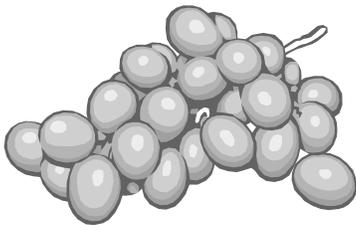
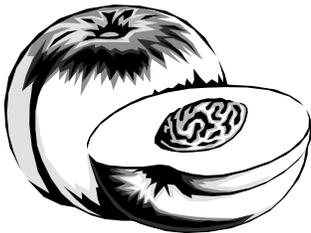
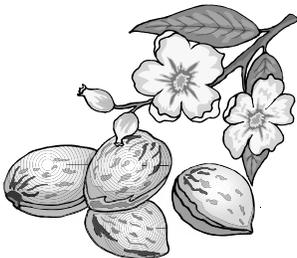


# THE SCOOP

on fruits and nuts in Stanislaus County

by Roger Duncan

Pomology and  
Viticulture Advisor



1.5 hours  
of Continuing Education  
Credits & 3.0 hours of CCA  
hours pending

## North San Joaquin Valley Cling Peach Day

Sponsored by UC Cooperative Extension  
& the Cling Peach Board

December 3, 2009, 8:30 – Noon  
Stanislaus County Agricultural Center  
Service and Crows Landing Roads, Modesto

8:00 Registration, coffee, snacks & socializing

8:30 Program begins

- *First Year Results Using the Darwin String Blossom Thinner*  
Roger Duncan, Farm Advisor, UCCE Stanislaus County
- *String Thinner Experiences in Merced County*  
Maxwell Norton, Farm Advisor, UCCE Merced County
- *Cost Effective Zinc Nutrition of Peach Trees*  
Scott Johnson, Pomology Specialist, UC Kearney Ag Center
- *Cling Peach Board Business:*  
*-Discussion of Industry Research Needs; Board Member Nominations*  
J. D. Allen, Cling Peach Board
- *Oriental Fruit Moth Parasite Video*  
Marshall Johnson, Entomology Specialist, UC Kearney Ag Center
- *Alternative Strategies for Managing OFM & Other Peach Pests*  
Walt Bentley, IPM Entomology Advisor, UC Kearney Ag Center
- *Spotted Wing Drosophila: A New Pest for Fruit Growers*  
Joe Grant, Farm Advisor, UCCE San Joaquin County

12:00 Lunch hosted by the Cling Peach Board

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

3800 Cornucopia Way, Suite A, Modesto, CA 95358 (209) 525-6800, FAX (209) 525-6840, e-mail - [rduncan@ucdavis.edu](mailto:rduncan@ucdavis.edu), website: [cestanislaus.ucdavis.edu](http://cestanislaus.ucdavis.edu)



The University of California, prohibits discrimination against or harassment of any person employed by or seeking employment with the University on the basis of race, color, national origin, religion, sex, physical or mental disability, medical condition (cancer-related or genetic characteristics), ancestry, marital status, age, sexual orientation, citizenship, or status as a covered veteran (special disabled veteran, Vietnam-era veteran or any other veteran who served on active duty during a war or in a campaign or expedition for which a campaign badge has been authorized). University Policy is intended to be consistent with the provisions of applicable State and Federal laws. Inquiries regarding the University's nondiscrimination policies may be directed to the Affirmative Action/Staff Personnel Services Director, University of California, Agriculture and Natural Resources, 1111 Franklin, 6<sup>th</sup> Floor, Oakland, CA 94607-5200 (510) 987-0096.

# Pruning Almond Trees (or not?)

As almond harvest winds down, growers start to think about the annual ritual of pruning their trees. It is something many do every year. It is something their father did every year and something their father's father did before that. The legend is passed on from generation to generation: "You have to prune out the branches in the middle of the tree to prevent shade out and keep the lower wood productive"... "You have to prune every year so new fruit wood will grow"... "You have to prune every year or the trees will get too tall"... "If you don't prune, yields will crash within a few years." We have all been told this from our fathers, our farmer neighbors and our college professors. As it turns out, all these reasons to prune may be either untrue or unimportant.

We have to remember that growing almonds is a business, not a popularity or beauty contest. Every dollar spent should earn or save you more than a dollar in return. Many growers spend \$150 per acre or more each year to prune their trees and dispose of the brush. So the question is, are you making money on your pruning investment?

Past and current University of California trials suggest that growers are not getting a return on their pruning investment. In fact, the numbers suggest the opposite: the more growers prune, the more they may reduce their yields and profits, even in the long term.

Let's look at the research. The first long-term trial to look at the effects of pruning on almond yield was at the Nickels Estate in Arbuckle. After 21 years, unpruned trees were still producing at least as much as trees that had been pruned every year for the life of the orchard. In the 21<sup>st</sup> leaf, unpruned trees produced 2307 pounds per acre compared to 2136 pounds per acre in the annually pruned trees. Over the 21 year span, cumulative yields were 35,082 pounds per acre in the "unpruned" trees compared to 34,176 pounds per acre for trees that were pruned every year. In this case, the grower would have paid to prune for 21 years so he could have had 906 fewer pounds of almonds in the end.

| <b>Nickels Estate Pruning Trial</b>                                     |                       |                       |                       |                        |            |
|---|-----------------------|-----------------------|-----------------------|------------------------|------------|
| <b>Cumulative Yields Through 21<sup>st</sup> Leaf (Pounds per Acre)</b> |                       |                       |                       |                        |            |
| <b>7' x 22' spacing in Class III Soil</b>                               |                       |                       |                       |                        |            |
|   | 18 <sup>th</sup> Leaf | 19 <sup>th</sup> Leaf | 20 <sup>th</sup> Leaf | 21 <sup>rst</sup> leaf | Cumulative |
| Annually pruned   | 2624                  | 2498                  | 2494                  | 2136                   | 34,176     |
| Unpruned  | 2833                  | 2680                  | 1958                  | 2307                   | 35,082     |

Since then, UCCE farm advisors, John Edstrom (Colusa County), Mario Viveros (Kern County) and I (Roger Duncan, Stanislaus County), have initiated long-term pruning trials in the northern, southern and central parts of the state to validate results from the first trial. These experiments are now 10 - 12 years old. In all three locations, unpruned trees have yielded as well or better than annually pruned trees. In the eleven-year-old Kern County trial, cumulative Nonpareil yields are 2291 pounds per acre higher in unpruned trees than trees that were pruned conventionally every year for the past eleven years. Carmel yields were 1879 pounds per acre higher in unpruned trees. Mechanical topping and hedging, whether done every year or every other year also did not increase yields. Yields were lowest in trees that were pruned by hand and also mechanically hedged each year.

| <b>Kern County Pruning Trial</b>  |           |        |          |
|---|-----------|--------|----------|
| <b>Cumulative Yields Through 11<sup>th</sup> Leaf (Pounds per Acre)</b> |           |        |          |
|   | Nonpareil | Carmel | Monterey |
| Unpruned trees  | 21,536    | 23,577 | 21,843   |
| Annually pruned trees   | 19,245    | 21,698 | 20,841   |
| Pruned in alternate years   | 20,585    | 20,363 | 21,313   |
| Topped & hedged annually  | 20,667    | 22,771 | 22,153   |
| Topped & hedged in alternate years                                      | 20,088    | 22,561 | 20,831   |
| Mechanical + hand pruned annually                                       | 18,643    | 20,248 | 20,090   |

**Stanislaus County Trial.** Here in my Stanislaus County trial, I have four pruning treatments.

**“Standard” training & annual pruning.** Three scaffold limbs were selected during the first dormant pruning. Trees continue to receive “moderate,” annual dormant pruning to keep centers open and remove crossing limbs.

**Standard training for two years, then unpruned thereafter.** Three permanent scaffolds were selected as in the “standard” treatment. Trees were pruned normally the second dormant season. These trees have been unpruned since the second dormant season.

**“Minimal” training & pruning.** At the first dormant pruning, four to six scaffolds were retained to maintain a full canopy. Beginning in the second year, pruners have been allowed only three cuts per tree each dormant season to maintain a minimally open canopy.

**Untrained & unpruned.** No scaffold selection was made in the first dormant season except to remove limbs originating too low on the trunk for shaker access. There has been no annual pruning other than to occasionally remove limbs that interfere with cultural operations.

The table below shows cumulative yields and comparative gross income for the various pruning treatments through 2009 (10<sup>th</sup> leaf) in the Stanislaus County trial. Normal, annual pruning has resulted in significant yield and income losses in both Nonpareil and Carmel. Over the first ten years of the orchard’s life, standard annual pruning has reduced Nonpareil yields by up to 1134 pounds per acre and Carmel yields by almost 2000 pounds so far. Using the average grower price of almonds over the past ten years pruning would have reduced net income by over \$4000 per acre including pruning costs and yield loss so far! That’s over \$160,000 in lost income for a 40 acre grower.

| <b>Cumulative Yields &amp; Comparative Income for Nonpareil &amp; Carmel Trees in 10-Year-Old Stanislaus County Pruning Trial.</b> |                                      |                                  |   |                                     |                                  |   |
|--|--------------------------------------|----------------------------------|---|-------------------------------------|----------------------------------|---|
|  | Cumulative Nonpareil yield (lb/acre) | Yield compared to annual pruning | Gross income increase per acre @ \$1.75 per lb* | Cumulative Carmel yield (lb / acre) | Yield compared to annual pruning | Gross income increase per acre @ \$1.52 per lb* |
| Annually pruned trees  | 19,185                               | --                               | --  | 16,379                              | --                               | --  |
| Unpruned after 2 years   | 20,191                               | +1006 lb                         | +\$1761   | 17,575                              | +1196 lb                         | +\$1818   |
| Minimally pruned   | 19,177                               | - 8 lb                           | -\$14   | 17,560                              | +1181 lb                         | +\$1795   |
| Untrained & unpruned   | 20,319                               | +1134 lb                         | +\$1985   | 18,377                              | +1998 lb                         | +\$3037   |

\*Price per pound is the ten year average for Nonpareil and Carmel.

Other things that I have observed in this pruning trial include:

- Kernel size is not smaller in unpruned trees
- Unpruned trees are not taller than pruned trees. Untrained and unpruned trees are actually a few inches shorter. Similar results were documented in other trials.
- We have not observed more stick tights or mummies in unpruned trees so far.
- We observed more hull rot in untrained & unpruned trees in one year. We have not noticed any other disease problems in unpruned trees.
- The harder we prune, the more suckers and water sprouts grow the following year.

Summary. Untrained trees and trees trained to multiple scaffolds are more susceptible to blow over and scaffold failure during the development years. This is especially true for trees planted at wide spacings (larger trees). Untrained trees also have presented more safety hazards to equipment operators, requiring more safety pruning in later years in my trial. A good compromise may be to train the trees during the first two years (to reduce scaffold splitting and safety pruning in later years) and then abandon pruning in later years. Trees that were initially trained to three scaffolds but have not been pruned after the second dormant season look very acceptable, have not had scaffold breakage problems, have not created problems for equipment operators, are not overly dense, rarely need safety pruning and yield as much or more than annually pruned trees.

In the first University pruning trial at the Nickels Estate, unpruned almond trees maintained yields at least as high as annually pruned trees for a minimum of 21 years (I don't have any data past 21 years). The three current trials are only 10 – 12 years old, but so far are showing similar results. We don't know for sure what will happen over the next 10 or 15 years in these trials, but we can say with certainty that if yields decline in unpruned trees, it takes more than a decade to occur. That means that orchards older than 10 or 15 years should not be pruned for the purpose of sustaining yields, period. Realistically, almond orchards have to be pruned a little on occasion for reasons other than yield. Limbs that are dead, broken or diseased, interfere with cultural practices or are safety hazards for equipment operators have to be removed. However, the notion that almond trees need to be pruned every year to increase or sustain yields appears to be just flat wrong.



# Using Blue Orchard Bees in California Almonds



workshop presented by  
**University of California Cooperative Extension**  
&



**USDA-ARS Bee Biology & Systematics Laboratory, Logan Utah**

*With support from the Almond Board of California*  
9 am to 11 am, informal networking 11- 12:30 pm



## **December 7, 2009**

**Masonic Family Center**  
1110 W. East Ave.  
**Chico, CA**

## **December 8, 2009**

**UCCE Stanislaus County**  
**Stanislaus County Ag Center**  
**Harvest Hall Modesto, CA**

- 9:00 – 9:10**    **Welcome**  
Joe Connell, UC Farm Advisor (Butte Co.)  
Roger Duncan, UC Farm Advisor (Stanislaus Co.)
- 9:10 – 9:20**    **Efforts to Utilize Blue Orchard Bees in California**  
Sara Goldman Smith, UC-IPM, staff research associate
- 9:20 – 9:35**    **Training Blue Orchard Bees to Work with Growers**  
Glen Trostle, Entomologist, USDA Logan Bee Lab
- 9:35 – 10:10**    **Understanding the Solitary Life of the Blue Orchard Bee**  
Jim Cane, Research Entomologist, USDA Logan Bee Lab
- 10:10 – 10:30**    **Successful Solitary Bee Management: Lessons from Alfalfa Seed Growers**  
Theresa Pitts-Singer, Research Entomologist, USDA Logan Bee Lab
- 10:30 – 11:00**    **Commercial Experience and Products**  
Series of 5 minute presentations by managers and producers of blue orchard bee (BOB)\*
- 11:00 – 12:30**    **General Discussion**  
Suggested topics
- status of BOB commercialization
  - nest & shelter options
  - honey bee and BOB compatibility
  - stocking densities
  - loose cell vs. nest release
  - hygienic practices

*\*Contact Sara Goldman Smith if you would like to share your experience with Blue Orchard Bee culture (530) 751-6378, srgoldman@ucdavis.edu*



*Look Inside for more information on:*

- ◆ **NJSV Cling Peach Day**
- ◆ **Pruning Almond Trees**
- ◆ **Blue Orchard Bee Workshop**

*Save the date for:*

## **North San Joaquin Valley Almond Day**

**Brought to you by  
University of California Cooperative Extension**

**Thursday, January 28, 2010  
Stanislaus County Agricultural Center  
Corner of Service & Crows Landing Roads, Modesto**

This meeting is free and open to the public. Speakers from the University of California will present their most current research findings to the local almond industry. Look for the next meeting announcement for more information to come.



NONPROFIT ORG.  
US POSTAGE PAID  
MODESTO, CA  
PERMIT NO. 400

CURRENT RESIDENT OR



**The Scoop on Fruits & Nuts**  
In Stanislaus County  
November 2009

UNIVERSITY OF CALIFORNIA  
COOPERATIVE EXTENSION  
3800 Cornucopia Way, Suite A  
Modesto, CA 95358