

Nuts—Biology

Effect of Water Stress of Almonds on Pacific Spider Mite Outbreaks

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The effect of water stress of almonds on subsequent pacific mite outbreaks was studied in 1991 and 1992 in McFarland, CA. The trial orchard is a two Nonpareil and one Carmel variety arrangement. It is irrigated with mini-sprinklers. Eight water stress treatments were applied to 48 tree plots (6 x 8 trees) replicated six times. The treatments were based on water cutoff of 53, 46, 39, 32, 25, 18, 11 and 4 days prior to harvest of the Nonpareil variety in 1989-1990-1991. Active spider mites were counted from 10 to 20 leaves, sampled from a single Nonpareil and a single Carmel tree at the center of each plot.

In 1991, readings were taken on April 5, May 28, June 6, July 31 and August 21. Significant differences in mite densities were found based on the stress applied in 1990 to the Nonpareils for the May and June readings. Mite densities on the Carmels were lower and significantly different on only June 6. These differences were based on stress applied in 1990.

In 1992, readings were taken on April 23 and May 19. Significant differences in spider mite densities were found on both dates for the Nonpareil variety and only on May 19 for the Carmel variety. These differences were based on stress applied in 1991.

Table 1. Pacific mite density in almonds based on deficit irrigation, McFarland, CA, 1991 (activities per leaf).

Days without water	5 Apr		28 May		6 Jun		31 Jul	
	Nonpareil	Carmel	Nonpareil	Carmel	Nonpareil	Carmel	Nonpareil	Carmel
53	1.47a	.31a	6.15b	1.93a	11.12a	8.67d	0	0
46	.72a	.18a	3.30ab	2.82a	16.58a	5.67d	0	0
39	1.50a	.20a	3.67ab	.47a	8.07a	4.52bc	0	0
32	.35a	.08a	2.45a	.43a	10.45a	1.55ab	0	0
25	.02a	.13a	1.90a	7.22a	5.65a	.40a	0	0
18	.07a	.07a	1.05a	.93a	4.57a	.33a	0	0
11	.07a	.08a	1.37a	.13a	5.38a	.62a	0	0
4	.15a	.07a	.48a	.03a	3.17a	.23a	0	0

Table 2. Pacific mite density in almonds based on deficit irrigation, 1992.

Days without water	23 Apr		19 May	
	Nonpareil	Carmel	Nonpareil	Carmel
53	12.1b	1.4a	13.2a	35.7b
46	6.9ab	0.2a	82.1b	10.1a
39	2.2a	0.7a	18.3ab	16.0a
32	3.5a	0.8a	10.0a	25.0a
25	0.4a	0.3a	6.0a	6.1a
18	1.8a	0.3a	4.1a	3.5a
11	1.6a	0.0a	4.4a	6.1a
4	0.7a	0.0a	6.5a	2.4a