(D10)

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

SOIL APPLIED INSECTICIDAL CONTROL OF ASIAN CITRUS PSYLLID AND CITRUS LEAFMINER, 2007

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Asian citrus psyllid (ACP): *Diaphorina citri* Kuwayama
Citrus leafminer (CLM): *Phyllocnistis citrella* Stainton

ACP is a serious pest of citrus in Florida. Adults and nymphs feed on and damage new growth and are capable of acquiring and transmitting the bacterium *Candidatus* Liberibacter asiaticus responsible for the citrus greening or huanglongbing disease. Feeding by CLM damages leaf cuticle exposing underlying tissue to infection by the bacterium *Xanthomonas citri* responsible for the citrus canker disease. Therefore, both pests need to be controlled to reduce spread of these diseases. The trial was conducted at the University of Florida Southwest Research and Education Center in Immokalee, Florida, on 4 year old 'Valencia' orange trees planted at 15 × 22 ft spacing in double-row beds. A CRB design included 4 replicates of 5 treatments distributed across 4 adjoining rows of 20 trees each divided into 5 four tree plots. Trees were trimmed approximately every two weeks throughout the trial to encourage shoot growth for oviposition and development of ACP and CLM. Weeds, debris and leaf litter were removed from beneath each tree prior to application. Materials were applied on 13 Jun in 8 oz of solution as a drench to bare soil within 18 inches of the trunk using an EZ-Dose sprayer operating at a pressure of 45 PSI and a flow rate of 3.7 gpm. Evaluations were made every 13–15 DAT. The number of CLM larvae per 5 leaves on a single tender shoot was recorded from 3 trees in each plot. Ten shoots on each of three trees per treatment were examined to record the number infested with ACP eggs and nymphs. One infested shoot was collected and examined in the laboratory using a stereoscopic microscope to count ACP eggs and nymphs. The number of nymphs counted from the collected shoot was multiplied by the proportion of 10 infested shoots to estimate number of nymphs per shoot. Adult ACP density was estimated on each of the three trees by counting the insects falling on a clipboard covered with an 8 ½ × 11 inch white paper sheet placed under randomly chosen branches which were then tapped 3 times with the hand. Data were subjected to ANOVA to evaluate treatment effects on ACP and CLM infestations and means were separated using LSD contingent on a significant treatment effect ($P = 0.05$).

All treatments resulted in significantly fewer CLM larvae per flush compared to untreated check at 14 and 28 DAT (Table 1). Only Admire Pro and Mana AG 8412-094B were still providing significant reduction in CLM larvae at 56 DAT, when both rates of Platinum were no longer effective. There was no treatment effect at 71 DAT. No ACP nymphs were seen on plants treated with the high rate of Platinum at 14 DAT, although the mean ACP nymphs per flush on the high rate Platinum treatment was not different from the low rate of Platinum (Table 2). ACP nymphs per flush on the Mana AG 8412-094B was not significantly different from Admire Pro. All treatments significantly reduced nymphs compared to the untreated check through 71 DAT with no differences among treatments. Significantly fewer nymphs compared to the untreated check were also seen at 84 DAT in all treatments except the low rate of Platinum. At 99 DAT, all treatments except the high rate of Platinum resulted in significantly fewer nymphs compared to untreated check with no differences among treatments. All treatments significantly reduced ACP adult numbers per tap sample compared to the untreated check through 99 DAT except for Admire Pro at 14 DAT (Table 3). There were no differences among treatments on all dates except at 56 DAT, when the high rate of Platinum was significantly better than Mana AG 8412-094B. In summary, Platinum tended to act more quickly against ACP nymphs and CLM larvae, presumably due to its greater solubility. It also seemed to be less persistent, especially in regard to CLM.

Table 1.

Treatment/ formulation	Rate-amt form/acre	CLM larvae/5 leaves 27 Jun 14 DAT	11 Jul 28 DAT	8 Aug 56 DAT	23 Aug 71 DAT
Untreated check	---	12.00a	5.50a	5.42a	3.27a
Admire Pro 4.6 SC	14.0 oz	1.17b	0.08b	3.00b	1.67a
Mana AG 8412-094B 4SC	16.0 oz	1.17b	0.00b	3.33b	1.75a
Platinum 2EC	13.7 oz	0.42b	0.67b	4.75a	3.30a
Platinum 2EC	18.8 oz	0.00b	0.08b	4.83a	3.45a

Means in a column followed by the same letter are not significantly different (LSD, $P = 0.05$).

Table 2.

Treatment/ formulation	Rate-amt form/acre	ACP nymphs/flush[1] 27 Jun 14 DAT	11 Jul 28 DAT	25 Jul 42 DAT	8 Aug 56 DAT	23 Aug 71 DAT	5 Sep 84 DAT	20 Sep 99 DAT
Untreated check	---	31.37a	15.65a	67.25a	87.75a	26.51a	17.06a	32.00a
Admire Pro 4.6 SC	14.0 oz	16.65b	2.10b	2.31b	3.71b	3.17b	6.64bc	12.44b
Mana AG 8412-094B 4SC	16.0 oz	8.18b	0.00b	0.88b	4.37b	1.53b	6.85bc	10.74b
Platinum 2EC	13.7 oz	0.01c	0.05b	1.64b	10.37b	2.08b	14.26ab	14.93b
Platinum 2EC	18.8 oz	0.00c	0.00b	1.02b	4.25b	2.13b	0.85c	18.01ab

Means in a column followed by the same letter are not significantly different (LSD, $P = 0.05$).
[1]Derived from the number of nymphs per infested flush and percentage of flush infested on each tree sampled

Table 3.

Treatment/ formulation	Rate-amt form/acre	ACP adults/tap sample 27 Jun 14 DAT	11 Jul 28 DAT	25 Jul 42 DAT	8 Aug 56 DAT	23 Aug 71 DAT	5 Sep 84 DAT	20 Sep 99 DAT
Untreated check	---	0.80a	6.30a	5.17a	7.90a	6.00a	5.08a	4.90a
Admire Pro 4.6 SC	14.0 oz	0.80a	0.17b	0.17b	0.50bc	0.50b	0.58b	0.67b
Mana AG 8412-094B 4SC	16.0 oz	0.00b	0.00b	0.42b	1.16b	1.17b	0.42b	0.75b
Platinum 2EC	13.7 oz	0.00b	0.00b	0.08b	0.92bc	0.42b	0.42b	0.67b
Platinum 2EC	18.8 oz	0.00b	0.25b	0.00b	0.17c	0.17b	0.42b	0.92b

Means in a column followed by the same letter are not significantly different (LSD, $P = 0.05$).