

## AREA-WIDE MANAGEMENT OF THE GLASSY-WINGED SHARPSHOOTER IN THE TEMECULA VALLEY

### **Project Leaders:**

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### **INTRODUCTION**

The Temecula viticultural area was the first in California to be seriously impacted by the glassy-winged sharpshooter (GWSS) *Homalodisca coagulata* and the spread of *Xylella fastidiosa*, the causative agent for Pierce's disease (PD). While PD problems were first identified in 1996, it was realized by 1999 that the situation was dire. As a result, this ongoing cooperative demonstration project was initiated in 2000 to examine the impact of area-wide management strategies on GWSS populations and PD incidences in the Temecula Valley. The Temecula advisory committee consists of representatives from wine grape growers, citrus growers, University of California-Riverside, USDA, CDFA and the Riverside County Agricultural Commissioner's Office.

Based on grower surveys, there were approximately 2800 acres of wine grapes in production in 1996 in the Temecula viticultural area. About 800 acres were removed due to PD by fall 2000 with 200 acres estimated for fall 2001 (RLH). The area encompasses about 2800 acres of wine grapes and 1600 acres of citrus.

The key strategy is to reduce and limit the vector (GWSS) and remove the reservoirs (infected vines). Another strategy in conjunction with the Riverside Agricultural Commissioner's Office was to facilitate the removal of abandoned citrus and vineyards in Temecula.

In the 2000 season, the opportunity to treat nearly the entire commercial citrus in the Temecula viticultural area was seized upon in an effort to destroy a substantial portion of the regional GWSS population. The emergency treatment of 1300 acres of citrus in Temecula, California with Admire (imidacloprid) during April and May 2000 represented a pivotal shift toward an area-wide management of GWSS. In March and April 2001, 269 acres of citrus were treated with Admire and an additional 319 acres were treated with foliar applications of Baythroid on an "as needed" basis. Many grape growers treated their grapes with Admire or made foliar applications of Baythroid, Provado, or Danitol. Recommendations were made to remove sick vines in order to remove bacterial reservoirs. Though response was slow initially, growers are aggressively removing sick vines.

Although wine grapes are the most vulnerable due to the risk of PD, other crops were scrutinized for contributions to GWSS population growth. Citrus was the most important year long reproductive host of GWSS in Temecula. Citrus also seemed to concentrate GWSS over the winter months when grapes and most ornamental hosts were dormant.

### **OBJECTIVES**

1. Determine the impact of the 2000 area-wide management program on GWSS populations in citrus, grapes, and other plant hosts in the ecosystem in the 2001 season.
2. Determine the impact of the area-wide program on GWSS adult oviposition and nymphal development.
3. Determine the impact of the GWSS program on beneficial citrus insects, pest upsets and GWSS parasitism.
4. Evaluate the biological and economic effectiveness of an area-wide insecticide program of GWSS.

### **RESULTS AND CONCLUSIONS**

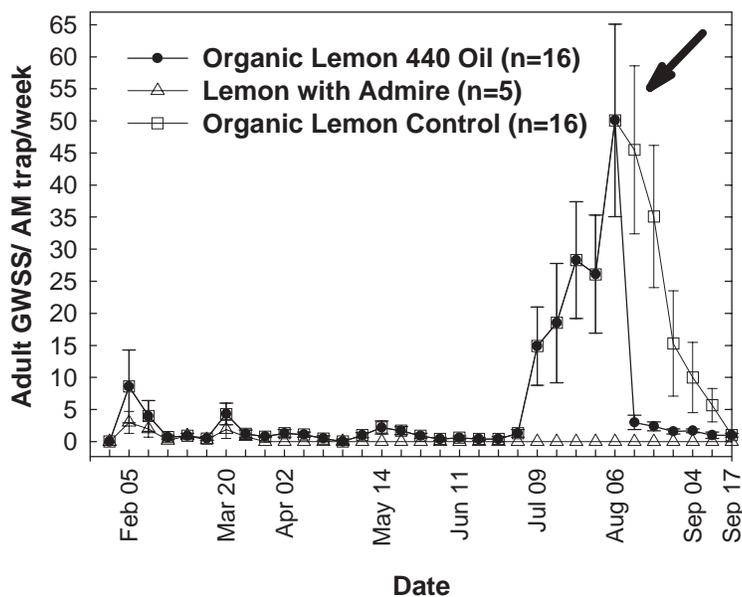
GWSS populations were monitored weekly in citrus and grapes from March 2000 to December 2000 by trapping (500 traps), visual counts (adults, nymphs, egg masses), beats in citrus, and A-vacuuming in grapes. Although good in most cases, Admire was not 100% efficacious on citrus in 2000. Improper application of Admire or weak trees will affect uptake by citrus trees preventing it from reaching the target site. Lorsban was used in 2000 in areas where Admire failed

to provide adequate control of GWSS in citrus. GWSS populations tended to be clumped, with high numbers often found on weak trees. The results from the 2000 project indicated that every tree or acre does not need to be treated. GWSS numbers remained low in Admire treated citrus (Figure 1) during 2001.

Troublesome areas or hot spots were identified from the 2000 project and by early monitoring during January-April 2001. This led to the treatment of 269 acres of citrus with Admire in March and April 2001. An additional 319 acres of citrus were treated as needed with foliar applications of Baythroid (a pyrethroid) between May 21 and August 15, 2001. A helicopter was used to make Baythroid applications to all but 45 acres. An additional 106 acres of organic lemons received treatments of Gavacide C (440 oils are allowed by CCOF and OMRI). Two small abandoned vineyards with absentee owners and high incidences of PD and GWSS were treated with Danitol by helicopter. Several grape growers treated grapes with Admire or as needed with foliar applications of Danitol, Baythroid, or Provado.

Organic citrus groves were the problematic areas and populations remained high in these groves until August 2001 treatments were made with 440 oils. In April 2001, Surround (kaolin clay), 1.2% Gavacide C (a 440 oil) and 1.4% Gavacide C were applied to certified organic lemon (4 replicates of 3 acres each). The Gavacide C was promising with the lack of other alternatives in organic situations, and two organic lemon groves (30 and 52 acres) were treated with 1.25% Gavacide C on August 4, 2001 (750 gallons per acre). The oil resulted in a 62% and 71% reduction in adult populations in these groves. About 50% of the egg masses contacted by the oil were killed and subsequent oviposition was reduced. About 99% of wasps from oil-treated parasitized egg masses emerged compared to only 2% compared to Baythroid treated egg masses. Follow-up treatments will be made in these organic groves in Mar 2002 with 1.25% Gavacide C and Pyganic. This marked the first time that GWSS populations were impacted in organic situations.

The current situation in Temecula is serious, but cautious optimism prevails. First, GWSS populations are currently the lowest in Riverside County citrus. Second, 2001 grape vine removal due to PD was the lowest in the past three years. Temecula wine grape growers experienced record yields in 2000, and the 2001 crush may prove to be Temecula's finest to date. There will be some replanting in 2002 (2% or less) especially in high visibility areas for both aesthetic reasons and to explore the feasibility of reestablishing lost vineyards at this time.



**Figure 1.** Seasonal Trends of Adult GWSS based on Pherocon AM trap data in organic lemons and Admire treated lemon. Treatment 440 oil was applied to organic lemons on August 7, 2001 as indicated by arrow. Bars represent  $\pm$ SE.