



## Vine Mealybug Frequently Asked Questions

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### **What damage does VMB do to vines and grapes?**

The primary damage caused by Vine Mealybug (*Planococcus ficus*) is cluster contamination with egg sacs, cottony white wax secretions, nymphs, adults and honeydew secretion. Vine mealybug excretes copious amounts of honeydew onto berries, leaves, canes, cordons and trunks making them very sticky. This sugary honeydew provides the growth medium for sooty mold fungi that turns the affected areas black. Unchecked infestations can cause premature leaf drop, defoliation, and loss of plant vigor. Like other mealybugs, it can spread leafroll and corky bark viruses.

### **Why is it important to detect VMB early?**

To avoid spread to adjacent vines and neighboring vineyards. At present, the only way to control VMB is with the use of insecticides. One to several insecticide applications are needed to obtain clean fruit. The more it spreads the greater the acreage that will need treatment.

### **What is the life cycle of VMB here on the North Coast?**

On the North Coast there are probably four overlapping generations a year. VMB overwinters as eggs inside cottony sacs and as nymphs under the bark at the graft union, in old pruning wounds in the trunk and below the base of the spurs. As temperatures warm in early spring the nymphs develop into adults, mate and lay eggs of the first generation where they overwintered. After egg hatch (late March through April), crawlers move up the trunk and can be found below bark on the trunk and cordons and at the base of spurs. The first generation will take approximately two months to develop to adults (April through May). By late spring, nymphs can be found on basal leaves. In the summer months, populations increase dramatically with each generation. At this time, all stages are found on most above ground parts of the vine: under and on top of bark on trunk, cordons, and spurs. Individuals are distributed through the canopy well above the fruit zone. Clusters of insects will be seen at the base of the leaf stem (petiole) where it meets the cane. Females lay eggs on all above-ground parts of the vine, including the leaves. Other mealybugs found in vineyards (grape and obscure) do not lay eggs on the leaves and are not found in the canopy above the fruit zone. Starting in November, densities decline and nymphs migrate downward under the bark to the lower trunk.

### **How is VMB spread to a vineyard?**

The initial introduction into North Coast vineyards was via contaminated nursery stock. In the summer months, when VMB populations are found throughout the canopy, spread can occur through premature leaf drop, due to feeding, or normal leaf drop coupled with the movement of those leaves by wind. Other means of spread include machinery,

workers, birds and winery waste. It is important not to allow populations to build up in the canopy and to have the lowest population possible at harvest.

### **What preventative measures should I take to avoid the arrival of VMB in my vineyard?**

Know what VMB looks like. Train your workers to detect VMB in your vineyard. Monitor for males with VMB pheromone traps. Talk to your neighbors to encourage participation in trapping. When purchasing nursery stock, inquire if the nursery is following a monitoring and sanitation protocol for VMB. Nurseries should be monitoring with pheromone traps. Nursery sanitation practices include hot water treatment of cuttings and dormant vines.

### **How do I find out if I have VMB in my vineyard?**

The first step is to set VMB traps to catch the males. If males are caught, it will be necessary to walk the vineyard in search of the colonies. Look for ant activity, honeydew and sooty mold. In winter and early spring (November through May) look for the colonies under the bark, at the graft union, trunk and cordons. In the summer months look for colonies in the canopy, under the bark in the trunks and cordons.

### **Where can I obtain VMB traps?**

Contact your agricultural chemical supplier. You may also contact your local Agricultural Commissioners' Office.

Traps are tent shaped (delta traps) and red in color. Inside the trap you place the lure that contains the VMB pheromone.

### **When, where, and how many traps should I place in my vineyard?**

In the North Coast, we begin to catch males in traps in mid to late May. Begin trapping in mid-June or July. The highest numbers are caught from September through November. However, early monitoring increases the chances of finding the infestation before harvest and before the insects move throughout the canopy. Place one trap per 30 acres or less at the center of the vineyard. Placing the trap in the center of the vineyard allows for a larger diameter to be surveyed. Place the trap in the trellis wire at the fruit zone level. Check the traps every other week and replace the lure once a month or every 6 weeks.

### **How do I evaluate the traps, or where can they be evaluated?**

Your local Agricultural Commissioner's Office personnel may be able to assist you. Trained PCA's in possession of a 30 X dissecting scope may also be of assistance. A trap with a suspected male should be sent to the CDFR Plant Pest Diagnostics Center, through your local Agricultural Commissioner's Office, for positive identification.

### **How do numbers of trapped VMB change depending on season and proximity to an infestation?**

In the North Coast low numbers are caught from mid-May through August. In this period any number above 10 may mean the infestation is close by – possibly in the block that the trap was placed. In September through November the numbers increase substantially, and 50 males or more per trap could mean the infestation is close by. In this period, one

or two male per trap means the VMB infestation has a very low population of insects or it is far away – probably outside of the block that the trap was placed.

**Do the traps catch other species of male mealybugs?**

Yes. The traps can attract male grass mealybugs in the genus *Phenacoccus* and *Chorizococcus*. In some locations the number of *Phenacoccus* caught can be high. Both grass mealybugs can be easily distinguished from *Planococcus* mealybugs (VMB genus) with a little bit of training and practice. Occasionally, grape or obscure mealybug males (genus *Pseudococcus*) are trapped in low numbers (1 to 3) and can be distinguished from *Planococcus* mealybugs by a CDFA expert. In California we have two species in the genus *Planococcus*: VMB and citrus mealybug. The males of these two species cannot be distinguished. However, citrus mealybug has not been detected in the North Coast since we started trapping in 2002.

**Is it possible to eradicate VMB from a vineyard? If so, how?**

It is not known if VMB can be eradicated. It may be possible if only a handful of vines are found to have VMB, if it is detected within one or two years of its introduction into the vineyard, and if the vines are relatively young (perhaps no more than 3 years old). Diligence on the part of the grower is imperative for this to happen. This entails marking vines where any live stage has been observed, removing the bark and treating the vines with insecticides. Constant monitoring of all vines affected and nearby vines throughout the year is needed. As soon as any VMB stage is observed, it should be treated. Never allow a population to build up in the canopy since it increases the risk of spreading this pest.

**If VMB cannot be eradicated, what are the materials and timing for a control strategy?**

Please refer to the UC Pest Management Guidelines at:  
<http://www.ipm.ucdavis.edu/PMG/r302301911.html>

**What are biological and cultural controls for VMB?**

The mealybug destroyer (*Cryptolaemus montrouzieri*) has been commonly found feeding on VMB eggs in both Sonoma and Napa counties. The adult of this small beetle is mostly brown or blackish with an orange-brown head and tip of the abdomen. The larval stage resembles that of a mealybug since its body is covered with a white-waxy secretion. It can be distinguished by its fast movement in search of prey. Also, with the use of a hand lens, mealybug destroyers can be distinguished by the chewing mouthparts as opposed to mealybugs that have sucking mouthparts.

In the San Joaquin and Coachella Valleys, two parasites that attack citrus and vine mealybugs have been introduced: *Anagyrus pseudococci* and *Leptomastidea abnormis*. The former is the one more commonly found in both regions. To date, neither has been released in the North Coast.

**Are there organic materials to control or eradicate VMB?**

No research has been conducted on organic materials for VMB control. Oils were studied for control of grape mealybug but were found ineffective due to the repellent waxy coating of mealybugs. Mating disruption with pheromones is being researched.

**Can winery waste be a source of VMB? If so, how?**

The number of VMB in infested clusters decreases after going through the process of destemming and/or press. However, eggs, nymphs and, to a lesser extent, adults do survive. The seeds and skins that are removed from the bottom of a fermentation tank pose little or no risk.

Infested stems from the destemming operation and infested pomace from whole cluster press loads must not be placed near vines or spread down row centers. Winery waste can be taken to a state-certified composting facility, or to the county landfill. If it is returned to the vineyard, it must be managed to reduce VMB populations. Preliminary studies show that solarization with 4 mm clear plastic sheeting for 4 weeks can substantially reduce populations. The pile has to be less than 4 ft high and the plastic has to completely cover the pile, and remain firmly secured to the ground with no air gaps. Stems are relatively more infested than skins. Solarization may be more effective if stems are mixed with seeds and skins. In piles with a higher content of skins we obtained population reduction earlier than in piles that were 100% stems. The plastic has to be clear since this allows sunlight to penetrate, increasing the temperature inside the pile

**Will there be local educational meetings about VMB?**

Lake County Agricultural Commissioner will provide a VMB update at the UCCE Lake and Mendocino Winegrape Growers Meeting on January 12, 2005, location to be announced.

UCCE is planning to hold a field meeting in mid-May to train growers and field personnel to monitor and control VMB. One session will be in English and the other in Spanish. UCCE, Lake County Department of Agriculture and the Lake County Winegrape Commission will publicize the meeting date and location.

**Where can I find more information about VMB?**

There is a VMB page on the Lake County UCCE website, <http://celake.ucdavis.edu> <http://www.vinemealybug.uckac.edu> is another useful website.

“Mealybugs in California Vineyards” UC ANR Publication # 21612. Call 263-6838 to order