

# Vineyard Views

1710 Soscol Avenue, Suite 4, Napa, CA 94559

Telephone: (707) 253-4221 Fax: (707) 253-4434

Web Site: <http://cenapa.ucdavis.edu>

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## Vine Mealybug Update

Following an extensive detection effort in Napa County in 2003, vine mealybug (VMB) has been confirmed in 20 Napa County vineyards. All of these infestations appear to be due to the planting of infested grapevine nursery stock from 1998 through 2003. The infested sites are located throughout Napa County (Carneros to Calistoga, valley floor and mountain vineyards), which is not surprising given that infested nursery stock was the source of the insects.

First found in California in the Coachella Valley in the early 1990's, VMB spread northward (presumably on infested equipment or fruit bins) and was found in the San Joaquin Valley in 1998. At some point, it apparently was introduced into some of the commercial grapevine propagation stream, and was widely spread on infested nursery plants. In 2002, VMB was discovered in several northern California counties and most of these new finds were associated with new plantings. Spread on nursery stock has raised concerns that the insect could now be widely distributed throughout California and that we are currently seeing only a fraction of the infested vineyards. To date, 16 counties have confirmed VMB infestations.

Vine mealybug infestations can result in complete crop loss if allowed to develop without insecticide applications. Control programs are costly and require considerable effort and worker training. During the early stages of an infestation, vine mealybug is difficult to detect. Detection programs rely on the use of pheromone traps to catch the winged males, followed by visual inspection of vineyards to determine where the female infestations exist.

### **2003 Detection Efforts in Napa County**

Fifteen infestations were found in 2003, on the heels of 5 finds in 2002. The large number of finds in Napa County resulted from a coordinated trapping and detection effort spearheaded by the Napa County Agricultural Commissioner's office. This effort was possible thanks to funding provided by the Napa County Board of Supervisors and the local winegrape industry.

| Counties with VMB infestations confirmed by CDFA |
|--|
| Alameda  |
| El Dorado  |
| Fresno   |
| Kern   |
| Madera   |
| Monterey   |
| Napa   |
| Riverside  |
| Sacramento                                       |
| San Joaquin                                      |
| San Luis Obispo                                  |
| Santa Barbara                                    |
| Santa Clara                                      |
| Sonoma   |
| Stanislaus                                       |
| Yolo   |

No state funding is available to directly support county VMB trapping programs, so detection efforts vary widely from county to county. Some counties have done little or no trapping. So while it seems that Napa County may have more than its share of infested vineyards, it is more likely the case that we have simply been looking harder than other counties.

Pheromone traps attract male vine mealybugs, sometimes from over ½ mile away. The winged males are tiny and require microscopic examination to properly identify them. In several parts of Napa County, a native ryegrass mealybug is present and males of this species are also attracted to the VMB pheromone. These male mealybugs are similar in appearance to VMB males, which makes expert examination of the traps even more critical.

| 2003 VMB Trapping in Napa County   |       |
|--|-------|
| Traps placed by growers  | 947   |
| Traps placed by County Ag staff  | 162   |
| Total traps*   | 1,109 |
|  |       |
| Grower traps requiring microscopic examination by County Ag staff  | 598   |
| * Traps were provided by the Bayer Corp. and CDFG. Additional traps purchased by growers are not reflected in these figures. |       |

Only male mealybugs can fly. Females do not have wings and move only by crawling. On their own, infestations would increase in size quite slowly, being limited by the walking range of females. However, females are easily spread throughout vineyards and between vineyards because of the sticky honeydew they secrete. Females will stick to people, equipment and plant material (including fruit), and can then be moved over large distances. Even birds have been implicated in spread of VMB when feeding on infested ripe fruit close to harvest. These secondary methods of spread account for VMB’s rapid spread throughout the state.

It is likely that there are additional VMB sites in Napa County that we have not yet found. Males have been trapped in three areas that are distant from any of the known infestations. Given the limited range over which the traps are effective, it seems likely that these, and possibly even more sites, will eventually be found. In counties with only limited detection efforts, it seems certain that many infestations will turn up once they are large enough to be found by field crews.

**Control Efforts**

All infested sites in Napa County are being aggressively treated with insecticides in an attempt to eradicate vine mealybug. Treatments include Admire, the systemic form of imidacloprid, and the contact insecticide Lorsban. Recent changes were made to the Lorsban label to allow for both fall and late winter applications to control VMB. To see current UC Pest Management Guidelines, go to <http://www.ipm.ucdavis.edu/PMG/selectnewpest.grapes.html> or contact my office for a copy.

One of the vineyards where VMB was discovered in 2002 may have successfully eradicated the infestation. All other sites still have active populations. While eradication is the goal at all of the infested sites, it remains to be seen whether this is a realistic expectation. Vine mealybug may now be with us for the foreseeable future, requiring aggressive treatments each year in order to keep populations at tolerable levels and to limit the potential for further spread.

### **Risk of further spread**

The movement of fruit, and the winery waste generated from infested vineyards are areas of concern with regards to additional spread. Stems from clusters infested with VMB will likely still harbor live insects after passing through a winery crusher-stemmer. If directly spread back into a vineyard, infested stems could lead to new vineyard infestations.

County Ag staff has closely monitored movement of harvested fruit from VMB sites in Napa County in order to minimize the risks associated with infested stems. Stems were composted, solarized or returned to the vineyard of origin. Since VMB is now distributed throughout the state, introductions of VMB on fruit originating from other counties is a significant issue. Wineries should be aware of the status of incoming loads of fruit and deal with the stems appropriately. More information regarding vine mealybug is available at my website: <http://cenapa.ucdavis.edu/>.

### **Budget Woes Continue for UC Cooperative Extension and Ag Research**

Despite efforts from many in the agricultural community, last year's state budget included a 25% budget reduction to UC Cooperative Extension, and a 10% cut to the Agricultural Experiment Station.

This reduction has already led to significant cutbacks to UC Cooperative Extension:

- 32 Advisor positions have been eliminated. This includes the loss of all vacant positions, as well as recent retirements and resignations.
- 22 layoffs in our administrative unit in Oakland.
- The Forest Products Laboratory in Richmond was closed and 14 positions eliminated.
- Significant program support funds have been lost.

In Napa County, our vacant Horticulture Advisor position and our vacant Natural Resources/Community Development Advisor position are now gone. Thanks in large part to our local funding support through Napa County, we are able to continue with our Viticulture program, 4-H and Master Gardener programs, and our Nutrition and Family Consumer Science programs.

At UC, endowment funds are being used for direct payment of salaries previously covered by state funds. In addition, we are "borrowing" salary savings from anticipated retirements over the next several years in order to fund ongoing Cooperative Extension programs and personnel.

By taking these drastic steps, UC has been able to absorb the 25% budget cut without having to lay off any county-based Advisors. This was the goal of UC Vice President W.R. Gomes. "Our top priority is to maintain programs that directly serve local communities and local needs," said Gomes recently. However, if UC Cooperative Extension is hit with additional budget cuts in 2004-05, Advisor layoffs and elimination of programs will likely be unavoidable.

Currently, new operational structures are being explored at UC in light of the current budget realities. Further downsizing may occur through reorganization of our statewide unit, the

Division of Agriculture and Natural Resources (ANR). This may involve consolidation or loss of some statewide programs such as Integrated Pest Management, Sustainable Agriculture, Small Farms, and others. Vice President Gomes and ANR's Executive Council are conducting "listening sessions" Jan. 29-Feb. 26 to receive input from the agricultural community and other external stakeholders regarding some of these possible changes. If you have thoughts to share regarding the future of Cooperative Extension in California, please visit the ANR Future Directions website at <http://groups.ucanr.org/directions/>. There you can find information regarding these sessions and some proposed changes.

The wine industry has been a key supporter of UC Cooperative Extension during this budget crisis and your support is greatly appreciated.

### **Olive Fly Hits Hard**

Olive fly made its presence known throughout Napa County this year, catching many olive oil producers by surprise. First found in Napa County in 2001, the local population has increased exponentially ever since. A trapping program managed by the Napa County Agricultural Commissioner's staff showed trap numbers increasing about 10X between 2001 and 2002, and another 10X from 2002 to 2003! Many trees went unpicked this year due to the level of infested fruit. Some producers went through the labor-intensive process of hand sorting fruit to eliminate damaged olives – often 30-40% of the crop. Growers who made regular treatments to their trees with spinosad (an organically-approved insecticide derived from a soil-dwelling bacterium) generally had success in controlling this pest. Homeowner formulations of spinosad are now available, but may need to be special ordered. For more information on olive fly, see my web site at <http://cenapa.ucdavis.edu/>

### *Research Continues Looking For a Cure for Pierce's Disease*

A 3-day symposium was recently held in San Diego providing updates on the tremendous amount of research being conducted on Pierce's disease and the glassy-winged sharpshooter. Efforts are being directed towards reducing the impact of the sharpshooter with regards to spreading PD, and ultimately to find a cure or prevention strategy for the disease. The symposium proceedings are over 300 pages, so I can only provide a brief snapshot of a fraction of the work. The entire proceedings can be found online at <http://www.cdfa.ca.gov/gwss/>.

Genetic engineering is an active area of research towards finding a solution to Pierce's disease. Research is being conducted on plants and on *Xylella fastidiosa*, the bacterium that causes PD. In grapevines, genetic engineering offers the possibility of introducing genes that will improve PD tolerance in existing grape varieties, without otherwise changing their viticultural or enological characteristics. Research projects are currently looking at:

- Genes involved with protecting xylem cells walls from degradation by *Xylella*
- Genes that produce antimicrobial peptides antagonistic to *Xylella*
- Genes that confer resistance to PD in North American *Vitis* species

Other projects are looking at modifying *Xylella* in order to produce non-pathogenic strains of the bacterium. These could be introduced into vines and would occupy the sites where the pathogenic strains would normally go. This strategy could prevent the pathogenic strains from ever getting established within the plant and thereby prevent PD from occurring. Some of these strategies involve:

- Interfering with cell-to-cell signaling. This could prevent *Xylella* from developing into the large masses that eventually clog xylem vessels
- Limiting *Xylella*'s ability to attach to cell walls
- Preventing the formation of xanthan gum by *Xylella*, or using other microbes to digest it. Xanthan gum is a likely contributor to xylem plugging in PD vines.

Other efforts along these lines include:

- Identifying and characterizing different strains of *Xylella* involved in PD, almond leaf scorch, oleander leaf scorch and other diseases.
- Identifying genes specific to the PD strains and evaluating their contribution to virulence
- Randomly knocking out *Xylella* genes and evaluating virulence of the resulting strains. This process can help identify genes involved in virulence that can then be removed, hopefully resulting in non-pathogenic strains.

Much more work is ongoing in numerous fields of study. While no cure is eminent, several of the current strategies hold great promise.

**New Publications** - See <http://anrcatalog.ucdavis.edu/> or contact my office for ordering info.

**Wine Grape Varieties in California** - UC ANR Publication 3419. \$30.00

This beautifully illustrated book is the first comprehensive variety publication written by UC viticulture specialists and advisors (including yours truly) to cover all of the wine districts in California. This is a "must-have" guide for growers, vintners, and wine enthusiasts.

Thirty-six major wine grape varieties are highlighted, covering synonyms, source, physical characteristics, harvest periods and methods, and winery use. Each variety is highlighted by close-up photography of its clusters, leaves, and leaf shoots - 143 lush color photos in all. Included are ripening periods for 53 varieties grown in California, information on trellising systems, summaries of available and registered clones, a glossary, and a bibliography.

**Aquatic and Riparian Weeds of the West** – UC ANR Publication 3421. \$40.00

This major new publication is the first comprehensive identification manual for aquatic and riparian weeds west of the Rocky Mountains. This practical, easy-to-use guide covers 171 aquatic plant species -- consisting of 58 plant groups, including a full description of 82 species and another 96 plants compared as similar species, representing 42 plant families.

Lavishly illustrated with over 560 photographs and weighing in at 442 pages, this is a "must-have" reference and field manual. Anyone interested in learning more about identification of

important weeds of aquatic and riparian systems should make room on their bookshelf for this new guide.

**Integrated Pest Management for Walnuts—Third Edition** - UC ANR Publication 3270. \$30.00

The latest in the University of California's acclaimed IPM manual series; this edition is completely revised. It includes comprehensive information on walnut pests, including identification tips, monitoring methods, treatment thresholds, biological controls, and other management techniques. The 3rd Edition includes 65 more photos, for a total of 215 photos, all printed in larger format with improved color. An additional 24 pest problems are discussed and illustrated for a total of more than 90. At 136 pages, the revision is 40% longer than the previous edition.

*Vineyard Views* is written by:  
Ed Weber  
Viticulture Farm Advisor  
UC Cooperative Extension, Napa County  
eaweber@ucdavis.edu  
<http://cenapa.ucdavis.edu/>