

Pome Fruits—Chemical Control

Apple, Effects of Insecticide Residues on Codling Moth Determined Using a Bioassay

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Four insecticides were applied to apple (Red Delicious) with a handgun sprayer at 300 psi to the point of drip, simulating a dilute spray of approximately 400 gallons per acre. Four to five trees in the same row were treated with the same product. All treatments were made on September 4. Fruit were collected at intervals following the application as shown in the table. Ten fruit were collected from each treatment each sample date. Fruit were picked by the stem so as not to disrupt residues, placed directly into 14 oz paper cups held in a large plastic food storage container. Fruit were returned to the laboratory and allowed to remain at room temperature overnight with the exception of the first sample which was allowed to come to room temperature and dry before larvae were introduced onto the apples. Codling moth eggs were obtained from a colony maintained at the USDA-ARS Fruit Research Laboratory in Yakima. This colony is known to be susceptible to azinphosmethyl and probably to all the insecticides used in this test. Five newly hatched CM larvae (less than one hour old) were transferred to each apple using a small camel's hair brush. Lids were placed on the food storage containers and they were kept at room temperature (70-75°F) for 4 days. After 4 days fruit were removed from the cups and the number of entries (as indicated by the presence of frass) was counted. Entry sites were then dissected to determine if the CM larvae were alive or dead.

The average mortality in the treatment with no insecticide was about 50%. Sevin was the first product to show damage after 11 days, 6% surviving larvae. All other treatments showed an increase in CM entries in the fruit on day 21 following application. By day 25 only the Pennacap treatment had significantly less survival than the treatment with no insecticide.

Material and form., rate/acre	% survival days following application <sup>1</sup>							
	0	4	7	11	14	18	21	25
Guthion 35WP, 3 lb	0a	0a	0a	0a	2a	0a	14a	32ab
Pennacap 2FM, 3 qt	0a	0a	0a	0a	0a	0a	4a	12a
Imidan 50WP, 6 lb	0a	0a	0a	0a	0a	0a	22a	30ab
Sevin 4F, 1 qt	0a	0a	0a	6a	14a	8a	22a	36ab
Untreated	54b	48b	38b	42b	58b	48b	44b	50b

<sup>1</sup>Means in the same column followed by the same letter not significantly different (P=0.05, Student-Newman-Keuls).