



University of California Cooperative Extension

## Grape Notes

September 2002

Division of Agriculture & Natural Resources

County of San Luis Obispo

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## VINE MEALYBUG

The vine mealybug has been continuing its slow yet very damaging spread northward throughout California's grape-growing regions. It was first found in 1994 in the Coachella Valley, and by 1998 had arrived in the Southern San Joaquin Valley. This summer, a new infestation has been found in a southern San Luis Obispo County vineyard, a northern Santa Barbara County vineyard, and also in multiple vineyards in the North Coast and Lodi areas. The vine mealybug poses a very significant, long-term threat to grape production in all areas of the state, including those regions that have not had problems with mealybugs in the past. Many San Joaquin Valley growers who did not make more of an effort to prevent the vine mealybug from becoming established in their vineyards now regret having made that decision. We on the Central Coast need to learn from their experiences, and make every effort to keep this pest from ever becoming permanently established here. We will likely be dealing with annual infestations in this area from this point forward; only by responding to such infestations quickly and thoroughly will we keep our industry in this area free of the vine mealybug.

### IDENTIFICATION

The simplest way to distinguish the vine mealybug (*Planococcus ficus*) from the grape, obscure, and long-tailed mealybugs is by its lack of tail filaments. What will alert most growers to the presence of this new mealybug is the tremendous amount of dark sooty mold on infested vines.



Vine Mealybug



Obscure Mealybug



Grape Mealybug

Absolute verification of the vine mealybug requires a trained specialist with a microscope; it is not possible to make this determination in the field with a hand lens. Any mealybug that resembles the vine mealybug needs to be verified as soon as possible; this can be done through your Cooperative Extension or Agricultural Commissioner's office. Keep in mind that different species of mealybugs can be found within the same vineyard and even on the same vine. A large population of obscure or grape mealybugs may make the presence of the vine

mealybug less obvious until an infestation becomes more advanced. Be sure to know what is actually present in your vineyard. The University of California now offers a short booklet, "Mealybugs in California Vineyards", with exceptional photographs and a key for mealybug identification; more information about this publication follows at the end of this newsletter.

### **HABIT**

The vine mealybug causes much more damage and is much more difficult to control than either the grape, obscure, or longtailed mealybugs that are common to many areas of the Central Coast. Unlike these species, the vine mealybug can be found on all parts of the vine, including the root system. In observations of areas infested with both the vine mealybug and obscure mealybug in late summer, the obscure mealybugs tended to feed primarily on the fruit clusters and less so on the leaves, whereas the vine mealybug remained widespread throughout the vine, feeding on the leaves, shoots, clusters, cordons and trunks. The habit of the vine mealybug for feeding on roots and beneath the bark of mature vines makes it extremely difficult to eliminate an infestation from older vines. The vine mealybug also has a very high reproductive rate, typically five to seven generations per season; this allows the population to blow up very quickly and reach very high numbers on infested vines. Ants will tend the vine mealybug in the same manner as other mealybugs, and can tend vine mealybugs on the roots while not being seen on the aboveground parts of the vine. The host range of the vine mealybug includes fig, date palm, apple, avocado, citrus and a few ornamentals, but in California it has only been reported on grapes so far.

### **DAMAGE**

Damage by the vine mealybug is similar to that of other grape-infesting mealybugs in that it produces honeydew that drops onto the foliage and fruit, and serves as a substrate for black sooty mold. However, the vine mealybug produces a much greater quantity of honeydew than either the grape or obscure mealybugs, so an infested vine will be exceptionally sooty and blackened. In heavily infested vines, the waxy honeydew may be observed accumulating on the underside of cordons like small icicles, and seeping down the trunk giving it a wet appearance. Like other mealybugs, the vine mealybug can readily transmit grape viruses. Heavily infested vines will show dramatically lower yields and a poorer quality harvest.

### **MOVEMENT**

The female mealybug is unable to fly, so it must be carried by humans, equipment, birds, or with vine material. New infestations in previously clean areas have been associated with contaminated planting materials coming in from infested regions. Once the



Vine mealybug feeding on a shoot and fruit cluster rachis

pest becomes established in an area, then local distribution within the same vineyard or to nearby vineyards will likely occur via the movement of field equipment such as French plows and mechanical harvesters, on the hands and clothing of field workers, and by bird activity. Spread of the insect by its own movement will be relatively slow, and tends to be along the direction of the rows where there are connecting trellis wires and overlapping vine canopies.

## **TREATMENT**

Complete eradication from a vineyard is difficult, and may not be possible in many situations without removing the heavily infested vines. Early detection and quick, thorough action is the key to a successful eradication effort. There will be more success in eradicating the pest from young vines (less than four years old), because the vines have yet to develop thick layers of bark, and their less-developed root systems contribute to efficient uptake of systemic insecticides. It will be much more difficult to eradicate the pest from older vines, because the pest can feed beneath the thick layers of bark and also below the soil surface on roots where spray applications cannot penetrate. Additionally, the extensive root systems of older vines makes it more difficult to achieve complete and uniform uptake of systemic insecticides applied with irrigations. Based on these factors, mature, non-irrigated vines may be the most difficult to treat successfully; however, non-irrigated vineyards typically have widely-spaced vines that do not touch each other, and will therefore see a much slower rate of vine-to-vine spread of the pest within the vineyard.

Biological control of vine mealybug by parasitoids has been observed, but not by the same parasitoid species that help control the grape and obscure mealybugs. One of the worst aspects of dealing with an advanced vine mealybug infestation, whether in an effort to eradicate or simply to manage the pest, is that the relatively hard chemical controls required will disrupt an established IPM program, and lead to more severe outbreaks of other pests. This is another reason to respond to a vine mealybug infestation early on, and take prompt action while it is still on a small scale.

## **PREVENTION STEPS**

- Do not take cuttings from vineyards or areas that are suspected of being infested, and question the material source about their control measures for vine mealybug;
- Thoroughly clean any equipment that has been in an infested area before bringing it into non-infested areas; steam-clean and wait as long as possible before re-entry;
- Closely monitor vines that have been planted or grafted during the past four years, particularly if the source material came from a region with the vine mealybug;
- Fruit coming from infested areas of the Central Valley and trucked to the Central Coast for processing is another potential source of the pest; carefully inspect any vineyard material that you are bringing into this area

## **PHEROMONE TRAPPING**

The mature male mealybug is a small winged insect that does not infest plants. Dr. Jocelyn Millar at UC Riverside has developed a pheromone to attract the male vine mealybug, and at the moment this is one of our most effective tools for determining if an infestation exists in a

general area. The limitations of this trapping method are that the identification of the trapped male requires a microscope and proper training, and that the pheromone may also attract males of certain other mealybugs. This office will be working with UC researchers and area Ag Commissioner personnel to place out a large number of these traps next spring throughout both San Luis Obispo and Santa Barbara Counties. Any vineyard that has been planted within the last four years or that has material movement (equipment, fruit, labor) from infested areas needs to have a trap nearby.

## **THE BOTTOM LINE**

The vine mealybug has been moving throughout California primarily through the actions of the vineyard industry itself. Because a large portion of our local government pest exclusion resources have necessarily been and will continue to be focused on the glassy winged sharpshooter, the responsibility and challenge to remain free of the vine mealybug ultimately belongs to our own local industry. To achieve this, we as a group need to:

- Educate ourselves about the vine mealybug and its significant threat to our industry;
- Be aware of the dangers of bringing in vineyard materials from other areas;
- Monitor our vineyards frequently for possible outbreaks;
- Teach field workers to recognize and report suspect infestations on vines;
- Report suspect infestations for positive identification as soon as possible;
- Be willing to make a quick and thorough eradication effort if the pest is found

The lesson from the San Joaquin Valley is clear: it will cost us much less time and resources to keep the vine mealybug out of this area, as compared to the costs that we will have to face if the pest becomes permanently established here.

## **ADDITIONAL INFORMATION**

- For the electronic version of this same newsletter with color photos, see:
  - [http://cesanluisobispo.ucdavis.edu/newsletterfiles/GRAPE\\_NOTES1590.pdf](http://cesanluisobispo.ucdavis.edu/newsletterfiles/GRAPE_NOTES1590.pdf)
- UC Publication 21612, "Mealybugs in California Vineyards" has excellent color photos of the common mealybug species and a detailed key for their identification:
  - \$7.00, 16pp
  - Available for purchase at local Cooperative Extension offices
  - Purchase by phone at 800-994-8849
  - Also available over the internet at <http://anrcatalog.ucdavis.edu>
- UC Publication IPM6-00, "Vine Mealybug", is a free two-page brochure with additional color photos:
  - <http://cetulare.ucdavis.edu/pubgrape/ipm600.pdf>
- UC Pest Management Guidelines for Vine Mealybug website; this page contains the current recommended chemical control measures:
  - <http://www.ipm.ucdavis.edu/PMG/r302301911.html>



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University of California Cooperative Extension



Mark Battany  
Viticulture/Soils Farm Advisor

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VINE MEALYBUG**

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