

IV. Chemical Control/New Products

d. Chemical Control

1. Codling Moth and Pears

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Evaluation of various application timings of Confirm for codling moth control in pears: The trial was conducted in a commercial 'Bartlett' pear orchard in Suisan Valley. Five treatments were replicated four times in a RBC design. Each replicate was an individual tree. The treatments were Confirm at 0.3 lb (AI)/ac which was applied once for control of the first codling moth (CM) generation and once for control of the second CM generation at three different degree day (DD) timings. The three DD timings targeted were: 100, 200 and 300 DD after biofix. The three Confirm application timings were compared to Guthion which was applied at 200 DD after the beginning of each flight and an untreated control. Treatments were applied with a handgun operating at 200 psi with a finished spray volume of 400 gal/acre (3.85 gal/tree). DD were calculated with a 2 April biofix for the first generation and 25 June biofix for the second generation using a single sine horizontal cutoff model with a lower threshold of 50° F and an upper threshold of 88° F. Maximum and minimum air temperatures were obtained from the IMPACT weather station at Cordelia, CA. Flight activity of male CM was monitored with a pheromone trap placed in the experimental area.

Control of the first CM generation was evaluated on 13 June by inspecting 50 fruit from the bottom of the tree canopy and 50 fruit from the top of the tree canopy per replicate for CM infestation (a total of 400 fruit per treatment). Control of the second generation was evaluated at commercial harvest on 24 July by inspecting 125 fruit from the bottom of the tree canopy and 125 fruit from the top of the tree canopy per replicate for CM infestation (a total of 1000 fruit per treatment).

First Generation Evaluation: In the high and total fruit samples, Guthion provided significantly better control than Confirm at the 200 DD application timing but Guthion did not provide significantly better control than the other treatments. In the low fruit sample, there was no significant difference among the treatments. In the first generation evaluation, only 100 fruit per tree were inspected for CM infestation to allow for sufficient fruit for the harvest sample. Because of the low number of fruit inspected, the data should be viewed as preliminary but it appears that the 300 DD timing of Confirm provided better control than the 100 or 200 DD timings. A possible reason for the better control of 300 DD timing as compared to the 100 or 200 DD timings is the unusual cool spring that caused a large and sustained second peak of the first CM flight which occurred after 300 DD. In addition, the trial received about 3/4 inches of rain on 30 April to 1 May. This rain occurred about 7 days after the 200 DD application timing and may have reduced the residual activity of Confirm. However, Guthion

was also applied at 200 DD and CM infestation with Guthion was significantly lower than that of Confirm applied at 200 DD. Also, the 300 DD timing allowed for greater fruit and foliage expansion and thus greater insecticide coverage.

Harvest Evaluation: In the high fruit samples, Guthion provided significantly better control than the three application timings of Confirm and untreated control. The 300 DD application timing of Confirm provided significantly better control than the untreated control and there was no significant difference in percent CM infestation among the Confirm application timings. In the low fruit samples, Guthion and Confirm applied at 200 DD provided significantly better control than the untreated control and there was no significant difference in percent CM infestation among the Confirm application timings. In the total fruit samples, Guthion and Confirm applied at 200 and 300 DD provided significantly better control than the untreated control and there was no significant difference in percent CM infestation among the Confirm application timings. Spider mite damage was evident in the Guthion treatment.

Conclusions: This trial was conducted in a mature pear orchard with a low to moderate CM population. CM control in the Suisun Valley requires three to four applications of Guthion at 0.75 to 1.5 lb (AI)/ac /application which are spaced three to four weeks apart. This standard program results in CM infestation of less than 0.5%. Confirm applied once for control of the first CM generation and once for the second CM generation at the three DD application timings provided some degree of CM control but the control was not comparable to two applications of Guthion. The control achieved with two applications of Guthion would not be acceptable to pear growers. Confirm application timings at 200 and 300 DD appeared to provide slightly better control than an application timing at 100 DD.

Treatment	Timing (DD)	Mean* Percent Codling Moth Infestation					
		High Fruit		Low Fruit		Total	
		1st	2nd	1st	2nd	1st	2nd
Guthion	200	0.5a	2.0a	0.5a	1.4a	0.5a	1.7a
Confirm	100	3.0ab	8.4bc	1.0a	5.6ab	2.0ab	7.0bc
Confirm	200	4.0b	7.8bc	1.0a	2.2a	2.5b	5.0ab
Confirm	300	1.0ab	7.0b	1.0a	4.2ab	1.0ab	5.6ab
Untreated	-----	3.5ab	15.6c	0.0a	7.4b	1.8a	11.5cb

* Means followed by the same letter within a column are not significantly different (Fisher's protected LSD, $P \leq 0.05$). Data analyzed using an arcsin transformation.