

CITRUS: *Citrus sinensis* (L.) Osbeck 'Thomson Improved Navel Orange'

Evaluation of Glassy-Winged Sharpshooter Mortality Following Exposure to Aged Insecticide Residues, 2017

David Haviland and Stephanie Rill

University of California Cooperative Extension, Kern County, 1031 S. Mt. Vernon Ave., Bakersfield, CA 93307, Phone: (661) 862-6200, Fax: (661) 862-6208 (dhaviland@ucdavis.edu; smrill@ucanr.edu)

Subject Editor: Jonathan Babcock

Orange | *Citrus sinensis*

Glassy-winged sharpshooter (GWSS) | *Homalodisca vitripennis* (Germer)

The effects of aged residues from insecticide treatments on GWSS mortality were evaluated in late summer of 2017 using 35 potted citrus trees. The trees were organized into a completely randomized design with 5 reps of six treatments and a water check (Table 1). On 12 Aug a 1 qt hand-held spray bottle was used to spray each tree with 160 ml (runoff) of an insecticide solution that was equivalent to the per-acre field rate mixed in 200 gal of water per acre. The effects of insecticide residues on GWSS mortality were evaluated at weekly intervals by caging adult GWSS onto the treated surfaces. Each week we collected 350 adult GWSS from an organic citrus orchard and placed them into thirty-five 5-gal paint strainer bags that each contained 10 mixed-gender adults. On the day of treatment, the residues were allowed to dry for approximately 1 h and then one bag containing GWSS was placed onto each of the 35 citrus trees. Mortality of GWSS within the bags was recorded 7 d later (1 WAT). This caging process was repeated on a weekly basis using newly collected GWSS each week for 8 wk after application. Percentage

mortality data were analyzed by ANOVA with means separated by Fisher's Protected LSD ($P \leq 0.05$) after arcsine transformation.

All treatments except for Beleaf provided significant GWSS mortality through 7 WAT. GWSS mortality in plots treated with Sivanto was 100% through 5 WAT and over 90% through 7 WAT. Mortality in plots treated with Assail and Actara was 100% through 4 WAT and greater than 90% 5 WAT. By 6–7 WAT, Assail maintained mortality levels over 80% while Actara maintained them over 65%. In plots treated with Harvanta and Sequoia, there was 100% mortality for 2 wk and greater than 90% mortality 3 WAT. Mortality thereafter gradually tapered off to approximately 50–60% by 7 WAT. GWSS mortality in plots treated with Beleaf was slightly higher than the water check 1 WAT, and statistically equivalent to the water check on all other dates.

This research was supported in part by the Consolidated Central Valley Table Grape Pest and Disease Control District with additional industry gifts of pesticides and funding.

Table 1.

Treatment/formulation	Rate/acre ^b	Mean GWSS mortality (%) ^a							
		1 WAT	2 WAT	3 WAT	4 WAT	5 WAT	6 WAT	7 WAT	8 WAT
Sivanto 200SL	14 fl oz	100.0a	100.0a	100.0a	100.0a	100.0a	90.0a	91.1a	64.0a
Assail 30SG	4.5 oz	100.0a	100.0a	100.0a	100.0a	90.9a	83.5a	91.8a	67.3a
Actara 25WG	4 oz	100.0a	100.0a	100.0a	100.0a	91.9a	65.6a	73.3b	56.0ab
Harvanta	22 fl oz	100.0a	100.0a	96.0a	94.0a	87.5a	72.5a	51.3bc	43.5abc
Sequoia	4.5 fl oz	100.0a	100.0a	92.0a	84.4a	86.0a	66.0a	61.1b	50.2abc
Beleaf 25SG	10.5 oz	48.8b	19.1b	25.5b	22.4b	15.0b	8.5b	25.3cd	25.1bc
Water Check		28.6c	23.0b	35.0b	46.7b	16.8b	11.1b	17.3d	16.7c
	<i>F</i>	134.94	688.36	34.41	11.47	14.03	6.97	12.45	11.60
	<i>P</i>	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001

Means in a column followed by the same letter are not significantly different; $P > 0.05$, FPLSD after arcsine transformation of the percentage mortality. Original means are shown.

^aPercentage mortality of GWSS exposed to pesticide residues for 7-d periods from 1 to 8 weeks after treatment (WAT).

^bRate of formulated product per 200 gal of water, sprayed to light runoff.