

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

## Evaluation of Glassy-Winged Sharpshooter Mortality Following Exposure to Aged Insecticide Residues, 2018

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Subject Editor: Jonathan Babcock

Orange | *Citrus sinensis*

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

The effects of aged residues from insecticide treatments on glassy-winged sharpshooter (GWSS) mortality were evaluated in mid-summer of 2018 using 40 potted citrus trees. The trees were organized into a completely randomized design with five reps of seven treatments and a water-only check (Table 1). On 11 Jul, 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 of formulated product 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 400 adult GWSS from an organic citrus orchard and placed them into forty 5-gal paint strainer bags so that each contained 10 mixed-gender adults. On the day of treatment, the residues were allowed to dry for approximately 1 h and one bag containing GWSS was placed onto each of the 40 citrus trees. Mortality of GWSS within the bags was recorded 7 d later (1 wk after treatment [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.

With two minor exceptions, all treatments provided significant increases in mortality on all evaluation dates through 8 WAT compared to the water-only check (Table 1). Through 4 WAT, all treatments provided >98% GWSS control on at least three evaluation dates compared to 24.0–50.3% mortality in the check. By 5 to 6 WAT mortality stayed above 95% in plots treated with Actara, Exirel, Sivanto HL, and Verdepryn, with other treatments ranging from 71.7 to 95.0%. By 7 and 8 WAT Exirel continued to provide >98% mortality while other products except for Verdepryn maintained mortality percentages above 60%. Comparisons of the two formulations of Sivanto, both of which contained the same amount of active ingredient per acre, resulted in similar efficacy through 5 WAT, and a trend towards longer residual activity of Sivanto HL compared to Sivanto Prime 6 to 8 WAT.

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 <sup>b</sup>	Mean GWSS mortality (%) <sup>a</sup>							
		1 WAT	2 WAT	3 WAT	4 WAT	5 WAT	6 WAT	7 WAT	8 WAT
Water Check	-	42.7b	42.5b	50.3b	24.0b	22.2c	33.4c	20.0c	8.0d
Actara 25WG	4 oz	100.0a	100.0a	100.0a	100.0a	100.0a	100.0a	85.0ab	84.2ab
Assail 30SG	4.5 oz	100.0a	100.0a	100.0a	100.0a	73.3b	91.4a	85.0ab	76.4bc
Exirel	20.5 oz	100.0a	100.0a	100.0a	100.0a	98.3ab	100.0a	98.3a	100.0a
Sequoia 2SC	4.5 fl oz	100.0a	98.0a	80.0a	98.0a	95.0ab	94.7a	68.6b	68.2bc
Sivanto HL	3.5 fl oz	100.0a	100.0a	100.0a	100.0a	100.0a	98.8a	89.8ab	84.4ab
Sivanto Prime	7 fl oz	100.0a	100.0a	100.0a	100.0a	71.7b	75.8b	64.8bc	61.6bc
Verdepryn	11 fl oz	100.0a	98.0a	98.0a	98.0a	95.0ab	95.9a	67.7b	34.0cd
	<i>F</i>	14.90	26.25	5.36	53.24	6.90	11.44	3.88	5.98
	<i>P</i>	<0.0001	<0.0001	0.0004	<0.0001	<0.0001	<0.0001	0.0037	0.0002

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.

<sup>a</sup>Percentage mortality of GWSS exposed to pesticide residues for 7-d periods from 1 to 8 wk after treatment (WAT).

<sup>b</sup>Rate of formulated product per 200 gal of water, sprayed to runoff.