



*March 2015*

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## Director's Update



### Congratulations to Lyna Pith

After carefully reviewing more than 70 applications for the 2015 Postharvest Technology of Horticultural Crops Short Course Scholarship, the review panel, comprised of three Postharvest Specialists, selected Lyna Pith from Cambodia. We are very excited to welcome Lyna to Davis, California, and know that she'll enjoy a great visit as well as learning lots of helpful information about maintaining the quality and safety of horticultural crops, and reducing postharvest losses!

### Great Interaction at the March 17-18 Fruit Ripening & Ethylene Management Workshop

There was a lot of lively conversation and important dialogue about the best ways to manage the ripening process of a wide range of commodities including bananas, tomatoes, pears, avocados and many more. Workshop participants enjoyed a sensory demonstration that included melon tasting, prepared by Dr. Florence Zakharov. Practical ways to manage the positive and negative effects of ethylene were also discussed. If you missed this year's workshop we hope you'll join us in March 2016!

--*Beth Mitcham*

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## Postharvest Education at UC Davis

### 37<sup>th</sup> Postharvest Technology of Horticultural Crops Short Course

We're looking forward to welcoming everyone for the June 15-26, 2015 Postharvest Technology of Horticultural Crops Short Course! The team at the Postharvest Technology Center has been working hard on the numerous details required for this course. The first week of the course will be held June 15-19, followed by the optional Field Tour scheduled for June 22-26. The first week of lectures and demonstrations is a prerequisite for attendance on the field tour. 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 a broad spectrum of postharvest technology information including lectures and hands-on demonstrations, and the popular 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](#).





### Third International Conference on Fresh-cut Products: Maintaining Quality & Safety, September 13-18, 2015

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 period for submitting abstracts closed on March 22, and authors will be notified of the results by April 15, 2015, however, it is not too late to register to attend. Many interesting abstracts were submitted for both oral and e-poster presentation.

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 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](#). We welcome online registration using the [registration webpage](#). The discounted "early registration" period closes April 30. 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



#### Introducing Updated Fruit Ripening & Ethylene Management Binder

We are pleased to introduce our updated Fruit Ripening & Ethylene Management binder which served as the course material for the 2015 Fruit Ripening & Ethylene Management Workshop. It includes optimum procedures for ripening a variety of produce items, and provides seven ripeness charts in color and numerous color tables and photographs. It also features copies of the Powerpoint presentations from the course lectures, and full color "Produce Facts: Recommendations for Maintaining Postharvest Quality" sheets for 19 important commodities. See the complete table of contents at [this link](#). The introductory price is \$95, and includes more than 280 pages of content.

Please use [this link](#) for shipments to U.S. addresses. For international shipping addresses, please use our [PDF Order Form](#).

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### Postharvest Specialists' Updates & Other News

#### Mitcham Selected to Receive 2015 ASHS Outstanding International Horticulturist Award

Dr. Beth Mitcham, Director of the Postharvest Technology Center and the Horticulture Innovation Lab, has been selected as the recipient of the 2015 ASHS Outstanding International Horticulturist Award. She will be honored at the ASHS Awards Ceremony on August 4, 2015 in New Orleans.

The American Society for Horticultural Science (ASHS) Outstanding International Horticulturist Award recognizes an international horticulturist who has made an outstanding and valuable contribution to international horticultural science, education, research and/or outreach for a period of 10 or more years. ASHS was founded in 1903, and its mission is to promote and encourage national and international interest in scientific research and education in horticulture. ASHS has more than 2500 members in more than 60 countries around the world.

#### Bruhn invited speaker at Southern California Food Industry Conference

Christine Bruhn addressed "Consumer perspectives driving nutrition and regulatory changes" at the 28th annual Southern

California Food Industry Conference, in Anaheim, California March 4. The conference theme, "Button Up for the Winds of Change: Labels, Regulations, and Consumer Expectations" attracted 150 attendees.

### Fruit & Vegetable Videos

Dr. Diane Barrett has recently completed a video "How to Use a Color Chart to Increase Market Value", and also compiled a database of existing videos available on fruit and vegetable postharvest handling, preservation and quality evaluation. Links to both items may be found on this webpage: [http://www.fruitandvegetable.ucdavis.edu/Fruit\\_Vegetable\\_Videos/](http://www.fruitandvegetable.ucdavis.edu/Fruit_Vegetable_Videos/)

### Postharvest Technology Center's LinkedIn Group

We invite you to join the Postharvest Technology Center's new [LinkedIn Group](#)! You'll be the first to hear about new course offerings, website updates, and other postharvest information.



### Postharvest Technology Refresher Training Workshop

Drs. Lisa Kitinoja and Diane M. Barrett, along with colleague Lizanne Wheeler, taught a 2 day 'Refresher Training Workshop' held February 19-21, sponsored by the US Agency for International Development's TOPS food security program, the World Food Logistics Organization and Save the Children. The workshop focused on updates from Master Trainers, cost benefit analysis, writing measurable objectives and monitoring and evaluation of postharvest training programs and was attended by 15 Tanzanians.

### Postharvest Education Foundation – Small-Scale Postharvest Technologies Short Course/Study Tour

Thirty-five individuals, primarily from Tanzania, attended the February 23-27, 2015 program, which included presentations on the basics of postharvest handling by Drs. Lisa Kitinoja and Diane Barrett, and colleague Lizanne Wheeler. Topics were taken from the Small Scale Postharvest Handling book. The study tour included visits to the Postharvest Training & Services Center at AVRDC, the HomeVeg and Malarua Farm packhouses and the Njiro Ministry of Agriculture Site where a postharvest retail shop operates. Demonstrations of the Zero Energy Cool Chamber, CoolBot and various solar dryers were made.



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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](#).

### Post-Harvest Mango Specialist – Winrock International Volunteer Opportunity in Myanmar

The Asia Farmer-to-Farmer Program requests volunteer assistance to assess the quality of mangos in Myanmar, to develop Myanmar mango indices, and improve information on market opportunities in the region. The volunteer(s) should have a master's degree in horticulture with marketing or advertising experience/background. The volunteer(s) should have hands-on experience in mango grading, quality testing and quality control. The position is open for 1-2 volunteers starting mid-May 2015 for 2 months. Winrock arranges and pays for all travel expenses including meals, lodging, visa, and transportation. For complete information see [this webpage](#).

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## What's New on Our Website

### New in March 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.

#### Jicama

Mercado-Silva, E., M. Cantwell (1998) [Quality changes in jicama roots stored at chilling and nonchilling temperature](#). Journal of

Food Quality 21:211-221.

Mercado-Silva, E., R. Garcia, A. Heredia-Zepeda, M. Cantwell (1998) Development of chilling injury in five jicama cultivars. Postharvest Biology and Technology 13:37-43.

### **Modified Atmospheres**

Cefola, M., B. Pace, G. Colelli, M. Cantwell (2015) Compositional and marketable quality of fresh-cut florets of four specialty brassicas in relation to controlled atmosphere storage. Acta Hort 1071:455-462.

Cantwell, M., M. Saltveit (2015) Tolerance of grape tomatoes to controlled atmospheres at low temperature. Acta Hort 1071:627-634.

Cantwell, M., M. Saltveit (2015) Tolerance of sugar snap peas to modified atmospheres with high concentrations of carbon dioxide. Acta Hort 1071:619-626.

### **Nutritional Quality**

Bouzari, A., D. Holstege, D.M. Barrett (2014) Mineral, fiber, and total phenolic retention in eight fruits and vegetables: a comparison of refrigerated and frozen storage. Journal of Agricultural and Food Chemistry 63:951-956.

Bouzari, A., D. Holstege, D.M. Barrett (2014) Vitamin retention in eight fruits and vegetables: a comparison of refrigerated and frozen storage. Journal of Agricultural and Food Chemistry 63:957-962.

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## **Postharvest Calendar**

- 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 3-4, 2015. MRL Harmonization Workshop. San Francisco, CA
- 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.** What are the ideal O<sub>2</sub>/CO<sub>2</sub> percentages in MAP for shredded sprouts? I read the sprouts fact sheet which states 1-4 for oxygen and 5-10 for carbon dioxide. In our shelf life study, we are seeing CO<sub>2</sub> reach 22% and O<sub>2</sub> around 10. What are the impacts of high levels of CO<sub>2</sub> on shredded sprouts?

Are certain varieties of sprouts more susceptible to browning post shredding than others?

Thanks for your help in advance! (A.M.)

**A.** There is very little recent information on brussels sprouts and I could not find data regarding respiration rates of the sliced sprouts. For the related Brassica cabbage, slicing doubles the respiration rate. While 20% CO<sub>2</sub> is reported to cause damage to intact brussels sprouts, I am not aware of atmosphere research on the sliced sprouts.

Regarding different varieties and browning rates, again I am not aware of published information and we have not done such a study. An easy way to assess this is by slicing and holding the product in perforated bags (air) at 5C and scoring for browning with time.

Let me know if you would like us to make some respiration measurements or conduct some other testing for your brussels sprouts. I think it would be worthwhile to reassess the modified atmospheres for the sliced sprouts, both for atmospheres that are beneficial

as well as those tolerated by the sprouts since they are being incorporated into other vegetable mixes.

--[Marita Cantwell](#)

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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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