

(D11)

**ORANGE:** *Citrus sinensis* (L.), 'Murcott'

**EFFECT OF NEXTER ON CALIFORNIA RED SCALE POPULATIONS IN SWEET ORANGE, 1999**

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California red scale (CRS): *Aonidiella aurantii* (Maskell)

Recent increases of California red scale have been observed in several groves in southwest Florida especially those that recently used Nexter to control mites. Our objective was to monitor populations of CRS under different application scenarios of Nexter and in comparison with a standard miticide considered as the check. An 18-acre block of sweet orange 'Murcott' with 80 tree rows orientated north to south was divided into 4-row plots with three replications. Four treatments were assigned to each 4-row plot in an RCB design. The time and number of applications of Nexter varied. Standard check trees were sprayed with Agri-Mek 0.15EC at 8 oz/acre plus 6% vol/vol FC 435-66 horticultural mineral oil on 9 Jun to control citrus rust mite. All applications on 9 Jun included zinc and manganese at 1 lb/acre and copper at 4 lb/acre as a tank mix. Treatments were applied with an airblast sprayer at 125 gpa. Evaluations were made using pheromone traps and scale counts on fruit. The first three evaluations were conducted in the field using a 5x magnifying headset to count all armored scales on each of four randomly chosen fruit at each of five locations in the center 2 rows of each plot. The last two evaluations were conducted in the laboratory by removing the same number of fruit and counting all scale under a stereoscopic microscope. Two additional fruit from each plot, chosen for high scale counts, were held for 21 days in 1 pt cardboard ice cream containers. Emerged parasitoids were counted after 20 days' incubation at ambient temperature. A pheromone lure (Trécé, Salinas CA) was attached to the center of a folded 6 x 12-inch yellow sticky trap (Olson Products, Medina, OH) placed centrally in the middle row of each bed. The traps were removed after 3-6 days and the CRS males were counted by placing a template with six 2.26-cm<sup>2</sup> circles on each side of the trap, measuring a total area of 27.2 cm<sup>2</sup>. A *t*-test was used to test for significant treatments effects for the first three evaluations where treatments consisted only of treatment with Nexter versus treatment with Agri-Mek. Data gathered subsequent to the second Nexter treatment was subjected to analysis of variance with mean separation by Fisher's LSD.

Density of male scales was consistent among treatments on 2 and 9 Sep. (Table 1). On 4 Nov, there were also no significant differences among treatments although six times more scales were seen on traps in plots treated with Nexter in June and September compared with those treated in June only. Highly significant differences were observed in numbers of CRS on fruit from trees treated with Nexter compared with those treated with Agri-Mek and oil (Table 2). Observations in the laboratory following the second (September) treatment indicated significantly more CRS on fruit randomly sampled from trees sprayed both in June and September compared with all other treatments, with no differences among the other treatments (Table 3). CRS parasitoid emergence was more on fruit from trees sprayed with Nexter on both dates, although even in the Jun only treatment, significantly more parasitoids emerged than in the check on both dates (Table 4). Percent parasitoid emergence from fruit collected on 15 Nov was highest from trees sprayed with Nexter in June and lowest from trees sprayed with Nexter in September. Thus, Nexter appeared to induce a notable although temporary increase in CRS population, which might have been caused by an incidental reduction in parasitoid activity.

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TABLE 1

Treatment/formulation	Rate amt form/acre	Application date	No. CRS males/inch <sup>2</sup> of trap		
			2 Sep	9 Sep	4 Nov
Nexter 75WP	10.7 oz	9 Jun	28.7 a	12.2 a	6.7 a
Nexter 75WP	10.7 oz	24 Sep	28.5 a	5.3 a	15.6 a
Nexter 75WP	10.7 oz	9 Jun and 24 Sep	28.2 a	13.0 a	41.7 a
AgriMek 0.15EC + Petroleum oil FC 435-66	8 oz + 6 % v/v	9 Jun	27.0 a	10.3 a	20.2 a

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

TABLE 2

Treatment/formulation	Rate amt form/acre	Application date	No. CRS/fruit (field count)			
			22 Jun	15 Jul	13 Aug	Overall
Nexter 75WP	10.7 oz	9 Jun	2.2 a	24.4 a	99.4 a	42.0 a
AgriMek 0.15EC + Petroleum oil FC 435-66	8 oz + 6 % v/v	9 Jun	0.4 b	1.6 b	17.3 b	6.4 b

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

TABLE 3

Treatment/formulation	Rate amt form/acre	Application date	No. CRS/fruit (laboratory count)		
			15 Nov	18 Jan	Combined dates
Nexter 75WP	10.7 oz	9 Jun	33.7 b	13.9 b	23.77 b
Nexter 75WP	10.7 oz	24 Sep	13.7 b	7.7 b	10.71 b
Nexter 75WP	10.7 oz	9 Jun and 24 Sep	101.2 a	91.0 a	96.05 a
Agri-Mek 0.15EC + Petroleum oil FC 435-66	8 oz + 6 % v/v	9 Jun	11.1 b	4.0 b	7.53 b

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

TABLE 4

Treatment/formulation	Rate amt form/acre	Application date	No. large CRS/fruit and % parasitized					
			15 Nov		18 Jan		Combined dates	
			no.	%	no.	%	no.	%
Nexter 75WP	10.7 oz	9 Jun	26.4 b	16.8 a	49.5 b	0.0 b	18.2 b	9.3 a
Nexter 75WP	10.7 oz	24 Sep	9.3 bc	2.5 b	7.8 c	0.0 b	8.5 c	1.3 b
Nexter 75WP	10.7 oz	9 Jun and 24 Sep	88.1 a	6.1 ab	129.5 a	0.3 a	109.2 a	2.9 ab
Agri-Mek 0.15EC + Petroleum oil FC 435-66	8 oz + 6 % v/v	9 Jun	6.2 c	9.3 ab	3.4 c	0.0 b	4.7 c	4.9 ab

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