Pome Fruits—Pesticide Resistance

Codling Moth on Bartlett Pear

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During the 1993 overwintering codling moth flight, 18 orchards in Lake and 4 in Mendocino Counties were tested for the presence or absence (not level) of resistance to azinphosmethyl (e.g., Guthion). Test protocol was developed by Lucia Varela, North Coast Area IPM Farm Advisor, and John Dunley of UC Berkeley Department of Entomology. The goals were to 1) determine if resistance was indicated in comparison to nontreated control orchards and 2) establish a commercial on-demand facility as part of ongoing pest management programs. Growers agreed to bear the cost of the tests and local PCAs cooperated with UCCE and Farmecology Lab staff in deploying and collecting traps. Ideally, each orchard was tested 3 nights, however some were only tested 1 or 2 nights due to insufficient nightly moth numbers. Each diagnostic test required 40 moths, 25 for the .5 µg azinphosmethyl dose and 15 for the acetone control. Doses were applied topically through a syringe.

Data were reviewed by Varela and Dunley (see accompanying table). Results indicated that some level of resistance exists across a wide area of Lake County and, to a lesser extent, in one area of Mendocino County. Testing will be repeated in 1994 to confirm resistance using a .1 µg dosage.

Table 1. North coast azinphosmethyl resistance survey, 1993.

Location (county)	% Guthion mortality (corrected)			Valid data	Resistant to Guthion
Lake (control)	100.0	91.3	100.0	yes	no
Lake	52.8	54.1*	64.5*	yes	yes
Lake	59.2	46.9	62.3	yes	yes
Lake	49.5	40.7	65.1	yes	yes
Lake	53.4	49.0	63.4	yes	yes
Lake	72.6	78.4*		no - N	
Lake	41.6*	49.0	71.9	no - V	
Lake	61.9			no - N	
Lake	47.9	69.4*	78.8	no - V	
Lake	51.6*	88.9*	47.1	no - H	
Lake	59.1	63.6		yes	yes
Lake	65.3	64.8	70.4	yes	yes
Lake	52.4	71.9		no - V	
Lake	69.5			no - N	
Lake	46.2*	82.6		no - V	
Lake	42.0	47.3		yes	yes
Mendo (control)	100.0	97.1	95.3	yes	no
Mendo	81.6*	75.1*	64.7	yes	moderate
Mendo	81.9*	80.0	76.9	yes	moderate
Yuba	66.6	63.7		yes	yes

*Control mortality above 15%.
no - H = high control mortality
no - N = not enough data collected
no - V = results too variable