

Registration of 2,4-D for Fruit Size and Yield Increase of Mandarins and Mandarin Hybrids in California

Project Leader:

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The overall goal of this project is to seek permanent registration of 2,4-D for fruit size increase of mandarins and mandarin hybrids in California. We like to provide a tool for citrus growers in California to increase fruit size of mandarins and mandarin hybrids and increase growers' return. We also like to collect two alternate bearing cycles (4 years) of data for Afourer mandarin at two locations and Minneola tangelo at one location.

Working with AMVAC and Cal EPA, I submitted efficacy data of 2,4-D for increasing fruit size and yield of Fina Sodea Clementine mandarins in March 2004. After 9 months + of communication, a 24(C) registration of "ALCO CitrusFix™" (2,4-D, Isopropyl Ester made by AMVAC Chemical Corp.) for fruit size and yield increases of mandarins and mandarin hybrids was granted by Cal EPA in December 29, 2004. Growers in California began using this application in spring 2005.

The second year harvests of Afourer mandarin and Minneola tangelo were completed in January and March 2005. Treatments for the third year were applied in late spring 2005. Harvests for the third season will be completed by March 2006. The project will be terminated after the March 2006 harvests. CRB decided not to continue the 4th year experiment.

The results of the second year Afourer mandarin harvest at S. Bakersfield are shown in Table 1. The results of the second year Afourer mandarin harvest at Orange Cove are shown in Table 2. For the March 7-10, 2005 harvest, the fruit were shipped to the UC Lindcove Research and Education Center packline, and the data presented in Table 2 were total number of fruit in each fruit in different fruit size classes (not the weight). The results of the second year Minneola tangelo harvest near Madera are shown in Table 3. Eight replications at the Madera site were lost due to grower size harvesting.

Treatment	Tiny	Small	Medium	Large	Jumbo	Mammoth	Colossal	La-Ma	Total
12ppm 14d	8.76	24.63	45.88	45.66	11.85	5.06	0.99	62.58	142.84
24ppm 14d	7.42	21.56	41.70	48.87	12.03	7.69	1.35	68.58	140.61
48ppm 14d	4.77	16.74	38.88	50.35	15.22	9.40	1.79	74.98	137.15
12ppm 30d	7.34	22.55	43.38	42.74	11.23	6.63	1.47	60.60	135.34
24ppm 30d	5.98	20.60	43.79	48.66	12.73	7.85	1.44	69.25	141.06
48ppm 30d	4.61	15.99	33.73	44.94	13.68	7.82	2.07	66.44	122.83
Control	9.05	26.69	49.20	44.77	10.41	5.25	0.92	60.43	146.29

Table 1. Afourer mandarin harvest near 5. Bakersfield from February 7-9, 2005, average total fruit per tree (/b) and average fruit weight (/b) in different fruit size classes.

Treatment	Tiny	Small	Medium	Large	Jumbo	Mammoth	Colossal	La-Ma	Total
12ppm 14d	37.69	127.04	101.56	153.94	48.88	6.13	0.5	304.38	476.63
24ppm 14d	24.00	94.38	86.94	155.06	51.88	4.31	0.19	293.88	416.75
48ppm 14d	23.13	92.94	79.56	149.94	55.88	5.56	0.25	285.38	407.25
12ppm 30d	44.31	148.25	124.25	188.69	57.56	4.81	0.25	370.50	568.13
24ppm 30d	42.69	146.69	127.00	197.50	54.38	3.88	0.06	378.88	575.19
48ppm 30d	29.19	100.00	83.94	158.69	54.13	6.50	0.31	296.75	432.75
Control	36.69	124.50	103.25	157.63	49.56	2.19	0.06	307.44	470.88

Table 2. Afourer mandarin harvest near Orange Cove from March 7-10, 2005, average total fruit number and average fruit number in different fruit size classes.

Treatment	Large	Jumbo	Mammoth	Colossal	S. Col.	U. Col.	SU Col.	Ma-S.Col.	Total
12ppm 14d	257.60	81.98	129.20	25.19	0.69	0.66	0.00	155.08	495.31
24ppm 14d	213.49	76.67	129.21	29.34	0.61	0.39	0.00	159.17	449.70
48ppm 14d	205.83	74.94	125.24	25.93	1.10	0.28	0.00	152.26	433.31
12ppm 30d	228.71	79.09	130.68	28.30	1.76	0.66	0.11	160.73	469.33
24ppm 30d	210.54	81.26	140.22	29.23	0.91	0.85	0.00	170.34	463.01
48ppm 30d	209.18	80.88	112.39	23.05	0.66	0.58	0.00	136.09	426.71
Control	239.80	69.22	109.73	21.95	0.58	0.19	0.00	132.24	441.45

Table 3. Minneola harvest near Madera, March 1-6, 2005, avg. total fruit per tree (/b) and avg. fruit weight (/b) in different fruit size classes.

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