

Update on Vine Mealybug Trapping and Distribution

January 11, 2011

Kris Godfrey, Gillian Watson, and Natalia von Ellenrieder
California Department of Food and Agriculture
Sacramento, California

Pheromone trapping and sampling for vine mealybug (VMB) [*Planococcus ficus* (Signoret) (Homoptera: Pseudococcidae)] began throughout the state in 2003 and has continued through 2010. The level of trapping in 2010 was greater than that in 2009. Traps and lures, purchased with continued funding from USDA-APHIS, were made available to anyone requesting traps from the California Department of Food and Agriculture (CDFA). A total of 20 counties submitted vine mealybug samples and/or traps to the CDFA Plant Pest Diagnostics Laboratory (10 counties submitting traps, 7 counties submitting insect or plant samples, and 10 counties submitting traps and plant samples from certified grapevine nurseries). The CDFA Plant Pest Diagnostics Laboratory examined approximately 1,205 traps and 28 insect or plant samples for the presence of VMB in 2010.

The results of the trapping and sampling programs from 1994 to 2010 can be found in Appendix A. These are based on information from the CDFA Pest Damage Records (PDRs) and other information submitted by agricultural commissioner personnel and UCCE scientists. There were no new county records for VM B in 2010.

Vine mealybug infestations continued to spread out slowly from known infested areas during 2010. There are 20 infested counties; 25 have been surveyed and are currently negative for VMB; and two (Amador and Lake Counties) are currently under eradication programs (Table 1). In Lake County, extensive trapping was conducted and no VMB was found. In the past, Stanislaus County had questionable VMB status because of a few males trapped sporadically in previous years at commercial vineyards; however, in October 2010 a small number of VMB males were found in a trap at a nursery. This trap was located several miles from localities where VMB males had been caught previously. These catches suggest that there is at least one infested vineyard in Stanislaus County, so this county has been moved to the list of known infested counties.

Some of the insect samples submitted by Napa and San Luis Obispo Counties contained vine mealybugs that were or had been parasitized. The parasitoids attacking these mealybugs were not identified. However, releases of *Anagyrus pseudococci* and *Coccidoxenoides periminutus* were made in these counties beginning in 2006 and 2007 and continued through 2010. It is possible that the parasitized vine mealybugs found in the samples were one of these two parasitoids.

Table 1. California counties that have **at least one** vineyard infested with VMB, counties surveyed and found to be negative for VMB, and counties with an eradication program for VMB.

Counties known to be infested	Counties not known to be infested	Counties with an eradication program
Alameda	Butte	Amador
Amador	Calaveras	Lake
Fresno	Colusa	
Kern	Contra Costa	
Lake	El Dorado	
Merced	Glenn	
Monterey	Imperial	
Napa	Kings	
Riverside ^a	Los Angeles	
Sacramento	Madera	
San Benito	Marin	
San Joaquin	Mariposa	
San Luis Obispo	Mendocino	
Santa Barbara	Placer	
Santa Clara	San Bernardino	
Solano	San Diego	
Sonoma	San Mateo	
Stanislaus	Santa Cruz	
Tulare	Shasta	
Yolo	Sutter	
	Tehama	
	Trinity	
	Tuolumne	
	Ventura	
	Yuba	

^aOnly Coachella Valley is infested with VMB.

Appendix A

Vine Mealybug Detection Summary

Alameda County – VMB males and females found in 2003. No new sites reported for 2004, 2005, or 2006. In 2007, VMB females were found at a vineyard that had been identified as infested in previous years. No new infestations were found in 2008 or 2009.

Amador County – At one site, VMB males found in 2004, and females found in 2005. An eradication program in the area around the infested site began in 2005 and continues. In 2006, males were trapped in vineyards in the eradication program. No other vineyards within the county have been found to be infested.

Butte County – Trapped in 2003 and 2004, and no VMB found.

Calaveras County – Trapped in 2004, 2007, and 2009, and no VMB found.

Colusa County – Trapped in 2004 and no VMB found.

Contra Costa County – Trapped in 2003-2005 and 2009 and 2010, and no VMB found. A plant sample was submitted in 2008, but it was negative for VMB.

Del Norte County – No grape acreage.

El Dorado/Alpine Counties – All of the grape acreage is in El Dorado County. VMB was found one site in 2002 and an eradication program began. During the trapping program conducted county-wide in 2003, male VMB were found only at the eradication program site. Subsequent detection activities in 2004 - 2007 were negative for VMB. The small infestation of VMB in El Dorado County has been eradicated. In 2009, a sample was submitted, but was negative for VMB. In 2010, 3 samples were submitted, but all were negative for VMB.

Fresno County – Found VMB at one site each in 1998 and 1999. Trapping in nurseries in 2004 found no new sites. Two new sites were found in 2005. In 2006 and 2007, no samples were submitted to CDFA for verification of VMB.

Glenn County – Trapped in 2003-2005, and no VMB found.

Humboldt County – No trapping program. Small acreage of grapes.

Imperial County – Trapped in 2004 and 2005, and no VMB found.

Inyo/Mono Counties – No grape acreage.

Kern County – Found VMB at one site in 1998, two sites in 1999, and one site in 2002. In 2004 – 2006, approximately 13 nursery blocks had VMB males present, and two commercial production sites had VMB females present. In 2007, nursery sampling found 8 blocks with VMB males. In 2008, nursery sampling found 4 blocks with VMB males. In 2009, nursery sampling found 6 blocks with VMB males. In 2010, traps from nurseries (6 blocks) and commercial vineyards (2 traps) were positive for VMB.

Kings County – Trapped in 2004, and no VMB found.

Lake County – Found one site with VMB males in 2004 near a truck scale. In 2005, no males were found. In 2006, males were found in traps in the same location as in 2004, very late in the season. Delimitation trapping was conducted in 2007; from these traps only 2, located near the truck scales in September, contained VMB (fewer than 5 males per trap). In 2008, extensive trapping delimited the infestation and eradication was started. In 2009, eradication continued and no new VMB

infestations were found. However, *Ferrisia gilli*, a new county record, was discovered in one vineyard. In 2010, extensive trapping was conducted and no VMB, detected.

Lassen County – No grape acreage.

Los Angeles County – Samples submitted in 2003 were negative. In 2004 and 2005, no VMB were found in either traps or samples.

Madera County – One nursery was found to have VMB males in 2004. In 2005 and 2006, none were found in traps. Males in the traps in 2004 may have come from surrounding vineyards that have since been removed. In 2007 - 2010, nursery trapping was negative for VMB.

Marin County – Trapped in 2004 – 2006, no VMB males found.

Mariposa County – Trapped in 2003, 2004, and 2009, no male VMB found.

Mendocino County – Trapped in 2003 and 2004, no VMB found. In 2006, samples of mealybugs on grapevines were not VMB. In 2008, trap samples from vineyards and nursery areas were negative for VMB.

Merced County – VMB males were found at one site in 2004, and females found at the same site in 2005. Males were trapped at this site in 2006 - 2010.

Modoc County – No grape acreage.

Monterey County – Female VMB were found at one site in 2002. In 2003, 17 sites with males and two sites with females were found. In 2004, an additional 13 sites with males and three sites with females were found. In 2005, five additional sites with males were identified. In 2006, males were trapped at known infested sites, and one additional site with females was identified. In 2007, crawlers were found at a new site, and males were found at known infested sites. In 2008, males were found in traps placed at 5 new sites. In 2009, males were found at 7 new sites. These sites are located near known infested areas. In 2010, there was additional spread of VMB with low numbers of males trapped near known infested areas.

Napa County – In 2002, 8 sites with males and 6 with females were found. In 2003, an additional site with males and 14 sites with females were found. In 2004, 9 sites with males and 11 sites with females were found. In 2005, 33 sites with males and 6 sites with females were found. In 2006, 43 sites with males and 18 sites with females were found. Many of the 2006 sites were at or near sites that had been infested in previous years. Only two sites with males were remotely located compared to previous years. In 2007 - 2010, male and female VMB were found at or near sites that were previously known to be infested. In 2010, VMB in one sample were parasitized. The identity of the parasitoid was not determined, but two species of parasitoids had been released in this county from 2007 - 2010.

Nevada County – No trapping program.

Orange County – No grape acreage.

Placer County – Trapped in 2004, no VMB found.

Plumas/Sierra Counties – No grape acreage.

Riverside County – VMB was first found throughout the Coachella Valley in 1994. To date the entire valley is infested.

Sacramento County – VMB females were found at one site in 2002, and at an additional site in 2003. In 2004, males were found at two additional sites. In 2005, 7 traps were positive for VMB but the locations of the traps were not known. In 2006

- and 2007, the grapevine nurseries in the county were trapped and no VMB were found. Also in 2007, a plant sample was submitted that was negative for VMB. In 2008, nursery samples were negative for VMB. In 2009, one sample was submitted that was negative for VMB. In 2010, traps placed at nurseries did not detect any VMB.
- San Benito** County – Males were trapped from 2003 – 2010. In 2009 and 2010, males were trapped at more vineyards than in previous years and throughout the grape growing season.
- San Bernardino** County – Trapped in 2003, and no VMB found.
- San Diego** County – Trapped in 2004 and 2006, and no VMB found.
- San Francisco** County – No grape acreage.
- San Joaquin** County – In 2003, males were found at three sites and females at 6 sites. In 2004, males were trapped at 25 sites and females were found at an additional two sites. In 2005, males were trapped at one nursery site, and females were found at another site. In 2006, females were found at 6 sites and males were trapped at three sites. These detections through the years show a slow spread of VMB from the northern part of the county to the south and east. In 2007, the submitted plant samples and traps were negative for VMB. In 2008, nursery trap samples were negative for VMB, but 2 plant samples were positive for VMB. These sites represent a small expansion of the known VMB distribution. In 2009, nursery samples and one plant sample were submitted and found to be negative for VMB. In 2010, traps placed at two nurseries had low numbers of VMB males. These nurseries are near known infested areas of the county.
- San Luis Obispo** County – In 2001 and 2002, VMB females were found at one site. In 2003, males were trapped at 10 sites and females were found at five sites. In 2004, males were trapped at 6 sites and females were found at an additional 6 sites. In 2005, males were trapped at 8 additional sites. In 2006 - 2008, the males that were found were in areas known to be infested with VMB. In 2010, plant samples and traps from nurseries that are adjacent to known infested areas were submitted that were positive for VMB. Parasitoids were present in the VMB that were found in the plant samples. The identity of the parasitoid was not determined, but two species of parasitoids have been released in this county from 2007 - 2010.
- San Mateo** County – Trapped in 2003 and 2004, and no VMB were found. In 2005 and 2006, males were trapped at one nursery site. In 2007 - 2009, no males were trapped at that nursery site. This county has been moved to the not-infested list.
- Santa Barbara** County – In 2000 and 2002, VMB females were found at one site. In 2003, males were trapped at five sites and females were found at three sites. In 2004, females were found at four sites. In 2005, females were found at a site where male VMB had been found in 2000. In 2007, 3 sites with VMB females were found, all located near known infested areas. In 2008, 1 site with VMB females and 1 site with males were found, located near known infested areas. In 2010, plant samples with mealybugs were submitted, but were negative for VMB.
- Santa Clara** County – In 2003, males were found at two sites and females at one site. In 2004, an additional two sites were found to have VMB males and one additional site was found to have females. In 2005, males were trapped at sites already

known to have VMB present. In 2006, traps were placed at new locations within the county and no VMB were found.

Santa Cruz County – Trapped in 2004 – 2006, 2008, and 2009, and no VMB were found.

Shasta County – Trapped in 2003-2005, no VMB found. In 2009, nursery samples were negative for VMB.

Siskiyou County – No trapping program, but less than 30 acres of grapes.

Solano County – In 2004 – 2008, no males were trapped at nursery sites. In 2004, one commercial vineyard was found to have female VMB. In 2010, one plant sample and traps from a nursery were submitted, but were negative for VMB.

Sonoma County – In 2002, four sites were found to have males and four sites were found to have females present. In 2003, an additional 33 sites were found to have VMB males and 6 sites to have VMB females. In 2004, 26 sites were found to have males and two sites were found to have females. In 2005, 8 additional sites with males and one additional site with females were found. In 2006, most of the finds were at or near known infested sites, with the exception of two sites near Sebastopol. In 2007 - 2010, males were trapped at or near known infested locations, and one plant sample positive for VMB was submitted in 2010.

Stanislaus County – In 2004, one site with VMB males was identified. The individual who submitted the trap said that this vineyard had a moderate infestation of VMB. In 2005, trapping at nurseries found no VMB. In 2006, one trap placed at a nursery had a small number of VMB males in one sampling period. Continued sampling at this site in 2006 found no other VMB males. In 2007 - 2009, no males were trapped in the nurseries. In October 2010, a low density (less than 5 males) of VMB males was found in a trap at a nursery.

Sutter County – Trapped in 2003, 2004, 2006 - 2008, and no VMB found.

Tehama County – Trapped in 2003 – 2005, and no VMB found. In 2006, a sample of mealybugs was submitted from a vineyard, but the mealybug was *Ferrisia gilli*, not VMB.

Trinity County – Trapped in 2003, 2004, 2006, and 2008 - 2010, and no VMB found.

Tulare County – Nurseries were trapped in 2003 and 2006, and no VMB males were found. In 2004, 11 sites with males and two sites with females were found. In 2005, two sites were positive that had had males in previous years. In 2008, one nursery site was positive for VMB males. This site is located near known infested sites.

Tuolumne County – Trapped in 2003 and 2004, no VMB found.

Ventura County – Trapped and sampled by Phil Phillips (UCCE) in 2003 – 2008, and no VMB found.

Yolo County – Trapped in 2003 and 2004, and no VMB found. In 2005, one site with females was found. In 2006, the nursery trapping found no VMB males, and females were found at the same site as in 2005. Plant and insect samples submitted in 2007 and 2008 were negative for VMB. In 2009, plant samples, traps, and nursery samples were negative for VMB. In 2010, one plant sample was positive for VMB, and all submitted traps (production nurseries and commercial production) were negative for VMB.

Yuba County – Trapped in 2004 and 2006, and no VMB found.