

RIVERSIDE COUNTY GLASSY-WINGED SHARPSHOOTER AREA-WIDE MANAGEMENT PROGRAM IN THE COACHELLA AND TEMECULA VALLEYS

Project Leaders:

Nick C. Toscano
Dept. of Entomology
University of California
Riverside, CA 92521
nick.toscano@ucr.edu

Raymond Hix
Center for Viticulture
Florida A & M University
Tallahassee, FL 32309
Raymond.hix@famuedu

Carmen Gispert
University of California
Cooperative Extension
Indio, CA 92201
cgispt@ucdavis.edu

Cooperators:

Thomas Perring
Dept. of Entomology
University of California
Riverside, CA 92521
Thomas.perring@ucr.edu

John Snyder
Riverside County
Agricultural Commissioner's Office
Riverside, CA 92502
jsnyder@co.riverside.ca.us

Robert Mulherin
Riverside County
Agricultural Commissioner's Office
Riverside, CA 92502
rmulherin@co.riverside.ca.us

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ABSTRACT

Riverside County has two general areas where citrus groves interface with vineyards; the Coachella and Temecula valleys. The Coachella valley with 12,000 acres of table grapes in proximity to 12,000 acres of citrus and the Temecula valley with 2,000 acres of wine grapes in proximity to 1,600 acres of citrus are vulnerable to Pierce's disease (PD), *Xylella fastidiosa*. The grapes in the Coachella and Temecula areas of Riverside County are in jeopardy because the glassy-winged sharpshooter (GWSS), the vector of the PD bacterium, builds up in adjacent citrus groves. Citrus is an important year-round reproductive host of GWSS in Riverside County, but also one that concentrates GWSS populations over the winter months during the time that grapes and many ornamental hosts are dormant. GWSS weekly monitoring in citrus and grapes began in March 2000 in Temecula valley and in 2003 in Coachella valley by trapping and visual inspections. Systemic insecticides such as Admire (imidacloprid), gave excellent control. In 2004 GWSS infestations in Temecula appear to be associated primarily with untreated tracts of vegetation such as organic citrus. Coachella valley GWSS populations have declined substantially relative to the pre-action levels due to insecticide applications.

INTRODUCTION

The wine grape industry and its connecting tourist industry in Temecula valley generate \$100 million in revenue for the economy of the area. GWSS/PD caused a 30% vineyard loss and almost brought this wine-growing region to its knees. An area-wide GWSS management program initiated in the spring of 2000 saved the industry from a 100% loss. Only a continuation of an area-wide GWSS management program will keep the vineyards viable in Temecula. The table grape industry in the Coachella Valley is represented by 10,465 acres of producing vines, which generate fresh market grapes valued at an average of \$110 million annually. The GWSS was identified in the Coachella Valley in the early 1990's. Population increases of this insect in Coachella Valley in the last three years have increased the danger of PD occurrence in this area, as has occurred in similar situations in the Temecula and San Joaquin Valleys. In July 2002, the occurrence of *X. fastidiosa*, the PD bacterium, was found in 13 vines from two adjacent vineyards in the southeastern part of Coachella Valley. With this discovery, and the increasing GWSS populations, there was and is a real need to continue an area-wide GWSS/PD management program, to prevent an economic disaster to the work forces and connecting small businesses of Mecca, Thermal, Coachella, Indio, etc. that depend upon the vineyards for a big portion of their incomes. Only a continuation of an area wide GWSS/PD management program will keep the vineyards viable in Coachella. At present there are no apparent biological or climatological factors that will limit the spread of GWSS or PD. GWSS has the potential to develop high population densities in citrus. Insecticide treatments in citrus groves preceded and followed by trapping and visual inspections to determine the effectiveness of these treatments are needed to manage this devastating insect vector and bacterium. Approximately 2,135 acres of citrus in Riverside County were treated for the GWSS in February through June 2004 between a cooperative agreement with USDA-APHIS and the Riverside County Agricultural Commissioner's Office under the "Area-Wide Management of the Glassy-Winged Sharpshooter in the Coachella and Temecula Valleys".

OBJECTIVES

1. Delineate the areas to be targeted for follow-up treatments to suppress GWSS populations in the Temecula and Coachella Valleys for 2004.
2. Determine the impact of the 2003 GWSS area-wide treatments to suppress GWSS populations in citrus groves and adjacent vineyards.
3. Determine the impact of a GWSS program on beneficial citrus insects, pest upsets and GWSS parasitoids.
4. Evaluate the biological and economic effectiveness of an area-wide insecticide program on GWSS.

RESULTS AND CONCLUSIONS

The programs in Coachella and Temecula were dependent upon growers, pest management consultants, citrus and vineyard manager's participation. The areas encompass approximately 28,000 acres. Representatives of various agencies were involved in the program, they were as follows: USDA-ARS, USDA-APHIS, CDFA, Riverside County Agricultural Commissioner, UC-Riverside and grower consultants. Representatives of these agencies meet to review the program.

The GWSS/PD citrus groves and vineyards within the GWSS/PD management areas were monitored weekly to determine the need and effect of insecticide treatments on GWSS populations. Yellow sticky traps (7 x 9 inches) were used help determine GWSS population densities and dispersal/movement within groves and into vineyards. Based on trap counts and visual inspection, approximately 1,555 and 580 acres of citrus were treated in Coachella and Temecula, respectively for GWSS control. The following insecticides used and acres treated per insecticide are as follows: 1,935 acres with Admire at 36 ounces per acre; 40 acre; 40 acres with Baythroid (cyfluthrin) at 3.2 ounces per acre; 80 acres with Danitol (fenpropathrin) at 21.33 ounces per acre; and 80 acres with PyGanic (Pyrethrins) at 7 pints per acre.

In 2004, high numbers of adult GWSS were caught on the yellow sticky traps in Temecula, with populations peaking in July reaching a total of almost 700 GWSS found (Figure 1). Figure 2 indicates that the highest numbers of GWSS, an average of 10 per trap, are trapped in organic orchards or citrus not treated with synthetic insecticides such as Admire. GWSS populations were almost non-existent in Coachella Valley with populations of the smoke-tree sharpshooter, *H. lacerta*, being the predominant species found on the sticky-traps (Figure 3).

For an area-wide GWSS management program to be successful with large acreages of citrus, a management program has to been initiated. Organic insecticides are not as effective as the neonicotinoid insecticides Admire and Assail or pyrethroids for controlling GWSS. Therefore, organic insecticides will have to be applied more frequently than its synthetic counterpart. Organic citrus groves pose challenges to area-wide GWSS management programs.

The programs in Coachella and Temecula were dependent upon growers, pest management consultants, and citrus and vineyard managers' participation. The areas involved encompass approximately 28,000 acres. Representatives of various agencies were involved in the program. They are as follows: USDA-ARS, USDA-APHIS, CDFA, Riverside County Agricultural Commissioner, UC-Riverside, and grower consultants. Representatives of these agencies meet as frequently as once a month to evaluate these Riverside County area-wide programs.

FUNDING AGENCIES

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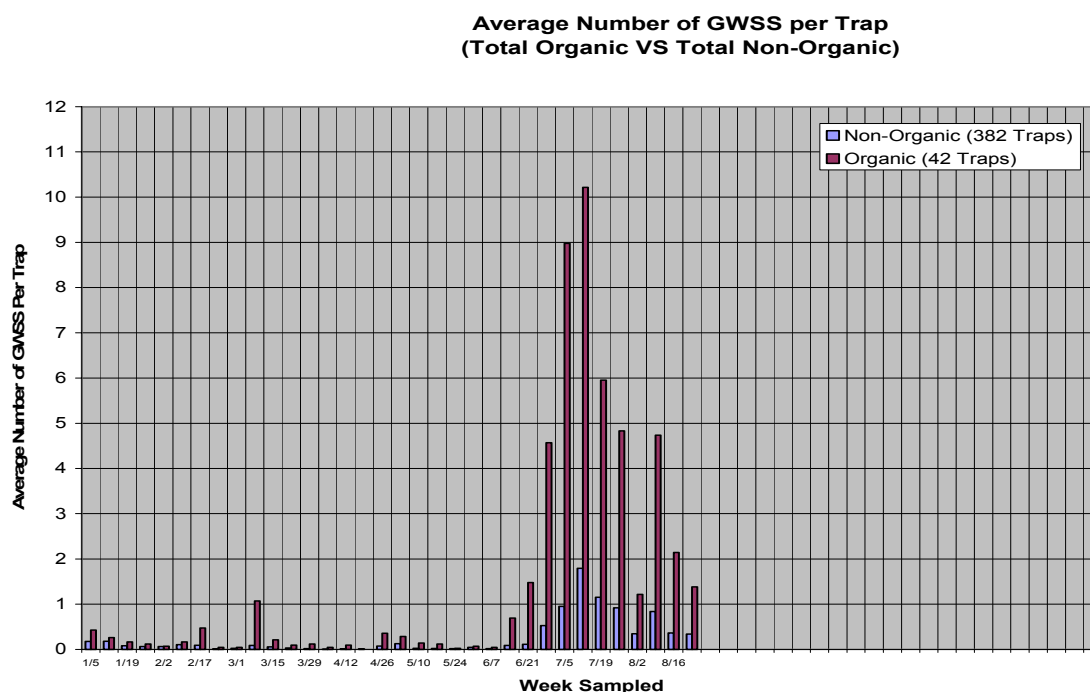


Figure 1. The average number of glassy-winged sharpshooters trapped on yellow-sticky traps from January through August 2004, in Temecula valley.

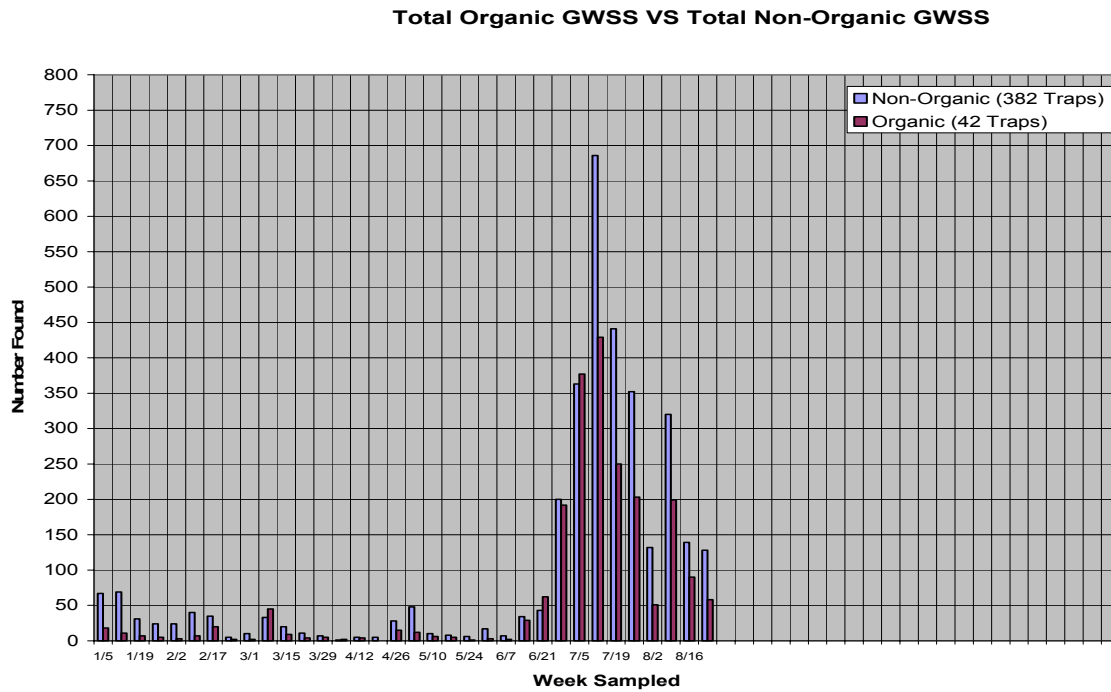


Figure 2. The total number of glassy-winged sharpshooter trapped on yellow-sticky traps from January through August 2004, in Temecula valley.

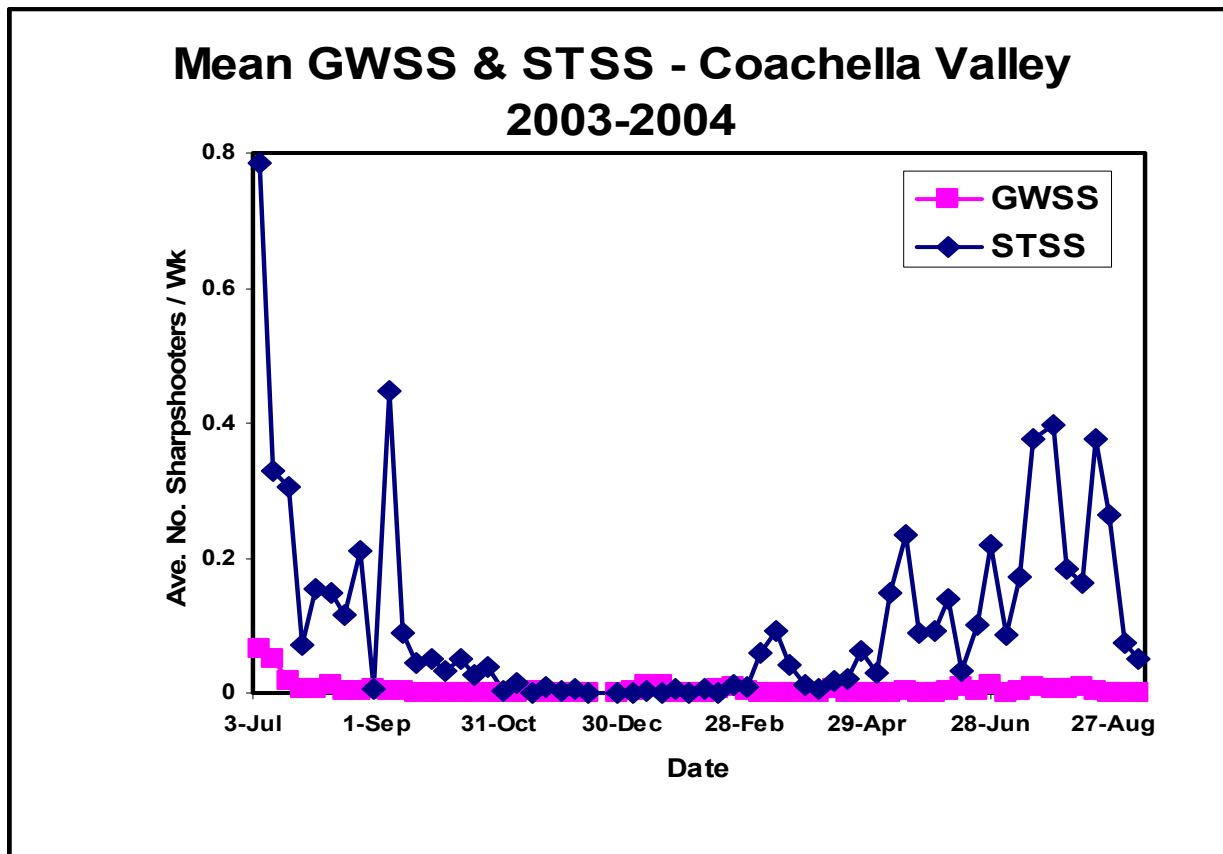


Figure 3. Mean number of glassy-winged sharpshooters and smoke-tree sharpshooters trapped on yellow-sticky traps from July through August in Coachella valley.