

Section VII.

Foliage and Seed Feeding Insects

EVALUATION OF INSECTICIDES FOR THE CONTROL OF APHID & WORM PESTS IN FRESH MARKET TOMATOES IN CENTRAL CALIFORNIA-2004

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This trial was established at the Two Bees Research Farm in Escalon, California in order to evaluate the effects of products on aphid and worm pests in fresh market tomatoes. The tomato variety was Bobcat, spaced 18 inches between plants in 60-inch wide centers, by 30 feet long. The plot size was .013 acre, drip irrigated on flat beds, with four replications. An untreated area equal to the size of the trial was maintained in order to continue high pest populations once the applications began in the trial area. The tomato plants were not trained on stakes.

The materials in the worm trial were applied over the same plants receiving the earlier aphid treatments. The multiple Avaunt treatments were intended to maintain plots with materials having only aphid activity so they could be evaluated at harvest for yield differences without excessive worm damage. All foliar treatments were applied with a CO₂ powered backpack sprayer. The soil application for aphids was made with a syringe using Platinum and Admire placing the solution under the drippers using 8ml of volume/plant. The next day foliar sprays of the other aphid materials were made with 2 TXVS10 nozzles operating at 60 psi for a volume of 29 gallons/acre.

The following 3 foliar applications for control of worms were made with 3 flat fan, low-drift air induction type nozzles. An AVI 11003 nozzle was used over the center of the row and an 80025VS nozzle on each side of the plant operating at 40 PSI at 58 gallons/acre. The boom was expanded in width from 20 inches to 60 inches so that the nozzles were at optimum distance from the plants as the plants grew larger.

Materials were applied on 20 & 21 July for aphids and 11 Aug, 31 Aug, and 16 Sep for worms.

Aphid evaluations were made by selecting one compound leaf per plant from 5 plants in each plot and examining the leaf surfaces. After the first evaluation, numbers of aphids in the untreated plots declined to very low levels. Worm evaluations were made by selecting 2 plants in each plot and shaking fruit onto a white tarp. Fruit was inspected and counted both for worm damage and worms present. Fruit was cut open, if any entry wounds were visible, to determine which species of worm was present. The white tarp was inspected for any worms that might have fallen off during the shaking process.

Control of Potato Aphids from 5 leaf sample - 2004

Products	Formulation	Prod/Acre	27 Jul # Aphids/leaf
Assail	70 WP	1.2 oz. Prod.	0.9 a
TD 2480	30 WDG	3 oz. Prod.	0.3 a
V10112	20 SG	10.6 oz. Prod.	0.9 a
V10112	20 SG	21.2 oz. Prod.	1.0 a
Provado	1.6 F	3.75 oz. Prod.	0.5 a
Asana	0.66 EC	9.6 oz. Prod.	0.1 a
Capture	2 E	3.8 oz. Prod.	1.1 a
Mustang	1.5 EW	2.8 oz. Prod.	2.8 a
Warrior	1 SC	3.84 oz. Prod.	0.1 a
Platinum (Soil)	2 SC	8 oz. Prod.	1.0 a
Platinum (Soil)	2 SC	11 oz. Prod.	0.3 a
Fulfill	50 WG	2.75 oz. Prod.	0.3 a
Fulfill	50 WG	5.5 oz. Prod.	0.2 a
Admire (Soil)	2 SC	16 oz. Prod.	0.1 a
Knack	0.86 EC	6 oz. Prod.	6.0 a
Untreated Control			30.0 b

Means in a column followed by the same letter are not significantly different at the 5% Level.

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Control of Worm Damage in Tomatoes – 2004 Date of Harvest 09/23/04

Materials, Formulation and Product/Acre	#Fruit Total	#Damage	%Damage
Assail 70 WP 1.2 oz.+ Avaunt 30 WG 2.5 oz.	82.5 abcd	1.7 abc	1.8 ab
TD 2480 30 WDG 3 oz. + Avaunt 30 WG 2.5 oz.	77.2 abcd	0.7 a	0.8 a
V10112 20 SG 10.6 oz + S1812 35 WP .15 LB	76.7 abcd	5.7 cd	7.3 cd
V10112 20 SG 21.2 oz. + S1812 35 WP .20 LB	72.7 abc	1.7 abc	2.7 abc
Provado 1.6 F 3.75 oz. + Renounce 20 WP 2.5 oz.	85.0 bcd	8.0 d	9.6 d
Provado 1.6 F 3.75 oz. + Renounce 20 WP 3.5 oz.	79.7 abcd	3.7 abcd	5.1 abcd
Assail 70 WP 1.2 oz. + Diamond 0.83 EC 9 oz.	68.7 ab	2.5 abc	3.9 abc
Assail 70 WP 1.2 oz. + Diamond 0.83 EC 12 oz.	81.2 abcd	1.7 abcd	2.1 abc
Assail 70 WP 1.2 oz. + Intrepid 2 F 8 oz.	94.5 d	1.0 ab	1.3 ab
Assail 70 WP 1.2 oz. + Entrust 80 2 oz.	74.5 abc	4.5 abcd	6.0 abcd
Asana 8.4 EC 9.6 oz. + Asana 8.4 EC 9.6 oz.	74.5 abc	2.7 abc	4.1 abc
Asana 8.4 EC 9.6 oz. + Avaunt 30 WG 2.5 oz.	73.2 abc	1.0 ab	1.77 ab
Capture 2 E 3.8 oz. + Capture 2 E 3.8 oz.	77.2 abcd	1.0 ab	1.5 ab
Mustang 1.5 EW 2.8 oz. + Mustang 1.5 EW 2.8 oz.	88.2 cd	5.5 bcd	6.1 bcd
Warrior 1 SC 3.84 oz. + Warrior 1 SC 3.84 oz.	83.7 abcd	1.5 abc	1.8 ab
Platinum (Soil) 2 SC 8 oz. + Proclaim 5 SG 4.8 oz.	80.0 abcd	2.0 abc	2.25 abc
Assail 70 WP 1.2 oz. + Avaunt 30 WG 2.5 oz.	71.0 abc	1.0 ab	1.4 ab
Untreated Control	66.0 a	22.0 e	32.4 e

Means in a column followed by the same letter are not significantly different at the 5% Level.

DMR

Results-Aphids

All treatments controlled potato aphids, *Macrosiphum euphorbiae* compared to the untreated check. Unfortunately the population of pests declined after the first application. Numbers in the untreated controls declined to the point where no differences could be detected between the untreated checks and any of the treatments.

Results-Worms

During the shaking of the fruit onto tarps on harvest day, 4 cabbage loopers *Trichoplusia ni* and 3 tomato fruit worms *Heliothrips zea* were detected in the samples. Much of the damaged fruit reflected the mixed population of worm species found at harvest. Avaunt, Intrepid, Capture and Warrior appeared to provide the highest level of control of worms but there was much overlap with the other materials and rates as shown by the statistical analysis. All materials and rates provide control superior to the untreated control which sustained over 32% damage. It is interesting to note that the Intrepid treatment provided the highest number of fruit in this experiment.