Reduced Risk Pest Management Approaches – Pest Management Alliance II Project

Project No.: **08-STEWCROP2-Verdegaal**

Project Leader: Paul S. Verdegaal
Farm Advisor
UCCE San Joaquin County
2101 E. Earhart Ave., Suite 200
Stockton, CA 95206
(209) 953-6119
psverdegaal@ucdavis.edu

Project Cooperators and Personnel:

Daniel J. Rivers, SRA II, UCCE - San Joaquin County
David Doll, Farm Advisor, UCCE - Merced County
Franz Niederholzer, UCCE - Sutter Butte County
Carolyn DeBuse, UCCE - Yolo Solano County
Walt Bentley, Extension Specialist, UC - KAC
Community Alliance with Family Farmers (CAFF)

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 our outreach efforts to growers and Pest Control Advisors (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 highest-priority target regions identified through this process will be used for regional demonstration sites. The three sites will work with UC IPM, UCCE, and local PCAs, to implement reduced risk practices and their potential for sustained success.

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

Almond Pest Management Alliance II (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, human and wildlife health, and VOC production. Building upon successes and lessons learned during Almond Pest Management Alliance I (PMA I), an outreach program, coordinated by CAFF and the Almond Board of California, 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.

Objective 3: Continuing Education for Almond PCAs
Almond PMA II will involve PCAs as leaders in project implementation to develop their skills and commitment to expansion of IPM implementation. PCAs have an enormous influence on how growers manage orchards; yet most efforts to encourage reduced risk almond production focus on growers. 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 presentations, trainings and involving local PCAs in demonstration site design.

Objective 4: Partner with support industry and suppliers
Almond PMA II will provide 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 PMA II is primarily a demonstration/education project whereby information developed for the Almond PMA I will be expanded and fine tuned. We are also interested in further validating sampling plans (primarily navel orangeworm (NOW), mites, ants and San Jose scale) and undertaking localized research for pest problems peculiar to each location. As an example; developing better and easier sampling for treatment thresholds of NOW, ants and mites.

The cooperators, both farmers and PCAs, are the integral part of the outreach and adoption. We look to them for ideas and successes (or failures) and also to help deliver information. We are looking to the PCAs to help monitor pests, such as NOW (egg traps), PTB (pheromone traps), ants (spring counts only), and leaffooted plant bug (observation of gumming on nuts and presence of eggs on leaves). Cooperating PCAs will visit and help provide outreach opportunities and information on pest management and alternative strategies or materials for sustainability.

The primary focus of this project is the reduction of organophosphates, especially Lorsban, and excessive reliance on pyrethroid sprays. We have some data that documents the efficacy of reduced risk products, in particular Intrepid for NOW. Work done by Frank Zalom has also demonstrated the efficacy of products such as Dimilin, Success, and Intrepid for peach twig borer in the dormant and bloom sprays, along with even newer materials. These products will be used in the reduced risk portion of the orchards. We are also are looking to integrate and effectively use May treatment

timings for NOW and PTB to reduce hull split or dormant applications. New products will help reduce or eliminate spider mites through disruption.

Materials and Methods:

Leveraging Almond Board funding to support the development and expansion of environmentally responsible pest management, CAFF will help to coordinate the project, arrange contractual agreements with participating PCAs, UCCE will provide technical and IPM expertise and Almond Board supports the activity with oversight on its progress.

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

The general work plan for 2009 included:

Dan conducted spur monitoring for SJS, PTB, mummy counts of NOW and sampling for mite eggs as presence/absence evaluation. In addition, weed species were recorded to set a baseline and observe any population shift, especially in the organic production blocks. In February detailed lab counts were made for mites, scale and NOW; PTB emergence rates also reported on. Traps were set out in late February and monitored through March and April. Bloom counts were conducted at SJ Delta College in February and March, along with continued pest monitoring. In April and May more intensive mite sampling was done, with a field meeting on the topic held in Ripon.

Mite sampling continued through out the current season. Hull split will be evaluated in July and August, at the SJ Delta College Regional Variety Trial. Nut samples will be taken at harvest for comparison from all trials for pest damage. Season data collected will be summarized with results to be submitted at the 2009 Almond Research Conference.

Field meetings, handouts for grower decision making during the season (e.g. resistance management grouping lists), newsletters and website update for UCCE - San Joaquin County will continue through the season.

A regional meeting for growers and PCAs is planned for November 5, 2009, at the Cabral Ag Center in Stockton. Dan Rivers 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 of major insect pests including recent NOW research developments and projects.

Results and Discussion:

Following is an activity summary of Dan Rivers, PMA coordinator housed in San Joaquin County:

Nov 08

- Met with San Joaquin County grower cooperators, discussed with them their concerns, and made plans for the demonstration sites including trapping programs, trials with new materials and field days.
- Attended the organic farming workshop at the PNP expo.
- Compiled and posted multiple-year bloom and hull split data summaries to the UCCE - San Joaquin website along with current chill hour accumulation updates.

Dec 08

- Presented a poster at the Almond Conference describing the PMA project plans and objectives.
- Helped organize the Winter Almond PMA field meeting, the first of a series of field meetings hosted by grower cooperators and attended by growers and PCAs. Food safety issues, winter sampling and pest management, band canker and fungal diseases were discussed along with the host growers' and PCA's philosophy and pest-management experiences.

Jan 09

- Conducted dormant monitoring at the demonstration sites including mummy nut counting for NOW control and spur sampling for scale insects and mites.

Feb 09

- Helped organize a tour for the AAIE Conference which included a stop at an Almond PMA demonstration site.
- Rated almond bloom by variety and posted a summary to the UCCE San Joaquin website.

Mar 09

- Completed bloom rating and summary.
- Monitored PTB emergence from hibernacula at the demonstration sites.
- Set up trapping programs in the demonstration orchards.

Apr 09

- Monitored traps and shoot strikes.
- Helped organize a spring field meeting. Topics discussed were worm control products, host grower practices, May sprays, mite sampling, ant monitoring, drought strategies and air quality.

May 09

- Continued monitoring traps and began sampling for mites.
- Set up an Almond PMA webpage at the UCCE - San Joaquin website.

Jun 09

- Continued monitoring traps and mite sampling.

Jul 09

- Continued monitoring traps and mite sampling.
- Began surveying for hull split.
- Set up a system of reporting trap catch data from all the PMA sites.

This year there has been light mite pressure, with some apple leaf hopper activity. NOW activity has been light to moderate as was San Jose Scale (SJS). Tenlined June beetle were surveyed with a surprising low level of population development in affected south county orchards.

Lower Limb Dieback (LLD) made a significant reoccurrence 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 in the near future.

Meetings –Verdegaal & Rivers

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

Recent Publications:

2008 Dec 10-11	Almond Research Conference Project Poster, Modesto
2008-09	Crop Digest San Joaquin County UC Cooperative Extension Quarterly articles on Almond situation