

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

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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.

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, CA with Admire® (imidacloprid) during Apr and May 2000 represented a pivotal shift toward an area-wide management of GWSS. In Mar and Apr 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 and/or made foliar applications of Provado®, or Danitol® in 2002. 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 weekly monitoring in citrus and grapes began in March 2000 and has been continued to December 2002 by trapping (~500 traps), visual counts (adults, nymphs, egg masses), beats in citrus, and A-vacuuming in grapes. This monitoring will continue through at least 30 June 2003. 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. The results from the 2000 project indicated that every tree or acre does not need to be treated. GWSS numbers remained low in citrus treated with Admire in 2001. The populations also remained low in citrus treated with Admire in early 2000, but GWSS were observed at low numbers in some of these groves in July and August 2002.

Troublesome areas or hot spots were identified during early monitoring in January-April 2002. This led to the treatment of 137 acres of citrus with Admire in April 2002. An additional 95 acres of citrus were treated as needed with foliar applications of Assail between July 21 and August 15, 2002. A helicopter was used to make Assail applications to 49 acres with 46 acres treated by speed sprayer. Gavacide C 440 oil was applied to 148 acres of organic citrus in 2002. As in previous years, grape growers were responsible for treatments to grape. Several grape growers treated grapes with Admire or as needed with foliar applications of Danitol, Baythroid, or Provado.

Organic citrus groves and grape vineyards were the problematic areas and populations remained highest in these groves (Figure 1). The results from Gavacide C treatments were promising in 2001, and with the lack of other alternatives in

organic situations, additional treatments were made with 1.25% Gavacide C and water on August 7, 2002 (750 gallons per acre) by speed sprayer to 109 acres of organic citrus. Gavacide C was applied on October 23, 2002 by helicopter to an additional 42 acres that were inaccessible by speed sprayer. The rate applied by helicopter was 15 gallons Gavacide C in 85 gallons water per acre. CCOF and OMRI currently allow the use of most 415 and 440 oils for organic use.

During July and August 2002, it became apparent that some citrus treated with Admire in early 2000 has become re-infested with GWSS. As a result, Admire or Assail treatments are planned for 500-600 acres of citrus in 2003. Based on the success of the program over 2000, 2001, and 2002, it would seem that this level of treatment in citrus every 3 years would keep GWSS populations suppressed in the Temecula viticultural area. This would be coupled with GWSS management within vineyards throughout the valley on a yearly basis.

Some vineyard replanting occurred in 2002 (2% or less) especially in high visibility areas for both aesthetic reasons and to explore the feasibility of reestablishing lost vineyards. Based on a survey of 5 Temecula wineries, 2001 wine grape production ranged from 47% to 77% of what it was in 1995 with production ranging from 3.7 to 7.8 tons per acre in 1995 to 4.3 to 6.0 tons per acre in 2001. However, Temecula is providing few wine grapes to other areas due to economic forces. As a result, the 2000 and 2001 harvests were more than adequate to sustain the Temecula wineries with substantial surplus. In the future, Temecula will likely concentrate on producing quality wine grapes for Temecula's wineries.

Temecula Viticultural Area 14 August 2002

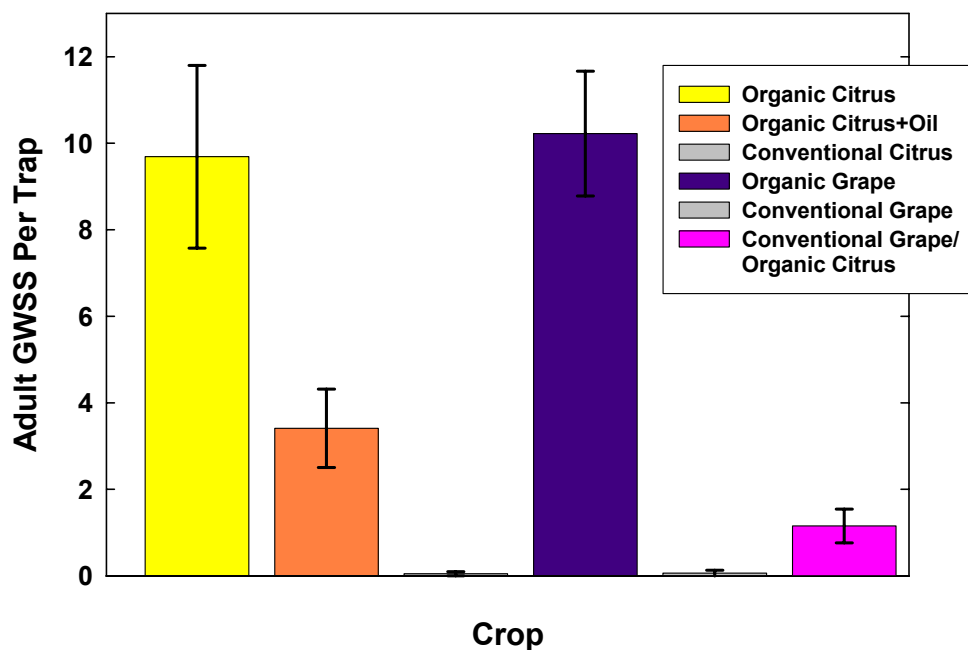


Figure 1. Comparison of GWSS (left to right) trapped in untreated organic citrus, 440 oil treated Organic citrus, Admire treated citrus, organic grape, Admire treated grape, Danitol treated grape Adjacent to oil treated organic citrus. Bars = \pm SEM. N = 15 to 20.

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