



University of California Cooperative Extension # Tulare County

Grape Notes



July 2002

Traditional Trellis DOV System Discussion and Cane Severance Demonstration

Sponsored by UCCE and California Sun-Maid Growers

**UC Kearney Research Extension Center
9240 South Riverbend Avenue
Parlier, California**

Tuesday, August 13, 2002

8:30 a.m. Register and move to demonstration site

9:00 DOV using a traditional trellis: general discussion and demonstration of cane severance

Bill Peacock, Steve Vasquez, and Fred Swanson, UC Farm Advisors, Kearney Research and Extension Center Superintendent respectively; Mike Moriyama and Joe Kretsch, Sun-Maid Growers of California

10:00 a.m. Adjourn

The Introduction of New Grape Pests and Diseases Complicates IPM

California grape growers use less pesticides today than they did thirty years ago, even though a multitude of exotic pests and diseases became established during that time. This is testimony to the grape IPM program, developed with industry support and university direction and put into practice by California growers.

UC Conceives IPM

Integrated pest management (IPM) had its beginning in California in the 1950's. University of California scientists, working on alfalfa and cotton, recognized that pests were developing resistance to the 'miraculous' new synthetic organic insecticides that came into use after World War II. DDT and organophosphates were considered miraculous at the time because they were safe and effective relative to the pesticides growers used prior to their development (cyanide, arsenate, nicotine solutions, etc.). But problems associated with this new generation of pesticides soon became apparent. Nontarget pests, insects and mites, were disrupted and became more damaging than the original target pest. Resistance occurred as a result of overuse, and soon materials that once gave amazing control were no longer efficacious. UC scientists began to work on a new approach that integrated chemical biological and cultural controls along with establishing action thresholds. Professor Ray Smith, an entomologist from UC Berkeley, coined the term integrated pest management in the early 1950's, and today IPM is the basis for sound pest management around the world.

History of Grape IPM

Integrated pest management in California grapes had its beginnings in the late 1950's in the San Joaquin Valley table and raisin grape industries. By that time the grape leafhopper, *Erythroneura elegantula* Osborn, had developed considerable resistance to the new synthetic organic insecticides, and serious biological upsets of spider mites and grape mealybug were occurring. In dry

and dusty raisin vineyards spider mites were nearly impossible to control. This set the stage for developing an IPM program for grapes. The scientists that spearheaded the project were Fred Jensen and Curt Lynn, UC advisors, and Dr. Don Flaherty, who worked for DiGiorgio Fruit Company at the time and later became a farm advisor in Tulare County. UC campus-based scientists included professors Dick Dout and Carl Huffaker, from UC Berkeley, professors Gene Stafford and Bill Hewitt and Drs. Hiroshi Kito and Luigi Chiarappa and John Nakata, all from UC Davis. They began intensive studies to lay the groundwork for integrating chemical, cultural and biological control into a practical pest management program for grapes. The California Table Grape Commission and California Raisin Advisory Board provided financial support and encouragement. A number of progressive grape growers quickly embraced the new concept and led the way for others.

In the 1960's, progress with IPM included the establishment of treatment levels for various insect and spider mite pests, development of more efficient ways of applying pesticides, adoption of cultural practices that favor abiotic or biotic natural controls, and use of selective pesticides to reduce the problems of biological upsets. Concerns over worker safety and environmental issues stimulated the research and development of the grape IPM program. By the 1980's, IPM practices were well established in California's grape industry. This was quite an accomplishment when considering IPM isn't the easiest road, requiring knowledge and experience and a long-term commitment.

The succession of new pest introductions that have complicated grape IPM since the 1960's is listed as follows:

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- < **Omnivorous Leafroller (*Platynota stultana* *Walsingham*)**: The omnivorous leafroller (OLR) was first described from specimens collected in Sonora, Mexico. In the early 1960's OLR was discovered causing damage to grapes in the San Joaquin Valley in Fresno County. Today, it is a serious pest of grapes throughout the southern San Joaquin Valley. It is particularly damaging because it prefers the fruit, is difficult to control late in the season, and is a causal agent in bunch rot. It is a pest on citrus, peaches, plums, cotton, and it has a wide host range including numerous weeds and ornamentals.
- < **Western Grapeleaf Skeletonizer (*Harrisina brillians*)**: Western grapeleaf skeletonizer (GLS) first invaded California near San Diego in 1941. Its native home is Mexico. Two years after its discovery it destroyed 90% of the grape crop in San Diego County. An attempt at eradication was not successful. In 1961, the new pest was found in the San Joaquin Valley. In spite of other attempts at eradication, it became firmly established by 1975. It is now a problem throughout the southern San Joaquin Valley.
- < **Variegated Leafhoppers (*Erythroneura variabilis*)**: The variegated leafhopper (VLH) was present in the Coachella Valley, San Bernardino, and other Southern California counties, but not in the San Joaquin Valley. This changed in 1980 when it was first reported in a few vineyards in Fresno County. Today, it can be found throughout the San Joaquin Valley. Variegated leafhopper is now the predominate leafhopper pest of grapes.
- < **Phomopsis Cane and Leaf Spot (*Phomopsis viticola*)**: This disease is endemic in the vineyards of New York, Pennsylvania, Ohio, and Michigan. It wasn't identified, however, in California vineyards until 1935 in the American River section of Sacramento County. In the 1960's it made its presence known in San Joaquin Valley vineyards. It moved slowly from north to south until today it is a serious disease of grapes throughout the San Joaquin Valley.
- < **Downy Mildew (*Plasmopara viticola*)**: Downy mildew is a major disease in humid grape-growing areas of the world. In Tulare County, the first documented finding of downy mildew occurred in the spring of 1995. It has since become a problem on susceptible varieties and during wet springs.
- < **Silverleaf Whitefly (*Bemisia argentifolii*)**: The silverleaf whitefly arrived in the San Joaquin Valley in 1993. In 1994, researchers at UC Riverside published a paper designating it a new species of whitefly. It has caused damage to cotton, tomatoes, squash, cucumbers, broccoli, citrus, and grapes among a host of other crops. It is potentially very destructive because it secretes large quantities of honeydew which in turn harbors sooty mold. It appears to have the ability to adapt to new crops. Presently, whitefly populations migrating from adjacent cotton fields or other preferred host crops present the greatest threat to grapes in the southern San Joaquin Valley.
- < **Aspergillus Vine Canker (*Aspergillus niger*)**: Aspergillus Vine Canker was first noted in the San Joaquin Valley in the fall of 1989 on exceptionally vigorous Red Globe vines that had been trained up the stake that year. Since 1989, Aspergillus Canker has been observed in Tulare, Kern, and Fresno counties on Red Globe, Crimson Seedless, Chardonnay, and Grenache. Although not a serious problem and easily managed, it is something new that has to be dealt with.
- < **Vine Mealybug**: In 1994, the vine mealybug was identified from vineyards in the Coachella Valley. In three years, the mealybug spread from a small area throughout the entire grape growing region of the Coachella Valley. In 1998, the mealybug was found in vineyards in southern Kern County and in 1999 in a raisin and table grape vineyards in Fresno County. It is a very serious pest of table, raisin, and wine grapes. Growers must be very careful with the movement of crews, harvest equipment, and other machinery to keep vine mealybug from infesting their vineyards and spreading in the San Joaquin Valley.
- < **Glassy-winged Sharpshooter (*Homalodisca coagulata*)**: Native to the southeastern United States, this insect was first observed in California in 1990 and is now found throughout Southern California and in Kern, Tulare, and

Fresno counties. It is a serious threat to vineyards because of its ability to spread Pierce's disease, and currently the containment and control of this pest is the focus of federal, state, and local agencies.

< **Citrus Peelminer (*Marmara gulosa*):** The citrus peelminer was first observed in 2000 causing damage to citrus in the San Joaquin Valley. Last year, 2001, the peelminer damaged table grapes throughout the southern San Joaquin Valley. Damage or mining by the larvae can be found in the green canes, the cluster peduncle and rachis, and berries. The moth is native to the southwestern United States and northern Mexico. Studies are underway to investigate the life history, biological control, and chemical control of this latest pest to invade California grapes.

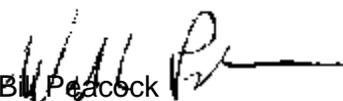
New Chemistry Helps

When looking back, grape IPM in its infancy was relatively simple. In the early days, the grape leafhopper was the biggest problem. Spider mites were an occasional problem, mostly in raisin growing districts on sandy soils. Grape mealybug, grape leafhopper, and cut worms required control in some grape growing districts some years. But, today, new pest introductions have complicated IPM. Fortunately, the agricultural chemical industries have developed many

new products using new technology and chemistry. These modern insecticides, miticides, and fungicides are exceptionally safe, effective, IPM friendly. Without these new materials it would be much more difficult to win the battle against grape pests and diseases.

Exotic Pests Must Be Excluded

The introduction of exotic pests has made it more difficult and expensive to produce grapes in the San Joaquin Valley. The glassy-winged sharpshooter even threatens the existence of the grape industry. However, there are a multitude of exotic grape pests that could raise havoc if they ever became established in California, and the likelihood of this occurring increases as the world becomes smaller. The economic future of the California grape industry will depend on excluding exotic pests. Federal, state, and county agencies, the public, and the grape industry must unite in an organized approach to successfully keep new pests from becoming established in California. If an exotic pest is detected, an immediate and appropriate response is paramount to eradicate the pest or at the very least geographically confine and manage it. We must not be complacent.


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