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

**PERSISTANCE OF STANDARD AND SLOW RELEASE SOIL APPLICATION OF  
IMIDACLOPRID FOR CITRUS PSYLLID CONTROL, 2007**

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

Application of imidacloprid to citrus in Florida is limited by label restrictions to 1 lb active ingredient/acre. While generally considered insufficient for ACP control on large trees, we investigated the feasibility of using a slow release formulation for this purpose.

The trial was conducted at the University of Florida Southwest Research and Education Center in Immokalee, Florida, on 13 year old 'Valencia' orange trees planted at 15 X 22 ft spacing in double-row beds separated by a swale and running north-south. A complete randomized block design was used with each plot consisting of 4 trees. Trees were trimmed approximately every two weeks throughout the trial to encourage new growth (flushes) and provide a suitable habitat for psyllid nymphs. Weeds, debris and leaf litter were removed from beneath each tree prior to application. The Nufarm slow release product NUQ 05054 was applied by scattering 1.25 oz (10 lb/acre) in a four foot circle around the base of each tree on 11- Sep. Admire pro was applied on 2 – Oct at a rate of 14 oz per acre in 16 ounces of solution as a drench to bare soil at a radius of 24 inches around the trunk of the tree with an EZ-Dose® sprayer with a pressure of 45 PSI and a flow rate of 3.7 gallons per minute.

Evaluations were made on 22, 29 Oct, 5, 13, 26 – Nov, 10 Dec, 14 – Jan, 5, 18 Feb, 10, 25 Mar, and 21 – Apr. when suitable new terminal growth (flush) was available: Ten shoots on each of three trees per plot were observed for the presence/absence of psyllid eggs and/or nymphs.

Shoots were rated depending on the stage of psyllid nymphs most prevalent on each flush as: 0 = no infestation, 1 eggs and 1<sup>st</sup> instars, 2 = second and third instars, 3 = 4<sup>th</sup> and 5<sup>th</sup> instars. One shoot of each of the three trees was removed and the number and stage of the psyllid nymphs was assessed in the laboratory using a stereoscopic microscope. Adults were monitored on each of three trees per plot using a “tap sample” obtained by gently striking the foliage three times with the hand and counting adults that fell onto an 8 x 11 inch white surface held about 1 ft underneath. In order to further evaluate the toxic response of psyllid at the end of the experiment, nymphs were counted on two infested shoots on two branches per tree in each plot

before being caged on 25-Apr with organdy sleeves. Cages and contained branches were removed on 15-May, placed in a freezer for 24 hours and number of adults that had emerged was recorded.

Adult populations were low averaging  $0.22 \pm 0.36$  per tap sample over the course of the study with no significant treatment effects. No significant treatment effects on percentage infestation were observed at the first evaluation on 22 Oct, or on 14 Jan. A lower proportion of infested shoots was seen on treated trees compared to untreated trees on all other sample dates.

Differences between the two imidacloprid treatments were not seen except on the last sample date, 21 Apr., when a significantly lower proportion of shoots were found infested on trees receiving NUQ05054 compared to Admire Pro. The same result was seen with percentage shoots infested with late instars although there were more sample dates with no significant differences. The trial was terminated on 15 May when no treatment effect was noted in number of adults that emerged inside the sleeve cages which averaged  $70.5 \pm 25.6$  percent of the original nymphs. Thus, both formulations of imidacloprid provided significant suppression of psyllid nymphs for almost 7 months, with evidence of greater persistence with the slow release NUQ05054.

Table 1:

Percent of Flushes observed with Psyllid Infestation													
	22-Oct-07	29-Oct-07	5-Nov-07	13-Nov-07	26-Nov-07	10-Dec-07	14-Jan-08	5-Feb-08	18-Feb-08	10-Mar-08	25-Mar-08	21-Apr-08	Total
Control	53.33 a	90.83 a	96.67 a	99.17 a	50.00 a	65.83 a	61.96 a	30.00 a	49.17 a	70.83 a	63.50 a	92.50 a	69.11 a
Admire	45.83 a	71.67 b	76.67 b	84.80 b	16.67 b	17.50 b	40.00 a	10.83 b	30.00 b	35.00 b	29.03 b	70.83 b	43.25 b
Nufarm	37.50 a	71.67 b	74.17 b	74.17 b	30.00 b	23.33 b	50.15 a	8.33 b	16.67 c	30.83 b	15.36 b	45.83 c	40.11 b

  

Percent of Flushes observed with primarily late instar psyllids													
	22-Oct-07	29-Oct-07	5-Nov-07	13-Nov-07	26-Nov-07	10-Dec-07	14-Jan-08	5-Feb-08	18-Feb-08	10-Mar-08	25-Mar-08	21-Apr-08	Total
Control	0.00 a	30.00 a	78.33 a	83.33 a	41.67 a	15.83a	28.37 a	10.00 a	23.33 a	25.83 a	13.83 a	72.50 a	35.55 a
Admire	0.00 a	14.17 b	41.68 b	54.37 b	10.00 a	0.83 b	10.00 a	1.67 b	9.17 a	9.17 b	3.06 a	34.17 b	15.67 b
Nufarm	0.00 a	8.33 b	35.83 b	36.67 b	15.00 b	1.67 b	13.79 a	1.67 b	7.50 a	7.50 b	1.67 a	13.33 c	11.90 b

*Part II: Materials Tested for Arthropod Management*

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**SOIL APPLIED INSECTICIDAL CONTROL OF CITRUS PSYLLIDS 2007**

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Common name	Trade name/ Cultivar	Concentration/ Formulation	Chemical name/resistance	Manufacture/source
imidacloprid	Admire Pro	4.6 SC	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
imidacloprid	NUQ05054	granular	1_((6-Chloro-3-pyridinyl)methyl)-N-nitro-2-imidazolidinimine	Nufarm Americas Inc. 150 Harvester Drive. Suite 200 Burr Ridge Ill. 60527