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

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

Philip A. Stansly
University of Florida/ IFAS
Southwest Florida Res. and Ed. Center
2686 State Road 29 North
Immokalee, FL 34142-9515
Phone: (239) 658-3400
Fax: (239) 658-3469
E-mail: pstansly@ufl.edu

Barry Kostyk

Myron Huffman.

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

Application of imidacloprid to citrus in Florida is limited by label restrictions to 1 lb (AI)/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-yr-old 'Valencia' orange trees planted at 15 × 22 ft spacing in double-row beds separated by a swale and running north-south. A CRB 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 ACP 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 2007. 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 in 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 gpm. 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 ACP eggs and nymphs. Shoots were rated depending on the stage of ACP nymphs most prevalent on each flush as: 0 = no infestation, 1 eggs and 1st instars, 2 = second and third instars, 3 = 4th and 5th instars. One shoot of each of the three trees was removed and the number and stage of the ACP 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 × 11 inch white surface held about 1 ft underneath. 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 h and the number of adults that emerged was recorded. Data was subjected to ANOVA with mean separation by LSD ($P = 0.05$).

Adult populations were low averaging 0.22 ± 0.36 per tap sample over the course of the study with no significant treatment effects. A lower proportion of infested shoots was seen on treated trees compared to untreated trees on all sample dates other than 22 Oct and 14 Jan. Differences between the two imidacloprid treatments were not seen except on 18 Feb and 21 Apr., when a significantly lower proportion of shoots were found infested on trees receiving NUQ 05054 compared to Admire Pro. A similar 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 ± 25.6 percent of the original nymphs. Both formulations of imidacloprid provided significant suppression of ACP nymphs for almost 7 months, with a trend of greater persistence with the slow release NUQ 05054.

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Table 1

Treatment/ formulation	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
Percentage of flushes with ACP													
Untreated check	53.33a	90.83a	96.67a	99.17a	50.00a	65.83a	61.96a	30.00a	49.17a	70.83a	63.50a	92.50a	69.11a
Admire Pro	45.83a	71.67b	76.67b	84.80b	16.67b	17.50b	40.00a	10.83b	30.00b	35.00b	29.03b	70.83b	43.25b
NUQ 05054	37.50a	71.67b	74.17b	74.17b	30.00b	23.33b	50.15a	8.33b	16.67c	30.83b	15.36b	45.83c	40.11b
Percentage of flushes with primarily late instar ACP													
Untreated check	0.00a	30.00a	78.33a	83.33a	41.67a	15.83a	28.37a	10.00a	23.33a	25.83a	13.83a	72.50a	35.55a
Admire Pro	0.00a	14.17b	41.68b	54.37b	10.00a	0.83b	10.00a	1.67b	9.17a	9.17b	3.06a	34.17b	15.67b
NUQ 05054	0.00a	8.33b	35.83b	36.67b	15.00b	1.67b	13.79a	1.67b	7.50a	7.50b	1.67a	13.33c	11.90b

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