

DEVELOPING IPM STRATEGIES

David Haviland, UCCE Entomology Farm Advisor, Kern Co


Kent Daane, UC Berkeley Biocontrol Specialist, Kearney Ag. Center

Walter Bentley, UC IPM Advisor, Kearney Ag. Center


Vine mealybug has quickly become a serious pest of table, wine, and raisin grapes in California. It was first introduced into California's Coachella Valley in the early 1990s. It quickly spread to distant California grape-growing regions, with new infestations found in the San Joaquin Valley (1998), Central Coast (1999), North Coast (2001), Sacramento Valley (2002), Sierra Foothill (2002), and Monterey (2002) regions. Long-distance spread of this pest has likely been the result of contaminated nursery stock, whereas localized spread is primarily a result of mealybugs "hitchhiking" on equipment and personnel working in vineyards.

Vine mealybug infestations can have significant impacts on the quality and yields of grapes. Prior to harvest, mealybugs have a great affinity for feeding in the cluster. This feeding results in clusters contaminated with mealybugs, honeydew and sooty mold. Wounds caused by mealybug feeding also allow for the entry of fruit-rotting pathogens into the rachis and fruit, causing individual berries or the entire cluster to become rotten.

Control of vine mealybug with insecticides is expensive, with costs



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being prohibitive to many raisin and winegrape growers in the San Joaquin Valley. Many of these insecticides, particularly the organophosphates and carbamates, are disruptive to IPM programs for several different pests. For these and other reasons, significant research is under way to develop management options for vine mealybug that can prevent spread to new locations, and can control this pest with softer pesticide chemistries, biological control, and other IPM friendly-strategies.

Preventing the Contamination of Nursery Stock with IPM

The most effective way to control vine mealybug is to never have it in the first place. While this might sound a little cliché, it is the basis for all management decisions in the production of nursery stock. Preventing contamination is the only method to ensure that pest populations do not exceed the level of zero tolerance.

For decades, hot-water treatments have been available, although inconsistently used, for the decontamination of dormant grape nursery stock from pests such as phylloxera and root-knot nematode. More recently, research has documented the effectiveness of these treatments against vine mealybug. Laboratory experiments have shown that 99.9% of vine mealybugs can be killed by immersing dormant cuttings or vines in hot water at 127°F for five minutes. Field experiments in Kern County validated the effectiveness of