Vine mealybug, *Plannococcus ficus*, Movement and Management

Walt Bentley and Kent Daane

Vine mealybug, *Planococcus ficus* (Signoret), has rapidly spread throughout California. First identify in the Coachella Valley in 1994, Arvin in 1998 and Del Rey in 1999, it has now spread to eighteen counties in 2004. These additional counties include Contra Costa, Madera, Santa Barbara, San Luis Obispo, Napa, Lake, Sonoma, Sacramento, San Joaquin, Stanislaus, Tulare, Calaveras and El Dorado. With the exception of Madera County, the finds have all occurred on plants less than five years old. It is clear that movement was on untreated nursery planting material.

Grape nurseries have implemented a hot water treatment (120 degrees Fahrenheit for five minutes) to disinfest cuttings. This treatment was originally developed to control nematodes and phylloxera and the guidelines used to manage these pests are effective on vine mealybug. Trials have shown excellent control of early growth stage crawlers and adults.

Once vine mealybug is found in a vineyard it is important to take immediate action. New infestations are usually on few vines or a few rows. These areas can be intensively treated with insecticides before the infestations spread throughout the planting. Once an infestation is uniform and populations are abundant (often the third year after introduction) the pest must be dealt with annually. Early detection is paramount in management.

Monitoring

The importance of early detection cannot be overemphasized. The best way to do this is to utilize the personnel that see every vine in the vineyard. Annual training programs should be established in the spring to discuss how to detect the signs of a mealybug infestation. Many of the monitoring guides are available, at no cost, through the County Farm and Home Advisor's Office. These guides are in both English and Spanish.

As an aid to detection, a pheromone for male vine mealybug has been developed and is now available through Suterra® located in Bend, Oregon. This pheromone is extremely stable and appears to attract males up to 60 feet. Pheromone monitoring is the best early detection method for new infestations. Pheromone traps should be placed in the vineyard by late March and monitored weekly. The pheromone is effective for 2 months. Once males are detected, a more intensive survey can be done to detect the exact location of infested vines.

Newly established vine mealybug populations are often not found until harvest because of its cryptic behavior (Malakar-Kuenen et.al. 2001). Symptoms of infestation include the presence of thick honeydew on the vine and in the cluster. High populations result in crystallization of the honeydew on canes, usually at the crown of the vine. A key symptom is the dropping of leaves underneath infested vines. This usually occurs by early July in the Fresno area. In examining the leaves, they will be brown and covered

with all stages of the mealybug. The publications entitled Mealybugs in California Vineyards (UC ANR 21612) and Vine Mealybug: What You Should Know (UC ANR Publication 8152) will help you recognize these signs.

In the San Joaquin Valley vine mealybug is the only species that can be easily seen on leaves. They are most easily found on leaves at the basal area of canes. Short wax filaments can be seen upon close examination of the female. They do not produce long tails found on grape, longtailed, or obscure mealybug. It is important to train the harvest crew in the identification of infested vines. These areas should be marked with colored ribbon for monitoring in the spring.

Chemical Control

Insecticides are necessary for management of vine mealybug. Chlorpyrifos (Lorsban 4E @4 pints per acre) timed just prior to bud break or an application of imidachloprid (Admire @ 24 to 32 ounces per acre applied through drip irrigation system in May) are the two most effective insecticide treatments for vine mealybug. Chlorpyrifos has also been registered as a post harvest treatment for use in the fall. The post harvest treatment is also very effective in reducing vine mealybug populations. Foliar insecticide sprays, during the summer, can also be of value.

If vine infestation is detected during the summer, the use of buprofezin (Applaud®) is an effective in managing cluster infestation. Applaud is an insect growth regulator and quite safe for use. It must be applied when immature stages are most abundant and will not work on the adult stage. Watch for mealybug movement to the basal leaves in June. Applaud is not toxic to parasites of vine mealybug and does not trigger spider mite outbreaks. It is also effective in controlling both variegated and grape leafhoppers when timed properly.

Summary

The importance of early detection of vine mealybug cannot be over emphasized. Early detection allows for management when both the population abundance and distribution in the vineyard low. Train field crews on how to recognize damage. Mark areas that show infestation and focus chemical management in those areas. Utilization of the vine mealybug pheromone trap can aid in early detection. Further information on management can be found at the UC IPM Pest Management Guidelines for Grape (http://www.ipm.ucdavis.edu/)