Identification, Monitoring & Control of Vine Mealybug

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The vine mealybug is a cousin to scale, aphids and leafhoppers.

- They suck sap from plants and feed on the sugary contents.
- They excrete sticky “honeydew”
- Sooty mold grows in honeydew excrement
- Can vector viral diseases

Not Your Father's Mealybug (grape mealybug)

1) Vine mealybug rapidly increases its population density

- Lay >500 eggs
- 4-7 generations per year (compared to 2-3 for grape mealybug)
- Excrete more honeydew
- More sooty mold & defoliation

If each VMB laid 500 eggs and they all survived...

1) 1
2) 500
3) 250,000
4) 125,000,000
5) 62,500,000,000
6) 31,250,000,000,000

One VMB could lead to 31 trillion insects in one year!!

2) Vine mealybug can feed on all parts of the vine throughout the year

- Majority hidden under bark or on roots
- Protected from sprays, predators & heat

3) Vine mealybug has a wide host range.

- Feeds on other fruit trees (apples, citrus, figs, avocados).
- Feeds on weeds (cheeseweed, burclover, black nightshade, sowthistle, lambsquarter)

VMB on burclover

4) Vine mealybug can vector viral diseases.

Vine mealybug can result in:

- complete crop loss
- rejection of loads at the winery
- death of spurs or arms

Presence of VMB and honeydew can be cause for load rejection at the winery


Honeydew accumulation
and berry damage

Feeding by VMB can cause rachis collapse and raisining


Damage to cane


VMB damage to leaves and cordon - mid-summer

VMB Distribution

- Found in Mediterranean regions of Europe, North & South Africa, the Middle East, Argentina & Mexico
- First discovered in Coachella Valley in 1994
- Found in Kern County in 1998
- Rapid dispersion throughout California grape growing regions

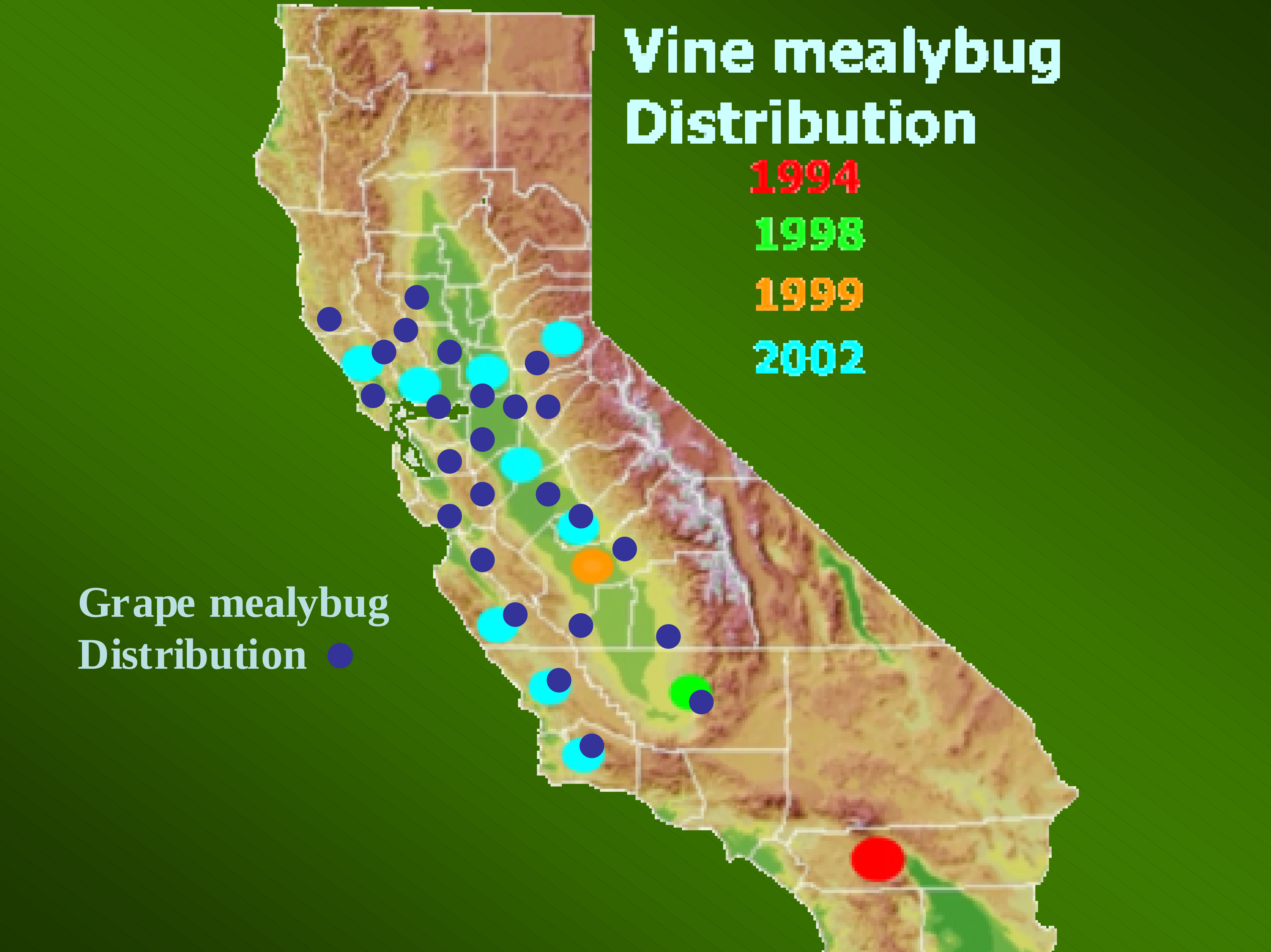
VMB Distribution

- Now 16 counties confirmed with VMB (including Stanislaus)
- Was spread throughout state mostly through infested nursery stock out of Southern California
- Some spread probably through mechanical harvesting equipment

VMB Distribution

Female VMB cannot fly

- Long distance distribution is by man
  - nursery stock
  - machinery
  - contaminated clothing
  - picking buckets, etc.
- Short distance spread by nature
  - ants
  - birds
  - blowing leaves



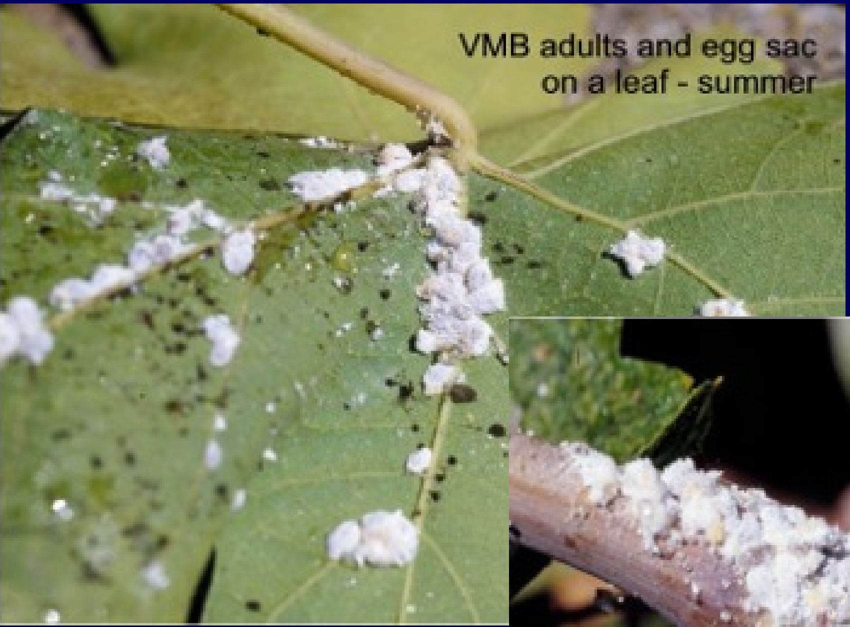
Vine mealybug
Distribution
1994
1998
1999
2002
Grape mealybug
Distribution

Seasonal Abundance and Distribution on the Vine

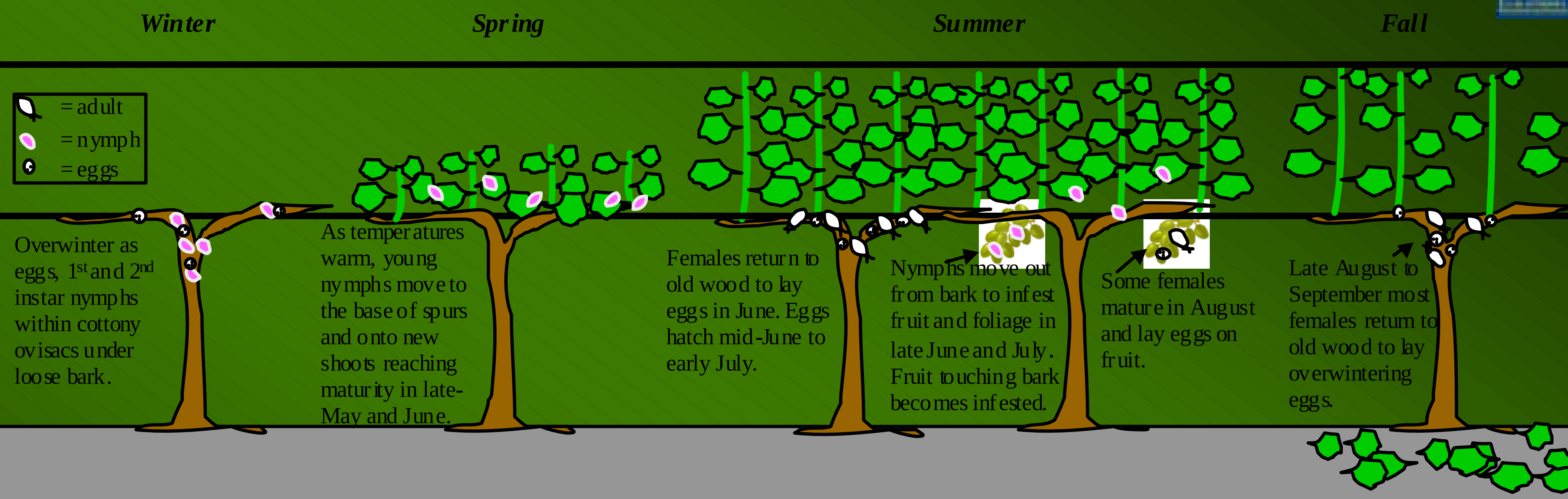
- In the San Joaquin Valley, all life stages can be found on any plant part at any given time of year
  - Overwinters <u>primarily</u> as nymphs <u>mostly</u> on the roots

In the spring, crawlers begin to move up the vine

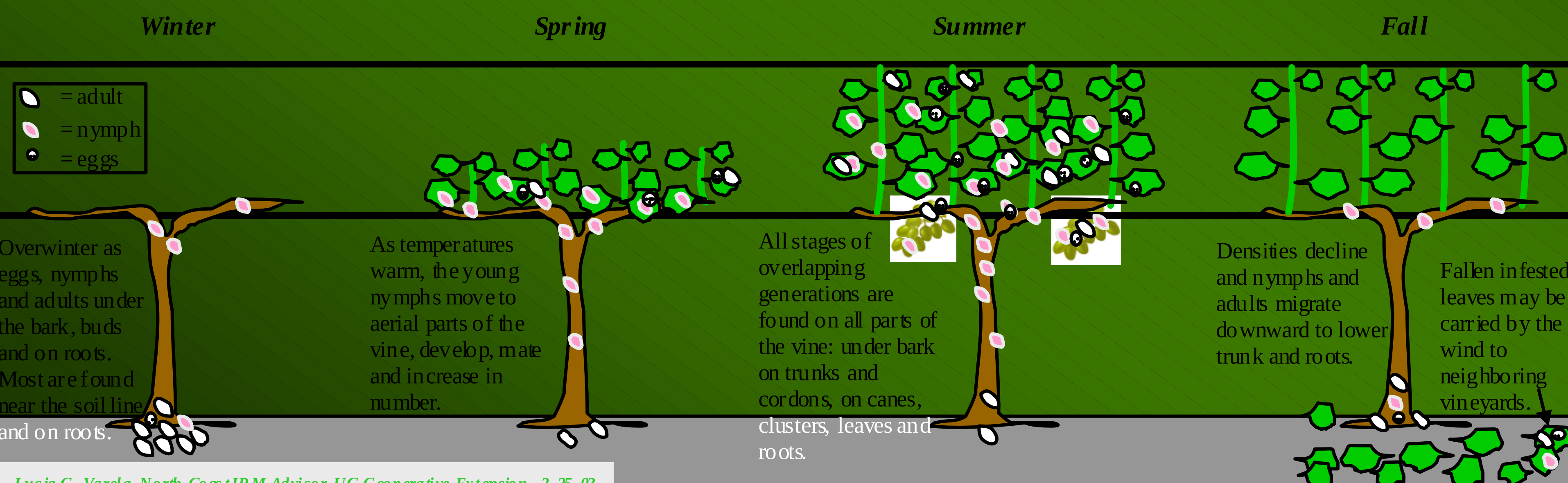
By mid-summer VMB is distributed throughout vine



Grape Mealybug (*Pseudococcus maritimus*) Life Cycle



Vine Mealybug (*Planococcus ficus*) Life Cycle



Lucia G. Varela, North Coast IPM Advisor, UC Cooperative Extension 3-25-03

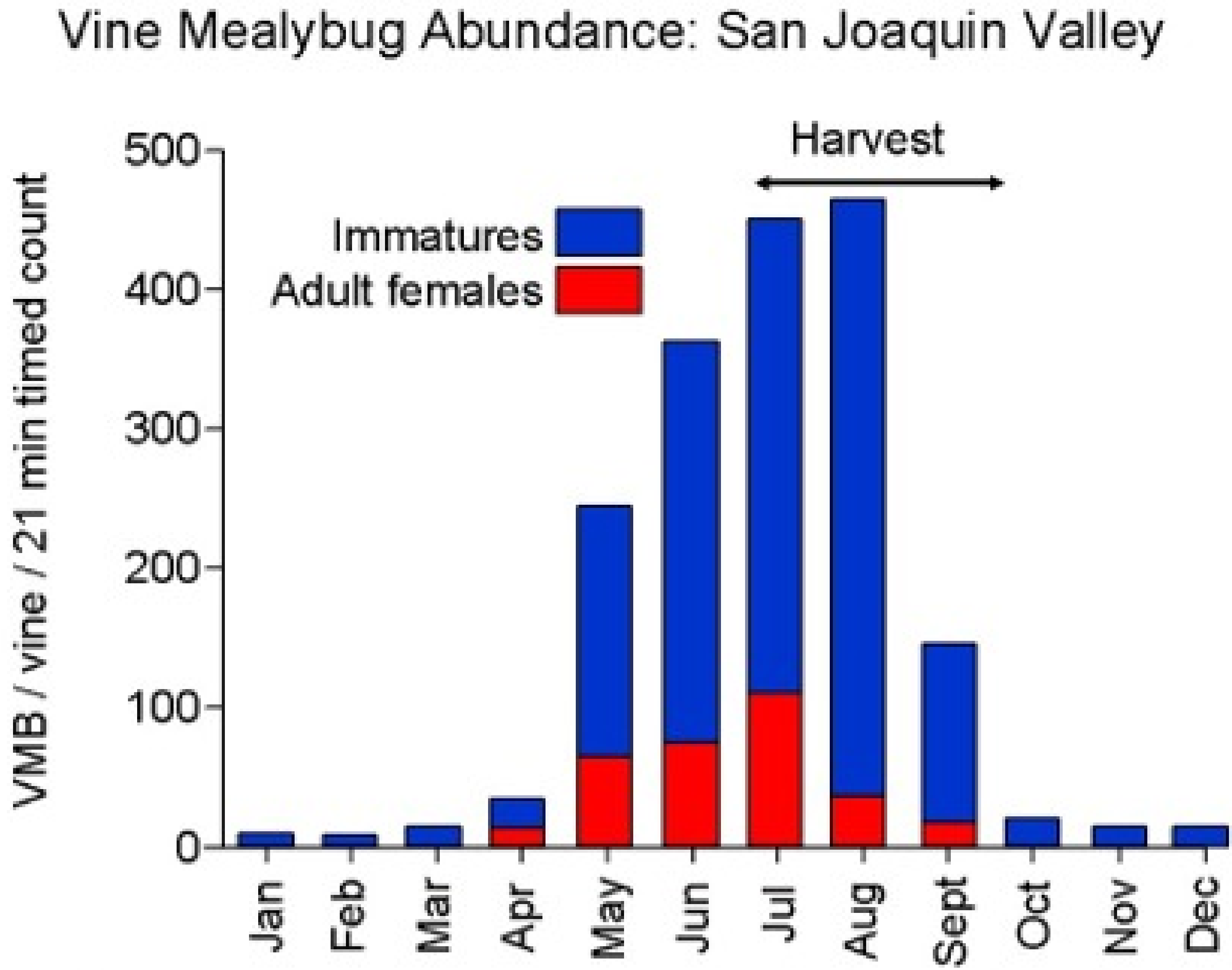
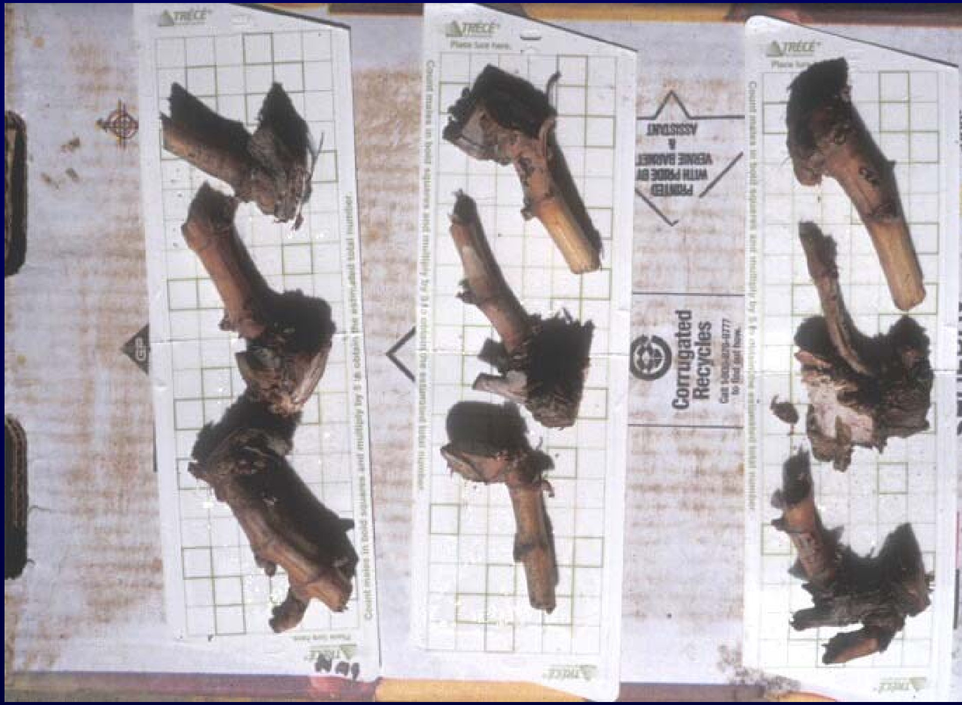
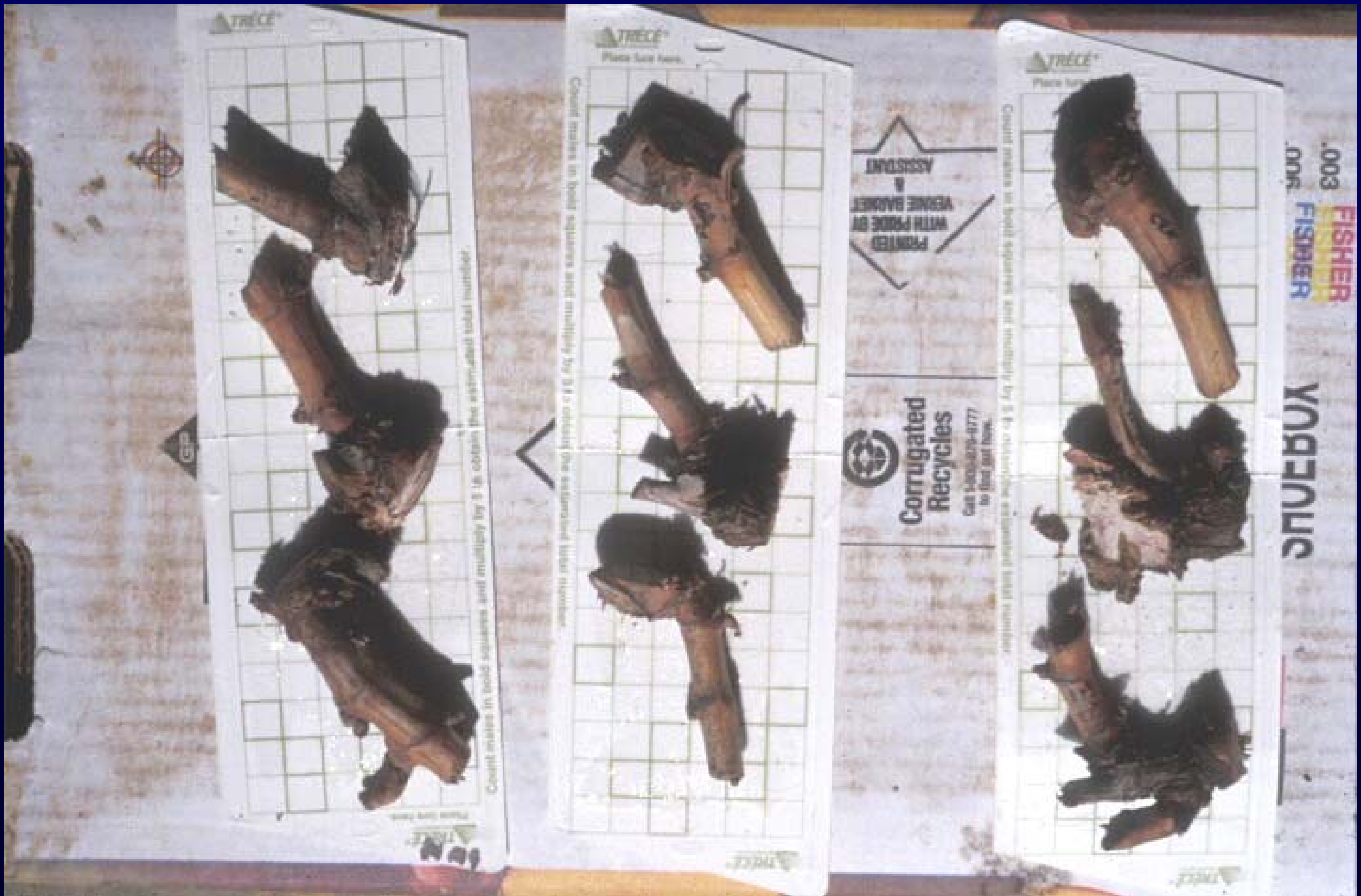


Fig. 2. Typical VMB abundance pattern in the San Joaquin Valley shows a build up until August.

Winter Monitoring for Mealybug



Monitoring VMB on Dormant Spurs with Sticky Traps



Mealybug crawlers

Summer Monitoring


VMB male and adult female

Grape Mealybug

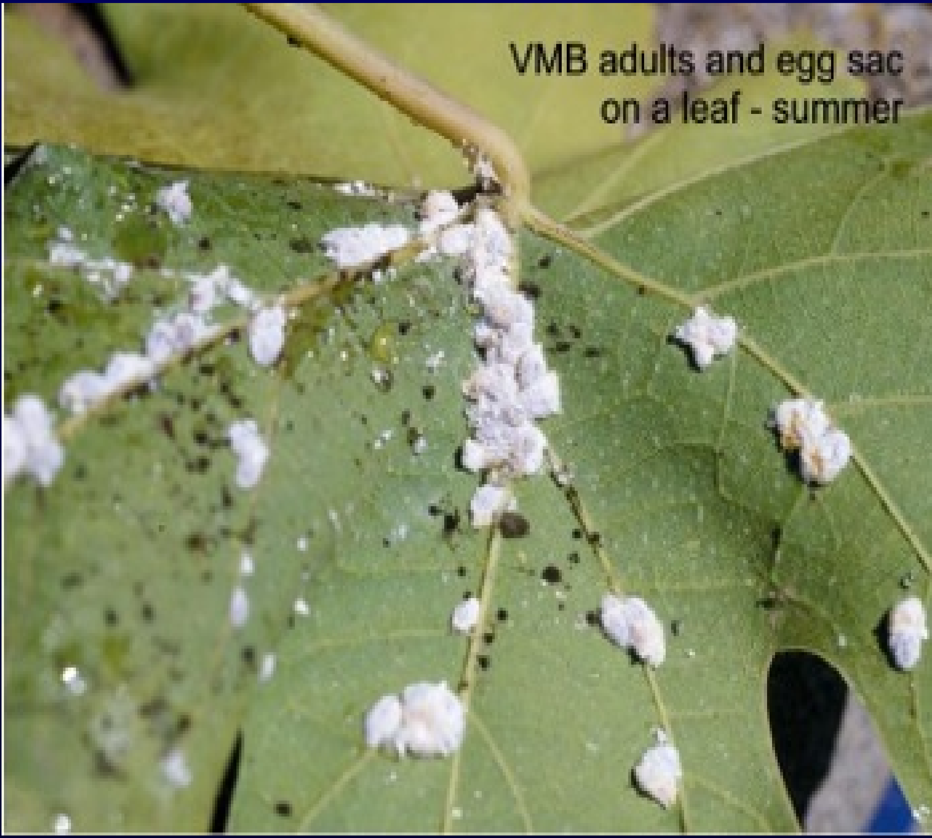
- Caudal filaments between 1/4 - 3/4 the body length

- Red fluid oozes from ostiolae when poked

Vine Mealybug

- Does not have long caudal filaments or "tails"

Look for VMB under the bark, on leaves and in clusters



Key Difference In Plant Symptoms Between Grape and Vine Mealybugs

Huge numbers on top of leaves

Defoliation

VMB produces copious amounts of honeydew - clusters look like they are coated with melted sugar or wax

Vine Mealybugs are difficult to detect when infestations are new

- They are hidden under bark or underground
- Look for other signs:
  - foraging ants on vines
  - wet bark (honeydew)
  - white wax protruding from under bark

Monitoring with Pheromone Traps

Monitoring with Pheromone Traps

- Excellent when looking for new infestations or if determining whether eradication effort was successful
- May attract males from over 1/4 mile
- Trap counts correlate with VMB density

Scenturion VMB pheromone lures available from Suterra O

The preferred trap is a Pherocon Delta IIID

- Trece 831-758-0204
- Suterra 541-388-3688

Trapping Guidelines

- Place traps at or above cordon
- Protected but ends exposed
- Check traps every 2 weeks
- Change lures every 8 weeks
- Place near replants, at row ends or where birds gather
- Male flight period is May - October

Male VMB:

- single pair of wings
- small “V” shaped tail
- Long antennae
- Brown
- Smaller than a thrips

VMB Management

- **<u>PREVENTION IS BEST</u>**

- Inspect nursery stock
- <u>Thoroughly</u> clean and inspect machinery, especially mechanical harvesters
- Workers should wash and change clothes after working in an infested block

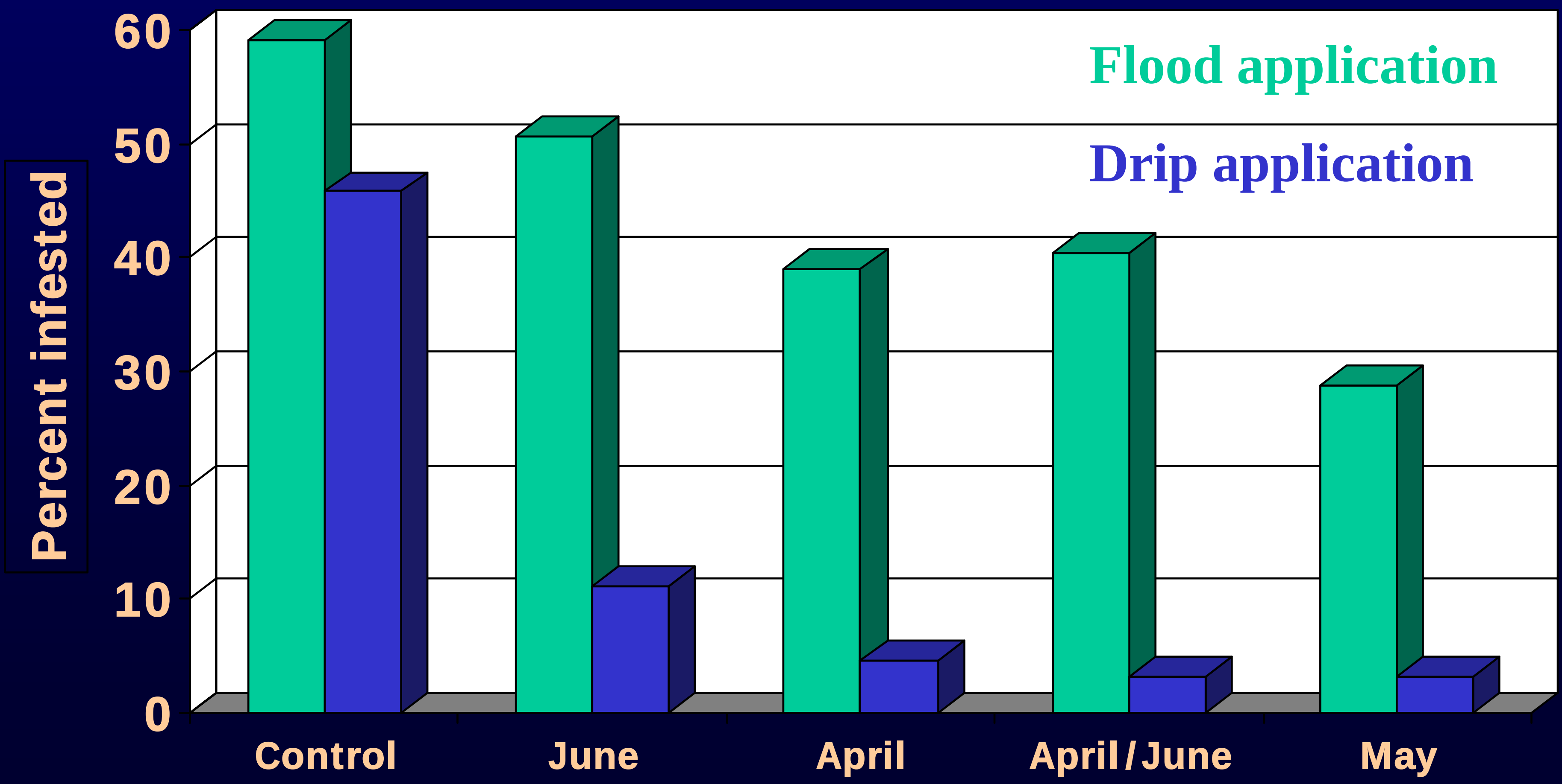
VMB Management

- Inspect vines planted from 1998-2000, especially if they came from a South San Joaquin Valley nursery.
- Hang pheromone traps
- If an infestation is suspected - call your Farm Advisor or Ag Commissioner

VMB Management

- If VMB is confirmed - **ERADICATE**
- Program may cost > $250 per acre but cheaper in the long run.

Choolgian Vine Mealybug Flood vs Drip Admire Treatments, 2002



Eradication Program

- Postharvest spray with Lorsban (whole vine & ground to kill ants)
- Delayed dormant Lorsban (directed to vine base)
- Systemic application of Admire at bloomtime and 4-6 weeks later.
- Summer - fall Applaud, Imidan, Malathion, Dimethoate or Provado

If not eradicated in 2 years, switch to annual management program

- Alternate insecticides each year
  - Bloom-time Admire
  - Delayed dormant Lorsban or Applaud; repeat in summer

Be Ever Vigilant

- Train your workers to identify signs of VMB
- Use pheromone traps
- Use good sanitation habits

Good websites for more VMB information

www.uckac.edu

- Go to research & extension programs, then mealybug

www.ipm.ucdavis.edu

- Pest Management Guidelines