Implementation

Implementing arthropod pest management in stone fruits without broad-spectrum insecticides

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Abstract: There were no differences in cost or pest damage between pest management programs in peaches that relied on organophosphates and those that did not. This has been a consistent finding in three years of field demonstrations in six San Joaquin Valley counties.

Results and Discussion

The objectives of this alliance of farmers, pest control advisers, farm advisers, and California Department of Pesticide Regulation personnel are to implement arthropod management without organophosphate or carbamate insecticides and do this with harvest damage and cost equal to a program that utilizes these materials. The first three years of the project has achieved these objectives.

Both the Conventional Pest Management (CPM) and the Pest Management Alliance (PMA) programs emphasize monitoring and, where established, utilizing treatment thresholds. Pesticides used by the PMA include mating disruption for oriental fruit moth (OFM), Spinosad for thrips, and katydid, *Bacillus thuringiensis* or tebufenozide for peach twig borer (PTB) and leafrollers, and horticultural mineral oil for San Jose scale (SJS) and European red mite (ERM). The CPM blocks utilize organophosphates with oil in the dormant sprays for PTB, ERM, and SJS. Phosmet is commonly used for OFM, PTB and forked-tail bush katydid. Management of flower thrips was done with formetanate hydrochloride. When webspinning spider mites required treatment both programs utilized abamectin for control.

The total percent rejected fruit due to insects for each of the three years is given in Table 1. The two programs resulted in comparable insect damage with the three-year average for the PMA being 7.2% and the CPM being 7.7%.

The primary pest problems of stone fruits are OFM, SJS, and PTB. Nectarine and some plum varieties are quite susceptible to western flower thrips. Of these pests, only western flower thrips was of concern and resulted in the greatest amount of damage to nectarines in each of the three years (Table 2). The damage caused by western flower thrips was no different between the two pest management approaches. Forked-tail bush katydid was the next most troublesome pest. Forked-tail bush katydid averaged 2.1% in both the PMA and CPM orchards over the three-year comparison. It has become a major concern to fruit growers in the San Joaquin Valley.

The costs of pesticides for both the PMA and CPM orchards were quite similar and are shown in Table 3. The 2002 costs have not been tabulated, but the two-year average cost of the PMA orchards was $183 and the CPM orchards was $190. Much of the reduction in costs has been due to savings on miticide costs between the two programs.

Table 1. Total (%) insect damage fruit, San Joaquin Valley Pest Management Alliance Orchards

Treatment	2000	2001	2002	3-year average
PMA	5.7	8.5	7.4	7.2
Conventional	5.6	7.9	9.5	7.7

Table 2. Average insecticide costs per acre, San Joaquin Valley Pest Management Alliance Orchards

Treatment	2000	2001	2002
PMA	218	148	?
Conventional	221	159	?

Table 3. Percent damaged fruit due to various pests, San Joaquin Valley Pest Management Alliance Orchards

	2000		2001		2002	
Pest	PMA	Conv	PMA	Conv	PMA	Conv
OFM	0.6	0.9	0.6	0.8	0.5	0.5
PTB	1.2	0.6	0.0	0.0	0.0	0.0
LR	0.0	0.0	0.2	0.3	0.3	0.7
SJS	0.0	0.0	0.5	0.6	1.8	1.9
Katydid	1.4	1.5	2.5	2.2	2.4	2.5
Thrips	2.5	2.6	4.7	4.0	2.4	3.9
Total	5.7	5.6	8.5	7.9	7.4	9.5