Almond Culture and Orchard Management

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CURRENT PROJECT ACTIVITIES SUMMARY

The Almond Board provides funding for farm advisors to conduct research projects, including the following eight almond-related efforts.

Monitoring and Reporting of Almond Insect Pest Dynamics in Tehama County

Project Leader: Richard Buchner, UCCE – Tehama/Glenn/Butte counties

Four insect trap location replications in Tehama County almonds were used to monitor Oriental Fruit Moth (OFM), Peach Twig Borer (PTB) and male, female and egg laying for Navel Orangeworm (NOW). Traps and Degree Days were monitored twice weekly. For PTB we set the first biofix on 3/16/15 the second on 5/26/15 at 1009 Degree Days (DD) and a third biofix on 7/2/15 at 997 DD. The OFM first biofix occurred 2/16/15,the second on 5/4/15 at 1201 DD, the third on 6/11/15 at 959 DD and a fourth on 7/20/15 at 1332 DD.NOW egg traps indicated first eggs on 4/6/15,second egg laying on 6/11/15 at 896 DD, third egg laying on 7/6/15 at 708 DD with a fourth egg laying on 7/30/15 at 730 DD. Female traps did not appear to catch many females showing relatively low activity throughout the season. Male NOW emerged ahead of the females and their flight activity was more steady, and not clearly mirroring female flights or egg laying.

Mechanical Pruning and Training of Young Almond Trees

Project Leader: Roger Duncan, UCCE – Stanislaus County

Mechanical topping did not save a substantial amount of money compared to hand training. The most expensive tree training method was mechanical topping plus hand selection of 4-5 scaffolds ($82.80/acre). The topping decreased the time for hand training but still cost more than the hand training alone. Topping without selecting scaffolds but removing limbs too low on the trunk cost about $48 per acre compared to short pruning by hand ($66/acre), a savings of $18 per acre. The least expensive treatment was no scaffold selection or heading, removing only low, problematic limbs off the trunk by hand ($18.00/ acre).In the future, parameters including trunk diameter, light interception, scaffold failure and tree blow over/leaning will be recorded. Yields at first and second year of harvest will also be measured.

Almond Bloom Disease Control Trials

Project Leader: Brent Holtz, UCCE – San Joaquin County

Sequential treatments' of Fontelis (penthiopyrad), Bumper (propiconazole), Tebuconazole, Abound (azoxystrobin), Gem (trifloxystrobin), Bravo Weather Stick (chlorothalonil), Quadris Top (difenoconazole + azoxystrobin), Inspire Super (difenoconazole + propiconazole), Rovral (iprodione) + oil, Captan (phthalamide), Topsin (thiophanate-methyl), Luna Sensation (fluropyram + trifloxystrobin), Luna Experience (fluropyram + tebuconazole), Serenade Optimum (Bacillus subtilis), Pristine (pyraclostrobin + boscalid), Merivon (fluxapyroxad + pyraclostrobin), and Microthiol Disperse (micronized wettable sulfur) were applied in tank-mixtures and in various combinations and timings for the control of common almond bloom diseases: brown rot, shot-hole, scab, and rust. All treatments significantly reduced the incidence of almond scab when compared to our two untreated controls. Because of the lack of precipitation at bloom there was not enough brown rot or shot-hole to rate.

Insect Studies: Potential Timings of Damage by Brown Marmorated Stinkbug

Project Leader: Dani Lightle, UCCE – Glenn/ Butte/Tehama counties

Ranging in size from 2^{nd} -5^{th} instar and adults, 174 brown marmorated stinkbugs (BMSB) were obtained from a lab colony maintained at the California Department of Food and Agriculture in Sacramento. All bugs were photographed using a digital microscope camera and the insect length and stylet (mouthpart) lengths were measured for each instar. The average mouthpart length ranged from 2.6mm for 2^{nd} instar bugs up to 8.13mm for adult bugs. BMSB mouthpart length will be compared to pericarp thickness in developing nuts in 2016.

Does Fall Nitrogen Application Improve Almond Yield?

Project Leader: Franz Niederholzer, UCCE – Colusa/Sutter/Yuba counties

The current nitrogen (N) management program recommends 20% of the annual N budget be applied between hull-split and leaf drop. However, winter rainfall in the Sacramento Valley regularly exceed the root zone soil water holding capacity, producing conditions where excess soil nitrate can be leached towards groundwater and eliminate any soil nitrate carryover from one season to the next. A field trial has been established to test if fall N fertilization improves almond yield the following year.

Young Orchard Educational Material

Project Leader: Katherine Pope, UCCE – Yolo/Solano/Sacramento counties

New almond orchards are being planted at a rapid pace in Yolo, Solano and Sacramento counties. Much of this acreage is being planted by those with no previous experience in tree crops, some with no experience in agriculture at all. Most of UC Cooperative Extension's tree crop materials are geared towards management of and problems in mature orchards. With this in mind, a stand-alone, introductory Young Orchards Handbook has been created to deal exclusively with the issues confronted in the early years of an orchard's life, such as weed, nutrient and irrigation management, and pruning and training. The Young Orchards Handbook will be made available through the UCCE Yolo website.

Sodium, Chloride and Boron Accumulation in Almonds – Westside Survey

Project Leader: Blake Sanden, UCCE – Kern County

A 3rd leaf quarter section almond block in northwest Kern County, 50/50 Nonpareil and Monterey, were planted on Hanson rootstock in 2013. A significant gradient in increasing native salt load in this soil is obvious as you move from East to West despite having leached this ground with two feet of water using sprinklers prior to planting. Four areas with dedicated sampling trees have been selected to represent this gradient. The total soil salt load (EC), sodium (Na), chloride (Cl) and boron (B) increase almost 3-fold from Area 1 to 4. With the exception of B, even Area 1 is on the high side for most almond plantings. The interesting result so far is that all tissue samples for leaves, trunk corings and hull boron content at harvest show no real difference with respect to Na, Cl and B. The trunk circumference of Area 4 is 19% less than Area 1, as would be expected with the higher salinity stress. The 3rd leaf yield was very disappointing for this block – being 312 lb/ac at best for Area 1 and 137 lb/ac for Area 4, a 56% decrease.

Navel Orangeworm (NOW) Monitoring

Project Leader: Emily Symmes, UCCE Area IPM Advisor – Sacramento Valley

Beginning in March 2015, trap sets were deployed to monitor NOW populations throughout the growing season in six commercial almond orchards in the Sacramento Valley. Multiple trap sets were placed as replicates within each orchard and monitored weekly. Trap sets consisted of egg traps (baited with almond meal), male traps (baited with female pheromone, Suterra® NOW Biolure ®), and female traps (baited with NOW kairomone lures, Peterson Trap Company, LLC).Trap data were collected through September to mid-October and are currently being analyzed. Harvest samples were obtained from the orchard sites in Glenn and Butte counties and damage evaluations are underway.

For More Details, Visit

- Poster locations 22 and 60, Exhibit Hall A + B during the Almond Conference; or on the web (after January 2016) at Almonds.com/ResearchDatabase
- 2014 - 2015 Annual Report CD (14-HORT3-Gradziel); or on the web (after January 2016) at Almonds.com/ResearchDatabase