

EVALUATION OF EFFICACY OF SEVIN® TREATMENTS IN PORTERVILLE GWSS INFESTATION

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INTRODUCTION

In 1999, the agricultural community in Temecula, California became aware that glassy-winged sharpshooter (GWSS) was a serious problem with regard to transmitting the bacterium *Xylella fastidiosa* and was causing epidemics of Pierce's Disease in grapes. This discovery spawned a search for GWSS in other areas of California during 2000. On May 16, 2000 yellow panel traps revealed an infestation in the Porterville area that was surveyed by Tulare County Agricultural Commissioner/Sealer's Office (TCAC) staff, with the assistance of the California Conservation Corp (CCC). It was determined that a 9-square-mile urban area of Porterville was infested with GWSS. After much discussion and examination of insecticide options, the TCAC decided to treat GWSS-infested residential yards with carbaryl (Sevin®) because it was registered for both food and ornamental plants. The purpose of the treatment program was to prevent the pest from spreading into additional nearby communities, and commercial citrus and grapes. The effectiveness of this treatment had not been previously studied.

OBJECTIVE

1. Study the effectiveness of multiple treatments of Sevin® for suppression of GWSS in two neighborhoods in the Porterville area.

RESULTS AND CONCLUSIONS

The Tulare County Agricultural Commissioner's office staff and the California Conservation Corp conducted visual surveys of 600 yards during early June of 2000 (ultimately 16,500 properties were surveyed). Treatments of Sevin® were applied only to yards that had visual signs of GWSS (egg masses, nymphs or adults). During the period of June 20-26, 2000, a commercial Pest Control Operator applied Sevin® to approximately 300 properties. A team of entomologists from the Kearney Agricultural Center sampled 30 residential properties on July 17 (approximately one month after treatments) in two different neighborhoods to measure densities of GWSS and determine efficacy of the insecticide treatments. We found evidence of GWSS (cast skins, old or new egg masses, and live individuals) in all 30 residences, yet only 50% of these residences were sprayed in June. This suggests that the California Conservation Corp crews were about 50% effective in finding evidence of GWSS when they first began surveying. As a result of this finding Tulare County Agricultural Commissioner's office and California Conservation Corp conducted another full survey to identify additional infested properties. Egg masses were found on *Canna*, calla lily, *Camellia*, ivy, tree-of-heaven, citrus, four o'clocks, *Viola*, grape, *Agapanthus*, ash, pear, redbud, apricot, privet, *Euonymus*, tiger lily, *Hibiscus*, crape myrtle and apples. Nymphs were found on fruitless mulberry, four o'clocks and apples. Adults were found on fruitless mulberry and grapes. On July 17th, approximately one month after the first treatment of Sevin®, there were fewer properties and fewer live GWSS found in the 14 yards that had been treated compared to the 16 yards that had not been treated. Since many yards were not treated, and coverage was not complete (tall trees), it is not surprising that the GWSS were not eliminated from these neighborhoods with one treatment of Sevin® (Table 1).

Sevin® was applied to over 1,000 Porterville yards during mid to late July. A survey of the two study neighborhoods in August revealed very few live stages of GWSS in untreated yards and yards that had received only one treatment, and no GWSS were found in yards that received two treatments of Sevin®. We found egg masses on apricot, *Citrus*, *Camellia* and four o'clocks. We found nymphs on grapes, and adults on fruitless mulberry trees and oleander. At this time of year, it was difficult to find any live stages of GWSS. This may have been because the pesticides effectively reduced their numbers, and/or because the majority of the GWSS were in the adult stage and adults are difficult to see. Where we did find GWSS in yards that were treated only once, the finds tended to be next to yards that were untreated. These data suggest that where coverage was good and applications of Sevin® were repeated, the program successfully suppressed GWSS.

In five locations, a total of 111 GWSS egg masses were enclosed in mesh bags immediately after treatment with Sevin®. We examined the bags weekly for four weeks and found no survival of nymphs. This suggests that if the egg masses are treated directly, the nymphs are very susceptible to carbaryl. Evidence of parasitism by *Gonatocerus ashmeadi* was found at each location. No live parasites were found suggesting that Sevin® was also toxic to this parasite.

In April of 2001, Tulare County Agricultural Commissioner's office staff re-surveyed all of the Porterville neighborhoods and treated only 474 properties. They treated both infested (213) and adjacent (261) properties. They found that the GWSS population had not expanded beyond the original 9 square miles of neighborhoods and far fewer properties had infestations than in 2000. These data suggest that multiple treatments with Sevin® in the urban area helped to contain GWSS.

Table 1. Surveys for GWSS in two Porterville neighborhoods after first (late June) and second (late July) sprays of Sevin®.

Treatment	Total properties	No. of GWSS Infested properties	Live Stages of GWSS
July 17 survey			
Unsprayed	16	14	131
Sprayed once	14	9	49
Aug 24 survey			
Unsprayed	10	2	3
Sprayed once	6	2	8
Sprayed twice	14	0	0