

Chemical Control/New Products

Particle Film Technology: Applications in Pear Pest Management

Richard J. Hilton and Philip VanBuskirk
Southern Oregon Research and Extension Center, Medford OR

Keywords: particle film technology, Guthion, pear psylla, pear rust mite, codling moth, twospotted spider mite, pear

Two particle film formulations were compared in 1998. A replicated test using handgun application to single trees was conducted at the Research Center in a block of Bartlett pears that has high codling moth pressure. Tests using speedsprayer application were conducted at the Research Center and in a commercial orchard. The results from the handgun trial are presented in the tables below. Repeated applications of the particle films in the foliar period resulted in control of pear psylla and pear rust mite. An increase in the level of twospotted spider mite was observed while predator mites were almost totally absent from the particle film treated trees. The particle film treatments resulted in a significant reduction of first generation codling moth entries (over 90% reduction relative to the check). However, a high level of codling moth injury occurred prior to harvest, in part due to a 25-day gap between the last particle film application and harvest. The particle film treatments reduced both sunburn and overall russet on the fruit.

The speedsprayer trials were supplemented by the use of mating disruption for control of codling moth, and in the grower plot organophosphate applications were made at third and fourth cover timings. When high mite levels were observed in the grower plot, an acaricide was applied to the groundcover. The results from the speedsprayer trials generally agreed with the results seen in the replicated handgun trial: reduced numbers of pear psylla, increased numbers of twospotted spider mite, improved fruit finish, and adequate (though not complete) control of codling moth. The two particle film formulations yielded very similar results.

- Particle films applied on six dates (5/22, 6/1, 6/11, 6/26, 7/13 and 7/30)
- Guthion applied four times (5/22, 6/11, 7/13, and 8/13)
- Applications made with handgun sprayer (200 gpa)
- Data shown are averages from five single-tree replicates

Treatment	Rate form. per acre	Pear psylla/leaf					
		5/19	5/28	6/19	7/7	7/21	8/13
M-96-018	50 lbs	1.31	0.54 ab	0.0 a	0.1 a	0.0 a	0.0 a
M-97-009	50 lbs	0.60	0.10 a	0.1 a	0.1 a	0.0 a	0.0 a
Guthion 50W	2.51bs	0.84	0.72 ab	3.5 c	5.3 b	1.6 b	2.3 c
Check	----	1.22	0.96 b	1.1 b	0.3 a	0.1 a	0.4 b

Treatment	Rate form. per acre	Twospotted spider mites/leaf					
		5/19	5/28	6/19	7/7	7/21	8/13
M-96-018	50 lb	0.0	0.0	0.0	0.04	0.58	1.24 b
M-97-009	50 lb	0.0	0.0	0.08	0.04	0.30	3.70 c
Guthion 50W	2.5 lb	0.0	0.0	0.0	0.04	0.08	0.12 ab
Check	----	0.0	0.0	0.06	0.00	0.02	0.04 a

Treatment	Rate form. per acre	Pear rust mites/leaf					
		5/19	5/28	6/19	7/7	7/21	8/13
M-96-018	50 lb	2.4	0.4	0.2 a	2.3 a	4.6	0.0 a
M-97-009	50 lb	1.3	0.0	1.3 ab	4.4 a	9.2	0.0 a
Guthion 50W	2.5 lb	3.6	0.1	8.3 c	20.4b	0.6	4.5 b
Check	----	0.5	0.5	4.0 bc	23.2b	34.4	13.9 c

Treatment	Rate form. per acre	Percent codling moth entries		Ratio larvae:exit	% First instar
		7/7	8/24		
M-96-018	50 lb	2.0b	41.6 b	8.9:1	49
M-97-009	50 lb	2.4 b	40.6 b	6.5:1	50
Guthion 50W	2.5 lb	0.0 a	0.4 a	2:0	0
Check	----	35.6 c	72.1 c	0.88:1	8.3

Means within a column followed by the same letter are not significantly different (P=0.05 Fisher's protected LSD). Leaf count data were subjected to the log(x + 1) transformation and percent infestation data were subjected to the arcsine transformation prior to statistical analysis.