

Chemical Control/New Products

EVALUATION OF REGISTERED ACARICIDES IN LATE SEASON FOLIAR APPLICATIONS IN PEAR, 2001

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Abstract: Acaricides registered for use on pear to control twospotted spider mites (TSM) were evaluated for their efficacy when used during the foliar season. Single tree replicates were sprayed by airblast sprayer, and pre- and post-treatment counts were made to determine the performance of the materials applied. Acramite, registered in 2001 for the first time under a Section 18 in Oregon, provided the best control of TSM in this test.

Introduction

Acaricides registered for use on pear to control twospotted spider mite, *Tetranychus urticae*, (TSM) were evaluated for their efficacy when used during the foliar season. Treatments were made to fifteen-year-old Comice pear using an airblast sprayer calibrated to deliver 212 gallons of finished spray per acre. Each treatment was composed of four single tree replicates arranged in a randomized design. Applications were made as TSM populations were building on 10 July 2001. TSM, predator mites, and pear rust mite populations were monitored by taking 15 leaves from the interior of each replicate, brushing the leaves in the laboratory and counting the number of arthropods present with the aid of a dissecting microscope.

Results

The most effective control of TSM was provided by the high rate of Acramite 50W with the lower rate also providing good control. Acramite when applied at 1 lb formulated per acre provided immediate reduction of TSM motiles to below the treatment threshold of 0.5 to 1.0 mites per leaf and that level of control was maintained for over 40 days (Table 2). The lower rate of Acramite required an additional seven days before reaching that level of control but then maintained TSM populations below the treatment threshold for over 40 days. At two weeks post-application, in addition to the Acramite treatments, five other treatments provided significant reduction of TSM motiles when compared to the control: Savey, Kelthane, Pyramite, Agri-Mek and Vendex. Of those treatments only Savey and Kelthane reduced TSM motiles below 0.5 per leaf. Savey, which has ovicidal activity, maintained TSM motiles below 0.5 per leaf from two weeks following application to over 40 days.

It has been known for many years that some of the acaricides registered on pear may have only a short-lived effect on TSM populations before those populations begin to increase.

Evidence of TSM resurgence was seen in the Vydate treatment, a carbamate, and to a lesser degree in the Kelthane treatment, a chlorinated hydrocarbon. While TSM populations decreased initially in both of these treatments, by the fourth week after treatment the populations were increasing and by six weeks after treatment the population level of TSM was the highest in those two treatments, in both instances significantly higher than the check.

Predator mite populations were initially very low (Table 4). Following treatment, the lowest predator mite populations were consistently seen in the Acramite, Vydate and Kelthane treatments until the final sample date, when the numbers of predator mites increased sharply in the Vydate and Kelthane plots. The high numbers of TSM in both the Vydate and Kelthane treatments are likely responsible for the observed increase in predator mites on that final sample date, whereas the continued low numbers of TSM in both Acramite treatments would account for the low numbers of predator mites in those instances due to a lack of prey availability.

With respect to control of pear rust mite (Table 5), none of the treatments were significantly different from the check until the final sample date. On 22 August, the high rate of Acramite did have a significantly higher pear rust mite population than the check or any of the treatments with the exception of Savey and the low rate of Acramite. Notably, the two Acramite treatments had the highest levels of pear rust mite observed on the final sample date.

Table 1. Twospotted spider mite eggs per leaf

Material	Rate form./ acre	Pre-treatment 9 Jul	18 Jul	25 Jul	1 Aug	8 Aug	22 Aug
Acramite 50W	0.75 lb	33.90 a	5.33 cd	0.07 d	0.27 bc	0.57 bc	0.73 c
Acramite 50W	1.0 lb	41.63 a	2.30 cd	0.00 d	0.03 c	0.03 c	0.03 c
Agri-Mek 0.15EC Plus HMO	16 fl oz 1 qt/100 gal	32.17 a	3.13 cd	0.77 c	9.20 ab	9.40 a	5.50 c
Pyramite 60W	13.2 oz	36.90 a	8.57 bc	3.43 abc	1.60 abc	1.87 abc	2.03 bc
Apollo 50SC	6 fl oz	37.63 a	20.93 ab	11.03 ab	6.13 ab	3.47 abc	0.83 bc
Savey 50WP	4 oz	28.27 a	39.03 a	8.20 a	7.60 abc	0.87 abc	0.13 c
Vendex 50WP	2 lb	28.93 a	12.27 abc	4.27 abc	6.93 ab	7.27 abc	0.13 c
Vydate L	8 pt	47.17 a	1.63 d	1.47 c	11.83 a	13.53 a	21.50 a
Kelthane 50WSP	6 lb	30.20 a	2.37 cd	2.47 bc	1.07 abc	4.90 ab	16.07 ab
Check		43.50 a	30.47 ab	9.60 a	21.03 ab	24.47 a	0.53 c

Means in a column followed by same letter do not significantly differ (P=.05, Duncan's New MRT). Data were transformed, log(x+1), prior to analysis. Untransformed means are presented.

Table 2. Twospotted spider mite motiles per leaf

Material	Rate form./ acre	Pre-treatment 9 Jul	18 Jul	25 Jul	1 Aug	8 Aug	22 Aug
Acramite 50W	0.75 lb	11.50 a	2.13 b	0.07 bc	0.00 b	0.13 c	0.13 c
Acramite 50W	1.0 lb	18.93 a	0.23 c	0.00 c	0.00 b	0.10 c	0.00 c
Agri-Mek 0.15EC Plus HMO	16 fl oz 1 qt/100 gal	15.53 a	7.37 ab	0.63 b	1.67 a	3.70 abc	1.93 bc
Pyramite 60W	13.2 oz	16.00 a	2.60 ab	1.10 bc	0.93 a	0.47 c	1.40 bc
Apollo 50SC	6 fl oz	21.70 a	3.37 ab	2.53 ab	2.13 a	0.83 bc	0.13 c
Savey 50WP	4 oz	12.20 a	2.03 ab	0.37 bc	0.47 ab	0.17 c	0.08 c
Vendex 50WP	2 lb	13.33 a	9.17 a	2.40 b	3.43 a	3.40 abc	0.13 c
Vydate L	8 pt	15.03 a	4.10 ab	2.67 ab	2.37 a	9.20 a	8.90 a
Kelthane 50WSP	6 lb	17.33 a	1.43 b	0.47 bc	0.57 ab	1.33 bc	5.47 ab
Check		29.00 a	16.53 ab	8.93 a	6.47 a	8.20 ab	0.30 c

Means in a column followed by same letter do not significantly differ (P=.05, Duncan's New MRT). Data were transformed, log(x+1), prior to analysis. Untransformed means are presented.

Table 3. Twospotted spider (all stages) per leaf

Material	Rate form./ acre	Pre-treatment 9 Jul	18 Jul	25 Jul	1 Aug	8 Aug	22 Aug
Acramite 50W	0.75 lb	45.40 a	7.47 cd	0.13 c	0.27 b	0.70 cd	0.87 b
Acramite 50W	1.0 lb	60.57 a	2.53 d	0.00 c	0.03 b	0.13 d	0.03 b
Agri-Mek 0.15EC Plus HMO	16 fl oz 1 qt/100 gal	47.70 a	10.50 bcd	1.40 b	10.87 a	13.10 ab	7.43 b
Pyramite 60W	13.2 oz	52.90 a	11.17 a-d	4.53 ab	2.53 ab	2.33 a-d	3.43 ab
Apollo 50SC	6 fl oz	59.33 a	24.30 abc	13.57 ab	8.27 a	4.30 a-d	0.97 b
Savey 50WP	4 oz	40.47 a	41.07 a	8.57 ab	8.07 ab	1.03 bcd	0.22 b
Vendex 50WP	2 lb	42.20 a	21.43 abc	6.67 b	10.37 a	10.67 abc	0.27 b
Vydate L	8 pt	62.20 a	5.70 d	4.13 b	14.20 a	22.73 a	30.40 a
Kelthane 50WSP	6 lb	47.53 a	3.80 d	2.93 b	1.63 ab	6.17 a-d	21.53 a
Check		72.50 a	47.00 ab	18.53 a	27.50 a	6.40 ab	0.83 b

Means in a column followed by same letter do not significantly differ (P=.05, Duncan's New MRT). Data were transformed, log(x+1), prior to analysis. Untransformed means are presented.

Table 4. Predator mite populations (all stages) per leaf

Material	Rate form./ acre	Pre-treatment 9 Jul	18 Jul	25 Jul	1 Aug	8 Aug	22 Aug
Acramite 50W	0.75 lb	0.00 a	0.00 b	0.00 c	0.03 b	0.07 b	0.17 a
Acramite 50W	1.0 lb	0.00 a	0.17 ab	0.07 abc	0.00 b	0.23 b	0.10 a
Agri-Mek 0.15EC Plus HMO	16 fl oz 1 qt/100 gal	0.07 a	0.03 ab	0.07 abc	0.27 ab	0.40 b	1.17 a
Pyramite 60W	13.2 oz	0.23 a	0.17 ab	0.17 abc	0.23 ab	0.33 b	0.57 a
Apollo 50SC	6 fl oz	0.03 a	0.37 ab	0.47 ab	0.37 ab	0.37 b	0.17 a
Savey 50WP	4 oz	0.10 a	0.40 a	0.37 a	0.27 ab	0.43 b	0.10 a
Vendex 50WP	2 lb	0.13 a	0.23 ab	0.10 abc	0.17 ab	0.40 b	0.33 a
Vydate L	8 pt	0.00 a	0.03 ab	0.00 c	0.00 b	0.00 b	1.17 a
Kelthane 50WSP	6 lb	0.00 a	0.00 b	0.03 bc	0.00 b	0.07 b	0.57 a
Check		0.07 a	0.27 ab	0.27 abc	0.63 a	1.20 a	0.23 a

Means in a column followed by same letter do not significantly differ (P=.05, Duncan's New MRT). Data were transformed, log(x+1), prior to analysis. Untransformed means are presented.

Table 5. Pear rust mites per leaf

Material	Rate form./ acre	Pre-treatment 9 Jul	18 Jul	25 Jul	1 Aug	8 Aug	22 Aug
Acramite 50W	0.75 lb	2.00 b	2.40 a	5.00 ab	4.90 a	6.87 a	14.80 ab
Acramite 50W	1.0 lb	4.20 ab	1.40 ab	6.80 ab	0.80 ab	8.00 a	11.60 a
Agri-Mek 0.15EC Plus HMO	16 fl oz 1 qt/100 gal	1.20 b	0.00 b	1.63 ab	0.20 ab	0.60 b	0.20 c
Pyramite 60W	13.2 oz	3.00 ab	0.00 b	0.80 ab	0.20 ab	0.00 b	0.00 c
Apollo 50SC	6 fl oz	1.00 b	0.00 b	1.60 ab	0.20 ab	0.00 b	4.00 c
Savey 50WP	4 oz	8.80 a	4.40 a	12.40 a	11.20 a	6.60 a	9.60 ab
Vendex 50WP	2 lb	0.40 b	0.00 b	0.60 ab	0.20 ab	0.27 b	0.00 c
Vydate L	8 pt	1.00 b	0.00 b	0.00 b	0.80 ab	0.60 b	0.60 bc
Kelthane 50WSP	6 lb	0.80 b	0.00 b	0.20 b	0.00 b	0.60 b	0.00 c
Check		1.80 ab	4.00 ab	2.80 ab	2.00 ab	5.00 ab	3.80 bc

Means in a column followed by same letter do not significantly differ (P=.05, Duncan's New MRT). Data were transformed, log(x+1), prior to analysis. Untransformed means are presented.