



*February 2015*

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## Director's Update



### With thanks to our contributors...

We have recently received a number of generous gifts, and I would like to take a moment to extend thanks to the following contributors:

- Archer Daniels Midland (general support for the center)
- Gloria Lopez Galvez (general support for the center)
- Diane Barrett (general support for the center in memory of Adel A. Kader)
- Jim & Marilyn Lugg (Postharvest Program Endowment Fund)
- Waine Aalto/Aalto Ethylene Gas Testing (general support for the center in honor of Carlos Crisosto)

These gifts are sincerely appreciated since the Postharvest Technology Center is almost completely self-supporting. Each gift is carefully utilized as our team seeks to provide the latest postharvest handling information to our stakeholders. Please link here to see a complete [list of contributors](#) to the Postharvest Technology Center.

Additional gifts are always welcomed, please use [this link](#) to make your tax deductible (U.S.) gift today.

--[Beth Mitcham](#)

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## Postharvest Education at UC Davis



### Space Limited for the Fruit Ripening & Ethylene Management Workshop March 17-18, 2015

We encourage those who are interested to enroll quickly for the remaining seats available for the 21<sup>st</sup> annual Fruit Ripening & Ethylene Management workshop. The workshop will be held March 17-18, 2015 at the Buehler Alumni Center on the UC Davis campus. This workshop is intended for shippers, fruit handlers (wholesale and retail), and produce managers who are involved in the handling and ripening of fruits and fruit-vegetables. The workshop is coordinated by Drs. Mary Lu Arpaia and Florence Zakharov, and will focus on managing the effects of ethylene, reducing losses at the receiving end, and delivering ready-to-eat, delicious fruits and fruit-vegetables to the consumer. Registration for this 2-day workshop is priced at \$825 and includes all instruction, instructional materials, morning and afternoon coffee, and two lunches. Space is limited. To register, or for more information, see the [webpage](#) or contact [Ms. Penny Stockdale](#).



## Enrollments Brisk for the Postharvest Technology of Horticultural Crops Short Course

We are pleased to have already received a number of group enrollments for the 37<sup>th</sup> Annual Postharvest Technology of Horticultural Crops Short Course, scheduled for June 15-19, with the optional Field Tour scheduled for June 22-26. We anticipate it will be a sold-out course this year as it has often been in the past. This world-renown course is an intensive study of the biology and current technologies used for handling fruits, nuts, vegetables and ornamental crops in California. The first week includes lectures and hands-on demonstrations, and the optional 2<sup>nd</sup> week field tour will visit a wide variety of postharvest operations in California's great central valley and coastal regions. For more information or to enroll, visit the [webpage](#), or contact [Ms. Penny Stockdale](#).



## Deadline Approaching! Call for Abstracts closes March 15, 2015 Third International Conference on Fresh-cut Products: Maintaining Quality & Safety, September 13-18, 2015

The deadline to submit abstracts for the 3<sup>rd</sup> International Conference on Fresh-cut Products: Maintaining Quality & Safety is Sunday, March 15<sup>th</sup>. This important international fresh-cut conference is organized by Dr. Marita Cantwell, with assistance from the Postharvest Technology Center, under the aegis of the International Society for Horticultural Science (ISHS).

The conference will be organized under the general topics of: Quality & Product Development, Temperature & Handling Logistics, Preparation & Processing, Packaging & Modified Atmospheres, Food Safety & Sanitation, and Marketing & Consumer Acceptance. An industry-academia panel is also planned, focusing on future industry needs and emerging technologies in fresh-cut products.

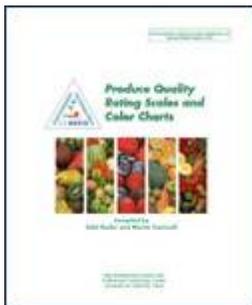
Special events at the International Fresh-cut Products Conference will include a Welcome Reception, and a Gala Dinner at the California Railroad Museum with period entertainment.

The conference will be held on the UC Davis campus September 13-16, 2015, with an optional 2 day technical tour September 17-18. Conference attendance will be limited to 200 registrations. We appreciate the [sponsors](#) who with their generous support allow us to keep registration fees as low as possible.

To learn more about the conference, visit the [website](#). Participants can submit their [abstracts online](#), as well as [register online to attend](#). The Call for Abstracts closes on March 15, 2015. The Registration Coordinator for the conference is [Ms. Penny Stockdale](#). This conference will take the place of the annual UC Postharvest Technology Center's [Fresh-cut Products Workshop](#) in 2015.

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## Featured Postharvest Bookstore Items



### 25% off "Produce Quality Rating Scales and Color Charts"

During the month of March 2015, we are offering a **25% discount** when you order Hort Series 23 "Produce Quality Rating Scales and Color Charts" either in the binder format (regularly \$75), the CD format (regularly \$50), or the combined format that includes both the binder and the CD (regularly \$100). The digital download version is also on sale. The objective of this publication is to compile the rating scales (scoring systems) and color charts for maturity, ripeness, and quality of fruits, nuts, and vegetables for the benefit of those interested in produce quality evaluation. See the complete table of contents at [this link](#).

Please use [this link](#) for shipments to U.S. addresses. For international shipping addresses, please use our [PDF Order Form](#), and note "25%-HS23".

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## Postharvest Specialists' Updates & Other News

## Updated Brochure: Food Safety Tips for your Edible Home Garden

Postharvest Specialists Drs. Linda Harris and Trevor Suslow have recently updated this helpful brochure for home gardeners, it is available for free download at <http://ucfoodsafety.ucdavis.edu/files/203224.pdf>.

## Harris Offers Several Talks on Food Safety Topics

Dr. Linda Harris provided several talks in late January, including, "Food safety considerations for nuts produced in the U.S." at the Carolinas Association for Food Protection Student Symposium in Raleigh, N.C.; a talk entitled "Interventions for the reduction of pathogens in low-moisture foods" to the Nanjing Agricultural University and UC Davis Joint Graduate Education Conference on One Health, Davis, CA; and a talk about "Verifying your sanitation program – environmental monitoring" which was given to the California Citrus Quality Council in Visalia, CA.

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## Postharvest Opportunities

### University of California Postharvest Systems Engineer - Assistant Specialist in Cooperative Extension

The Postharvest Systems Engineering Specialist position will hold a 100% appointment in Cooperative Extension, and will be housed academically in the Department of Biological and Agricultural Engineering on the UC Davis campus. The position will require extensive travel, and will address the state of California's need for expertise on postharvest handling and technologies for California crops with a goal of reducing energy consumption while ensuring superior food quality and safety. The position's recruitment period is November 20, 2014 through June 30, 2015. For complete information see [this webpage](#).

### Searching for Postdocs with Expertise in Postharvest Technology

Professor Linus Opara is searching for PhDs who have graduated within the last five years (with a degree in engineering/technology, science, or agriculture/horticulture), and who have expertise in aspects of postharvest technology. For more information contact [Dr. Linus Opara](#), DST/NRF South African Research Chair in Postharvest Technology.

### Food Scientist Opportunity

Knowing the diverse range of great people who attend our workshops, a former participant asked if we would include this job opportunity: The Perfect Bite Co. is seeking an R&D Chef/Food Scientist who holds an MS in Food Science (preferred) and who can provide technical expertise and creative solutions through the product life cycle. For complete information link to [this page](#).

### Sensitech Seeking Food Technologist

A BS in Food Science or Postharvest focus is preferred for this position, located in Beverly, MA, which will conduct projects designed to help with the production or distribution of temperature sensitive food products to determine the root cause of cold chain problems and the appropriate corrective actions. Strong project management, technical writing, and interpersonal/team skills are critical. For more information or to apply, visit [this link](#).

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## What's New on Our Website



### Small-Scale Postharvest Publication Now Available in Amharic

With thanks to translator Mekbib Hilegebrile Seife, the useful and important publication "Small-Scale Postharvest Practices: A Manual for Horticultural Crops" is now available for free download as a PDF document in the [Amharic language](#).

This brings the total to twelve languages into which this helpful publication has been translated. Click on the linked text to view the [Small-Scale Postharvest Practices](#) manual in a variety of languages.

### New in February 2015 in the "Postharvest Publications Organized by Topic" Library

This extensive [free postharvest resource library](#) currently offers more than 1,900 (pdf) articles on a wide variety of topics.

### Food Safety

Bech, T.B., A. Sbodio, C.S. Jacobsen, T. Suslow, [Adhesion of \*Escherichia coli\* and \*Salmonella enterica\* to soil in runoff as influenced by polyacrylamide](#). Journal of Environmental Quality 2:345 (2014) 2002-2008.

Lopez-Velasco, G., A. Tomas-Callejas, A.O. Sbodio, X. Pham, P. Wei, D. Diribsa, T.V. Suslow, (2015) [Factors affecting cell population density during enrichment and subsequent molecular detection of \*Salmonella enterica\* and \*Escherichia coli\* O157:H7 on lettuce contaminated during field production](#). Food Control (2015) 165-175.

Palumbo, M., L.J. Harris, M.D. Danyluk (2013) [Survival of foodborne pathogens on berries](#). IFAS Extension FSHN12-12, 12 pgs.

### **Peach**

Pons, C., C. Marti, J. Forment, C.H. Crisosto, A.M. Dandekar, A. Granell (2014) [A bulk segregant gene expression analysis of a peach population reveals components of the underlying mechanism of the fruit cold response](#). PLOS ONE Vol. 9, Issue 3, 21 pgs.

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## **Postharvest Calendar**

- March 15, 2015. [III International Conference on Fresh-cut Products: call for Abstracts closes](#)
- March 17-18, 2015. [21<sup>st</sup> Fruit Ripening & Ethylene Management Workshop](#). UC Davis campus
- March 25-26, 2015. [Opportunities in Phytosanitary Irradiation for Fresh Produce Workshop](#). Orange, CA
- April 14-15, 2015. [Microbial Challenge Testing for Foods – 2015](#). Chicago, IL
- April 14-17, 2015. [Fifth Eucarpia Leafy Vegetables Congress](#). Murcia, Spain.
- April 26-29, 2015. [124<sup>th</sup> IARW-WFLO-Cold Chain Alliance Convention and Expo](#). Orlando, FL
- June 7-11, 2015. [III International Symposium on Postharvest Pathology](#). Bari, Italy
- June 8-10, 2015. [United Fresh Produce Association Convention and Exhibition](#). Chicago, IL
- June 15-26, 2015. [37<sup>th</sup> Annual Postharvest Technology of Horticultural Crops Short Course](#). UC Davis
- September 13-18, 2015. [III International Conference on Fresh-cut Products](#). ISHS. UC Davis campus
- October 23-25, 2015. [PMA Fresh Summit](#). Atlanta, GA
- November 3-5, 2015. [3<sup>rd</sup> Produce Safety: A Science-based Framework Workshop](#). UC Davis campus

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## **Ask the Produce Docs**



**Q.** We handle multiple commodities for multiple customers and clients, and have three separate storing rooms for storing non-compatible commodities.

My question concerns the average life-cycle of perishables, specifically Avocados. By life-cycle, I mean the longest we could store a commodity (at its optimal cold-storage temperature) and not see product quality loss. We are in a situation here where we have Avocado pallets that were packed more than 90 days ago. This product has obviously lost quality, whether it be softness, discoloration, or a combination of both. I know that on the UC Davis Postharvest website the data given is for 7-10 storage days. We are almost ten times that.

I was wondering if there is any data or research on extended storage and the expected product loss. Our customer was not able to move the Avocados (a large amount) and wanted to point the finger at us, assuming it was a problem with Ethylene levels. It is my belief that Ethylene control can only be applied to non-ripened pallets of Avocados, not product that is entering the ripened stage of its life-cycle.

I am constantly browsing the UC Davis website for more information. I am new to this field, and the website's assistance has been very valuable to me. (C.G.)

**A.** You ask a very difficult question to answer about avocados. I assume from what you have written that you are dealing with imported avocados that have been in the handling chain, and I also assume that you started holding the avocados when they were still firm and they have now softened.

There would be many, many additional questions that would need to be asked to sort this out completely, but I will give you some general information about postharvest handling of avocados:

- 1) It is a good rule of thumb to try to minimize any exposure to ethylene except when you want to ripen them.
- 2) Low levels of ethylene during cold storage (5 C) can stimulate softening even in storage
- 3) The fruit will normally store (in air, not CA) for about 3 to 4 weeks. After this time you will generally see an increase in internal discoloration and decay incidence. The relative decline of the fruit is dependent on many factors including fruit harvest maturity,

speed of cooling after harvest, etc.

4) Controlled atmosphere shipment will delay what I described above. Once CA is broken and the fruit are placed in ambient conditions it will continue to age in storage.

5) The cold chain should never be compromised.

6) As for the maximum storage potential, a good rule of thumb is 3 to 4 weeks at 5C but I have seen lots of fruit deteriorate before this time and seen other fruit hold up for 6 to 8 weeks even in air storage. 90 days (12 weeks) is beyond a reasonable storage period for the fruit. I would expect to see many problems with this fruit.

I hope this information is helpful and if you want to provide me with additional details, I might be able to give you more specific information.

--Mary Lu Arpaia

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## End Notes and Disclaimers

**Postharvest Questions.** If you have a perplexing postharvest question you'd like answered, please send it to [postharvest@ucdavis.edu](mailto:postharvest@ucdavis.edu), and we'll see if one of our specialists can help.

**Archived Items.** Link to a data store of all our previous "[Ask the Produce Docs](#)" questions, or link to [archived copies](#) of our monthly e-newsletter as PDF documents.

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