(D10)

ORANGE: *Citrus sinensis* (L.) Osbeck, 'Valencia'

INSECTICIDAL CONTROL OF ASIAN CITRUS PSYLLID THROUGH FOLIAR APPLICATIONS ON ORANGE, 2006

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Asian citrus psyllid (ACP): *Diaphorina citri* Kuwayama

ACP is an important pest of citrus. Nymphs and adults suck sap from the young leaves and are also capable of carrying and transmitting the bacterium responsible for the citrus greening or huanglongbing disease. Therefore, reduction in ACP populations is required to reduce the spread of this disease. The study was carried out at the Southwest Florida Research and Education Center (SWFREC), Immokalee, Florida in Sep 2006. The experimental block consisted of 12-yr-old sweet orange *Citrus sinensis* (L) Osbeck 'Valencia' trees planted on double-row raised beds at a density of 133 trees/acre. Trees were irrigated by micro-sprinklers and subjected to conventional cultural practices. Bed sides of the experimental trees were pruned with a tractor-mounted box blade mower to induce new flush and encourage psyllid infestation. Nine treatments including an untreated check were randomly distributed across 4 replicates, each of which consisted of 3 rows of 21 trees each interspersed with 3 buffer rows. Treatments were applied on 8 Sep 2006 to the bed side of the trees using a tractor mounted Durand Wayland 3P-10C-32 air blast speed sprayer with an array of seven # 5 T-Jet stainless steel cone nozzles per side operating at a pressure of 200 psi delivering 150 gpa at a tractor speed of 1.5 mph. Data were taken from four trees in the center of each plot. Pre treatment data were collected one day before application, and post treatment data were collected 3, 10, and 18 DAT. Ten randomly selected flushes were observed and the number infested with psyllid eggs or nymphs recorded. One infested flush of these was collected and examined in the lab under a microscope to count eggs and different instars of *D. citri*. The number of ACP nymphs per flush was estimated by multiplying the proportion of 10 flush infested by the number counted from the collected flush. ACP density was estimated by counting the adults falling on an 8 ½ × 11 inch white paper sheet (on a clipboard) placed at random under the branches which were then tapped three times. The adult ACP counts were combined over the three sample dates for analysis. The number of larvae and adults of four predatory coccinellids, *Curinus coeruleus* Mulsant, *Olla v-nigrum* Mulsant, *Harmonia axyridis* Pallas and *Cycloneda sanguinea* (L.) also recorded from the 10 flushes on each tree and the data for all species and stages were combined for analysis. All data were transformed by log(x + 1) and were subjected to ANOVA to evaluate treatment effects on psyllids and the ladybeetles and means were separated using LSD ($P = 0.05$).

No significant differences were found among replicates the day before treatment for the different life stages of ACP or the cumulative numbers of four predatory ladybeetles. The number of eggs and adult ACP on treated plants did not differ from untreated plants on any post treatment sampling date, with an overall mean (± SE) of 0.21 ± 0.04 adults per tap sample and 5.92 ± 1.12 eggs per flush observed. At 3 DAT, all treatments significantly reduced nymphs compared to the untreated check except GWN-1715. The fewest nymphs were seen on trees treated with high rate of BYI 08330, followed by MSR and Micromite combined with oil. Nymphs at the two later sample dates had decreased in the untreated check due to increased numbers of ladybeetles that moved from treated plots. Despite that decrease in nymphal populations on untreated trees, no treatment had significantly reduced nymphal densities compared to the untreated check. Nymphal densities were lowest in the Provado, MSR, and the high rate of BYI 08330 treatments at 10 DAT or 18 DAT compared to the untreated check. Nymphal densities were significantly higher than the untreated check in the low rate of BYI 08330 at 10 DAT and GWN-1715 at 18 DAT. These surprising results may have been a consequence of significantly more ladybeetles observed in the untreated check compared to all other treatments. Thus, while some short-term benefit was achieved with certain of these foliar applications, the sustained activity of natural enemies appeared to provide better long term control.

Treatment/ formulation	Rate amt product/acre	Estimated no. of ACP nymphs per flush			Mean no. of ladybeetles per 10 flushes (adults + larvae) Total over three samplings
		3 DAT	10 DAT	18 DAT	
435 Oil	5 gal	2.24bc	0.36dc	1.48ab	0.81bc
Micromite 80WGS + 435 Oil	6.25 oz	0.83bc	0.28dc	0.69bc	1.00b
MSR 2E	3 pints	0.25c	0.06d	0.12bc	0.00e
GWN-1715 75WP	10.60 oz	4.50ab	2.20ab	5.89a	0.19de
BYI 08330 150 OD	12 fl oz	1.55bc	2.12a	1.39bc	0.25cde
BYI 08330 150 OD	16 fl oz	0.08c	0.81bcd	0.08c	0.13de
Envidor 2 SC	20 fl oz	3.58b	1.81abc	0.13bc	0.63bcd
Provado 1.6F	15 fl oz	3.07b	0.00d	0.01c	0.00e
Untreated check		6.33a	0.49bcd	0.32bc	2.06a

Means within columns not followed by the same letter are significantly different (LSD, $P < 0.05$).