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Kern/Tulare

GWSS Update

A project of the Glassy-winged Sharpshooter Task Force of Kern and Tulare Counties. Participants: Agricultural Commissioner Offices of Kern and Tulare Counties, California Department of Food and Agriculture, University of California-Cooperative Extension, U.S. Department of Agriculture (APHIS and ARS Divisions).

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Overview: Riverside County's area-wide GWSS programs

Southern California's Riverside County has two general areas where citrus interfaces with grape:

1) the Coachella Valley, with about 10,465 acres of producing table grapes and 12,000 acres of citrus

2) the Temecula Valley, with 2,300 acres of wine grapes in proximity to 1,600 acres of citrus

The table grape industry in the Coachella Valley produced grapes valued at $108.5 million in 2001.

In 1997, the grape situation in California changed drastically when Pierce's disease (PD) caused by the bacterium *Xylella fastidiosa* was documented in the wine-grape region of the Temecula Valley. Since then, Temecula growers have experienced devastating losses to PD. (In Florida and southern Georgia, PD transmitted by the glassy-winged sharpshooter (GWSS) is a major factor limiting grape production.)

By April 2002, 925 of 2,300 acres of vineyards that existed in the Temecula Valley in 1996 had been removed as a result of PD due to the presence of GWSS, *Homalodisca coagulata*.

Forming Temecula's area-wide program. The Temecula viticulture area was the first in California to be seriously impacted by the GWSS and the spread of PD. While PD problems were first identified in 1997, it was realized by 1999 that the situation was dire.

As a result, the ongoing cooperative demonstration known as the Temecula Area-wide Management of the Glassy-Winged Sharpshooter Pilot 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 and citrus growers, the University of California-Riverside, USDA, CDFA and the Riverside County Agricultural Commissioner's Office.

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

Pivotal shift. In the 2000 season, the opportunity to treat 1,300 acres of the 1,600 acres of citrus in the Temecula viticulture area was seized upon in an effort to destroy a substantial portion of the regional GWSS population. The emergency Admire® treatment (systemic imidacloprid) of citrus in the wine grape production area of the Temecula Valley during April and May 2000 represented a pivotal shift toward an area-wide management of GWSS. The remaining 300 acres were certified organic and adequate materials for GWSS control weren't available.

Simultaneously, a GWSS monitoring program was established that has maintained an average of 550 traps in grape and citrus at a density of about one trap per eight acres. Over the 2000, 2001, and 2002 growing seasons, GWSS populations were barely above detectable limits in Temecula, with the exception of organic citrus and grape.

Grape growers have been responsible for treating their grapes. Based on trap and visual surveys in late 2002, 501 acres of citrus were targeted in 2003 with Admire and another 109 acres with Danitol® (pyrethroid).

The success of the program over 2000, 2001 and 2002 suggests that this level of treatment in citrus every three years would keep GWSS populations suppressed in the Temecula viticulture area. This should be coupled with GWSS management within vineyards throughout the valley on a yearly basis.

Recommendations were made to remove sick vines to remove bacterial reservoirs. Though response was slow initially, growers now aggressively remove sick vines.

A closer look at the Coachella Valley. The Coachella Valley has the largest grape-citrus interface in Riverside County. As a result, the Riverside County Agricultural Commissioner's Office conducted a survey from July 24–Sept. 15, 2000, that confirmed the GWSS was very abundant in the Coachella Valley in the context of vector populations. There were 492 traps placed in the Coachella Valley area with trap densities of one per 120 acres in high priority crops (citrus, grapes and

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Overview: Riverside County GWSS/PD program

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Prunus), one per 240 acres in low priority crops, and one per 5 square miles in residential areas.

About 1,625 trap inspections were made during the eight-week period, resulting in 439 GWSS specimens—193 from citrus, 238 in grape and eight in residential or low priority crops.

Carmen Gispert, Area Viticulture Advisor, and Tom Perring, Professor, UC-Riverside, received a grant from the Coachella Valley Table Grape Commission to establish a GWSS monitoring program in early 2001.

In 2002 and 2003, Gispert and Raymond Hix, Extension Specialist, UC-Riverside, were contracted by the CDFA on behalf of the Riverside County Agricultural Commissioner to expand the GWSS monitoring program in the Coachella Valley, which now has more than 700 traps in service augmented by visual inspections.

Coachella Valley concerns. In July 2002, the occurrence of *X. fastidiosa* (PD strain) in 13 vines from two adjacent vineyards in the Mecca area of the Valley was confirmed (Gispert & Perring). With this discovery, and the increasing numbers of GWSS, there was a real need for an area-wide GWSS management program to prevent a devastating epidemic like the situation in Temecula.

Clearly, there are no apparent biological or climatic factors that would limit the spread of PD in grapes in the Coachella Valley. The GWSS populations in the Coachella Valley were high enough to potentially devastate the table grape industry if left unchecked because this insect is capable of spreading the PD bacterium from vine to vine with disease incidence increasing from year to year in an exponential fashion.

Riverside County funded a survey to visually inspect all Coachella Valley citrus on a 20-acre-by-20 acre basis. This survey had three goals.

First, it identified and classified the GWSS populations in specific groves. Secondly, it prioritized groves for potential treatments. Finally, it helped establish compliance agreements with Coachella Valley citrus growers.

Ultimately, the 2000 survey, the current monitoring program and the visual survey provided three layers of information that were used to guide treatment decisions.

Area-wide management programs in Temecula and in Kern County have been successful in suppressing GWSS populations, thereby limiting the spread of PD. Therefore, $1.6 million in funding from USDA-APHIS was sought and obtained by the Riverside County Agricultural Commissioner's Office to implement the Coachella Valley Area-wide GWSS Program. This program was officially initiated on Feb. 10, 2003.

Moving ahead with area-wide approach. With cooperation of the citrus growers, 10,312 acres of citrus were treated primarily with Admire (7,329.5 acres) and Assail® (acetamiprid) (2,734.6 acres) by April 30. Assail treatments were used primarily in flood irrigated citrus groves by speed sprayer, or citrus interplanted in date gardens by handgun applications.

By April 10, 2003, all groves with populations of GWSS were treated. Some Assail treatments were repeated in the summer as a precaution.

The primary objective of the program is to prevent a repeat of Temecula and Kern County GWSS/PD situations. Currently, fewer than four traps per week are catching GWSS. Only in a few instances has more than one GWSS been captured on a single trap. The ironic fortune in Coachella Valley is that grape growers have been treating grapes for the vine mealybug for about eight years, which probably helped hold back a PD epidemic due to GWSS.

Citrus' key role. In Riverside County, table and wine grapes are most vulnerable to PD. Citrus crops are the most important year-round reproductive host of GWSS in Riverside County, but they also concentrate GWSS populations during winter months when grapes and many ornamental hosts are dormant.

For area-wide programs to be successful in areas with large acreages of citrus, these groves must be treated before the insects move into deciduous perennial crops and ornamentals after foliage development. If done on an area-wide basis, groves don't have to be treated every year.

There are strains of this bacterium in parts of California that cause lethal diseases in almond, oleander and other ornamentals. Strains in Brazil cause a serious citrus disease known as citrus variegated chlorosis (CVC). When populations of GWSS are uncontrolled in southern California citrus, there are 100 times the vectors per tree than those in Brazil. Brazil has lost nearly 40 percent of its trees over the past 11 years. The CVC strain of the bacterium is a potential threat that could devastate California citrus before anyone detects its presence.

— Raymond Hix, Ph.D., Entomologist, Glassy-Winged Sharpshooter/Pierce's Disease, UC-Riverside

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