

# Trapping and Identifying Mealybugs in Oregon Vineyards

Kyoo Rok Park, Serhan Mermer, Gordon B. Jones, Govinda Shrestha, Alexander Levin, Rick Hilton, Nathan H. Mercer, Kent M. Daane, Linda Brewer, Patricia A. Skinkis and Vaughn Walton

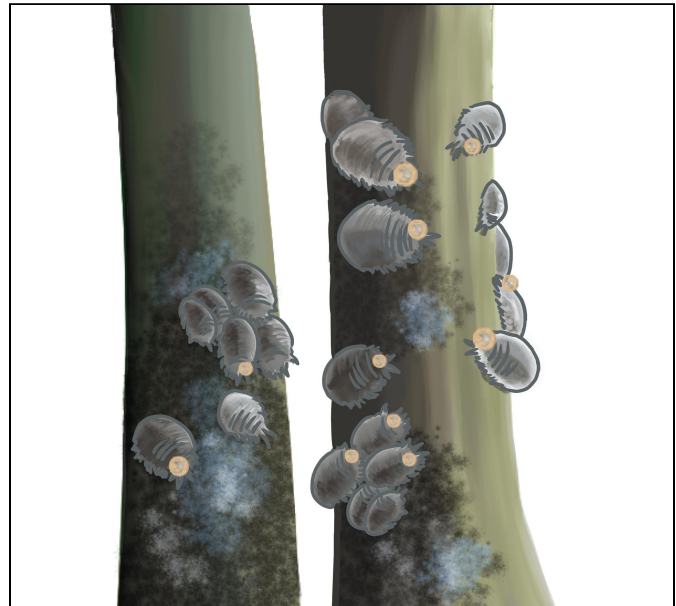
## Introduction

Mealybugs (*Hemiptera: Pseudococcidae*) are soft-bodied insects that can be from one-eighth to one-quarter-inch long. Adult female mealybugs are wingless and oval-shaped with a white wax coating. Adult males are winged and smaller than the females. Mealybugs are known vectors (spreaders) of grapevine leafroll-associated viruses, produce honeydew and sooty mold growth on grape clusters and the vine, and attract ants. These insects often exist undetected in vineyards due to their cryptic lifestyle. Mealybugs can be found on all parts of the vine, depending on the time of the year, and can remain hidden under vine bark, in clusters and on roots, all not easily visible.

## Mealybug species

Several mealybug species are found in Oregon, but few are of economic concern. Grape mealybug (*Pseudococcus maritimus*) (Erhorn) and vine mealybug (*Planococcus ficus*) (Signoret) (Figure 2) are of most concern in Oregon. Gills (*Ferrisia gilliae*), Obscure (*Pseudococcus viburni*) (Signoret), and longtailed (*Pseudococcus longispinus*) (Targioni-Tozzeti) mealybugs may also occur.

Signs of mealybugs on vines include honeydew (a sugary liquid excreted by all mealybugs), sooty mold and sometimes the presence of ants on the vine.



**Figure 1. Illustration of female mealybugs on grapevines. These mealybugs can vector grapevine virus, impact fruit quality, produce honeydew and sooty mold, and attract ants.**

Credit: K.R. Park, © Oregon State University

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For the vine and grape mealybug, a pheromone lure helps growers monitor and detect male mealybugs. This publication details how to place and use pheromone sticky traps for early detection of the vine and grape mealybug.

## Trapping guidelines for pheromone traps

To assemble mealybug traps (Figure 3) for grape or vine mealybugs, you must:

1. Obtain or purchase a pheromone lure and delta trap, preferably with a white sticky bottom liner to visually detect the male mealybugs. You'll need a separate trap for vine mealybug and grape mealybug.
2. Place the pheromone lure (for either vine mealybug or grape mealybug) on top of the sticky bottom liner.
3. Assemble the trap by securing the top with twist ties and folding in the side tabs.
4. Label the trap with the placement date; vineyard block, row and vine number; and lure type.

## Where to place pheromone traps

- Place one trap per 30 acres. If an entire vineyard is less than 30 acres, only one trap is necessary. If male mealybugs are found in your trap but the resident population has not been located, or if there is a high risk that your vineyard will become infested, increase the trap density to one trap per 10 acres.
- Begin placing traps in your vineyard in the spring, from late March to June, depending on the region. Continue trapping through October or until the first rain occurs in fall. Most males are typically trapped in late summer or early fall (August and September).



**Figure 2a. A female mealybug (*Pseudococcus maritimus*) (Ehrhorn).**

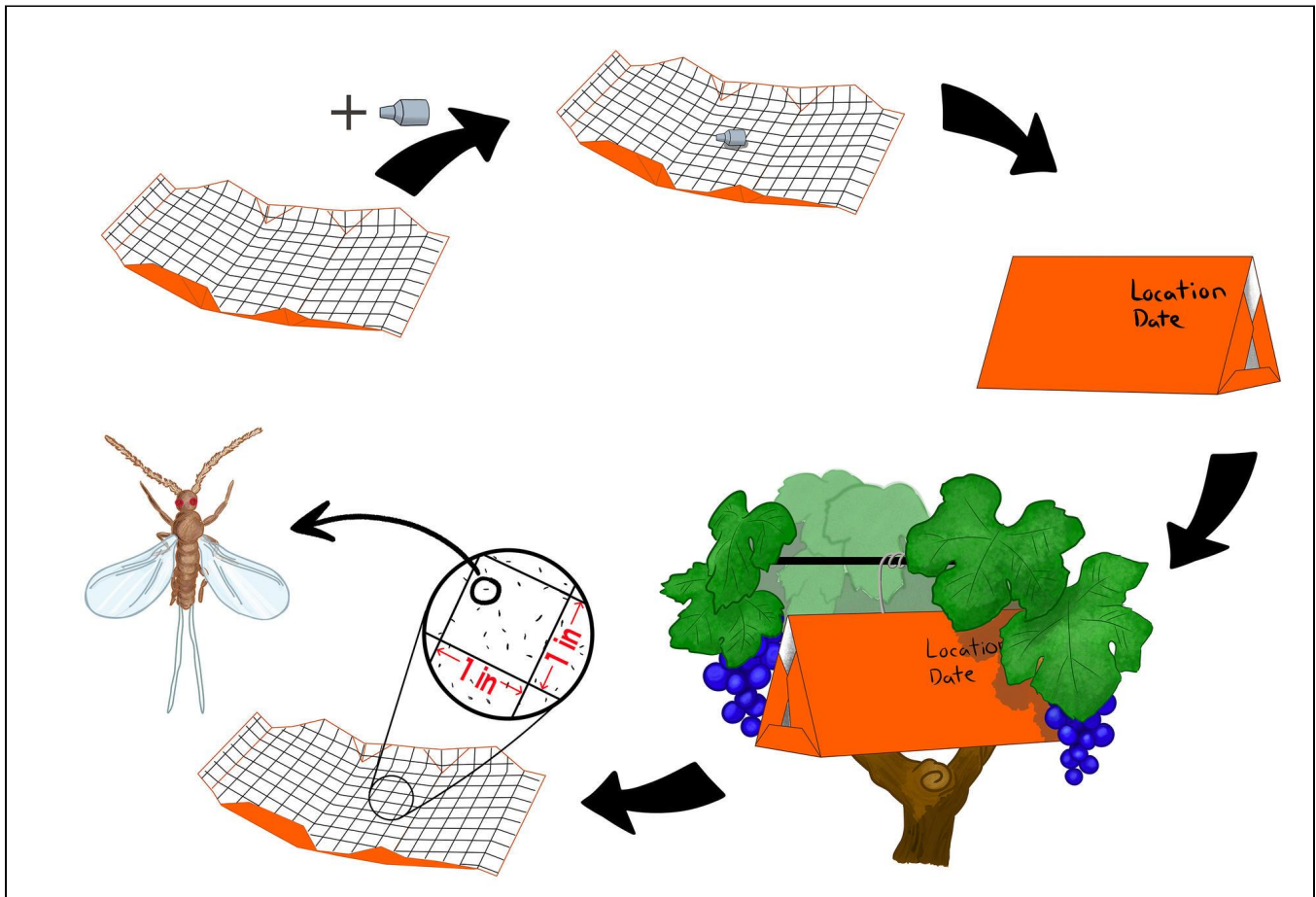
Credit: K.M. Daane, © University of California Berkeley



**Figure 2b. A vine mealybug (*Planococcus ficus*) (Signoret).**

Credit: K.M. Daane, © University of California Berkeley

- Place the trap at the top of the trunk, just above the fruiting zone (Figure 3). Traps should be placed within the canopy, not outside the vine, to protect them from weather and equipment interference. However, be sure the open ends are not blocked by the canopy or fruit so that male mealybugs can easily fly through the ends and onto the sticky trap. Optimum placement may require removing some clusters, leaves or both.



**Figure 3. Mealybug trap assembly, placement and placement workflow (figures not to scale).**

Credit: K.R. Park, © Oregon State University

## Replacing lure and traps

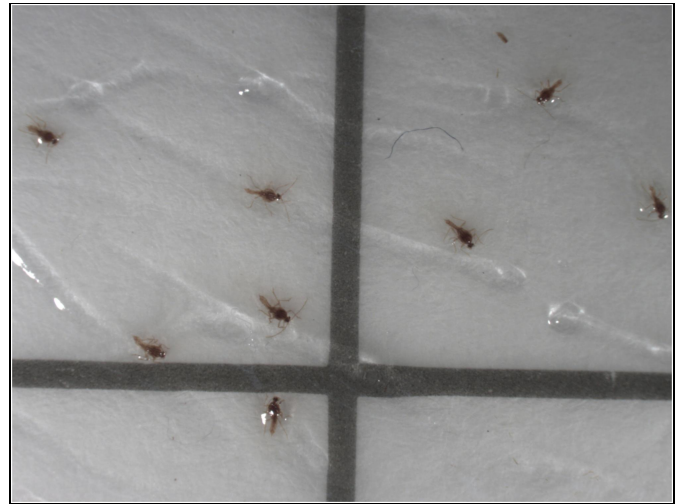
- Replace the pheromone lure every one to two months.
- Change traps when the sticky surface is dirty, or when counting male mealybugs.
- Counting males determines flight patterns and population fluctuations.
- If no male mealybugs are found, place new pheromone lures into old traps. This will optimize the use of the trap and the lure to detect male mealybugs.
- Relabel new traps and note when new lures are placed in the trap.

## How to identify male mealybugs in traps

- To the naked eye, male mealybugs can be confused with thrips or midges. They also may be confused with springtails, parasitic wasps or winged aphids.
- Use a good light source and a hand lens to identify male mealybugs on traps.
- It can be difficult to see the features of the winged male mealybugs embedded in the sticky surface of the trap. They are small (less than one-eighth-inch long), brownish and have one pair of clear wings. The chest (thorax) is wider than the abdomen (Figure 4a), and there are two long tail filaments (Figure 4b).
- Encourage your neighbors with vineyards to place traps to determine whether infestations also occur on their property.
- Rapid identification of male mealybugs ensures a quick treatment response and a more effective control program.
- Report suspected infestations to your local county Extension agent, crop consultant, the [Oregon Department of Agriculture](https://survey123.arcgis.com/share/7733dae812fa4743baa7994a54fb62bb) (<https://survey123.arcgis.com/share/7733dae812fa4743baa7994a54fb62bb>), or an Oregon State University entomologist as soon as possible for positive identification.

## Scouting vineyards for mealybugs

- If you find male mealybugs in traps, visually scout those vineyards for the female mealybug. The best time for field scouting is in late summer or fall, before harvest, when the mealybug population is at its highest.



**Figure 4a. Adult winged male mealybugs found on the sticky surface of a pheromone-baited trap.**

Credit: M. Reitmajer, © Oregon State University



**Figure 4b. Close-up pictures of grape mealybug males. Notice the two tail filaments, clear wings with virtually no venation, wide thorax and beaded antennae.**

Credit: M. Reitmajer, © Oregon State University

Inspect vines for female mealybug evidence. Look for wandering ants, cottony and waxy substances, honeydew (shiny, sticky leaves and trunk) and black sooty mold (a fungus that grows on honeydew). Female mealybugs can be located on and under the bark of the trunk, the head, cordons, canopy, clusters and roots of the vine. If ants are present, watch them to determine whether they are tending female mealybugs.

- Examine grape clusters, especially those that touch the cordon or trunk. Break the cluster apart to see if there are populations within.
- Flag areas of concern for follow-up and regular inspection.

## Training vineyard and winery staff

- Train farm workers, crews and vineyard personnel to recognize and report suspected mealybugs.
- Train and educate winery staff before they visit sites for fruit sampling; fruit coming into the winery and on sorting lines should be inspected for mealybugs.
- Be aware of mealybug risk when transferring vineyard materials (such as equipment, tools, fruit loads and harvest bins) between the vineyards. Moving these supplies and equipment from infested vineyards may spread young crawlers within or among vineyards. Be sure to sanitize equipment.

## Acknowledgments

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## For more information

To identify male vine mealybugs in pheromone traps and reference examples of other small insects that may be caught in traps, visit [UCCE Sonoma County \(https://cesonoma.ucanr.edu/files/27218.pdf\)](https://cesonoma.ucanr.edu/files/27218.pdf).

[Retail sources for Red Delta traps and lures for vine mealybug. \(https://ucanr.edu/sites/SoCo/files/27835.pdf\)](https://ucanr.edu/sites/SoCo/files/27835.pdf)

## About the authors



### Kyo Rok Park

research associate

*Department of Horticulture, Oregon State University*



### Serhan Mermer

toxicologist and assistant professor

*Department of Environmental & Molecular Toxicology, Oregon State University;*



### [Gordon B. Jones \(https://extension.oregonstate.edu/people/gordon-jones\)](https://extension.oregonstate.edu/people/gordon-jones)

Extension Agronomist



### [Govinda Shrestha \(https://extension.oregonstate.edu/people/govinda-shrestha\)](https://extension.oregonstate.edu/people/govinda-shrestha)

Statewide Hemp Extension Specialist and Entomologist for Pest Management (Former)



### [Alexander Levin \(https://extension.oregonstate.edu/people/alexander-levin\)](https://extension.oregonstate.edu/people/alexander-levin)

SOREC Director and Viticulturist



### [Rick Hilton \(https://extension.oregonstate.edu/people/rick-hilton\)](https://extension.oregonstate.edu/people/rick-hilton)

(Retired)

**Nathan H. Mercer**

postdoctoral researcher

*Department of Environmental Science, Policy, and Management, University of California Berkeley*

**Kent M. Daane**

Cooperative Extension specialist and professor

*Department of Environmental Science, Policy, and Management, University of California Berkeley;*



**Linda Brewer** (<https://horticulture.oregonstate.edu/users/linda-brewer>)

Senior Faculty Research Assistant II, Department of Horticulture



**Patricia A. Skinkis** (<https://extension.oregonstate.edu/people/patricia-skinkis>)

Viticulture Extension Specialist



**Vaughn Walton** (<https://extension.oregonstate.edu/people/vaughn-walton>)

Entomologist

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