

2019 Statewide Pistachio Day

Visalia Convention Center
Wednesday, January 16

Agenda

8:00 AM **Welcome and Announcements**
Elizabeth Fichtner, UC Cooperative Extension Specialist, Tulare County, Pistachio Day Chair
Moderator: Phoebe Gordon, Farm Advisor, Madera County

8:10 **Industry Update**—Bob Klein, Research Director, California Pistachio Research Board

SESSION 1

Moderator: Elizabeth Fichtner, UC ANR Cooperative Extension Advisor, Tulare County

8:30 **Managing Groundwater Quality in Pistachios**
Thomas Harter, UC Cooperative Extension Specialist, Department of Land Air and Water Resources, UC Davis

9:00 **25 Years of Salinity Research: What We Know**
Louise Ferguson, UC Cooperative Extension Specialist, Department of Plant Sciences, UC Davis

9:20 **A New Technology for Determining Salinity**
Blake Sanden, Farm Advisor Emeritus, Kern County

9:30 **Choosing Reclamation Amendments and Rates for Effective Salinity Management**
Mae Culumber, Farm Advisor, Fresno County

10:00 **Break**

SESSION 2

Moderator: Bruce Lampinen, UC Cooperative Extension Specialist, Department of Plant Sciences, UC Davis

10:30 **Pistachio Potassium Needs, Application and Availability**
Phoebe Gordon, Farm Advisor, Madera County

11:00 **Understanding the Pistachio Tree's Response to Mechanical and Hand Pruning**
Bob Beede, Farm Advisor Emeritus, Kings County

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11:30 **Growing and Producing Golden Hills Pistachios**
Craig Kallsen, Farm Advisor, Kern County

12:00 PM **Lunch**

SESSION 3: INTEGRATED PEST MANAGEMENT (IPM)

Moderator: Houston Wilson, Extension Entomologist, Kearney Agricultural Research and Extension Center, Parlier

1:00 **Arthropod Pest Management in Young Orchards**
Kris Tollerup, Area Entomology Farm Advisor, Kearney Agriculture Research and Extension Center, Parlier

1:30 **The Use of AF36 Biopesticide to Reduce Aflatoxins, Challenges and Prospects**
Themis Michailides, Professor, Department of Plant Pathology, UC Davis and Kearney Agriculture Research and Extension Center, Parlier

2:00 **Break**

2:30 **Insect Management Update: Gill's Mealybug, BMSB and Mating Disruption for NOW**
David Haviland, Entomology Farm Advisor, Kern County

3:00 **Navel Orangeworm Management: Nut Susceptibility, Insecticides and Sanitation**
Bradley S. Higbee, Field Research and Development Manager, Trécé Inc.

3:30 **Evaluating Performance of Irradiated Navel Orangeworm for Sterile Insect Program**
Houston Wilson, Extension Entomologist, Kearney Agricultural Research and Extension Center, Parlier

4:00 **Adjourn**

Register at: <https://ucanr.edu/survey/survey.cfm?surveynumber=25680>

2018-2019 Winter Rest Calculation

One of the chief concerns related to successful pistachio production in the southern San Joaquin Valley is whether or not the trees receive a sufficient winter ‘rest’ period. The pistachio species (*Pistacia vera*), which is the species used for commercial nut production, originated in the lower mountains and high plateaus of central Asia now within countries such as Uzbekistan, Iran and Afghanistan. These areas are characterized by very hot summers but cold winters. As a result of the climate in this area of adaptation, pistachio developed a significant winter rest requirement. Crop scientists have a lot to learn with respect to how pistachio monitors the adequacy of the winter rest period and this is an area of active research. Nevertheless, the adequacy of the winter rest period is somehow sensed physiologically by the tree. The ability to “measure” when adequate rest has occurred indicates to the tree when winter is over and when vegetative growth and bloom can safely resume in the spring reducing the risk of freeze damage. Pistachio is grown at comparatively low elevations in the southern San Joaquin Valley, which, historically, has been much warmer during the fall, winter and early spring than central Asia, and, which, more recently, appears to be on a further winter warming trend. Because of the warm winters in the SJV, pistachio trees do not always appear to be getting a clear signal of when winter begins and ends, which results in non-uniform vegetative and flower bud push in the spring, and inadequate flower development, resulting in reduced yield.

A year-or-so ago, due to the generosity of a local pistachio growing company, I was able to run some correlations of temperature data with harvest yield from a few large ‘Kerman’ – ‘Peters’ pistachio orchards over a roughly 30 year period. I found temperature variables, with thresholds and calendar periods, which appeared to correlate with and explain more of the year-to-year variation in yield than others. Significantly, the most important variable in the southern SJV had nothing to do with year-to-year temperature differences in this area, but on whether the previous harvest year was either the “on” or “off” bearing year of the alternate bearing cycle. However, “warm” winter temperatures were shown to influence yield enough to affect grower returns negatively in a given year. For those interested in the model it can be found at <http://cekern.ucanr.edu/files/260681.pdf>. This document helps explain the model and contains a link that allows a potential user to download the Excel spreadsheet that contains those actual calculations.

One variable, which appeared to be important in the yield response to temperatures, was the number of hours greater than 65.0 °F as accumulated from November 15 through February 15. Temperatures greater than 65.0 °F during this calendar period reduced expected yield. While this relationship is merely a correlation, and does not explain why warm temperatures reduce yield, it suggests that temperatures above this threshold interfere in some way with the winter rest period of the tree. The model predicts that for each hour above 65.0 °F, yield at the following harvest in September or October would be reduced by about eight (8) lbs. /acre. Note that the model did not predict a threshold level of hourly warm temperatures where a production disaster would ensue. All the model predicted was a slow chipping away of yield potential with each hour of temperature greater than 65.0 °F. For each orchard involved in this correlation, from the period from the late 1980s through 2015, hourly accumulations of temperatures above 65.0 °F for the period from mid-November through mid-February, averaged from 67 to 98, but could climb into the 200s or more some years. What becomes clear is that during the “on”-bearing year, such as was the case during the 2017-18 crop year, this chipping away at yield potential is less noticeable. In a mature and alternate bearing orchard, yields in the on-year can easily reach 6500 lbs. /acre and more. In years when hours above 65.0 °F reach 200, and assuming a yield decrease of 8 lbs./acre for each hour, potential harvest yield of 6500 lbs./acre would be reduced by 1600 (200 x 8) lbs./acre, resulting in an actual yield of 4900 lbs./acre. While 4900 lbs. /acre is not great for an on-year in a heavily alternating orchard, it is still respectable and will pay the bills. However, if you look at that same orchard, in an off year, when off-year yields may typically reach only 2000 lbs. /acre, that same 1600 lb. /acre decrease would leave only 400 lbs./acre yield, which won’t come close to covering production costs. Thus, warm winter temperatures in an industry wide off-year can seem like a disaster, even when the net yield loss is similar to what happens in an on-year.

The upcoming year, for most mature Kerman orchards, is going to be an off-year based on last season's yields. In looking at the hourly temperature accumulations at the Shafter CIMIS station in Kern County, I calculate that from the period from November 15 through 10 AM January 4, 2018 about 50 hours above 65 °F have accumulated for the 2018-2019 winter rest period. According to the model, that translates into a loss in expected yield of 400 lbs. /acre in off-year yield, already. For those interested in the hours of air temperature less than 45 °F as accumulated from November 1 through January 3 (the latest available at the time of this writing) the value is 491, which is low for the Shafter station for this time interval. However, what a value of 491 on January 3 means in terms of expected yield at harvest is unknown.

According to the short-term weather forecasts, the prediction is that we are going to return to some warmer temperatures in parts of the pistachio growing regions in Kern County. It looks like the trees are going to have to catch naps where they can.

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