Chemical Control/New Products

Pear, Control of the Codling Moth with Experimental Insecticides, 1994

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The trial was conducted in a 30-yr-old Bartlett pear block with chemicals applied to four single tree replicates arranged in a randomized block design. Materials were applied with conventional, high pressure hand gun equipment and sprayed to runoff or about 400 gpa. Each chemical was applied 3 times in a season-long, phenologically timed CM program. Two different timings were employed as based on CM biofix as determined by the first male moth captured in pheromone baited traps. A standard larvicidal timing was used in treatments receiving Guthion, AC 303,603 and 1 treatment of RH 5992. This standard program consisted of a first application at about 250 dd following biofix; the second 28 days later and the final at about 1250 dd, or 250 dd after the predicted emergence of second generation moths. Corresponding dates to the above schedule were 12-13 May, 9 Jun and 13 Jul. An ovicidal timing was employed for the insect growth regulator (IGR) fenoxycarb. The timings for fenoxycarb were a first application at 50-100 dd after biofix (27 Apr), the second 28 days after the first, and the third at 1050 dd (7 Jul). Evaluation of CM damage was made by recording the number of larval entries per 50 fruit per replicate per treatment at the end of the first CM generation (7-9 Jul) and again at harvest (17 Aug). Densities of pear psylla (PP) immatures and spider mites [twospotted spider mite (TSM), European red mite (ERM) and pear rust mite, (PRM)] were estimated at 3 post-treatment intervals (20 Jun, 25 Jul, 16 Aug) by recording their numbers from leaf brushing 20 leaves (10 old, 10 new) per replicate. Adult PP and PP predators, consisting of lacewings, earwigs, and predaceous bugs, were estimated from 2 beating tray samples per replicate taken on the following dates: 22 Jun, 27 Jul, and 19 Aug.

CM damage at harvest was lowest in the Guthion program which had 5.0% larval entries followed by the experimental insecticide AC 303,630 at 10.5% (Table 1). There was a significant difference in CM damage at harvest between Guthion and RH 5992 which averaged 28.5%. All treatments were significantly better than the untreated check, which was 66.5% at harvest. CM damage recorded in the fenoxycarb treatment was 18%. While Guthion provided the best suppression, its use also resulted in elevated densities of TSM and PP when compared to those in the untreated check (Table 2). Fenoxycarb treatments provided the best control of the PP but also appeared to elevate TSM densities. AC 303,630 provided the best control of the TSM and PRM, but also resulted in lower numbers of PP predators. However, the AC 303,630 did have significantly higher levels of ERM.

Table 1.

Material and rate form per acre	Codling moth treatment timing	% CM-infested fruit	
		1st generation 9-11 July	Harvest 17 August
Fenoxycarb 25W 0.5 lb	IGR	5.5b	18.0ab
RH 5992 70W 200 g, plus Latron B-1956 3 oz	Std.	1.5ab	28.5b
AC 303,630 2 SC 760 ml	Std.	1.5ab	10.5ab
Guthion 50W 2.5 lb	Std.	1.0a	5.0a
Check		33.0c	66.5d

All data were transformed by square root (x + 0.5); untransformed data are presented.
Means within columns, followed by the same letter, are not significantly different (P=0.05; LSD).

Table 2.

Material and rate form/acre	CM treatment timing	PP					
		adults per trays	immatures/10 leaves	TSM/leaf	ERM/leaf	PRM/leaf	Pred./10 trays
Fenoxycarb 25W 0.5 lb	IGR	4.9a	4.7a	11.0c	0.5a	52.4bc	2.5a
RH 5992 70W 200 g	Std.	4.2a	9.0a	2.7ab	0.8a	62.1c	2.5a
AC 303,630 SC 760 ml	Std.	10.8a	10.0a	0.2a	7.2b	2.7a	0.8a
Guthion 50W 2.5 lb	Std.	10.0a	27.3a	8.7bc	0.4a	19.1ab	2.1a
Check		4.2a	14.0a	3.8abc	0.2a	53.4bc	1.7a

All data were transformed by square root (x + 0.5); untransformed data are presented.
Means within columns, followed by the same letter, are not significantly different (P=0.05; LSD).