

III. Stone Fruits

e. Pesticide Resistance

1. Oriental Fruit Moth - Peaches

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The pheromone trap bioassay method developed by Riedl et al was utilized to monitor OFM resistance in 1987, 1988, and 1989. Field tests to determine the efficacy of various rates of Guthion on Oriental fruit moth were also conducted in selected orchards in conjunction with the adult bioassay tests. In the field tests Guthion 50wp was applied at rates varying from 0.125 to 4.000 pounds AI/acre by handgun in approximately 400 gallons per acre. Table 1 shows the LD50 values for Guthion applied topically to adult OFM male moths in 1987, 1988 and 1989. In 1987 moths in the Lomo area of Sutter county were three times more tolerant to topically applied Guthion than any orchards tested in 1988. In 1988 however the LD50 at Lomo had declined to less than 50% of the previous year and in 1989 LD50 levels were comparable to the most susceptible orchards tested. In 1988 LD50 levels were similar in other orchards tested, ranging from .13 to .23 mg/l, well within the range one would expect in susceptible populations.

In 1989 adult male tests indicate intermediate resistance in an orchard 1 mile west of the Lomo orchard which showed resistance in both 87 and 88 Table 2. The Salida orchard which was highly susceptible in 1988 also showed an increased tolerance to Guthion in 1989.

It appears that topically applied .4 mg/l Guthion is a reliable diagnostic dose for monitoring resistance in OFM.

Field tests tended to confirm these results.

Table 1.

LD50 Values of Topically Applied Azinphosmethyl
For Male Oriental Fruit Moth Males

<u>Site/County</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>
Lomo/Sutter	.59	.25	.16
Eager Rd./Sutter		.49	
Oswald/Sutter(1)		.13 & .18	
Lockford/San Joaquin		.23	
Salida/Stanslaus		.17	.37
Ballico/Merced		.18	.19
Chowchilla/Madera			.15
Parlier/Fresno			.18

Table 2.

Probit Mortality for Topical Application of azinphosmethyl
on Adult OFM, 1989

<u>Site/County</u>	<u>Date</u>	<u>LD</u>		
		10	50	90
Lomo/Sutter	5-17	.08	.16	.51
Eager Rd/Sutter	8-18	.14	.49	.83
Salida/Stanslaus	8-22	.02	.37	.73
Ballico/Merced	8-22	.01	.19	.50
Chowchilla/Madera	8-23	.03	.15	.58

Table 3.

Percent Oriental Fruit Moth Adult
Males Killed When Treated Topically With .4
Miligrams per Liter Guthion

<u>Site/County</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>
Lomo/Sutter	35	82	91
Eager R./Sutter			35
Oswald/Sutter(1)		95	
Oswald/Sutter(2)		96	
Lockford/San Joaquin		84	
Salida/Stanslaus		90	62
Ballico/Merced		96	74
Chowchilla/Madera			76
Parlier/Fresno		89	77