University *of* California
Agriculture and Natural Resources

Cooperative Extension
May 2012, Vol. 17.2

THE SCOOP

on fruits and nuts in Stanislaus County

U.S. Department of Agriculture, University of California, and Stanislaus County Board of Supervisors cooperating

Summer Almond Field Day

Sponsored by the University of California Cooperative Extension

Friday, June 1st, 2012, 8:00 - 11:30 am
12727 El Capitan, Ballico, CA

For more information, please call the Merced UCCE Office - 209-385-7403

8:00 Registration, PCA and continuing education credits sign-up

8:30 20 minute talks followed with a 5minute Q&A

Summer Insect Pest Management in Almond Orchards
Walter Bentley, Area wide UCIPM advisor, Kearney Ag Center

Tree Spacing Considerations for Efficient Almond Production
Roger Duncan, Farm Advisor, UCCE Stanislaus County

Managing Vertebrate Pests Within Orchard Systems
Roger Baldwin, Area wide UCIPM Vertebrate Pest Advisor, KAC

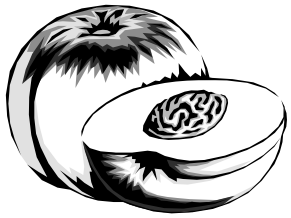
Pre-Plant Fumigant Selection for Nematode and Replant Disease Management
Greg Browne, USDA-ARS, Davis, CA

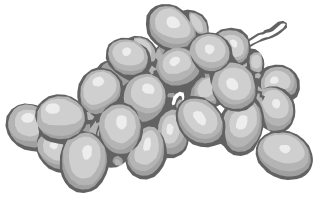
Herbicide Selection for Orchard Weed Control and Resistance Management
Brad Hanson, UC Weed Specialist, UC Davis

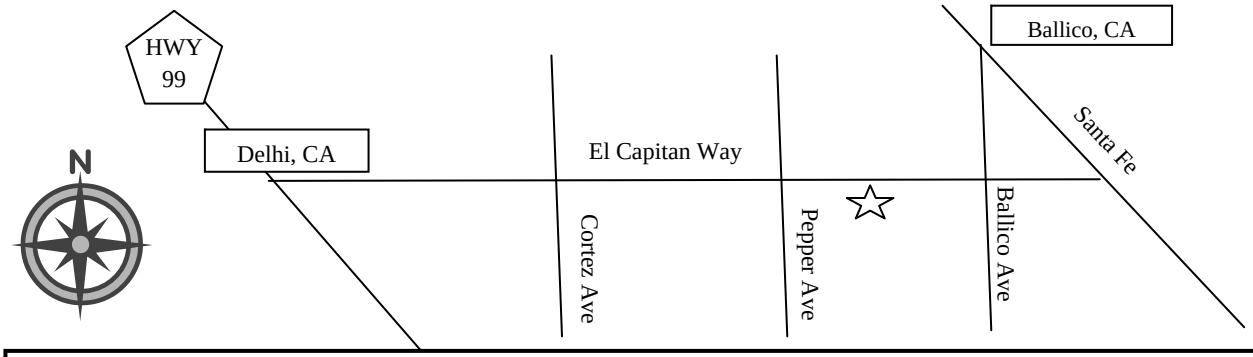
Overview of Almond Field Trials Conducted Within Merced County
David Doll, Farm Advisor, UCCE Merced County

2.0 hours of PCA, CCA and Private Applicators Credit have been requested.

Roger Duncan
Pomology & Viticulture Advisor







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Rust Beginning to Show in Almond Orchards

Rust problems were widespread throughout California almond orchards in 2011 due to back to back, prolonged cool, wet springs. The 2012 season is shaping up to be another year with weather conditions and inoculum levels conducive to rust, as well as scab and maybe Alternaria. I have been seeing rust symptoms in local orchards since the first of May which is earlier than usual. I have also been noticing what I think are unusually high numbers of scab lesions on green shoots. Growers who had summer disease problems last year and did not apply an effective fungicide in April need to be especially watchful this year.

Rust symptoms are characterized by bright yellow spots on the top of leaves with rust colored (thus the name) puffy spore masses on the bottom side. Severe infections lead to mid-season defoliation which can affect next season's bloom. April and May is the best spray timing for preventing rust. If excessive rust begins to show in your orchard, even a June spray can help reduce excessive leaves in the windrow at harvest. For a description of effective fungicides, go to our webpage at http://cestanislaus.ucdavis.edu. Find the publication entitled *"Efficacy and timing of fungicides, bactericides and biologicals for deciduous tree fruit, nut, strawberry and vine crops".* You can also find a copy of my slide show on management of summer-time almond diseases I presented at the 2012 North San Joaquin Valley Almond Day on our site.

Nitrogen Use Efficiency in Almonds

Franz Niederholzer, UCCE Farm Advisor, Colusa/Sutter/Yuba Counties

Nitrogen (N) is a key mineral nutrient in almond production. Nitrogen deficiency reduces kernel yield per acre, and profitable almond production requires significant N input each year a large crop is set. Nitrogen is also an environmental contaminant, harmful to both air and water quality.

Efficient N management means matching N inputs (fertilizer, nitrate in water, compost, etc.) to orchard N needs through the season to grow the largest crop in the cleanest way possible. How best to do this? Some practices are known, others are the subject of current research. Current work by research teams lead by University of California Professor Patrick Brown and funded by public (USDA, State of CA) and private (Almond Board of CA, fertilizer industry) dollars is helping growers and PCA/CCAs get a clearer picture of efficient almond orchard N management. The study site is a mature, commercial 50% Nonpareil / 50% Monterey orchard on Nemaguard rootstock near Belridge in Kern County. Information on this overall project is available on the web at: http://ucanr.org/sites/scri/. Click on "Outreach" to see recent presentations and publications on this topic. You can also find a copy of the slide show presented at the North San Joaquin Valley Almond Day by Dr. Brown on the Stanislaus County UC Cooperative Extension webpage: http://cestanislaus.ucdavis.edu.

Continued . . .

For now, growers and PCA/CCA's may want to consider the 4Rs of good nutrient management -- Right Source, Right Rate, Right Timing and Right Placement – when planning fertilizer use, especially N fertilizer. Here's a quick review of these four key factors in nitrogen management in almonds.

Right Source. There are a number of N sources available to growers – urea, UAN 32, ammonium sulfate, CAN 17, calcium nitrate as well as composts and organic fertilizers. Liquid materials such as UAN32 and CAN17 are popular. So far, at the Belridge experiment, there has been no difference in yield between equal, annual amounts of nitrogen applied as UAN 32 or CAN17. Therefore material choice should mostly be made because of price per unit N and local needs. Ammonium sulfate and urea are acid producing, as the ammonium from these materials is converted to nitrate in the soil. Fertilizer nitrate adds no acid to the soil. Ammonium and urea can be lost as ammonia gas if applied to the soil surface without rapid (1-2 days, max) incorporation. Nitrate doesn't volatilize. Urea and nitrate will move with water during an irrigation event and can be moved below the root zone with excess water – either from rain or irrigation. Ammonium is less mobile during and shortly after application – until converted to nitrate. This process usually takes several weeks.

Right Rate. The annual fertilizer rate in a mature, producing orchard is mostly determined by crop size, although some N is needed to grow new shoots and spurs for future crops. In mature, producing almond trees, the crop contains the largest percentage of the whole tree nitrogen (and potassium) content. One thousand pounds of almond kernel yield contains 50-75 pounds of nitrogen, depending on the amount of N supplied to trees, with higher nut N levels in trees receiving high N rates. A removal rate of 60 lbs N/1000 lb nut meat yield is suggested by Dr. Brown's team as the number to use when estimating annual N demand from a crop load estimate. At the Belridge study site, with excellent irrigation management practices in use, annual applications of 275 lbs fertilizer N produced 3500-4500 lbs of Nonpareil nut meats/acre in 2009-2011. In those same years, a higher rate (350 lbs N/ acre/year) produced no more nuts, while lower rates (125 or 200 lbs N/ acre/year) produced good crops, but significantly less than the 275 lb. N/ acre/year rate. A heavy crop uses a lot of N but fertilizing with high rates of N doesn't necessarily result in a heavy crop. Other factors (weather, summer defoliation, etc.) besides N can limit your production so be sure your applied rate is appropriate for ***your*** crop's demand.

Right Timing. Almond nuts and shoots use the most N (80% of annual demand) between leaf emergence and mid-June. As nut and shoot growth slows, trees use less N in late summer/early fall. Deciduous trees essentially absorb no N between leaf drop in the fall and leaf out in the spring. To match fertilizer delivery with tree N use, Dr. Brown's group recommends delivering fertilizer N at four different timings and amounts through the season – February or March (20% of total annual N input), April (30%), June (30%) and September (20%). The last application should be

applied as soon as possible postharvest, and potentially skipped if significant leaf loss has occurred at harvest. Overall, for the best returns and to benefit the environment, almond growers should apply most of their annual fertilizer N input in spring/early summer and do everything possible to limit the amount of nitrate in the soil as winter -- and the storm season -- approaches.

Right Placement. Fertigation delivers fertilizer to active roots. As long as irrigation is managed to deliver only needed water, fertigation is a highly efficient method of fertilization. Orchards using flood or solid set sprinkler irrigation systems should apply fertilizer N in the herbicide strips along the tree row, not as a general broadcast application. There are more almond tree roots in the tree rows than out in the middles, where competition with weeds for water and nutrients plus compaction from equipment traffic reduces tree root growth.

Poor Piece-Rate Design: Paying the Same Per Tree

Gregorio Billikopf, UC Cooperative Extension Farm Advisor, Stanislaus County

Uncertain economic times may present unexpected opportunities for agriculture. For instance, reduced jobs in construction have permitted some people in that industry to try their hand at agriculture. I had the opportunity to interview three such individuals last week. They have been picking cherries and are discouraged. One day the fastest picker in their team averaged $24/hour. But other days have not been as rewarding. At times they have struggled to make minimum wage. These men work through a farm labor contractor (FLC), but the difficulty in question is not merely one faced by FLCs: the price per box picked is the same, regardless of the cherry load.

Farm employers often speak of the many challenges associated with piece-rate (which is usually the most rational way to pay harvest crew workers when properly designed). “Should we have the crews start picking the most difficult trees or the easiest ones?” When the question is put this way, there is no easy answer. Workers will bolt before giving the job a chance if they begin with the hardest trees. And if they begin with the easiest ones, as our three construction workers, they are disappointed at continually vanishing potential earnings.

The right answer requires re-asking the question. “How do we establish a fair piece-rate so that workers are not punished and demotivated by trees with little fruit?” The answer is simple (implementation takes a little work, especially at the beginning, but the results are well worthwhile): workers should earn the same for equivalent amounts of effort. A worker who gives it his or her all should make the same regardless of whether the tree is loaded with fruit or this is the second pass to catch fruit that was too unripe to pick the first time.

Crew workers perform best when paid for their effort. After all, most pickers have no control over fruit yields. They should not be punished or rewarded by differences in crop load. Every block of trees, then, should have their own piece-rate value. These values need to be set before the work is commenced. Once the farm employer determines what he

or she is willing to pay for the job, then the idea behind consistent pay for consistent effort, rather than pay determined by luck (trees that are loaded with fruit vs. trees that have very little fruit) makes sense. So it is that one employee's best efforts may yield her $27 per hour, for instance, while another's best efforts may yield him only $10 per hour. As long as both are putting forth their best efforts in a consistent manner, they should continue to earn about $27 and $10 respectively, even when fruit load may vary considerably.

For psychological reasons, the easiest trees to harvest (for instance trees that are loaded with fruit and require no ladders) should be paid at 100% of the piece rate. As the difficulty increases, so should the percentage of the piece rate. For instance, if the base piece-rate pay is $6 per box (this figure is given strictly for illustrative purposes), then the very easiest trees to pick should be paid at $6/box ($6 x 100%). If picking is considered 40% more difficult, then the price ought to be $8.40/box ($6 x 140%). If twice as hard, $12/box ($6 x 200%), and so on.

For more detailed information on establishing effective piece rates, see http://www.cnr.berkeley.edu/ucce50/ag-labor/7research/7calag06.htm,
or contact Gregorio Billikopf at gebillikopf@ucdavis.edu or (209) 525-6800.

Just Published

Maintaining Microirrigation Systems: ANR Pub #21637
This handy publication discusses the maintenance issues of microirrigation systems that can be used on tree crops, row crops, and trees and vines. Chapters include an overview of maintenance needs, monitoring and water assessment, causes and prevention of clogging, flushing and safety concerns. It also includes methods of preventing root intrusion, soil ingestion, bacterial growth, and backflow contamination.

2009 winner of a "Blue Ribbon" award for excellence in educational publications from the American Society of Agricultural and Biological Engineers.

Tree & Vine IPM Breakfast Meetings

The final meetings of the season will be held June 6th and 20th at the Barnwood Restaurant in Ripon. Our guest speaker on June 6th will be UC Cooperative Extension entomologist, Bob Van Steenwyk. The meetings are held from 7:00 – 8:00 on the first and third Wednesdays from March - June. One hour of continuing education credits are offered at each meeting.

Weed Day 2012

Thursday, July 19, 2012
Check in begins at 7:30, tour starts 8:15
Buehler Alumni Center, UC Davis

The 56th annual Weed Day event provides an opportunity for pest control advisors, farm advisors, chemical company cooperators, college faculty and students, and regulatory officials to learn about current weed science research at UC Davis. The event begins with a morning field tour of the UC Davis weed science research plots and visit to the USDA-ARS Exotic and Invasive Weed Research Laboratory. Lunch and afternoon presentations will be indoors in the Buehler Alumni & Visitors Center.

Register online at http://wric.ucdavis.edu/

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