

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

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**Reporting Period:** The results reported here are from work conducted October 2006 to September 2007.

**ABSTRACT**

Riverside County has two general areas where citrus groves interface with vineyards, the Coachella and Temecula Valleys. The Coachella Valley with 10,438 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* (Xf). The grapes in the Coachella and Temecula areas of Riverside County are in jeopardy because of the glassy-winged sharpshooter (GWSS), the vector of the PD bacterium, builds up in adjacent citrus groves. Citrus is an important year around 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 in grapes began in March 2000 in Temecula Valley and 2003 in Coachella Valley by trapping and visual inspections. Systemic insecticides such as Admire (imidacloprid), gave excellent control. Temecula and Coachella Valley GWSS populations have decreased since the treatment programs were initiated. With the exception of a little upsurge in 2007 Temecula GWSS populations; overall GWSS numbers in both valleys have declined substantially relative to the pre-action levels due to insecticide applications.

**INTRODUCTION**

The GWSS vectors a bacterium that causes PD. This insect and bacterium are a severe threat to California's 833,644 acres of vineyards and \$30 billion dollar industry. An area wide GWSS management program was initiated in Temecula in 2000 to prevent this vector's spread into other California grape growing regions. In Temecula Valley itself, the wine grape industry and its connecting tourist industry generate over \$100 million of revenue for the economy of the area. GWSS/PD caused a 40% vineyard loss and almost destroyed the connected tourist industry. The 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 over \$110 million annually. The GWSS was identified in the Coachella Valley in the early 1990's. Populations of this insect in Coachella Valley 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 Xf, 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 associated 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 in that area. 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 950 acres of citrus in Riverside County were treated for the GWSS in June through September, 2007, through a cooperative agreement with USDA-APHIS and the Riverside County Agricultural Commissioner's Office for the area wide management of the GWSS in the Coachella and Temecula valleys. The cost of 2007 Riverside County GWSS insecticide treatments was approximately \$126,000.

## OBJECTIVES

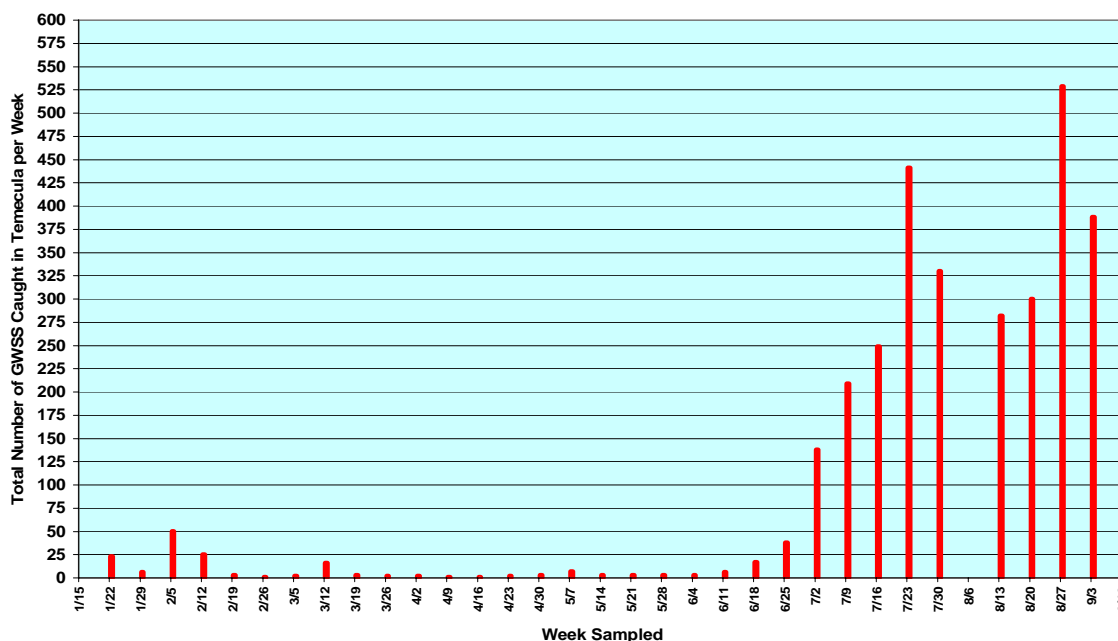
1. Delineate the areas to be targeted for follow-up treatments to suppress GWSS populations in the Temecula and Coachella Valleys for 2007.
2. Determine the impact of the 2006 GWSS area-wide treatments to suppress GWSS populations in citrus groves and adjacent vineyards.

## RESULTS AND CONCLUSIONS

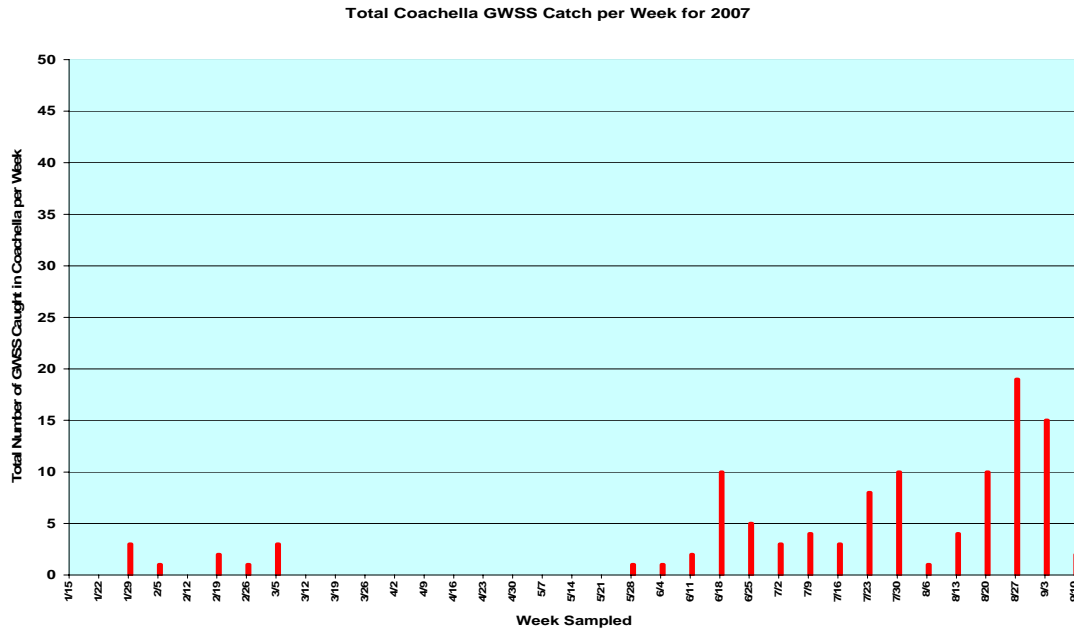
The programs in Coachella and Temecula were dependent upon participation of growers, pest management consultants, and citrus and vineyard managers. The areas encompass approximately 28,000 acres. Representatives of various agencies were involved in the program, they were as follows: USDA-ARS, USDA-APHIS, CDFA, Riverside County Agricultural Commissioner, UC Riverside, UC Cooperative Extension, and grower consultants. Representatives of these agencies meet periodically to review the program. Newsletters are sent to growers, managers, wineries, and agencies with information on GWSS populations and insecticide treatments via e-mail. The information from Temecula is sent weekly, while information from Coachella goes to the various parties monthly.

The 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. A total of 1,397 GWSS yellow sticky traps are monitored weekly. Based on trap counts and visual inspection, approximately 885 and 70 acres of citrus were treated in Coachella and Temecula, respectively, for GWSS control in 2007. In Temecula and Coachella Valley, treatments for GWSS in citrus were initiated when at least two GWSS adults were found at the same trap location for two consecutive weeks. In Temecula Valley only the citrus where the GWSS was found were treated. In Coachella Valley all citrus located within a 1.0 mile radius from the trap find were treated as a preventive measure to protect surrounding groves and vineyards. The decision to treat a greater area around GWSS finds in Coachella than what was treated in Temecula differed because of terrain; urban development and the history of GWSS blow-ups in Kern County and Temecula Valley during the fourth year after GWSS area-wide programs were initiated. One hundred percent of the 885 acres of Coachella Valley citrus were treated with a single application of Alias (imidacloprid) at 36 ounces per acre. In Temecula Valley 40 acres of citrus were treated with Lorsban (chlorpyrifos) at the rate of 7 pints per acre followed by an application of AdmirePro (imidacloprid) at 14 ounces per acre. In the remaining 30 acres in the Temecula area where PyGanic was used to manage GWSS in organic groves, a follow-up treatment of PyGanic was applied a month after the first application for two consecutive months. PyGanic (5% pyrethrum) was applied at the rate of 7 pints per acre. Treatment threshold numbers of GWSS were not trapped until July (Figures 1, 2 & 3). Therefore, 2007 Coachella and Temecula GWSS insecticide applications were applied in late July and early August. Application of imidacloprid in citrus this late into the season is not ideal for GWSS control.

**Total Temecula GWSS Catch per Week for 2007**

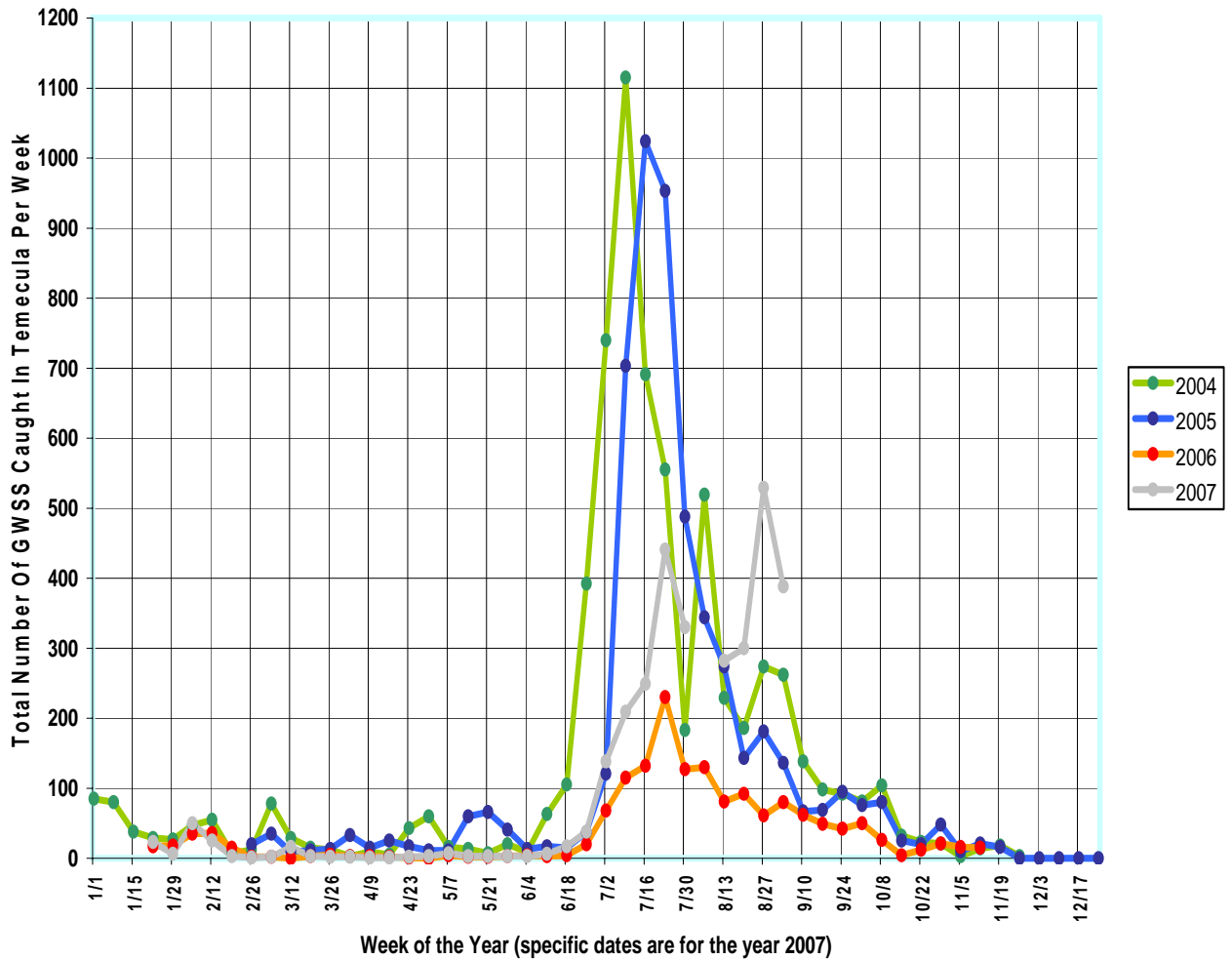


**Figure 1.** In 2007, high numbers of adult glassy-winged sharpshooters were caught on the yellow sticky traps in Temecula, with populations peaking in August and reaching a total of 530 trapped the week of August 27.



**Figure 2.** Glassy-winged sharpshooter populations in Coachella Valley peaked August 27 with a high of 19 trapped.

### Temecula Glassy-winged Sharpshooter Populations Compared Over The Last Four Years



**Figure 3.** Temecula glassy-winged sharpshooter populations compared over the last four years

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