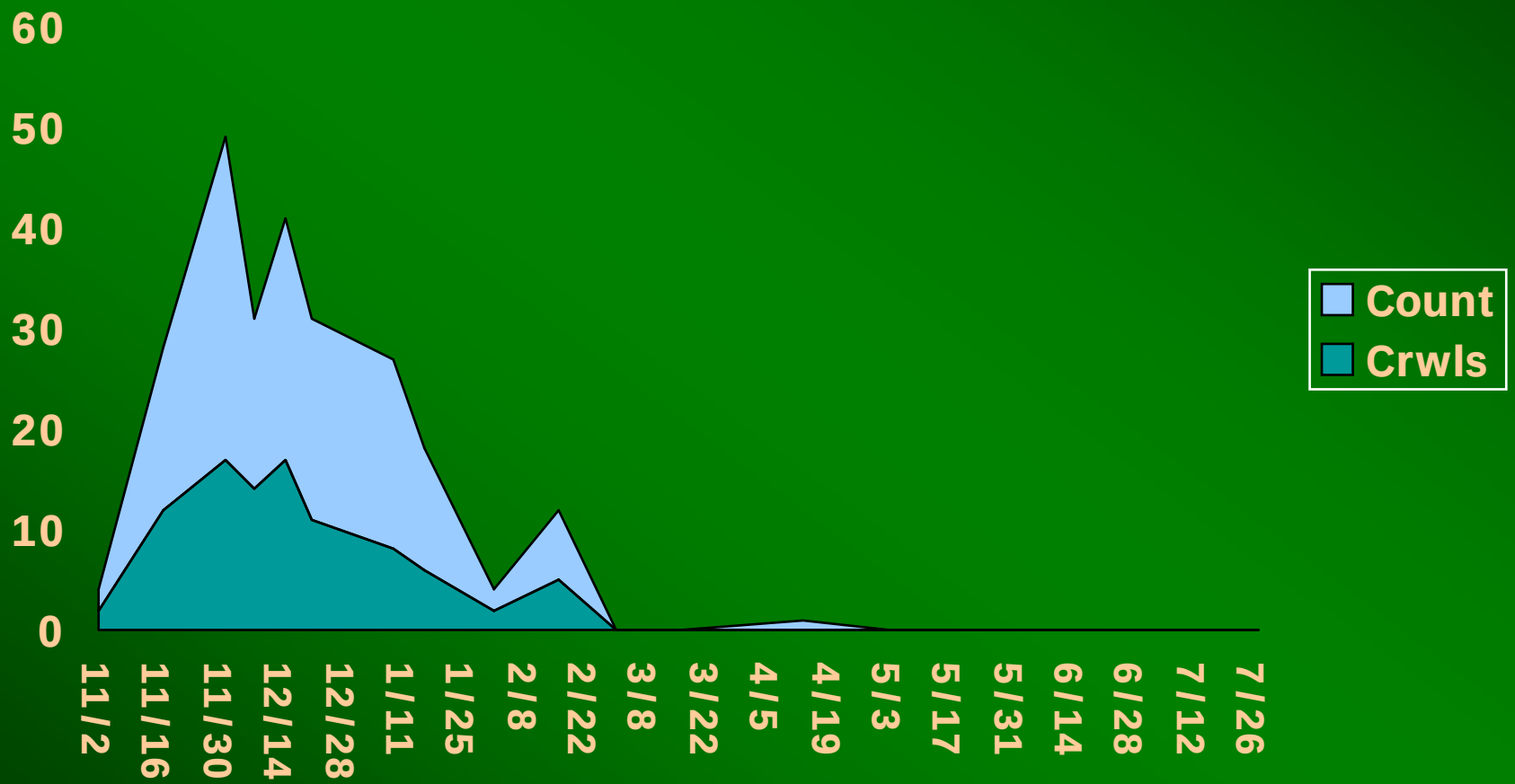
Monitoring for Mealybug



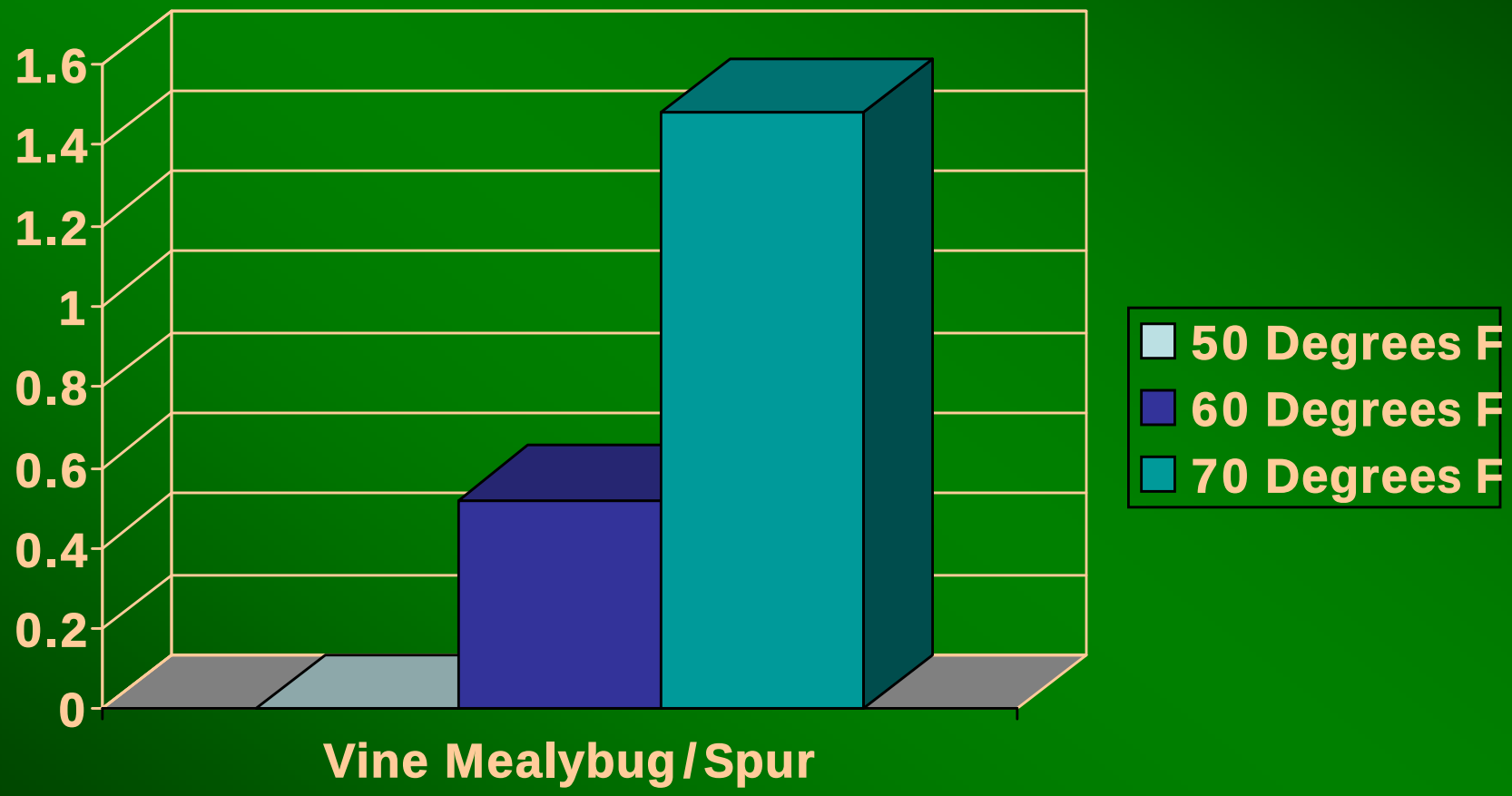
Seasonal Development of Vine Mealybug in Central San Joaquin Valley



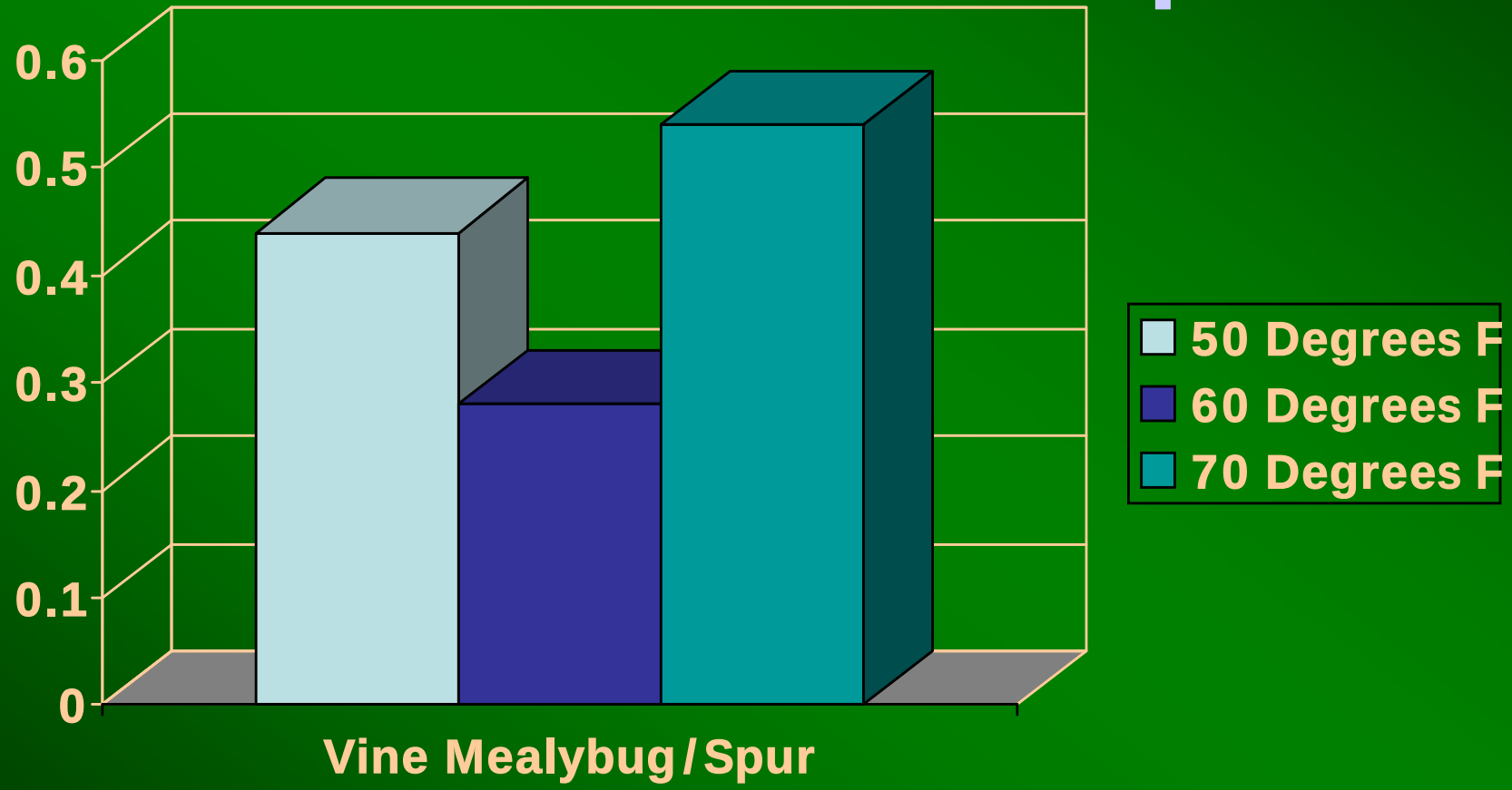
Vine Root Searches 2001, Live Vine Mealybug



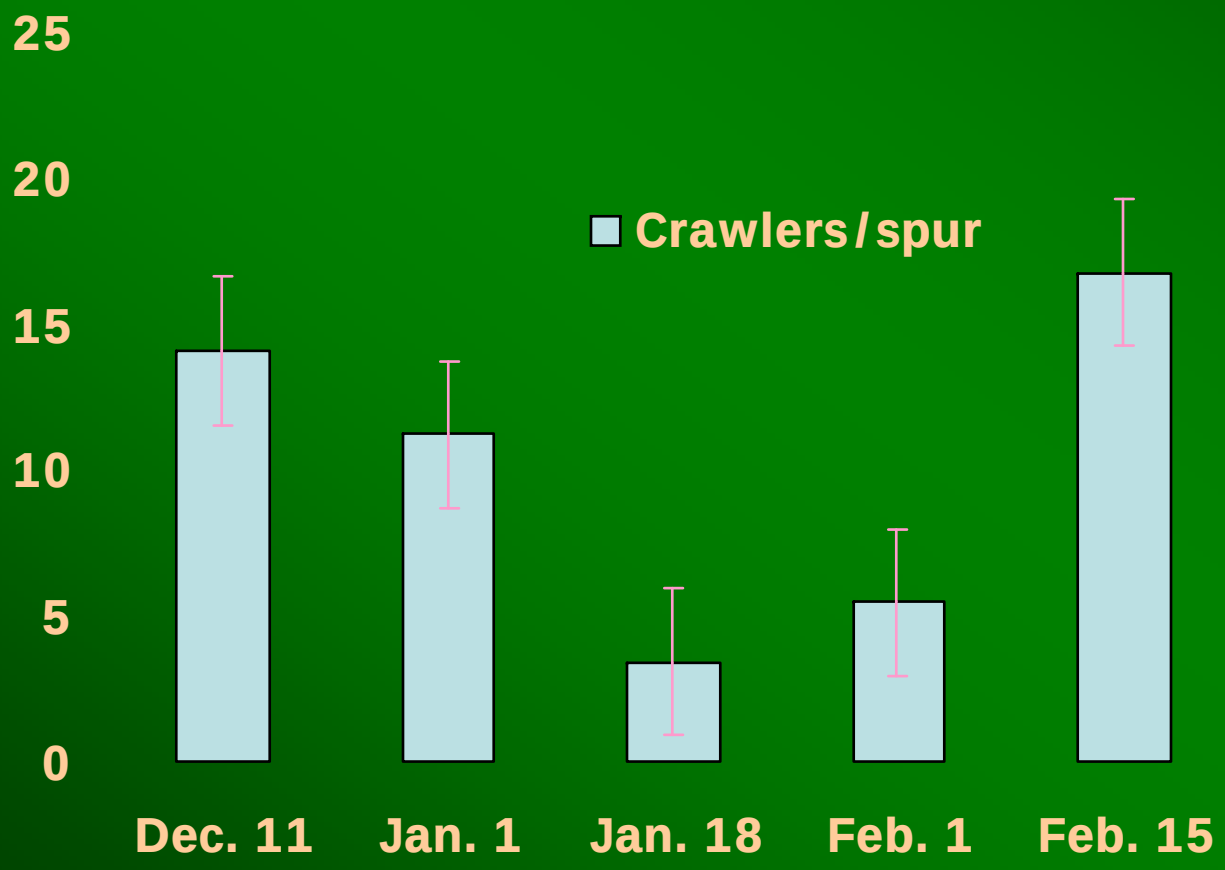
Vine Mealybug Movement from Spurs 3/11-3/29



Vine Mealybug Movement from Incubation to Room Temperature

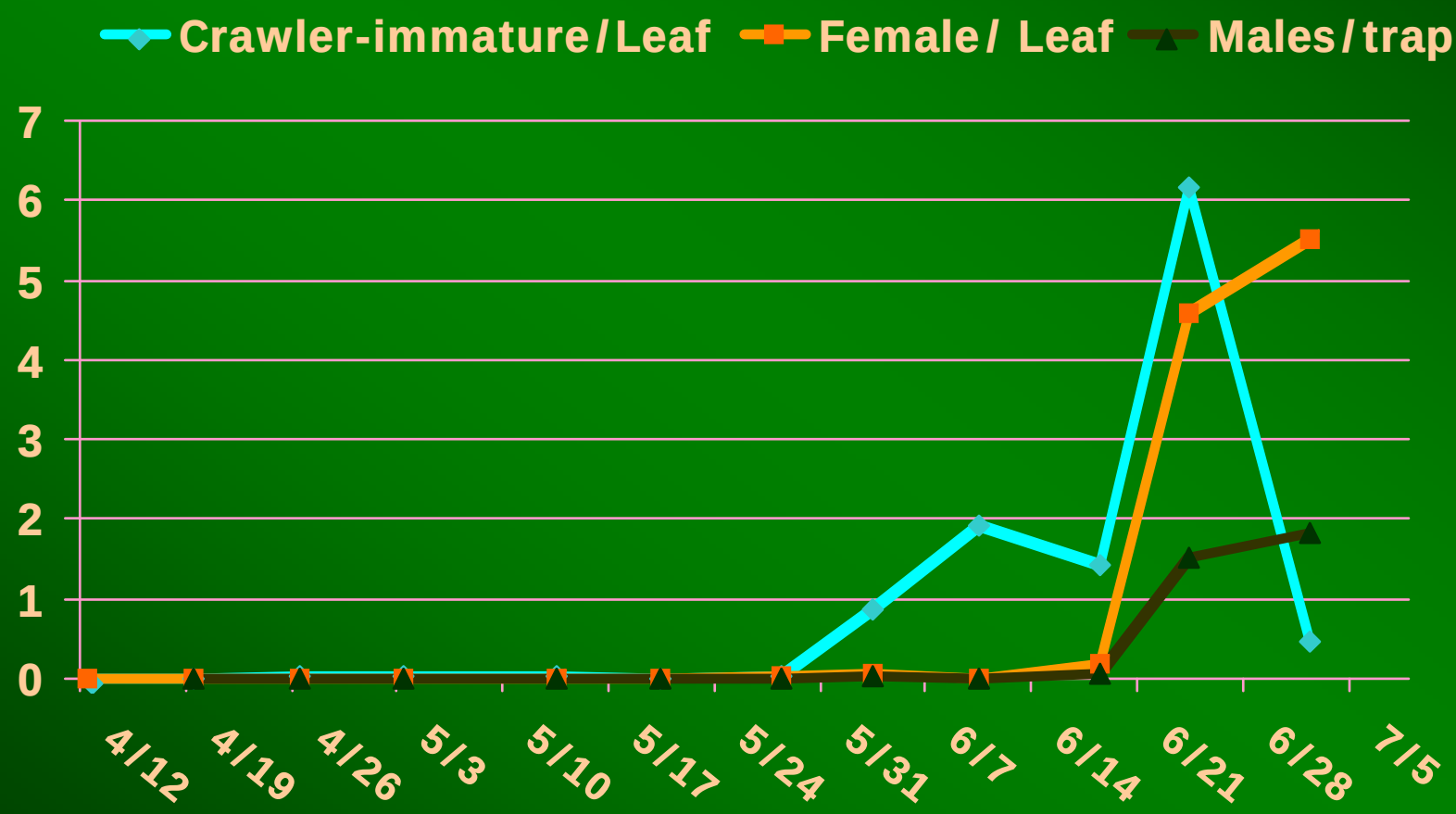


Vine Mealybug, Crawlers/Spur Through Winter 2002



Vine Mealybug on Leaves(June 20) Following Insecticide Spray

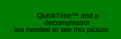
Vine Mealybug Crawler and Male Seasonal Activity 2008



Mealybug Insecticide Trials

A listing of Contact insecticides

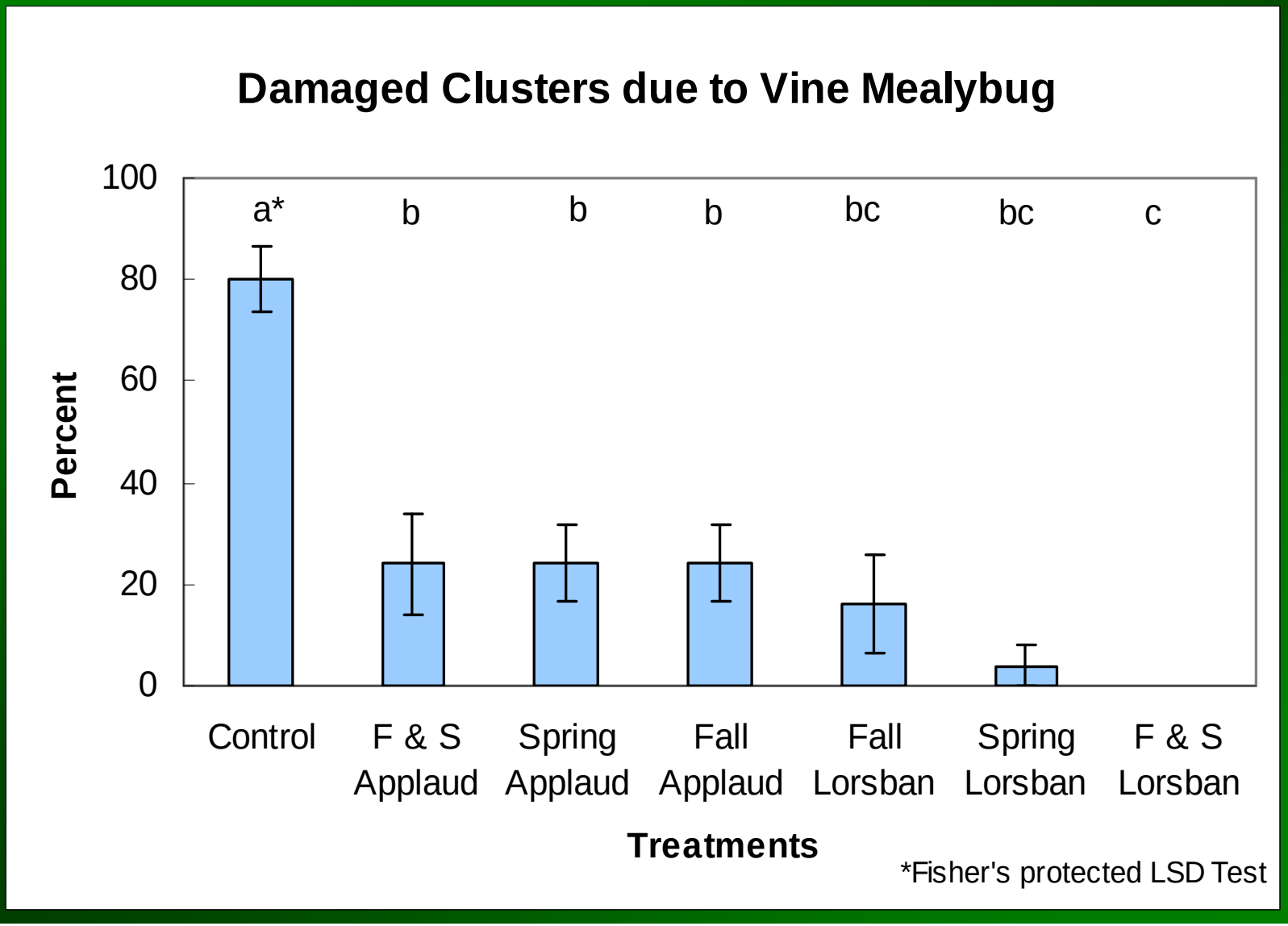
From: Danne, Yokota, and Bentley, July 2008



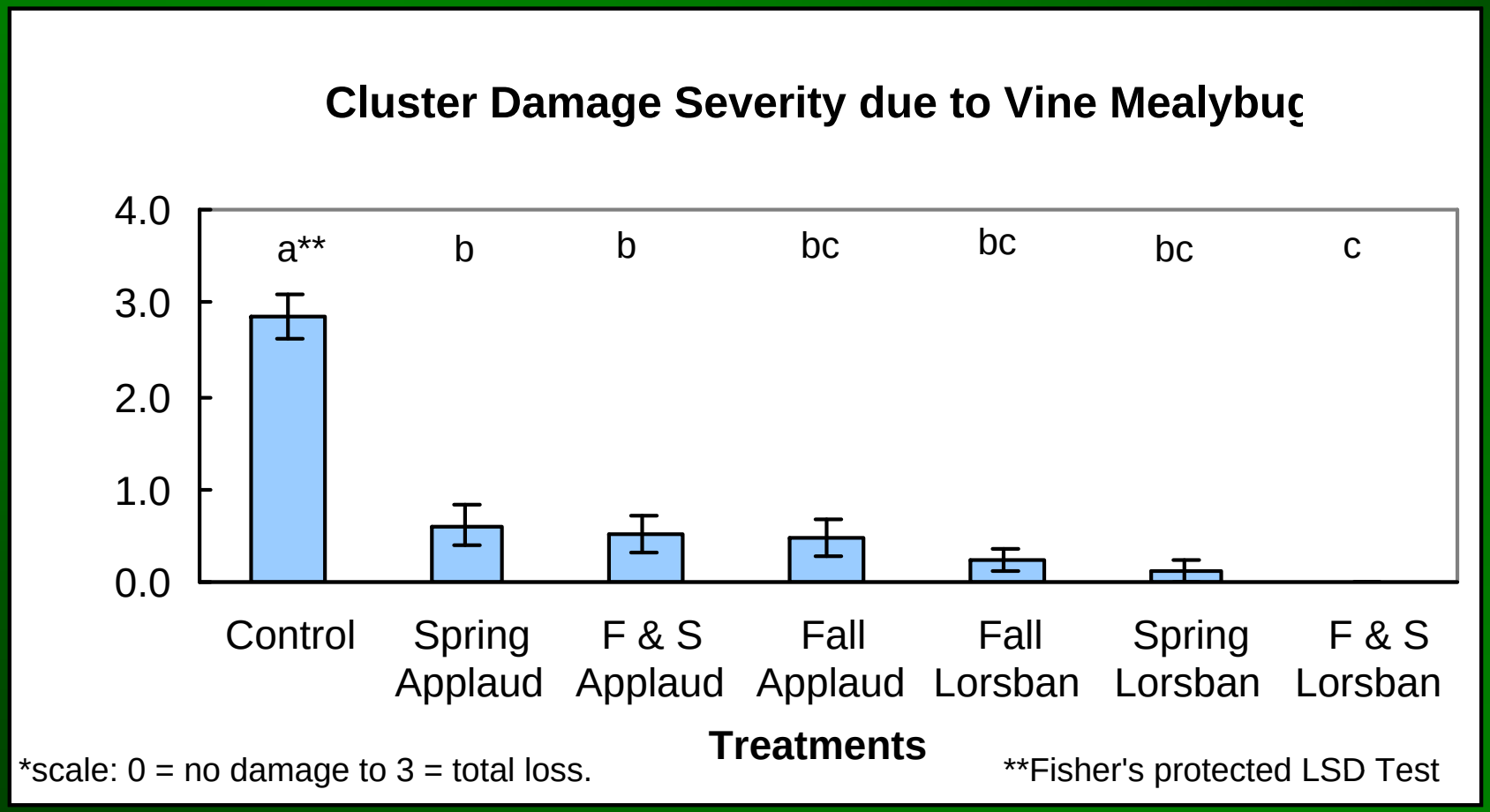
Materials and Methods

- Uniformly infested vineyard – Sanger CA
- Trial: 7 treatments, 5 blocks, 3 individual vine replicates/treatment
- 2 Pesticides: Applaud (12 oz/ac) and Lorsban (4 pts/ac) + Control
- 3 Applications: fall (Oct. 14, 2004), spring (Mar. 3, 2005), doubled application in both fall and spring on the same vine

Cluster Damage from VMB

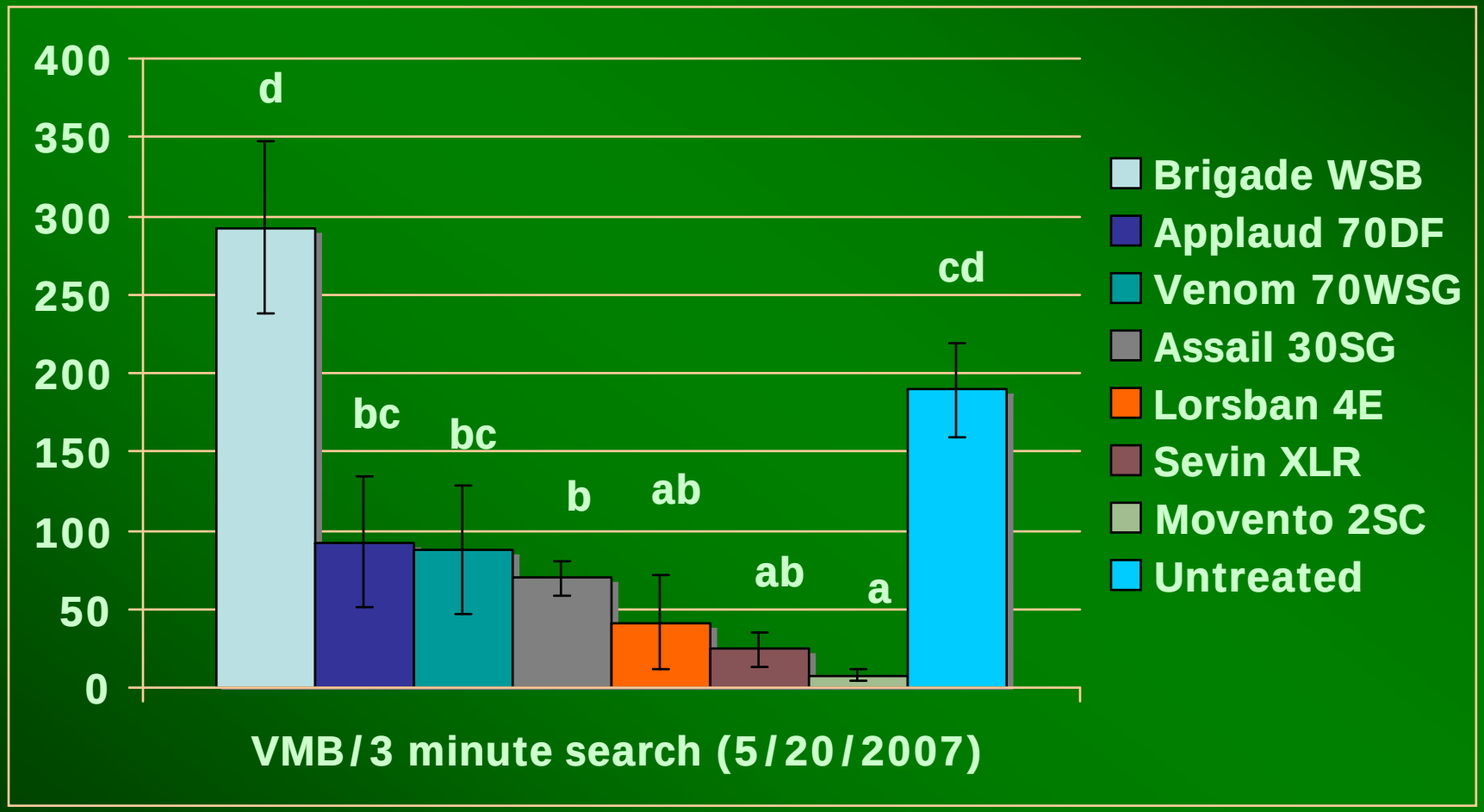


Cluster Damage Severity

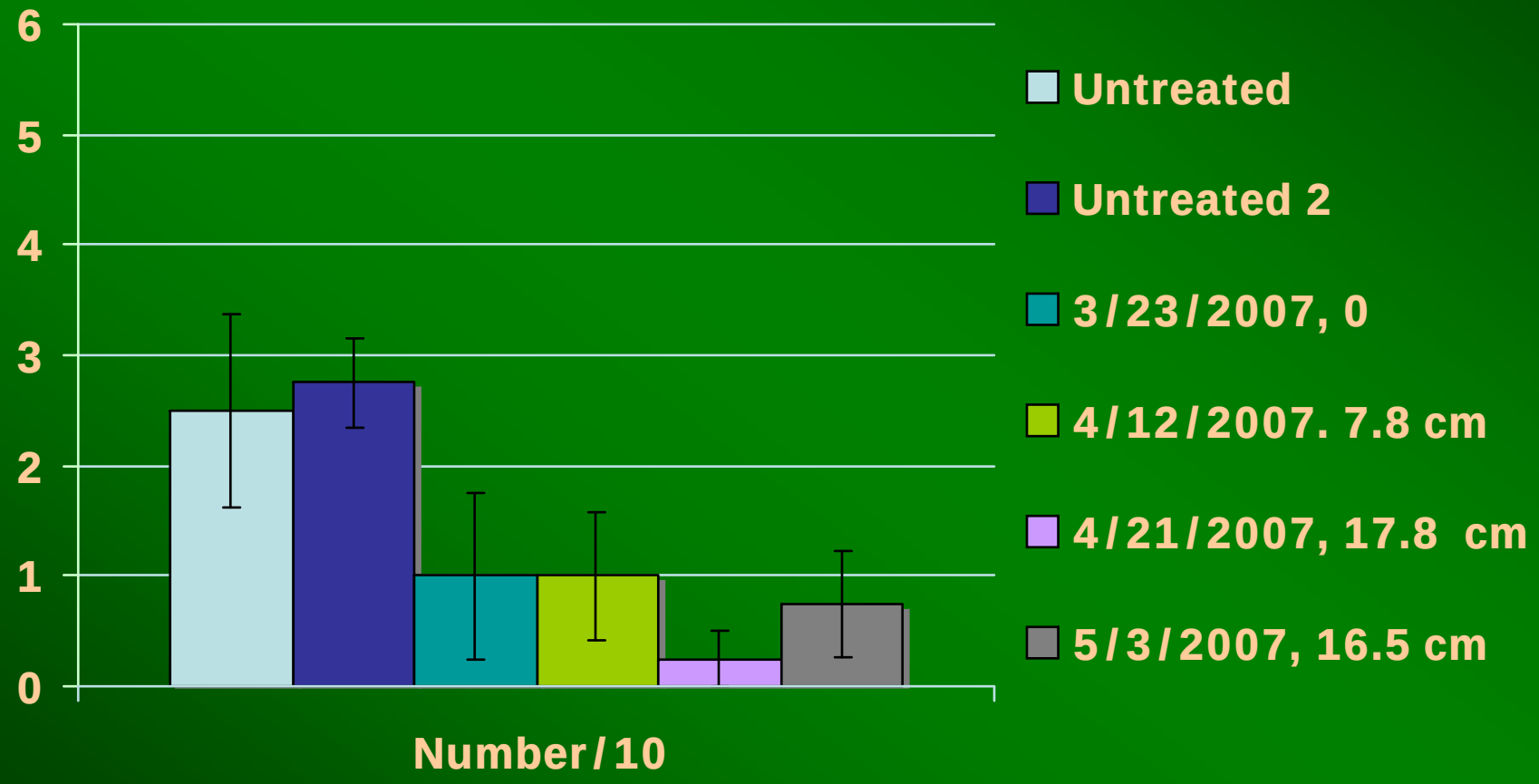



Winter
Crawler
location

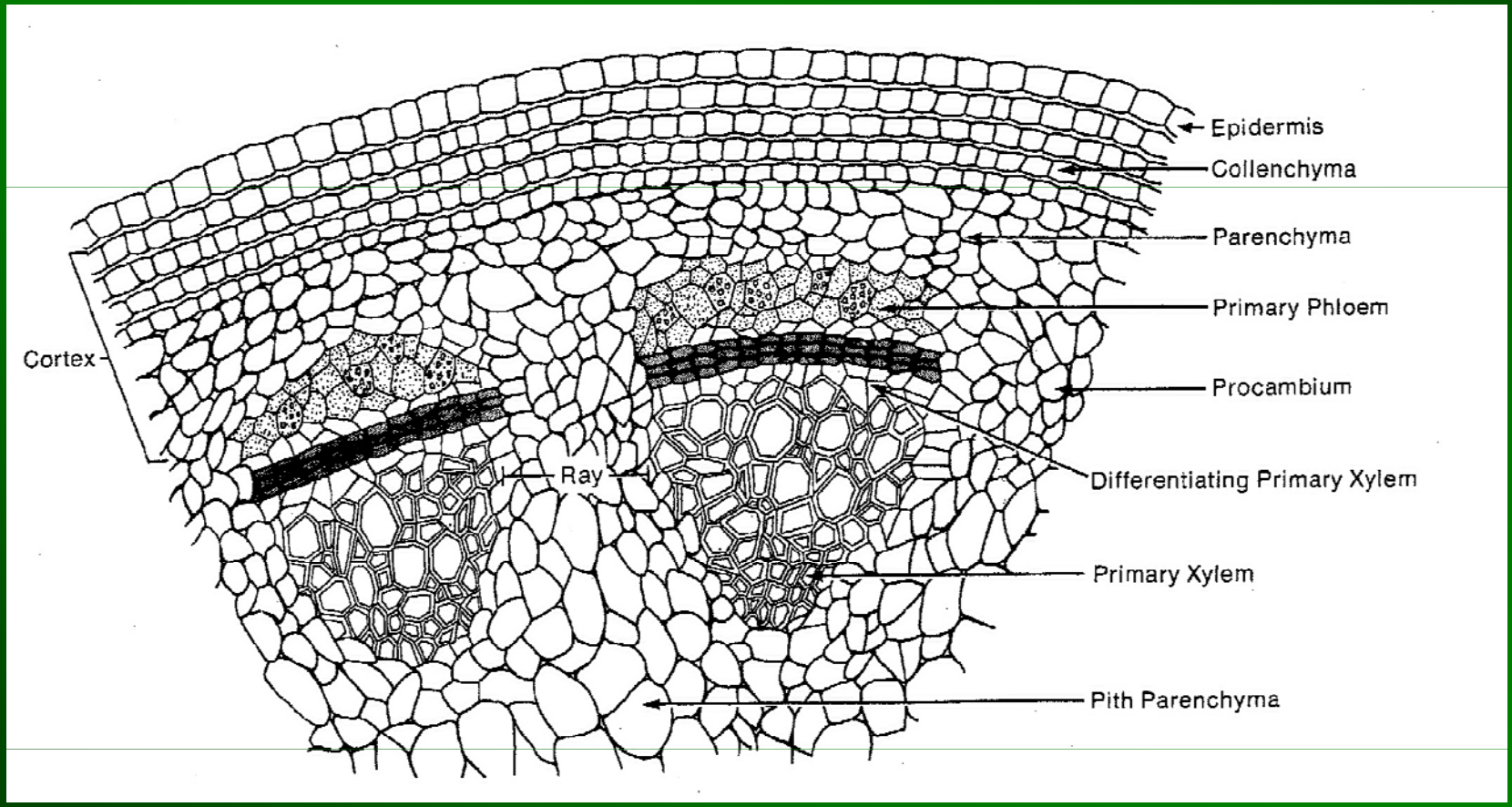
Post Harvest (8/28/06) Insecticide Application (From Haviland and Buckey, Kern County UCCE 2008)



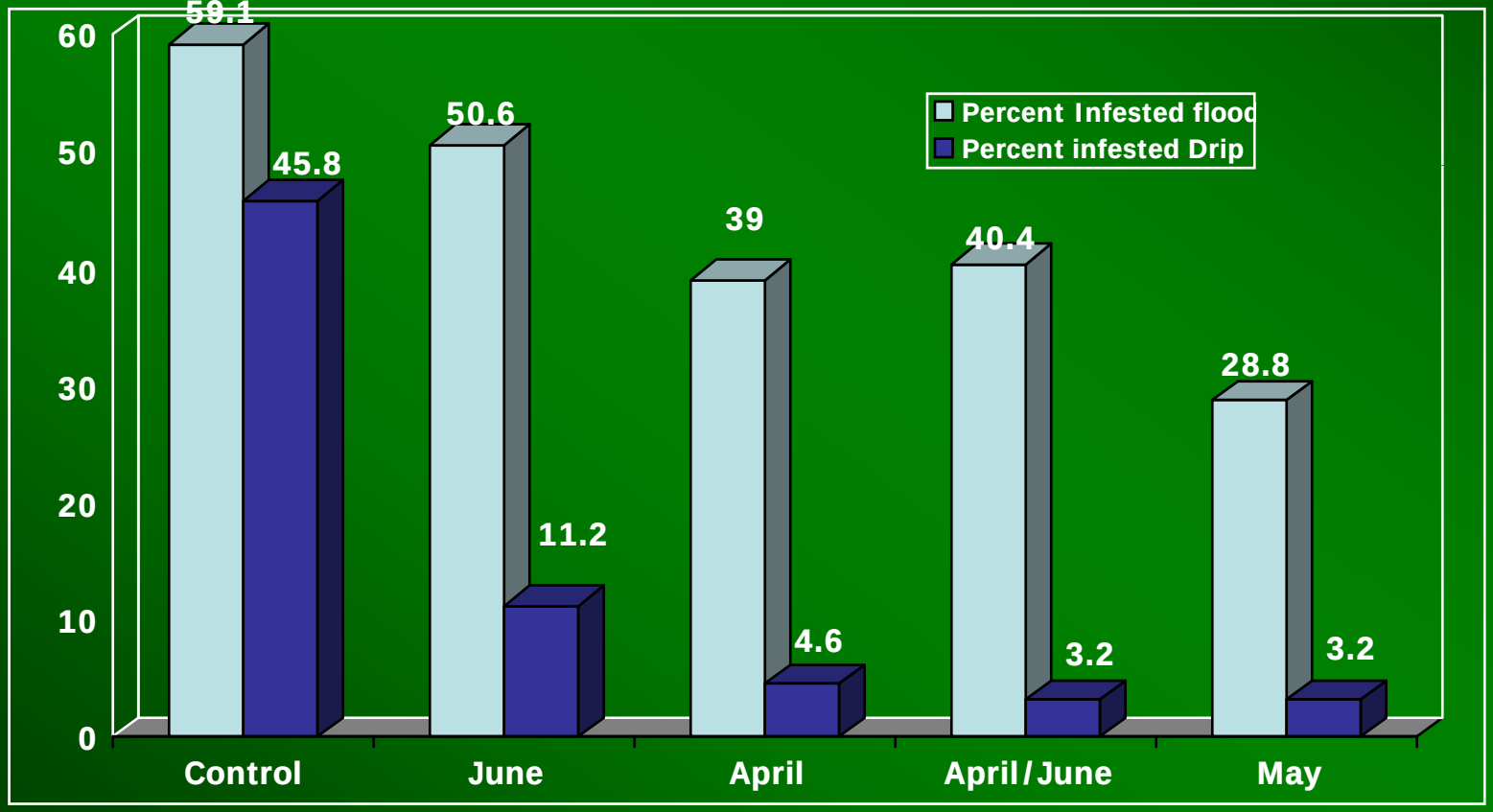
Applaud Timing Trial , Vine Mealybug, Thomson Seedless, 2006



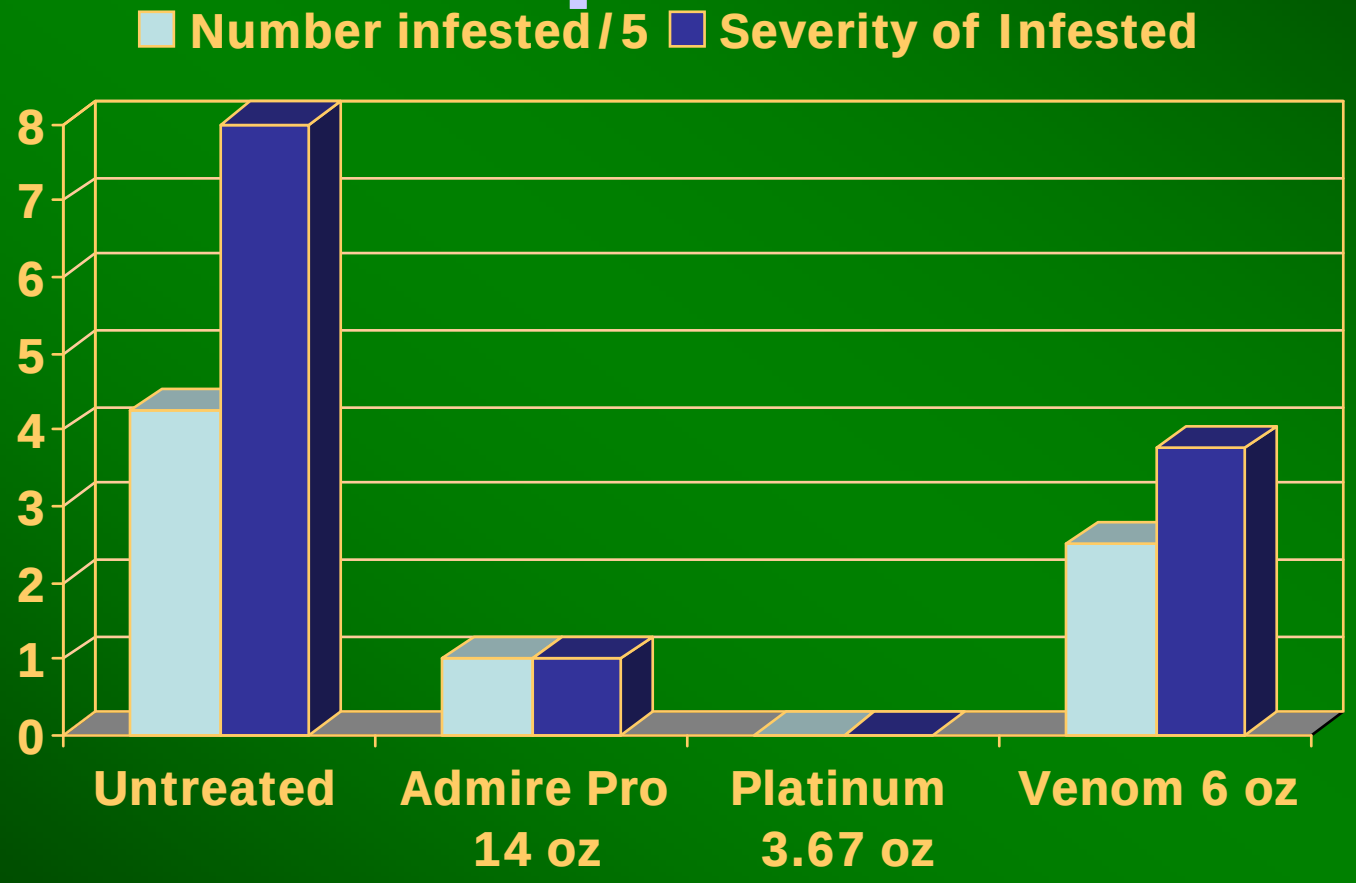
Stem Cross Section



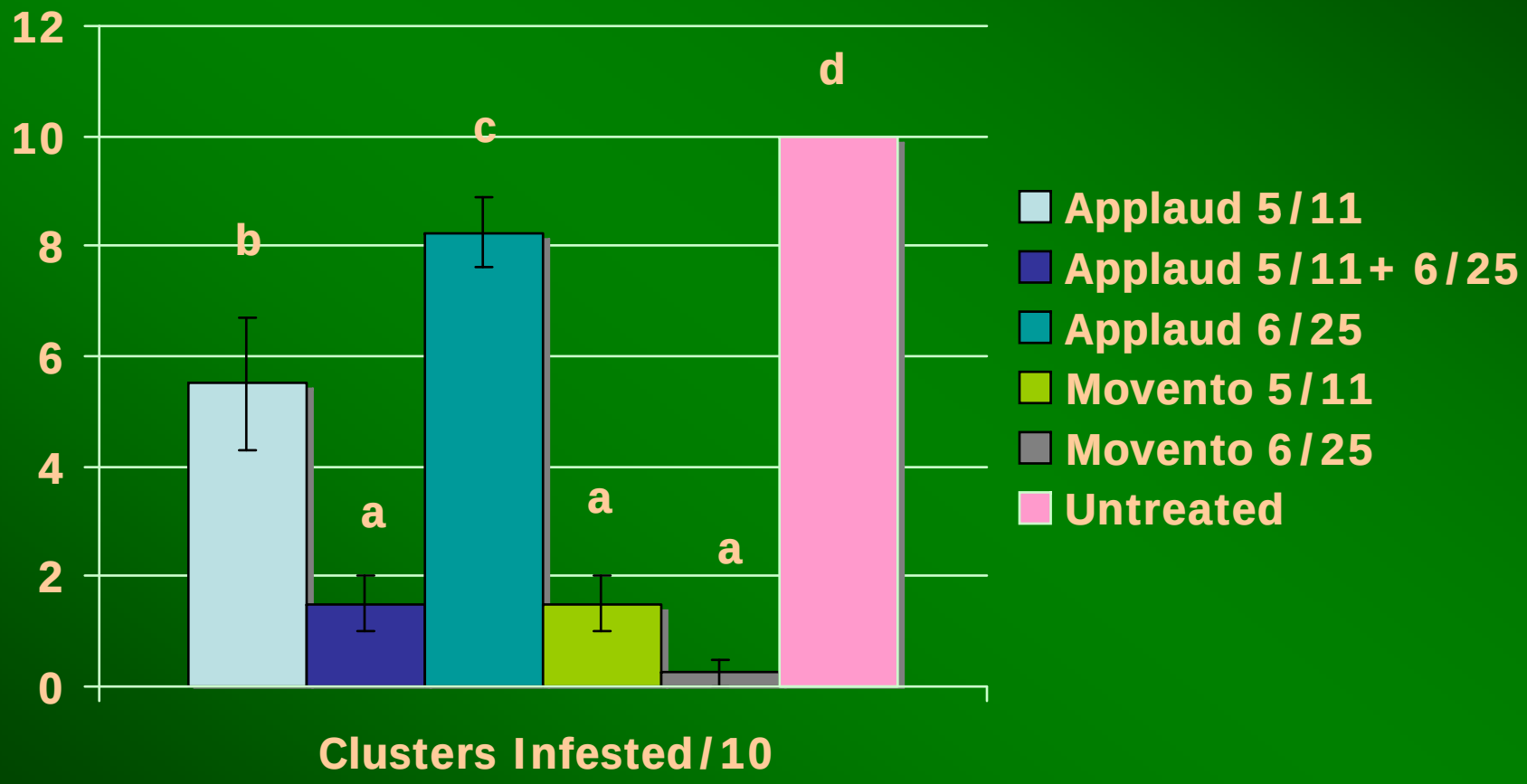
Choolgian Vine Mealybug Flood vs Drip Treatments Imidacloprid, 2002



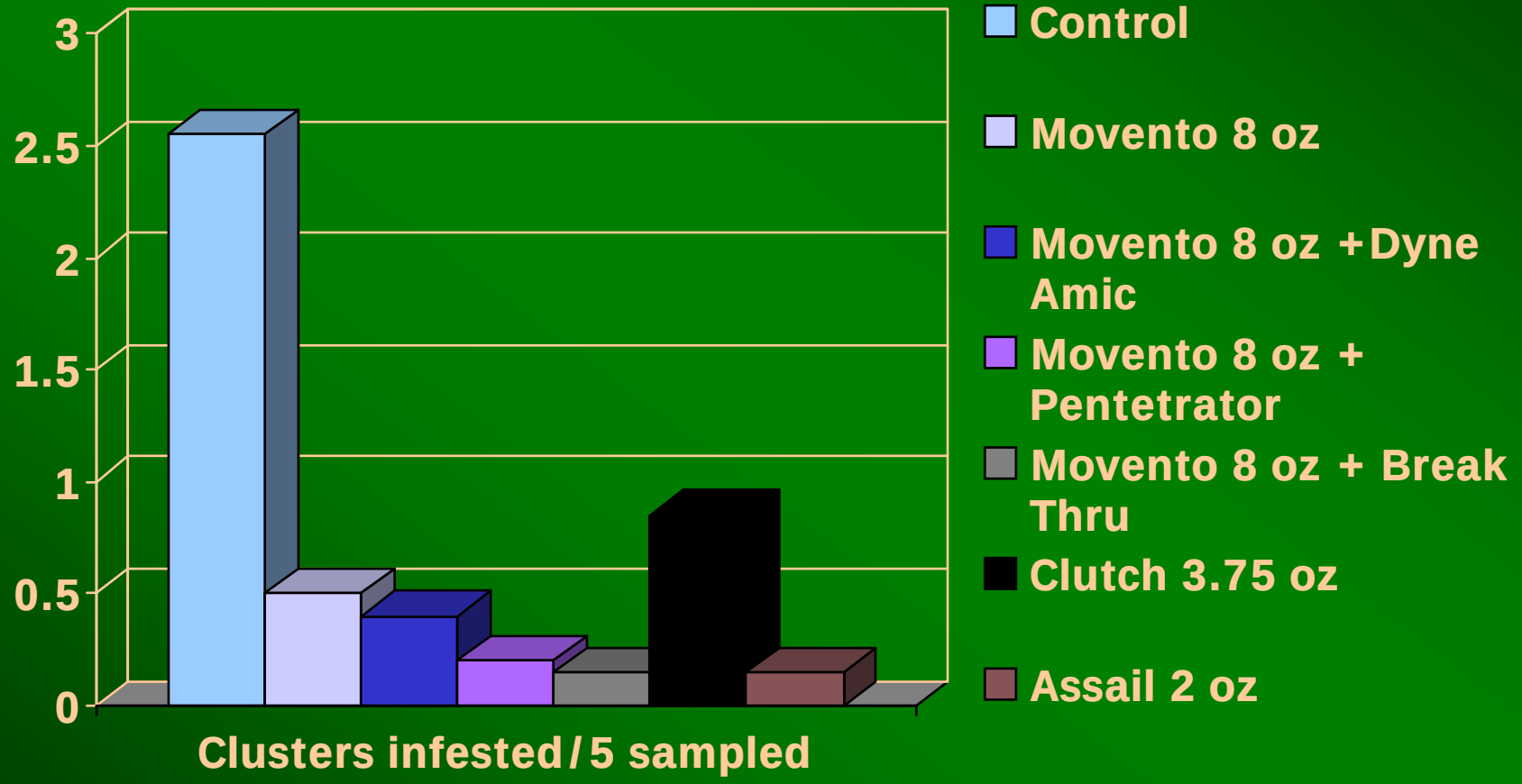
Vine Mealybug Systemic Trial 2008, Treated 6/5 and Sampled 7/2



Vine MB Inseason Controls, Reading 8/21, 2007



Effects of Various Insecticides (6/30) on Vine Mealybug Infestation (7/25)

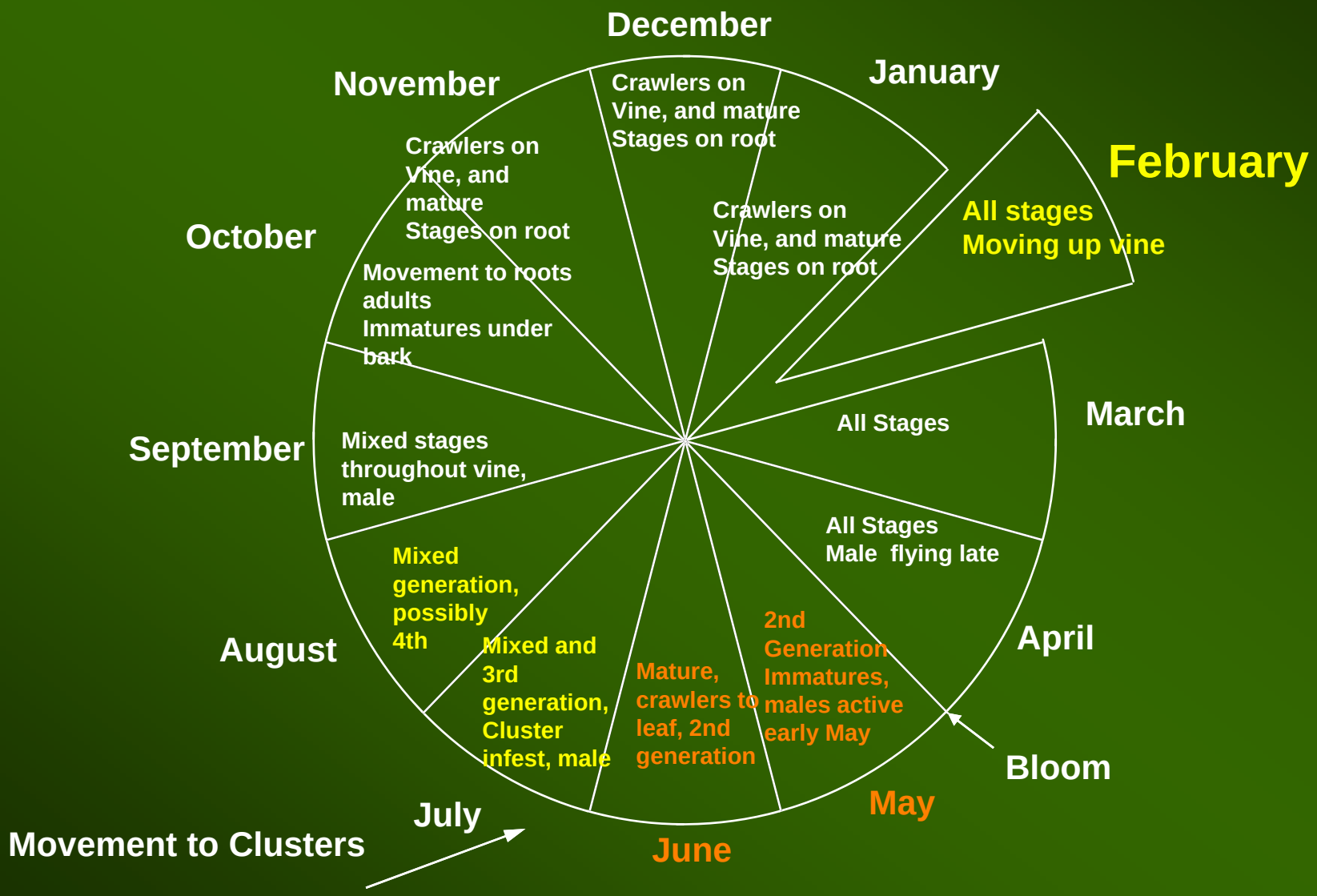


Vine mealybug Biological Control

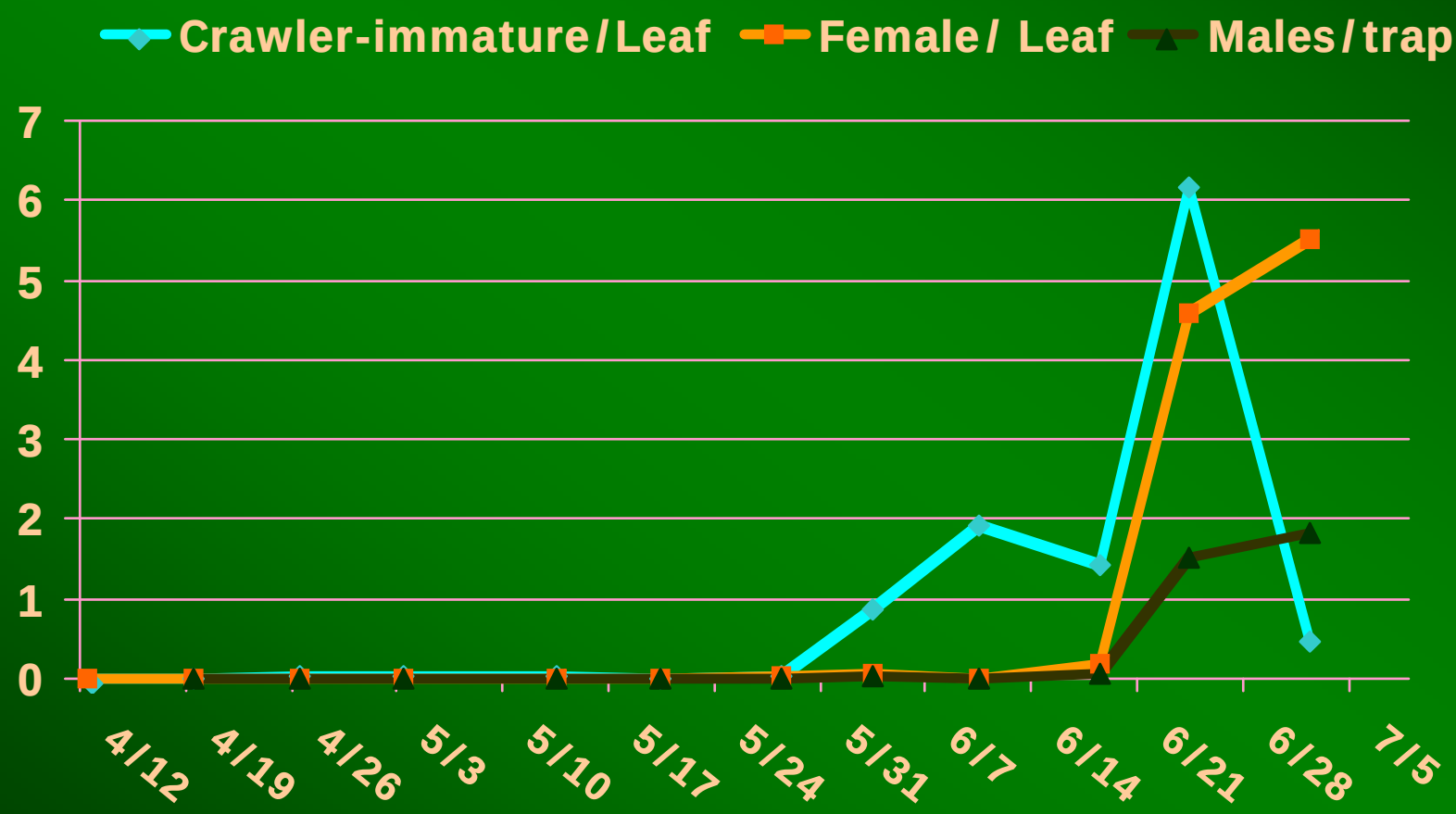
Integrating the Management

- Important to preserve biological control
- Chemical control is necessary
  - Integration involves the product and when it is applied.
- Selective (harmful to target but not biocontrol)
  - Applaud, Admire, Movento, Platinum, Oils
- Non Selective
  - Assail, Lannate, Dimethoate, Diazinon, Lorsban, Sevin
- Timing is Selective
  - Lorsban in Spring but not post harvest
- Other techniques

Seasonal Development of Vine Mealybug in Central San Joaquin Valley



Vine Mealybug Crawler and Male Seasonal Activity 2008



MALE VMB

SEABRIGHT LABORATORIES
...Earth Friendly Products
Emeryville, CA 94608 USA

SEABRIGHT LABORATORIES
...Earth Friendly Products
Emeryville, CA 94608 USA

Monitoring for Vine Mealybug with Pheromone Traps

David Haviland, Entomology Farm Advisor, UC Cooperative Extension, Kern Co.
Printable color version available at cekern.ucdavis.edu/entomology/vine_mealybug.htm

Recommendations for pheromone traps

- Vine mealybug pheromone lure (product of Suterra LLC)
- Red Pherocon® Delta IIID sticky trap (product of Trécé, Inc.)
- Place 1 trap per ~20 acres
- Hang within canopy from trellis in high-traffic areas
- Check trap every 2-4 weeks
- Replace lure every 2 months

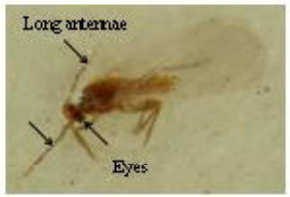
Mealybug males are similar in size to these periods. . . . . Preliminary identifications can be made with a 10x hand lens. Thirty to 40x magnification is recommended for confirmation.

Pheromone traps are a highly effective method for determining the presence of vine mealybug in vineyards. Trap can be used to survey for this pest in areas where it is not known to occur, or as a monitoring tool within infested vineyards.

Male vine mealybug characteristics

- Amber/brown color, not black
- Long antennae
- Large, egg-shaped thorax with a narrower abdomen

- Two wings with no noticeable veination (wings often difficult to see when stuck on a card)
- Eyes prominent, appear red to black



Other small insects that may appear similar to vine mealybug males

Thrips

Springtails

Aphids

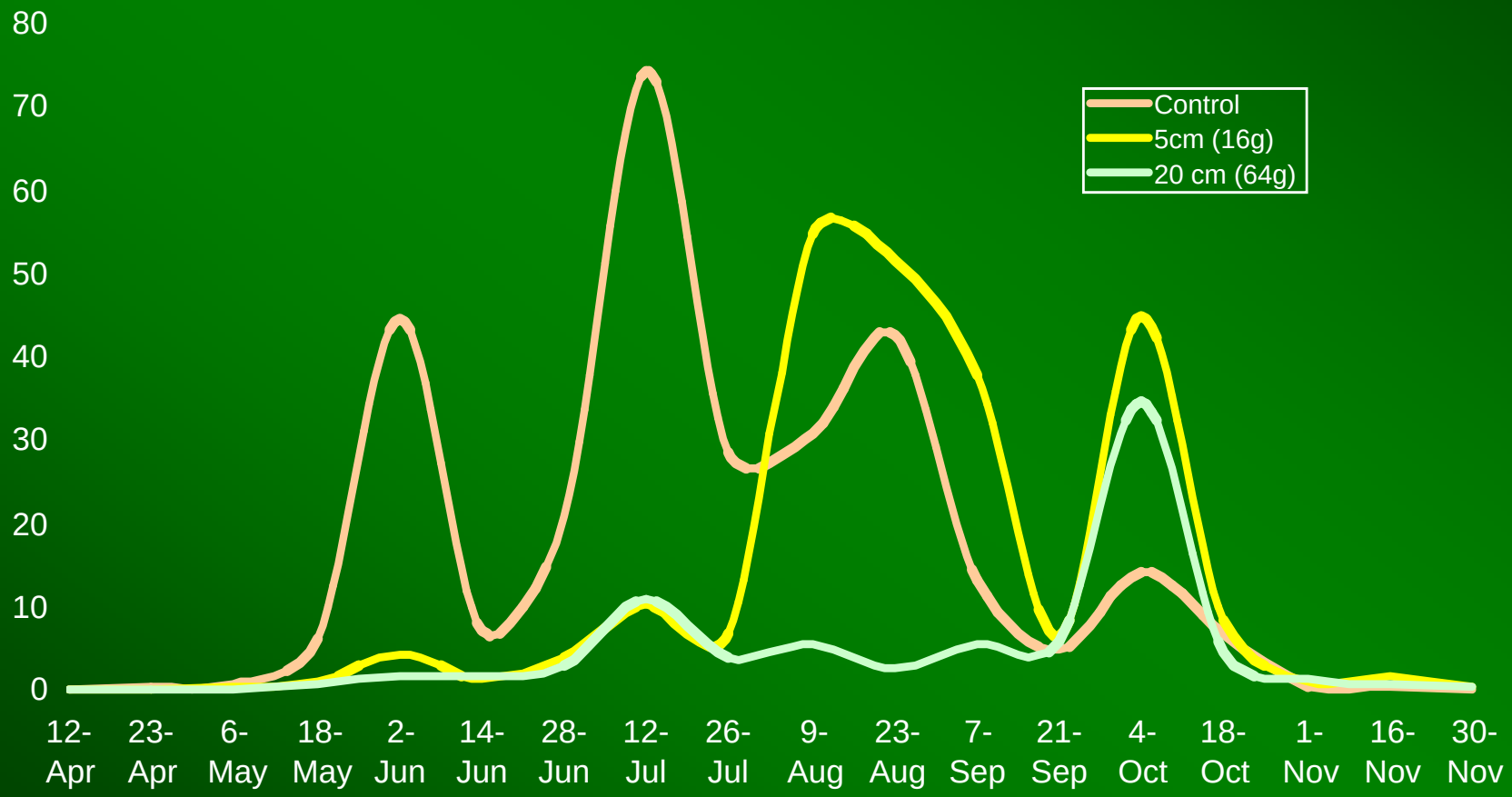
Parasitic wasps

Vine mealybug pheromone traps are very effective, and can attract males from adjacent fields over ¼ mile away. It is therefore necessary to use ground searches to validate the presence of vine mealybug females in a vineyard with trap catches.

For further assistance with identification, or to report mealybug finds in counties or regions not known to have vine mealybug, visit your County UCCE or Ag. Commissioner's office.

Vine Mealybug Trapping and Mating Confusion

Isomate Mating Disruption, Vine Mealybug Seasonal Flight



Vineyard Worker Education

Spur and VMB Counts