



FIELD NOTES

A QUARTERLY PUBLICATION OF COOPERATIVE EXTENSION

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Crop Digest - Grapes

The 2009 season was the third dry year in a row, and challenging in its own way. The fall and winter were drier than last year but the spring was as wet as two years ago. The dry soil conditions and heavy rain in early May made it difficult to manage the curve balls that Mother Nature threw our way. As in the previous two years, soil moisture was low as spring unfolded with vines under increasing stress, but this heavy rain in the first week of May provided a good irrigation. That did reduce vine stress and growth was very good. It wasn't until late summer that you may have seen the more negative flip side of that, especially if you farm Zinfandel, Petite Sirah, and other tight clustered varieties; more on that down the page.

Similar to the last two dry years, weed growth was minimal and most pest pressure was relatively low, whether insect, mite, or disease. There were varying symptoms of vine stress; among them scorched leaves, basal leaves yellowing, marginal chlorosis and/or browning, individual berry raisining, portions or entire clusters shriveling, and potassium deficiency symptoms. However, there were good cluster counts and as the season progressed good crop loads. Many farm calls this year touched on these various symptoms.

After widespread frost damage last year, many vines took 2008 off and came back with above average to heavy crops. In general, yields were above average but not as heavy as in 2005. Fortunately, growing conditions were relatively mild and mitigated the effects of extremely dry deep soil profiles. There were a few days of 100 degree temperatures, but the 1.3 inches of rain in early May, along with attentive irrigation scheduling provided good vine vigor and may explain somewhat the surprisingly good yields for most varieties and vineyards. With just a couple of brief hot spells during the summer weather was about average.

The negative side of the May rain wasn't disastrously evident, but it did seem there was good set and good berry size development that seemed to show up as higher than average incidence of sour rot in many Zinfandel and Petite Sirah vines, among other tight cluster

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New County Director/Advisor Appointed

We are pleased to announce that Dr. Brent A. Holtz has accepted the position of UC Cooperative Extension County Director/Farm Advisor for San Joaquin County. Brent will begin in his new position on January 1, 2010, filling the vacancy left by the retirement of Mick Canevari last June.

Brent is a San Joaquin County native and grew up in Escalon. He earned his BS degree in Biology, Plant Pathology, and Entomology at California Polytechnic State University, San Luis Obispo. He earned both his Masters degree and PhD in Plant Pathology from UC Berkeley. For the past fifteen years, Brent has been working as CE Farm Advisor-Pomology serving Madera County.

Please join us in congratulating Brent as our new UCCE County Director / Farm Advisor and welcoming him back to San Joaquin County!

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varieties. Sour rot or summer bunch rot can be a problem in very hot years, and in the extremely wet years also is present but in combination with *Botrytis* bunch rot. This year it wasn't extremely hot or wet, but "leakers" were not hard to find (smell).

Pest problems overall were not severe with regard to powdery mildew, leafhoppers or mites; but late summer just about a month before harvest, vine mealy bug (VMB) seemed to flare up in many locations, both in established infestations and at many new sites. Aggressive monitoring and control have been followed in most vineyards over the last seven years, but VMB continues to spread. It can be spread in a variety of ways including equipment, people, nursery material, wind animals, and birds. The main mechanism seems to be birds. There are good materials and options to control VMB and more will become available next season (I hope). Be on the lookout, talk to your PCA, educate your permanent employees and call our office if you have questions. We probably can live with it, but it will add to the cost of wine growing. Be on the lookout for other unusual occurrences of insect pest activity, as light brown apple moth (LBAM) continues to spread, and more recently a new moth has been identified in Napa called the European grapevine moth. It appears to be similar to the orange tortrix, which is mostly a coastal problem.

The 2009 harvest began a few days after the long term average of about August 10th. This year white Zinfandel was being picked on August 19th. The pace began slowly, but ramped up quickly as most varieties achieved maturity at same time, similar to last year. The above average crop and moderate conditions (except for two brief hot spells on Sep 10-11 and Sep 22-23) helped reduce scheduling problems. A slight lull of maturity development in late September seemed to slow down most everything still in the field. Most varieties and blocks (especially if frosted last spring) were slightly above average, but some varieties such as Sauvignon blanc, Merlot, Chardonnay, and Syrah even more so. Then came October 13th. The remnants of a Pacific typhoon dropped 2.5 to 3 inches of rain in the north county and 1.2 to 1.5 inches in the south county. At that time about 85 to 90% of the harvest was in, but that still left several thousand acres of late-season varieties such as Cabernet Sauvignon, Cabernet franc, Petit Verdot, Malbec, and more recent varieties of interest such as Touriga and Souzao. Many of these late-season varieties are adapted to being rained on although this is not a desirable event. Unfortunately there were a number of vineyards with varieties such as Zinfandel, Carignane, and Colombard which are not tolerant of rain. The heavy amount of rain and several days of high humidity delayed salvage attempts and caused problems. A fair amount was saved, but some grapes were left behind. A few isolated cases of late-ripening vines may produce some "Late Harvest" wonders by determined wine-

makers. So the 2009 harvest will be a mixed lot with some interesting cases. Harvest seems to be finishing up as I write this on the last day of October.

Grape prices did drop by about 10 to 15%, and production costs increased again. Above-average yields will help offset increased costs slightly. The price for grapes continues to vary widely depending on fruit destination (variety, wine program and winery). Costs are still well ahead of grower returns on a long term basis, about \$450 per ton for cash costs which don't include cost of overhead and opportunity of investment. The all too familiar challenges remain: regulations, labor availability, and more consolidation at the producer, wholesale, and retail levels. At the same time, the general state of the economy, along with state and federal plans to help, are causes for additional concerns. Still, growers appear to be thankful and optimistic for 2010.

Fall Checklist

- The soil may still be somewhat wet, but a light irrigation to help maintain soil moisture may be okay until rains become steady.
- No nitrogen should be applied now, but potassium now (or early next year) is okay. It won't move like nitrogen. To get full benefit of compost, it needs to be disked in.
- Make a note of any problem weed species that may be increasing.
- Mark any vines with excessive red leaves and/or leaf roll for possible removable.
- Renew your Ag Waiver Discharge membership.
- Update your air pollution mitigation plan if you have 100 acres or more in a single vineyard.
- Also, review your pesticide use reports and get everything up to date as there is continued interest to keep agriculture "accountable" for problems real and perceived.
- For vine mealy bug, Lorsban post harvest can help keep it checked until the summer control program. Be careful not to apply before a storm, especially near natural drains and waterways.
- If you are near or on a water shed runoff site, limit herbicide application so that either a contact only is used to "keep things under control" or use lowest label rate and skip several rows away from immediate runoff areas or slopes. Then reapply remainder of label rate late winter, early spring.
- Check with the Farm Bureau on recent changes in legislation; look into joining if you are not a current member.

Paul S. Verdegaal
Farm Advisor

Calendar of Events

Confronting Difficult Situations: Farm Foremen Training (Spanish)

Wednesday, December 2, 2009 (9:30 AM to 4 PM)
Stanislaus County Agricultural Center, Harvest Hall,
Stanislaus Building, Rooms H&I, Modesto, CA
(corner of Crows Landing Rd. and Service Rd.)
Info: Gregorio Billikopf, gebillikopf@ucdavis.edu
(209) 525-6800.

Farm foremen will learn how to confront difficult disciplinary and conflict situations that require effective listening and interpersonal negotiation skills.

Cost is \$36 per person, includes lunch and materials (\$ 28 per person **if postmarked on or before** November 23, 2009). Send check made out to **UC Regents**, to University of California, c/o G. Billikopf, 3800 Cornucopia Way #A, Modesto, CA 95358). Limited space.

North San Joaquin Valley Cling Peach Day

Thursday, December 3, 2009, 8:30 – Noon
Stanislaus County Agricultural Center
Corner of Service & Crows Landing Roads, Modesto
Info: Joe Grant (209) 953-6115 or Roger Duncan
(209) 525-6800

37th Annual Almond Industry Conference

Wednesday & Thursday, December 9-10, 2009
Doubletree Hotel, 1150 9th Street, Modesto
Info: California Almond Board (209) 549-8262 or
www.almondboard.com

Southern Sacramento Valley Processing Tomato Production Meeting

Thursday, January 14, 2010, 8 am to noon
Woodland Community Center, 2001 East Street,
Woodland
Info: Gene Miyao (530) 666-8732

California Cherry Research Review

Tuesday, January 19, 2010
Robert J. Cabral Ag Center, 2101 E Earhart Ave.,
Stockton
Details forthcoming. Info: Joe Grant (209) 953-6115

Northern San Joaquin Valley Processing Tomato Production Meeting

Wednesday, January 27, 2010, 8 am to 11 am
Doubletree Hotel, 1150 9th Street, Modesto
Info: Scott Stoddard, (209) 385-7403

North San Joaquin Valley Almond Day

Thursday, January 28, 2010
Stanislaus County Agricultural Center
Corner of Service & Crows Landing Roads, Modesto
Details forthcoming.
Info: Roger Duncan (209) 525-6800

58th Annual Lodi Grape Day

Tuesday, February 2, 2010
Hutchins Street Square, Lodi
Morning session is free, tickets required for lunch
(available at door or in advance from the Lodi Chamber of Commerce).
Info: Paul Verdegaal (209) 953-6119

Do you have a GT Cart that you would be interested in selling to UCCE? We modify the GT carts with the addition of weigh bars and use them to weigh harvests in our field trials. If you are interested, please contact Michelle Le Strange at (559) 684-3320.



Subscribe to the electronic newsletter AG-HRnet, on topics in Agricultural Labor Management.

To subscribe, provide your name and e-mail address to:
Gregorio Billikopf (209) 525-6800 or
e-mail: gebillikopf@ucdavis.edu

Fall-applied Urea Sprays Not Effective For Controlling Bacterial Canker in Cherries

Bacterial canker, caused by the bacterium *Pseudomonas syringae* pv. *syringae*, is a serious disease of sweet cherry and other stone fruits. Many plant and environmental factors affect the susceptibility of cherry trees to infection and the severity of disease development; effective and reliable control measures are lacking. Results of some recent trials on peach and almond suggested that fall-applied foliar sprays of low-biuret urea could reduce canker incidence and severity. In a 2007 test on Bing cherries in a commercial Linden area orchard, however, we found that fall-applied urea sprays at 25 to 100 lbs/acre had no effect on canker severity, leaf nitrogen levels, or fruit quality characteristics. With funding support from the California Cherry Advisory Board, we expanded these tests in 2009 to evaluate the effectiveness of these sprays over a broader range of cherry varieties and orchard sites.

We established trials in fall 2008 in eight Lodi and Linden area cherry orchards (Table 1). Most of the trial sites had a history of bacterial canker disease in recent years. In late October or early November, trees at six of the sites were treated with 100 lbs/acre of low-biuret

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Pseudomonas bacteria that cause bacterial canker are widespread, living on tree surfaces. Bacteria invade tree tissues through natural and man-made injuries to the bark in late fall and winter. Cankers develop rapidly in late winter and early spring, causing branch (or entire-tree) dieback and gumming.

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urea while another set of trees at each site were left untreated. Trees at the other two sites (D and A) were treated twice: first with 53 lbs/acre and again one week later with 43 lb/acre low-biuret urea. Spray applications

were made prior to leaf fall at each site using a backpack mist blower sprayer to simulate air blast sprayer application at 100 gallons/acre. Each trial was configured as a randomized complete block design with five single-tree replications.

The effect of urea applications on bacterial canker susceptibility were evaluated by wound-inoculating two branches (two or three year-old, ½" to ¾" diameter) per tree in late January with a pathogenic strain of *Pseudomonas syringae* pv. *syringae* (Pss). On each branch, two small wounds - about 12 to 18 inches apart - were made by puncturing the bark with a 16-gauge needle. A small droplet of a water suspension of Pss was applied to one of the wounds; a droplet of sterile water was applied to the other wound site (mock-inoculated "control").

Inoculation sites were wrapped with a flexible film covering to prevent drying and contamination of the wound site; this film was removed in mid-March. Inoculations were allowed to incubate in the orchard until shortly after bloom, when inoculated branches were cut from trees and the lengths of cankers originating from inoculation sites were measured. Appropriate statistical procedures were used to compare treatment effects within and between sites.

Bacterial canker susceptibility, as measured by the length of cankers that developed from artificial Pss wound inoculations, varied among orchard sites, but was unaffected by fall urea applications (Figure 1). Wounds inoculated with sterile water had very small necrotic spots at wound sites, confirming that the cankers developing on *P.s.*- inoculated branches resulted from bacterial infection, not from the wounding and inoculation methods we used.

These results confirm those of our 2007 cherry tests and cast considerable doubt on the value of fall-applied foliar urea sprays for reducing bacterial canker in cherry orchards. In some of the peach and almond trials where fall-applied urea appeared to help reduce bacterial canker, a reduction in both wound-inoculated canker size and field incidence of cankers was observed. The wound inoculation method we used does not evaluate chemical or nutritional effects on the tree or bark which, if not damaged or injured, may provide some indirect protection against entry and infection by *P. syringae*. Larger orchard-scale trials would be needed to evaluate these effects in cherries. Our tests do, however, show conclusively that fall urea sprays provide no benefit in terms of canker development once bacteria have gained entrance to susceptible tree tissues through natural or man-made wounds or injuries.

We wish to thank the following for hosting trials or pro-

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Table 1. Selected descriptive information for trial sites, urea applications, and experimental wound inoculations.

Site code	Variety	Rootstock	Low-biuret urea, 2008		Pss-inoculated
			lbs/acre	Applied	
S	Coral	Mazzard	100	10-Nov	28-Jan
D	Bing	Mahaleb	53+43	20, 27-Oct	21-Jan
V	Coral	Mazzard	100	12-Nov	28-Jan
M	Coral	Mahaleb	100	6-Nov	21-Jan
O	Bing	Mahaleb	100	7-Nov	21-Jan
Y	Bing	Mazzard	100	7-Nov	30-Jan
L	Royal Rainier	Mazzard	100	12-Nov	21-Jan
A	Bing	Gisela 6	53+43	20, 27-Oct	28-Jan

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viding other assistance: Steve Davalle, Mike Devencenzi, Tom Gill, Jeff Groen, Mark Lagorio, Leonard Manassero, Lawrence Sambado, Larry Stonebarger, Karl & Paul Wolf, and Jim Woodring.

Joe Grant, Farm Advisor

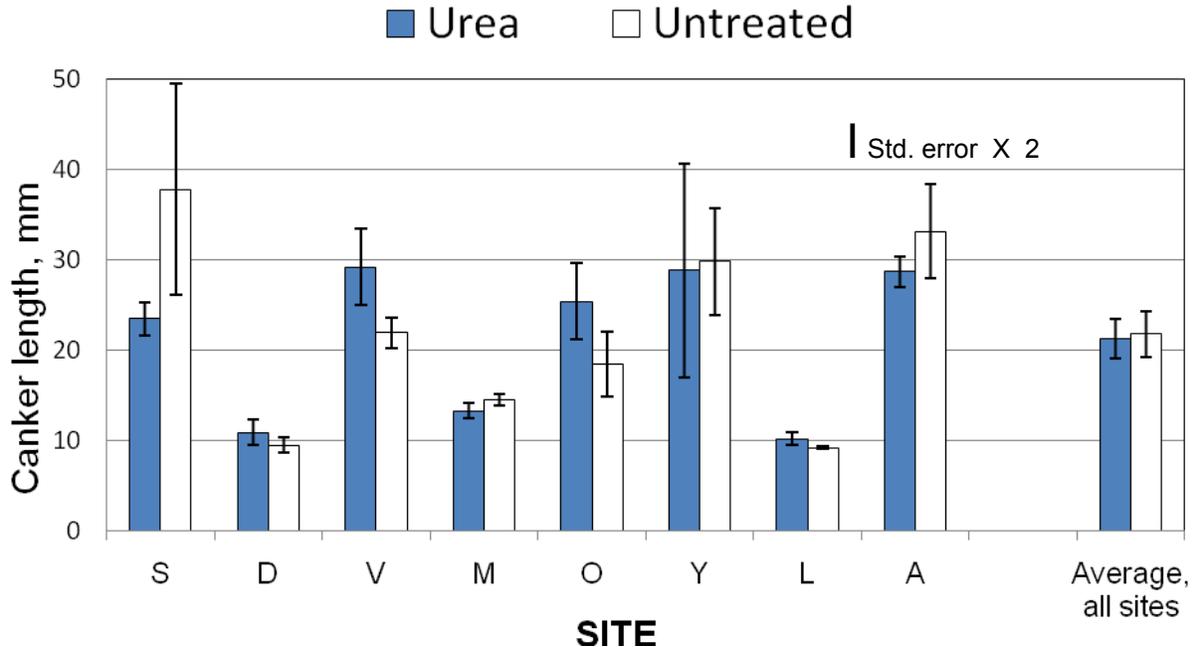


Figure 1. Average length of branch cankers (mm) originating from wounds inoculated with *Pseudomonas syringae* pv. *syringae* (Pss) varied among sites, but fall urea sprays had no effect on canker length at any test site or across all sites combined.

Colorado Feedlot Wage Survey 2009

What began as an effort to collect wage data from feedlots across the USA, soon turned into a Colorado Feedlot Wage Survey. No doubt feedlot producers are a fiercely independent lot and it took the efforts of Rachel Motteram, of the Colorado Livestock Association, to get the trust of a group of 20 Colorado producers to answer the questions. Two additional respondents, one from Oklahoma and one from Missouri, brought our total to twenty-two respondents. Despite the small numbers, the results are quite interesting and we thank each of the feedlot producers for their willingness to participate. The survey is based on a dairy wage survey I have been conducting since 2003. Additional questions were developed with the help of feedlot producers and Rachel Motteram.

Wages and hours worked. Feedlot employers were asked to select one cowboy or cowgirl and answer all of

the questions with this individual in mind, based on wages paid and work done in April 2009. The cowboys had worked from 1 to 23 years at the feedlot (average was a bit over 6 years). Length of employment is normally important in making wage comparisons, as employees who have worked longer tend to climb higher up the rate range within their pay grade. There was no relationship, however, between length of employment in this sample, and wages. Some of the highest paying feedlots were paying \$15 to \$17/hour to their entry level cowboys while long term employees of 10 and even 20 years were earning about \$10/hour in other feedlots. The average pay was \$12.63/hour. Thirty-two percent of the feedlots had differential pay for more difficult shifts.

For the month of April 2009, cowboy earnings ranged from \$1,600 to \$3,500 (average was \$2,569). In addition to their regular pay, 70% of the cowboys were eligible to earn a bonus or incentive. The bonuses or incentives actually earned in April ranged from \$0 to \$266 (average was \$128). When we count only those who

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earned some incentive, the average was \$158.

Benefits. Vacation ranged from 0 to 27 days/year. Among those who received some vacation, the average was 15 days/year. Two cowboys received approximately half of their vacation as actual time off and the other half as paid time in lieu of additional time off. Generally speaking, feedlot employers who were very generous with their vacation plan did not offer health insurance.

Seventy-seven percent of the feedlots provided some sort of health insurance for the cowboys (e.g., health, dental, eye). This insurance cost the feedlot from \$50 to \$1200/month (average was \$445/month). Cowboys worked an average of 9.7 hours/day, and 6 days/week. Cowboys were generally paid on an hourly basis (68%), while the rest were paid a salary. Retirement benefits were provided by 59% of the feedlot operations. Housing was a benefit obtained by 18% of the cowboys, either directly or in the form of a monthly housing allowance.

General feedlot statistics. The feedlot operations averaged 6,800 head checked per day per cowboy. For most (64%), this number had changed little from three years ago, while the remaining feedlots were about evenly divided between those who were checking more or fewer head. The one time capacity was an average of 45,750 head/feedlot. Pen checking time averaged 4.6 hours per cowboy (ranged from half an hour to 8 hours).

Horses. Horses were used by 86% of the feedlots. Of those who use horses, 58% require the cowboy provide his own mount while the rest (42%) are flexible on this matter. Some cowboys were limited to 2 horses (42%). Others had some limits, but could bring at least three mounts (47%). Finally, a couple of feedlots had no limits.

Quite a few cowboys (42%), even those who provided their own horses, were tested or evaluated in terms of their riding abilities. This is an excellent practice in order to avoid future injury to riders. I recommend a multifaceted test including riding ability, working with cattle, handling horses, loading horses into trailers, and ability to groom and saddle. Most (68%) cowboys were expected to provide their own saddle.

One question attempted to gauge if feedlots could tell the difference between those who wished to work versus play cowboy. Respondents generally attempted to either test applicants on their horsemanship and animal husbandry or asked open questions in interviews. Some tried references.

Labor supply and key labor issues. In terms of labor supply, 9% found it *much* more difficult to find cowboys than three years ago; 36% *more* difficult; 18% the *same*;

and 18% *easier*. An additional 18% had *no* need to hire new cowboys. Of those who found changes in their ability to hire cowboys, 93% felt these changes were *externally* caused; while one feedlot felt they had made changes in their operation that made it easier to recruit. This is a critical point in labor management. Some operators have found a combination of management practices that help them attract and retain good employees even while there are labor shortages. These include giving *job sample* (i.e., practical) tests to applicants to make sure the very best are hired, establishing a wage structure within which excellent employees can climb, creating effective incentive pay opportunities that benefit employee and farm operation, and supplying plenty of opportunities for open two-way communication, to name a few.

General labor related issues of concern, besides ability to find people, were: finding *quality* employees; managing compensation; safety; employee retention; housing; insurance; and agricultural working schedules.

Gregorio Billikopf
Labor Management Advisor



**2nd Annual Spray Safe
February 10, 2010
Robert J. Cabral Ag Center
2101 E. Earhart Ave., Stockton**

With the environment and our communities in mind, the Spray Safe program was created by growers to reduce spray drift, enhance worker safety and protect public health.

Be a part of a progressive movement that encourages those that apply sprays to be vigilant through communicating, training and awareness. Spray Safe provides instruction to owners, supervisors and managers on new improved practices, technologies, and precautions to improve the safe application of sprays.

The event is free of charge and includes lunch. Spanish translation will be provided.

For more information call San Joaquin Farm Bureau (209) 931-4931

Almond Pest Management Alliance (PMA) 2009

Post Harvest Reflections

It's November and all almonds in San Joaquin County are picked up, processed, or stockpiled. Preliminary reports are that the crop was slightly down, with likely contributors being unfavorable weather conditions at pollination, frost, and a spring hot spell. On the pest management front, post harvest is a good time to look back at the season's pest pressures, harvest sample results and treatment successes and breakdowns. If you attended the Almond PMA Comprehensive Pest Management Course on November 5th at the Robert Cabral Ag Center (or on the 4th down at Kearney Ag Center), you heard many of the speakers talk about winter sanitation as key to controlling damage caused by navel orangeworm. Navel orangeworm (NOW) does not go through diapause (dormancy) and needs a food source (mummy nuts) to survive the winter. By removing mummy nuts, either mechanically or with the help of birds and weather, we can disrupt the cycle. We are fortunate in San Joaquin County that historically we have had low NOW pressure, due in part to the influence of the Delta and the relative lack of other hosts like pistachios. You may be satisfied with your NOW control program, get good nut removal at harvest and your processor reject levels may be acceptable. Regardless of whether you practice winter sanitation or not, annual winter monitoring – counting mummy nuts and cracking out a few to look for worms – takes little time and is informative. Over the years, you may notice trends, decide there are times when supplemental mummy removal *is* necessary and find you can safely skip a hull split spray.

Another cultural practice effective for pest control (which only got a passing mention at the Comprehensive Pest Management Course) is regulated deficit irrigation. Hull-split deficit irrigation is really a season-long strategy that offers a few challenges and many benefits. I suspect that while pushing our orchards to produce more we forget that timely “skimping” on selective inputs (water, fertilizer) can be beneficial. Research has shown that mild stress for two weeks beginning at early hull split is very effective at controlling hull rot in almonds. Brent Holtz, a UC farm advisor believes that “... hull rot is the single greatest yield reducer of vigorous young almond orchards in the central San Joaquin Valley.” Other benefits of this regulated mild stress are more uniform hull split, fewer stick tights at harvest and tighter shell seal. Care must be taken not to impose increased stress on an already stressed orchard and thereby risk early defoliation or hazard a mite flare-up (*and* early defoliation). The details of how to manage regulated deficit irrigation will be covered in a future summer newsletter

but for now I will illustrate my point here with an example of an orchard that might have benefited from this strategy in 2009.

I collected harvest samples from a young Sierra foothills orchard in August. Details I have for this orchard are as follows; there was slight NOW pressure based on in-season egg counts, and moderate peach twig borer (PTB) pressure based on season-long pheromone trapping and earlier surveys of hibernacula and flagging shoots. The grower applied bracketed hull split worm sprays. There were many nuts remaining in the trees after harvest. This could be a function of tree age, size,



pruning, tying, or something else. There was a high incidence of hull rot (due to *Rhizopus*) in my nonpareil sample and in the mummies. Most dramatic though was the wide open shells with visible nut meats, many chewed. When I cracked out the sample, I found greater than 6% worm damage (5.3% NOW, 1.5% PTB) plus some ant feeding (0.9%). I found similar results with the Sonoras, which were harvested a few weeks later (high hull rot, poor shell seal, 3.4% NOW, 0.5% PTB, 1.9% Ant). This was not a controlled research trial, only my observations, but I expect that a well-managed deficit irrigation program may have prevented some hull rot and improved shell seal. They say a navel orangeworm can eat its way through a 5-gallon bucket but I think given the choice, any pest would prefer walking in through an open door.

If you missed the Almond PMA Comprehensive Pest Management Course or wish to review one of the topics presented, you should know that the talks were recorded. Look for details on viewing these informational video talks at the UCCE San Joaquin website.

Dan Rivers
Staff Research Associate

2009 Mid-maturity Processing Tomato Variety Evaluation in San Joaquin County

This year's mid-maturity processing tomato variety trial was located near Tracy in a drip-irrigated field.

The trial was transplanted on May 7, and harvest was delayed until September 30 (146 days). Despite this delay, average yield of all varieties was 55 tons per acre. The top three varieties, all yielding over 60 tons, were the Heinz varieties H 8504, H 9780 (standard), and H 4007. Soluble solids yield was highest in HM 6898, followed by H 9780.

Many thanks to our grower cooperator, Hal Robertson Farms, and to the California Tomato Research Institute, and the participating seed companies for their financial support.

After November you can obtain a copy of the full report, which includes many more details about the trials and the varieties, by doing one of the following:

- ✦ Call us at (209) 953-6100 and ask to be mailed a copy
- ✦ Come into the office and ask for the 2009 Processing Tomato Report

After November, view the report on our website at: <http://cesanjoaquin.ucdavis.edu>

Later in the winter, the full UC Statewide Variety Evaluation Report is available from the UCD Vegetable Research and Information Center website (or I can mail you a copy): http://vric.ucdavis.edu/veg_info_crop/tomato.htm

Brenna Aegerter
Vegetable Crops Advisor

Dairy Feed Management Survey

In August I mailed out a **Feed Management Survey** (one page, front and back), and would like a few more completed surveys to get a better picture of feeding practices in San Joaquin and Stanislaus Counties. If you didn't receive my survey or haven't had a chance to complete it, and would like to participate, please contact me at jmheguy@ucdavis.edu or (209)525-6800. I will mail you a hard-copy or send you an electronic version, whichever you prefer.

Jennifer Heguy
Dairy Farm Advisor



Variety	Yield ^z (tons/ acre)		Soluble solids (° Bx)	PTAB color	pH
H 8504	65.6	a	4.7	21.25	4.32
H 9780 (std)	63.6	ab	5.0	21.75	4.42
H 4007	60.3	bc	4.9	20.25	4.58
HM 6898	58.8	cd	5.5	21.25	4.37
HM 7883	57.8	cde	5.2	22.25	4.61
CXD 255	57.8	cde	4.9	22.00	4.49
HMX 7885	57.7	cde	5.0	22.00	4.64
PX 650	55.7	def	5.4	23.50	4.53
N 6390	55.4	def	5.4	22.75	4.48
AB 3	54.5	efg	5.2	21.25	4.47
SUN 6366 (std)	53.0	fgh	5.1	21.75	4.55
CXD 282	51.9	fgh	4.8	20.00	4.46
AB 2 (std)	50.4	gh	5.1	21.75	4.41
H 2601 (std)	49.1	hi	5.0	21.75	4.48
PX 002	46.1	i	4.9	21.00	4.49
HM 6903	41.6	j	4.9	20.75	4.52
LSD (5%)	4.1		0.3	0.93	0.05
CV (%)	5.2		3.0	3.0	0.8
Average	55.0		5.1	21.60	4.49

^z Means followed by the same letter are not significantly different

Observational varieties					
5508	71.9		4.3	21	4.41
UG 19406	69.0		5.1	21	4.37
N 6385	64.3		4.5	22	4.55
BQ 205	63.1		5.3	22	4.47
N 6393	62.8		5.4	22	4.52
5608	59.9		4.8	21	4.52
BQ 163	56.2		5.2	21	4.48
DRI 0309	53.5		5.1	22	4.45
N 6394	52.6		5.4	21	4.58
UG 4305	44.8		5.2	22	4.52
CXD 269	44.3		5.1	22	4.44
BQ 172	41.4		5.4	20	4.58
BOS 8800	35.9		5	23	4.56
HT1059	no data		4.3	23	4.55
Average	55.4		5.0	21.6	4.50

Tis the Season for Control of the Pesky Scale

Scale insects are a common pest of ornamental plants, and now is the time to develop a plan to keep scale under control for next year. Scale insects look like their name and identifying a scale compared to a mealybug is fairly straightforward. Identification is important as there are two groups of scales on ornamentals: armored (Figure 1) and soft (Figure 2), and individual species within each group may be controlled by different methods. There are also some common scale species that will not cause serious damage to a healthy tree and can be controlled without the use of any chemical sprays.

The following are six integrated pest management methods to control scales in ornamentals.



Figure 1. Greedy scale, a type of armored scale..

1. Identify the scale. You can check out pictures and further description on scales at UC IPM Online (<http://www.ipm.ucdavis.edu>). If you need help with identification, please bring your insect samples in to our Cooperative Extension office to be identified.
2. Prune out infested areas. Winter is the time of year to prune your woody plants, so pruning out areas that are heavily infested and disposing of (not composting) the material can serve as a first step in getting rid of the infestation. Pruning also opens up the canopy, which in the hot summer may help control black scale, citricola scale and others. Heat exposure increases scale mortality.
3. Keep the ants out! On every tree on which I have seen scale, I have seen ants scurrying up the trunk of the tree to harvest honeydew or protect their precious crop of scale. Ants feeding on the honeydew will have swollen, almost translucent abdomens. You can keep the ants from climbing the tree with a sticky substance such as Tanglefoot. Check the sticky material every one to two weeks to make sure it is effectively stopping the ants. This will need to be reapplied once the material is no longer

sticky. Trim branches which touch structures and give the ants alternate routes to climb up the tree. Use ant baits around the tree to kill out the local colonies as well. This will need to be monitored every year since the ant populations are always a problem.

4. Monitor for beneficial insects. There are many predatory wasps and lady beetles that feed beneath the scale and might be difficult to see. With a magnifying glass, you can distinguish live scale from dead by flipping the scale over with a sharp tool to see if it is dried up. Dead scale may remain on plants from several previous generations. Dead scale may have exit holes in them from the parasites as well
5. Monitor scale populations and determine a threshold number of scale that causes unacceptable damage. In a hypothetical scenario, if you note the presence of 20 scale per stem but you see no effect on the health of the tree, this may be a number that you can tolerate and not spray while continuing to monitor for beneficials. But perhaps you note that at 50 live scale you start to see yellowing and branch dieback; that becomes your threshold level at which you spray. In the future, you would then spray as soon as you see 50 live scale but before there is damage.
6. Chemical control – When scales are numerous enough to cause damage, horticultural oils and systemic insecticides are preferred for control. Properly identifying the scale will be necessary for determining the recommended chemical control and timing to spray. To determine when to spray for crawlers in the spring and summer, use sticky tape to pick up and detect crawlers from infested limbs. Please visit the scale pest note page online at <http://www.ipm.ucdavis.edu> to view the different methods of chemical control or call our Cooperative Extension office for control recommendations.



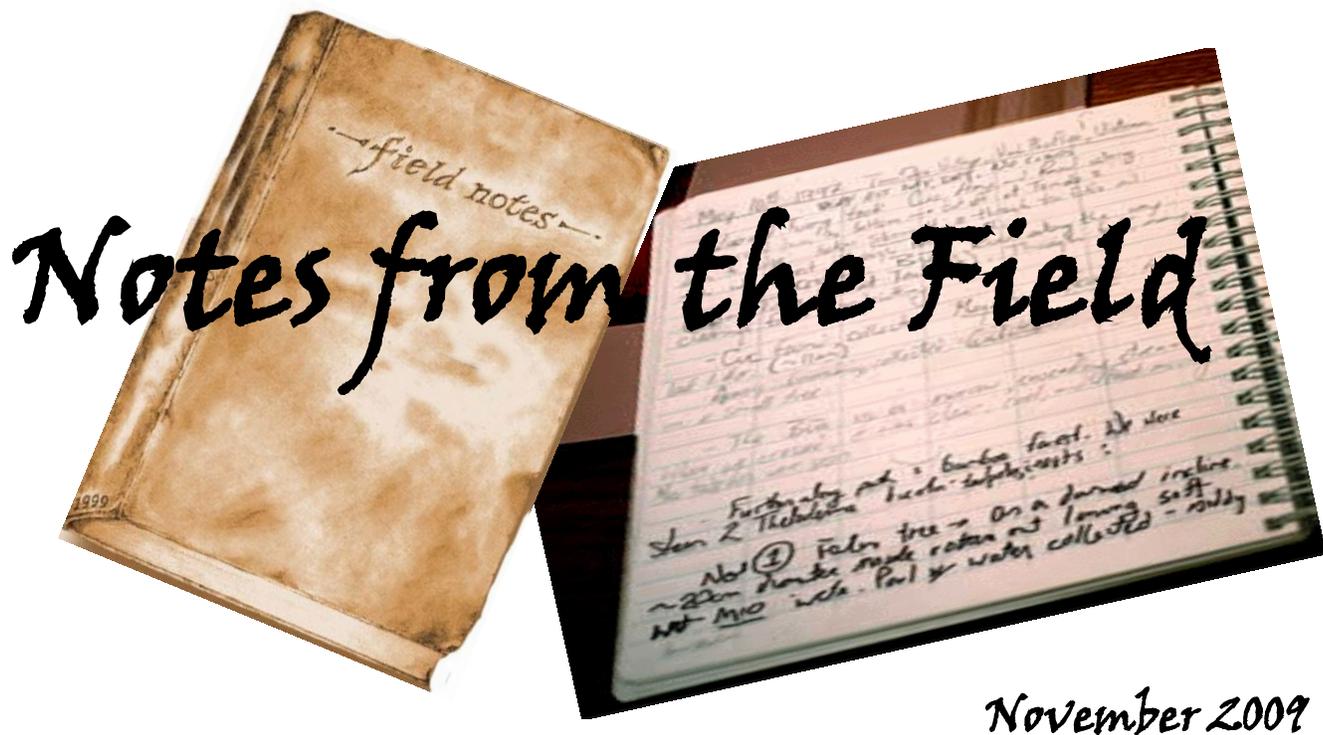
Figure 2. Brown Soft Scale, *Coccus hesperidum* on a tree branch.

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