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

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

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

Citrus leafminer (CLM): *Phyllocnistis citrella* (Stainton)

The Asian citrus psyllid (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. Damage

caused by citrus leafminer (CLM) feeding exposes leaf cuticle 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 5 year old 'Valencia' orange trees planted at 15 X 22 ft spacing in double-row beds. A completely randomized block 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 development required for the development of ACP and CLM immatures. Weeds, debris and leaf litter were removed from beneath each tree prior to application. Materials were applied on 13- Jun in 8 ounces of solution as a drench to bare soil within 18 inches of the trunk using an EZ-Dose® sprayer with a pressure of 45 PSI and a flow rate of 3.7 gallons per minute. Evaluations were made every 13 – 15 days after treatment (DAT). The number of CLM larvae per 5 leaves on a single shoot with pale green leaves was recorded from 3 trees in each plot. Ten shoots on each of three trees were observed to record the number infested with psyllid eggs and nymphs. One infested shoot was collected and examined in the laboratory using a stereoscopic microscope to count 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 psyllid density was estimated by counting the individuals 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.

All treatments resulted in significantly fewer CLM larvae per flush compared to untreated check at 14 and 28 DAT. 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 not different from the low rate of Platinum or Mana AG 8412-094B. The latter was also not 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 which was also not different from Admire Pro or Mana AG 8412-094B. At 99 DAT, all treatments except the high rate of Platinum resulted in significantly fewer nymphs compared to untreated check with no differences among all treatments. All treatments except Admire Pro at 14 DAT significantly reduced ACP adult numbers compared to the untreated check through 99 DAT. There were no differences among the effective 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, presumably due to its greater solubility. It also seemed to be less persistent, especially in regard to CLM, probably because less active ingredient (0.3 lb ai/ac in the high rate) was applied than either formulation of imidacloprid (0.5 ai lb/ac).

CLM larvae/5 leaves					
	Rate Oz/acre	27-Jun 14 DAT	11-Jul 28 DAT	8-Aug 56 DAT	23-Aug 71 DAT
Untreated	.....	12.00 a	5.50 a	5.42 a	3.27 a
Admire Pro	14	1.17 b	0.08 b	3.00 b	1.67 a
Mana AG 8412-094B	16	1.17 b	0.00 b	3.33 b	1.75 a
Platinum	13.7	0.42 b	0.67 b	4.75 a	3.30 a
Platinum	18.8	0.00 b	0.08 b	4.83 a	3.45 a

Means followed by the same letter in the same column are not significantly different ( $p < 0.05$ , LSD).

	ACP nymphs per flush <sup>1</sup>							
	Rate Oz/acre	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	...	31.37 a	15.65 a	67.25 a	87.75 a	26.51 a	17.06 a	32.00 a
Admire Pro	14	16.65 b	2.10 b	2.31 b	3.71 b	3.17 b	6.64 bc	12.44 b
Mana AG 8412-094B	16	8.18 bc	0.00 b	0.88 b	4.37 b	1.53 b	6.85 bc	10.74 b
Platinum	13.7	0.01 c	0.05 b	1.64 b	10.37 b	2.08 b	14.26 ab	14.93 b
Platinum	18.8	0.00 c	0.00 b	1.02 b	4.25 b	2.13 b	0.85 c	18.01 ab

Means followed by the same letter in the same column are not significantly different ( $p < 0.05$ , LSD).

<sup>1</sup> Derived from the number of nymphs per infested flush and percentage of flush infested on each tree sampled

	ACP adults per tap sample							
	Rate Oz/acre	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	...	0.80 a	6.30 a	5.17 a	7.90 a	6.00 a	5.08 a	4.90 a
Admire Pro	14	0.80 a	0.17 b	0.17 b	0.50 bc	0.50 b	0.58 b	0.67 b
Mana AG 8412-094B	16	0.00 b	0.00 b	0.42 b	1.16 b	1.17 b	0.42 b	0.75 b
Platinum	13.7	0.00 b	0.00 b	0.08 b	0.92 bc	0.42 b	0.42 b	0.67 b
Platinum	18.8	0.00 b	0.25 b	0.00 b	0.17 c	0.17 b	0.42 b	0.92 b

Means followed by the same letter in the same column are not significantly different ( $p < 0.05$ , LSD).

**Part II: Materials Tested for Arthropod Management**

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Brand Name	Formulation	Common Name	Composition	Manufacturer
Admire Pro	4.6 SC	imidacloprid	1_((6-Chloro-3-pyridinyl)methyl)-N-nitro-2-imidazolidinimine	Bayer CropScience LP P.O. Box 12014 1 T.W. Alexander Drive Research Triangle Park, North Carolina 27709
Platinum	2 EC	thiamethoxam	4H-1,3,5-Oxadiazin-4-imine,3-((2-chloro-5-thiazolyl)methyl)tetrahydro-5-methyl-N-nitro-	Syngenta Crop Protection P.O. Box 18300 Greensboro, NC 27419
MANA AG 8412- 094B	4.0 SC	imidacloprid	1_((6-Chloro-3-pyridinyl)methyl)-N-nitro-2-imidazolidinimine	Makhteshim Agan of North America Inc. 4515 Falls of Neuse Rd. Suite Raleigh NC 27609