
Reduced Risk Pest Management Approaches - Pest Management Alliance II Project

Project No.: 09-STEWCROP2-Verdegaal

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Project Cooperators and Personnel:

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Walt Bentley, Extension Specialist, UC KAC
Community Alliance with Family Farmers (CAFF)
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Joe and Nick Bavaro, Bavaro Farming
Jim Burkhart, San Joaquin Delta College Farm

Objectives:

Objective 1: Update and analyze current data on NOW, mites, diseases and invasive species

Project partners will update almond pest management studies and resulting practices in order to hone outreach efforts to growers and PCAs by understanding use patterns and geographical data relevant to targeted compounds (i.e., reduced risk vs. OP, carbamate, and pyrethroid use) and alternative strategies. The three high-priority target regions were identified for locations of regional demonstration sites. Three sites were selected in the San Joaquin County portion of PMA II, located in Ripon, Escalon and Manteca.

Objective 2: Outreach and education to expand on the success of Almond PMA I for growers needs

Almond PMA II will encourage California almond growers to adopt reduced risk practices. Growers and PCAs will learn about alternatives to OPs, carbamates, and pyrethroids, and the impact these products have on environmental quality and VOC production. Building upon successes and lessons learned during Almond PMA I, an outreach program, coordinated by CAFF and the Almond Board of California (ABC), will utilize the expertise of project partners (UC IPM staff, UC scientists, and UC farm

advisors) to educate both new and experienced almond growers through regional demonstration sites, field days, newsletters, and websites.

Meetings

2008 Dec 17	Field Meeting on Winter Monitoring	Escalon	30
2009 Feb 5	Organized a tour for the AAIE Conference including a stop at an Almond PMA site.	Manteca	45
2009 Apr 21	Field day on IPM & irrigation	Ripon	51

Newsletters

2008-09	Crop Digest San Joaquin County UC Cooperative Extension Quarterly articles on Almond situation Community Alliance with Family Farmers (CAFF) newsletters
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Objective 3: Continuing Education for Almond PCAs

Almond PMA II will involve PCAs to develop their skills and commitment to expansion of IPM implementation. Collaboration with local PCAs will expand the impact of Almond PMA II, and result in greater implementation of reduced risk practices after the project. PCAs provide a critical link in successfully affecting change in orchard management. This project addresses the need for continuing PCA education about reduced risk practices in almond orchards through the meetings mentioned in objective 2 and also with the regional meeting "Almond Pest Management Course" presented in Stockton on November 5, 2009.

Objective 4: Partner with support industry and suppliers

This current year we hope to continue the field trails and expand the framework for an open dialogue with chemical suppliers about supporting reduced risk options for almond production. Chemical suppliers target their research and develop in areas where they see market potential. Almond growers and their PCAs can benefit from information about pests and their management with regard to the industry's ongoing commitment to regulatory compliance and environmentally acceptable options for growers' pest management decisions.

Interpretive Summary:

Almond Pest Management Alliance II (PMA II) is primarily a demonstration/education project, which is helping to validate sampling plans (primarily for NOW, mites, ants and San Jose scale) in three local research plots for pest problems at each location. The demonstration sites are centrally located in almond growing areas to generally address area wide concerns.

The cooperators include two commercial grower's sites and the San Joaquin Delta College Laboratory Farm in Manteca. Growers and pest control advisers (PCAs) are an integral part of the outreach for validation and adoption of plans to monitor pests, such

as NOW (egg traps), PTB (pheromone traps), ants (spring counts only), and leaf-footed plant bug (observation of gumming on nuts and presence of eggs on leaves).

A primary focus of this project is the reduction of organophosphates, especially Lorsban (chlorpyrifos), and of excessive reliance on pyrethroid sprays. With the increasing availability of new materials that are more target pest oriented, as efficacious as past insecticides/miticides/fungicides and cost competitive, growers need data and field experience that confirms the advantages to adoption of these alternative chemicals and strategies. Some newer reduced-risk materials being looked at are Intrepid (methoxyfenozide) and Altacor (chlorantraniliprole) for NOW and Onager (hexythiazox) for mites.

Work done by Frank Zalom has also demonstrated the efficacy of products such as Dimilin (diflubenzuron), Success (spinosad), and Intrepid for peach twig borer in the dormant and bloom sprays, along with even newer materials in recent years. Both comparative plots and a documentation of grower practices will help to integrate and effectively use May treatment timings for NOW and PTB to reduce hull split or dormant applications. New products and timings may help reduce or eliminate spider mite problems that result from disruption of beneficials.

Leveraging ABC funding to support the development and expansion of environmentally responsible pest management, CAFF is helping to coordinate the project and arrange contractual agreements with participating PCAs. UCCE is providing technical and IPM expertise and the ABC is supporting the activity with oversight on its progress.

Results and Discussion:

We (Walt Bentley, Dan Rivers, and I) established three demonstration locations each with two growers in 3 orchards. One is replicated as a field trial in Ripon. The other two are an IPM orchard in Escalon and a transitioning organic orchard near Farmington. These orchards will provide data and also serve as primary sites for field days. Another observation trial was established with San Joaquin Delta College for monitoring and possible field days.

The general work plan for 2009 included:

Dan conducted dormant spur sampling for SJS and mite eggs (presence/absence evaluation) and mummy counts for NOW (**Table 1**). In addition weed species were surveyed to set a baseline and observe any population shift, particularly in the organic production block. A weekly summary of current chill hour accumulations (based on temperatures recorded at the Manteca CIMIS #70 weather station) was posted at the San Joaquin UCCE website. In February and March, PTB emergence from hibernacula was observed and reported on. Traps were set out in March and monitored weekly throughout the season, with attention paid to establishing initial biofixes at each of the sites for each of the pests of concern (and some minor pests like OFM and OBLR) and observing flights of succeeding generations (**Figure 1**). Bloom counts were conducted at SJ Delta College in February and March. Presence/absence mite sampling began in

April and continued into the summer months. A field meeting including a discussion of mite sampling techniques was held in Ripon in April.

Hull split was evaluated in July through September at the San Joaquin Delta College Regional Variety Trial. Harvest nut samples were collected from each of the trial orchards and the nuts were evaluated for pest damage (**Table 2**). Data collected throughout the season will be summarized with results to be submitted at the 2009 Almond Research Conference.

Other 2009 accomplishments include field meetings, handouts for in-season grower decision making (e.g. resistance management grouping lists), newsletters and web site updates for UCCE San Joaquin County. This year there has been light mite pressure, with some apple leaf hopper activity. There were some mite flare ups in August that came on with a hot spell. NOW activity was light to moderate, as was San Jose scale (SJS). Dan did some Ten Lined June Beetle surveying with fewer females collected in affected south county orchards than in 2008.

Lower Limb Dieback (LLD) has made a significant recurrence in 2009. We made a survey of San Joaquin county orchards with Themis Michailides lab group in early July to continue efforts to learn cause and possible management of the disorder.

A regional meeting for growers and PCAs is planned for November 5, 2009, at the Cabral Ag Center in Stockton. Dan is in charge of meeting details for the meeting location and working with Walt Bentley and Mark Cady for topics in monitoring and alternative strategies for control of major insect pests including recent NOW research developments and projects.

Table 1. PMA 2009 Winter dormant sampling

Orchard	Block	Varieties	Mummies/tree (UC: < 2)	Infested spur % (UC: less than 20%)			
				LiveSJS	ParasitizedSJS	EFL	MiteEggs
SJ A	1	Nonpareil, Carmel, Monterey	1.1	1	0	0	0
SJ B	1	Nonpareil, Aldrich, Monterey	0.8	15	7	0	2
SJ B	2	Nonpareil, Sonora, Monterey	0.7	2	5	0	8
SJ B	3	Nonpareil, Carmel, Monterey	0.9	7	9	0	28
SJ C	1	Nonpareil, Carmel, Fritz	11.6	0	0	0	6
Merced	1	Nonpareil, Carmel, Monterey	2.2	1	9	19	5
Merced	2	Nonpareil, Carmel, Sonora	1.2	54	23	12	14

Figure 1. Trapping data for San Joaquin B demonstration orchard

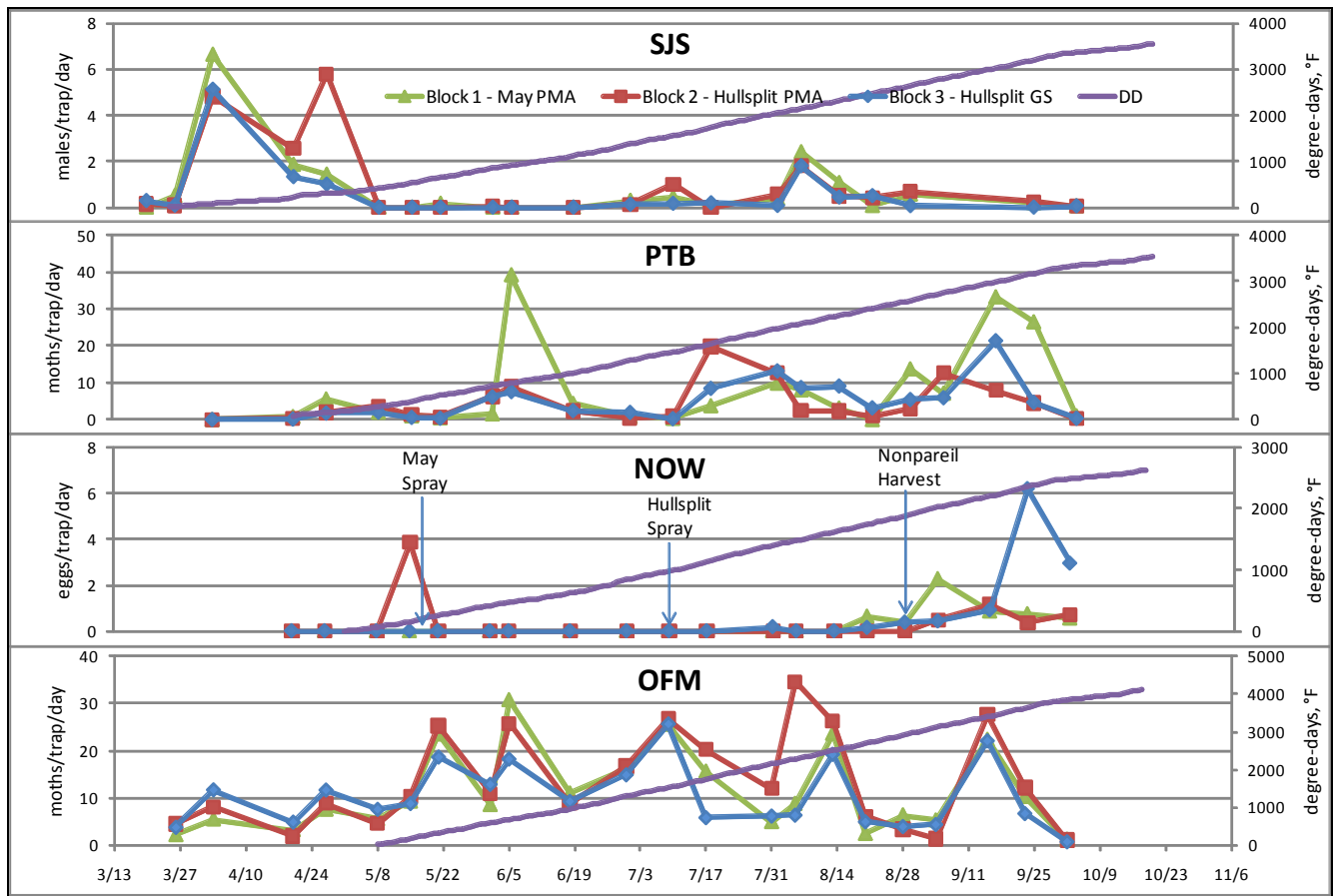


Table 2. 2009 Harvest evaluation – San Joaquin B demonstration orchard

Block	Treatment			Harvest Date	Sample Size	Mold	Serious Defects (% nut meats)			Bug	Other Defects
	Material	Timing	Variety				NOW	Ants	PTB/OFM		
1	Intrepid	May	Nonpareil	9/3	1000	0.1	0.2	0	0	0	1.0
2	Intrepid	Hullsplit	Nonpareil	9/3	1000	0	0.9	0	0	0	1.3
3	Warrior II	Hullsplit	Nonpareil	8/28	1000	0	0.8	0	0	0	1.9