THE ROLE OF OLFACTORY CUES IN HOST-PLANT SELECTION BY THE GLASSY-WINGED SHARPSHOOTER

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ABSTRACT
The glassy-winged sharpshooter (GWSS) is a highly polyphagous and mobile vector of Pierce's disease of grapes. Trap captures in a multi-crop agricultural landscape under constant deficit irrigation suggest that adult GWSS movement is tied to irrigation schedules. To understand the observed patterns of movement, we explored the orientation and feeding responses of adult GWSS toward citrus and avocado plants undergoing various levels of water-deficit and nutritional treatments. Choice and no-choice cage studies indicate that GWSS distinguishes water-stress in hosts and prefers to settle on and feed more on well-hydrated plants. GWSS showed no significant response to a choice of citrus fertilized with ammonium or nitrate forms of nitrogen.

Section 2:
Vector
Management

CURTAILING OVIPOSITION BY THE GLASSY-WINGED SHARPSHOOTER ON NURSERY PLANTS

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ABSTRACT
The containerized ornamental nursery industry in California has been implicated as the most likely source of new outbreaks of the glassy-winged sharpshooter (GWSS) *Homolodisca vitripennis* (formerly *H. coagulata*) in areas of the state that are not infested. For nurseries in GWSS-infested areas, rigorous quarantine requirements mandate GWSS monitoring, thorough plant inspections at shipping and receiving locations, and insecticide treatments. These requirements assume that one GWSS adult, or one egg mass can initiate a stable population. Thus, plant shipments are frequently rejected at the receiving location on the basis of an egg mass that was not detected and removed during the shipping site inspection. The costs associated with quarantine requirements and shipment rejection has become an important economic problem. Many nurseries in infested areas do not ship their product to areas that are not infested with GWSS, resulting in multi-million dollar losses.

In this study, we examine the impact of selected insecticides on GWSS oviposition on containerized nursery plants. The insecticides we selected for study are currently being used by the nursery industry in California to suppress insect populations. In two trials, examining 4 different plant species and 8 insecticides applied as foliar sprays or soil drenches, we found no suppressive impact on GWSS oviposition.

INTRODUCTION
The glassy-winged sharpshooter (GWSS) *Homolodisca vitripennis* (formerly *H. coagulata*) has arguably become the most important invasive species in California due to its propensity to spread diseases induced by *Xylella fastidiosa*, the most important being Pierce's disease of grapevines (Blua et al 1999). First identified in 1990 from collections in Orange and Ventura counties (Sorensen and Gill 1996), GWSS has spread throughout southern California from San Diego to Santa Barbara counties along the coast, and inland to San Bernardino and Riverside counties. More recently it has become established in Kern County. Over the past several years, local outbreaks of GWSS have been found in central and northern California counties where eradication efforts are underway.

Although no data are available that identify the source of these emerging populations, the ornamental nursery industry of California has taken the brunt of the responsibility on the basis of a most likely scenario involving the movement of the insect on containerized nursery material throughout the state. Additionally, it is widely accepted without evidence that the original establishment of GWSS in southern California occurred by dispersal on commercial nursery stock from the southeastern portion of the U.S. to California. (Sorensen and Gill 1996).

Currently, strict regulations have been imposed on the nursery industry to curtail movement of GWSS via containerized ornamentals transported from infested to non-infested counties. These regulations require thorough inspection by the office of county agricultural commissioners at both the origin of plants destined for transport and their destination. Additionally, local disinfestation protocols require repeated insecticide applications at the majority of nurseries shipping materials out of a quarantine area. Upon detection of GWSS at a destination nursery, costly insecticide treatments of the surrounding area are required as well as destruction of the infested material. Inspections and treatments are labor-intensive, time consuming, and result in substantial extra costs to growers, counties, and ultimately the state. It is important to note that nursery shipments can be rejected, leading to a spraying of the destination location and crop destruction, based on the simple presence of egg masses. In many cases the presence of an old egg mass (i.e. an egg-mass scar on the foliage) has been sufficient to trigger crop destruction, pesticide applications, and additional costly monitoring and surveillance. A determination of the viability of the masses is rarely if ever made. The assumption is that any egg mass detected is viable and capable of establishing a population.

The ornamental nursery industry needs new, cost-effective, solutions to the problem of transporting GWSS, especially as eggs, on nursery stock to non-infested areas of California. We believe that effective solutions can be immediately integrated