

Mating Disruption/SIR

Late-Season Pheromone Hanging to Reduce Overwintering Codling Moth Populations

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As the district with the latest harvest in California (through August), Lake County fruit is vulnerable to late 2nd and 3rd generation codling moth damage during a period when no cover sprays are applied. Previous experiments (1988-1994) showed that the long season renders mating disruption (MD) programs less effective than in earlier districts as populations increase year to year in treated orchards. In 1996, building on past observations by local pest control advisors, pheromone dispensers were hung in mid-July in five 100-acre blocks to disrupt mating of late season moths that normally escaped control. Trap catch and postharvest infestation data that year showed that this method successfully reduced late flights and damage. In 1997, trap catch data showed that these effects carried over to the following spring, significantly reducing overwintering flight. Besides reducing flights for two years and postharvest damage the year they were hung, the use of one mid-season hanging compensated for lack of organophosphate (OP) residue during the last half of harvest. This advantage will be even greater if (or when) pre-harvest intervals for OPs are lengthened. The carryover effect may also enable Lake County growers to decrease cover spray amounts and transition more rapidly to "softer" programs using more selective chemicals and/or MD. A side benefit (as yet unstudied) may be the reduction of current or future field resistance to OPs. Widespread commercial implementation of this new tactic is likely to occur in 1998, as it is viewed as being more economically feasible than a full season MD program.

**Table 1.** Codling moth-infested fruit on trees after harvest, Lake County, 1996.

Orchard	No. per 300 fruit		Ratio
	Pheromone-treated	Untreated	
KV1	9	49	1:5
KV2	20	56	1:3
SV <sup>1</sup>	5	5	1:1
UL1	3	15	1:5
UL2	3	14	1:5

Paired *t*-test, significant at P=.06.

SV<sup>1</sup>: if this orchard is removed from the data set, P=0.05.

**Table 2.** Overwintering flight codling moth wing trap catches, March 27-June 16, 1997, total catch per 2 traps.

Orchard	UC Pher	1 mg low		10 mg high Pher
		PCA Pher	Standard	
KV1	0	0	26	0
KV2	5	-	87	55
SV	0	1	15	7
UL1	0	2	66	15
UL2	2	1	14	4
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\*Paired *t*-test, significant at  $P=0.0475$ .