

(A1)

**APPLE:** *Malus domestica* Borkhausen, 'Fuji'

## EFFICACY OF REGISTERED AND EXPERIMENTAL MITICIDES, 2004

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Twospotted spider mite (TSM): *Tetranychus urticae* Koch  
European red mite (ERM): *Panonychus ulmi* (Koch)  
Western predatory mite (WPM): *Galandromus occidentalis* (Nesbitt)  
Stigmaeid predatory mite (ZM): *Zetzellia mali* (Ewing)  
Apple rust mite (ARM): *Aculus schlechtendali* (Nalepa)

This experiment was conducted in a 6-yr-old block of apple trees located at the Tree Fruit Research and Extension Center in Wenatchee, WA. The block consisted of three-tree plots separated by spaces, with one tree each of the cultivars 'Golden Delicious', 'Fuji', and 'Delicious'. The center 'Fuji' tree was used for all mite samples. Plots were staggered in adjacent rows to minimize drift. The experimental design was a RCB with 12 treatments and 4 replicates. Treatments were applied on 13 Aug with an airblast sprayer calibrated to deliver 200 gpa. Twenty-five leaves per tree were collected from each replicate and kept cool during transportation and storage. The mites were brushed from the leaves with a leaf brushing machine and collected on a revolving sticky glass plate. The composite leaf sample on the plate was counted using a stereoscopic microscope. Mite populations were sampled before and ca. weekly after treatment until mite population declined in the checks. Mite populations are reported as a composite of tetranychid (TSM, ERM) or predatory mites (WPM, ZM). Data were analyzed with analysis of variance and mean separation used the Waller-Duncan *k*-ratio *t*-test.

Mite pressure in this test was very high, with densities of 112-150 mites per leaf before treatments were applied and declining thereafter (Table 1). The population was comprised almost exclusively of TSM. Acramite at all rates and formulations provided fast knockdown of mites by 6 DAT (19 Aug). The low rate of Enviodor (14 fl oz) and FujiMite also provided good control by that time, although populations were significantly higher than the Acramite treatments. The Zeal treatment was slower than the others, with significantly higher populations at 6 DAT, but good control by 13 DAT (26 Aug). Pyramite provided significantly poorer control than the other materials on this date; however, it should be noted that the rate used (6.6 oz) is below the rate recommended on the label for this species (8.8-13.2 oz). There were no treatment differences in predatory mite populations by 6 DAT (Table 2). By 13 DAT, the check had significantly higher populations, presumably because of the higher prey population at that time. None of the acaricides had predatory mite populations that differed significantly. There was a moderate ARM population in the plot pre-treatment, which declined slightly over the following 2 wk (Table 3). Enviodor (18 fl oz rates only), Acramite, and Agri-Mek suppressed rust mite populations. The 14 fl oz rate of Enviodor, FujiMite, Zeal, and Pyramite were not significantly different from the check at 6 DAT. The latter three materials appear to have the least effect on ARM.

Table 1.

Treatment/ formulation	Rate amt product/acre	Tetranychid mites/leaf			
		10 Aug	19 Aug <sup>a</sup>	26 Aug <sup>a</sup>	2 Sep <sup>a</sup>
Envidor 240SC	14.0 fl oz	150.80a	1.92d	0.00e	0.00b
Envidor 240SC	18.0 fl oz	130.45a	0.71def	0.05cde	0.00b
Envidor 240SC + Saf-T-Side oil	18.0 fl oz 0.02% v/v	141.94a	0.27efg	0.04de	0.00b
Acramite 75W + Silwet L-77	0.5 lb 0.02% v/v	123.29a	0.00g	0.00e	0.00b
Acramite 75W + Silwet L-77	0.67 lb 0.02% v/v	116.60a	0.13fg	0.00e	0.00b
Acramite 50W + Silwet L-77	0.75 lb 0.02% v/v	123.22a	0.04g	0.00e	0.00b
Acramite 50W + Silwet L-77	1.0 lb 0.02% v/v	121.88a	0.09g	0.01de	0.00b
FujiMite 5%EC	1.0 qt	126.74a	1.03de	0.01de	0.00b
Zeal 72WDG	2.0 oz	121.60a	4.59c	0.98b	0.02ab
Pyramite 60WP	6.6 oz	135.02a	11.40b	0.24c	0.03ab
Agri-Mek 0.15EC + Saf-T-Side oil	16.0 fl oz 0.25% v/v	112.20a	0.19fg	0.13cd	0.00b
Untreated check	---	137.20a	62.00a	14.66a	0.05a

Means within columns not followed by the same letter are significantly different (Waller-Duncan *k*-ratio *t*-test, *k*-ratio=100).

<sup>a</sup>Data transformed log(x+0.5) due to unequal variances.

Table 2.

Treatment/ formulation	Rate amt product/acre	Predatory mites/leaf			
		10 Aug	19 Aug	26 Aug <sup>a</sup>	2 Sep
Envidor 240SC	14.0 fl oz	0.00a	0.09a	0.00b	0.00a
Envidor 240SC	18.0 fl oz	0.04a	0.16a	0.00b	0.00a
Envidor 240SC + Saf-T-Side oil	18.0 fl oz 0.02% v/v	0.35a	0.06a	0.01b	0.00a
Acramite 75W + Silwet L-77	0.5 lb 0.02% v/v	0.49a	0.20a	0.00b	0.00a
Acramite 75W + Silwet L-77	0.67 lb 0.02% v/v	0.21a	0.15a	0.00b	0.00a
Acramite 50W + Silwet L-77	0.75 lb 0.02% v/v	0.24a	0.12a	0.08b	0.04a
Acramite 50W + Silwet L-77	1.0 lb 0.02% v/v	0.02a	0.07a	0.00b	0.00a
FujiMite 5%EC	1.0 qt	0.00a	0.12a	0.00b	0.00a
Zeal 72WDG	2.0 oz	0.29a	0.23a	0.07b	0.08a
Pyramite 60WP	6.6 oz	0.12a	0.15a	0.01b	0.02a
Agri-Mek 0.15EC + Saf-T-Side oil	16.0 fl oz 0.25% v/v	0.28a	0.04a	0.01b	0.00a
Untreated check	---	0.08a	0.17a	0.29a	0.05a

Means within columns not followed by the same letter are significantly different (Waller-Duncan *k*-ratio *t*-test, *k*-ratio=100).

<sup>a</sup>Data transformed log(x+0.5) due to unequal variances.

Table 3.

Treatment/ formulation	Rate amt product/acre	Apple rust mites/leaf			
		10 Aug	19 Aug	26 Aug	2 Sep <sup>a</sup>
Envidor 240SC	14.0 fl oz	42.1a	34.9ab	1.5cd	0.00b
Envidor 240SC	18.0 fl oz	74.2a	6.8b	2.7bcd	0.00b
Envidor 240SC + Saf-T-Side oil	18.0 fl oz 0.02% v/v	70.4a	12.0b	2.0cd	0.00b
Acramite 75W	0.5 lb	97.4a	13.4b	0.7d	0.00b
Acramite 75W + Silwet L-77	0.02% v/v				
Acramite 75W	0.67 lb	76.4a	15.8b	1.6cd	0.00b
Acramite 75W + Silwet L-77	0.02% v/v				
Acramite 50W	0.75 lb	99.2a	16.4b	3.7bcd	0.00b
Acramite 50W + Silwet L-77	0.02% v/v				
Acramite 50W	1.0 lb	29.9a	4.9b	1.7cd	0.00b
Acramite 50W + Silwet L-77	0.02% v/v				
FujiMite 5%EC	1.0 qt	61.2a	26.4ab	7.1bc	0.06b
Zeal 72WDG	2.0 oz	101.8a	26.6ab	8.7b	1.36a
Pyramite 60WP	6.6 oz	75.6a	31.4ab	8.8b	0.39ab
Agri-Mek 0.15EC	16.0 fl oz	66.6a	13.3b	4.8bcd	0.00b
Agri-Mek 0.15EC + Saf-T-Side oil	0.25% v/v				
Untreated check	---	71.2a	61.5a	36.1a	0.29ab

Means within columns not followed by the same letter are significantly different (Waller-Duncan *k*-ratio *t*-test, *k*-ratio=100).

<sup>a</sup>Data transformed log(x+0.5) due to unequal variances.