



September 2014

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Director's Update



Looking forward to the UC Davis Reception at PMA's Fresh Summit!

We are looking forward to connecting with many of you at the UC Davis Reception on October 18 at the Produce Marketing Association's Fresh Summit in Anaheim, CA. In addition to the Dean of the College of Agriculture and Environmental Sciences, we will also be joined by five terrific students who were selected to receive a scholarship sponsoring their attendance based upon their academic standing and interest in the produce industry. We hope you can join us. [Please RSVP](#) if you have not already!

This reception and the student scholarships are made possible by generous contributions from our Sponsors:

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Fresh-cut Products Workshop Well Received

The 19th Annual Fresh-cut Products Workshop was a terrific success thanks to the leadership of Dr. Marita Cantwell and the cutting-edge speakers who contributed. There were lots of opportunities for questions and feedback which set the stage for a very interactive workshop. Participant comments such as, "I'm brand new to the industry and found this very helpful", and "Everything was very well organized and all topics were very thoroughly covered" help us to know that we're presenting relevant and quality content.

In September 2015, Dr. Cantwell will be convening the III International Conference on Fresh-cut Products: Maintaining Quality and Safety at UC Davis under the aegis of ISHS, then the following year we will return to our traditional format and host the 20th Annual Fresh-cut Products Workshop.

--[Beth Mitcham](#)

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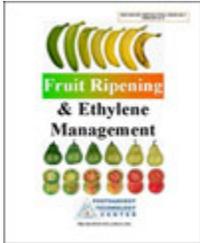


Limited Space! Produce Safety: A Science-based Framework Workshop

We encourage you to register soon for the limited number of spaces left for the November 4-6, 2014 Produce Safety: A Science-based Framework Workshop. This will be an interactive 2½ day workshop held on the UC Davis Campus, with a focus on Microbial Produce Safety Systems from Preharvest to Postharvest. Coordinated by Dr. Trevor Suslow, the workshop provides an integrated approach to building a foundation of awareness and improved understanding of the current scientific basis for produce microbial safety systems and preventive controls. The enrollment fee remains at \$950 for this 2½ day course. To learn more, we invite you to visit the [web page](#) or contact our Enrollment Coordinator, [Ms. Penny Stockdale](#).

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Featured Postharvest Bookstore Item



Fruit Ripening Workshop Binder! Now offering a 25% Discount

This publication is the course material for the Fruit Ripening & Retail Handling Workshop which is held each spring. It includes optimum procedures for ripening a variety of produce, and provides 7 color ripeness charts and numerous color tables and photographs. It provides detailed instructions for measuring soluble solids in melons and fruits, and a helpful resources directory. Regularly \$75, this publication is now on sale for only \$56.25. Please use [this link](#) for shipments to U.S. addresses. For international shipping addresses, please use our [PDF Order Form](#), and note 25%FREM.

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Postharvest Positions

Tanimura & Antle Greenhouse Management Training Program

This entry level position requires a minimum of a BS in Ag Sciences or equivalent coursework, with a good working knowledge of plant growth, plant nutrition, pest management, plant physiology, postharvest physiology, plant genetics, greenhouse systems and food safety. Successful candidates will begin 2-year Management Training Program with a 120 day orientation/skills development program at T&A's California and Arizona locations before assignment to their Livingston, Tenn. hydroponic greenhouse operations. Upon successful completion of the Management Training Program, the candidate can expect to be placed into a management role suited to the candidate's skills, For additional information contact [Reyna Navarrete](#).

Quality Representative Position with Chilean Blueberry Export Company

Chilean Blueberry Exporter Company seeks Quality Representative to survey shipments sent to the US East Coast during the arrival period of Chilean Season (December to March). Representative shall visit Receivers/Clients Coolers at each container arrival, inspect the fruit and send a technical report, in addition to remark company's point of view to receivers in case of controversy. Fluent English and good communications skills are required. Candidates shall apply for position by e-mailing to apaniagua@carsolfuit.cl.

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Postharvest Specialists' Updates & Other News

Small Scale Postharvest Technology Short Course / Study Tour (August 25-29, 2014 Bali, Indonesia)

The Postharvest Education Foundation (<http://www.postharvest.org/>) sponsored a 5 day course in Bali, Indonesia, coordinated by Dr. Lisa Kitinoja (PEF), Dr. Made Utama (Udayana University) and Dr. Diane Barrett (UC Davis). The agenda included a few classroom sessions, and a lot of field visits to farms, packhouses, a produce DC and markets. There were a wide range of postharvest handling practices, from the most basic to more advanced logistics, semi-processed products, packaging, cooling and shipping. There were about 25 participants, including international visitors, locals from Bali and Sulawesi and managers of one of the local supermarkets (Tiara Dewata).

Bruhn Shares Overview of Report from Food Protection Trends

The Sept/Oct issue of Food Protection Trends includes a research article of consumer preparation practices of chicken in the home. This research found 64% of the food preparers didn't wash their hands before beginning meal preparation, 38% did not wash after touching raw chicken, and 40% undercooked their chicken, that is the chicken did not reach the recommended end point temperature of 165F. Regarding produce handling, cross contamination from the raw chicken to salad via an unwashed cutting board seldom occurred. Either people washed or used a separate cutting board, prepared their



salad before cutting chicken, or didn't cut either chicken or salad. Many used prewashed salad ingredients, thus reducing the incidence of cross contamination in the home.

International Association for Food Protection Annual Meeting

Dr. Linda Harris serves as a member of the Executive Board of the International Association for Food Protection (IAFP), and recently transitioned to the position of Vice President from the position of Secretary. She presented at the IAFP's pre-conference "Validating Pasteurization Processes for Low-Water Activity Products" workshop and also presented several posters at the annual meeting, including several focusing on the persistence and survival of *Escherichia coli*.

Dr. Christine Bruhn also offered a number of presentations at the August IAFP annual meeting, including: "Reaching Community Volunteers with Safe Food Handling Information, Food Safety Education DPG"; "From Fridge to Table: Findings from United States and United Kingdom Observational Studies on Preparing Raw Poultry" (joint presentation with Ellen Evans from Cardiff Metropolitan Univ.); "Communications Roundtable: Leveraging Your Networks to Enhance Food Risk Communication"; "The Influence of Television Celebrity Chefs on Consumers' Food Safety Practices in the Home" (poster with Rachelle Woods); and "Investigating Positive Deviance Intervention to Change Consumer Food Safety Awareness and Behavior" (poster with Yaohua Feng).

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What's New on Our Website

Pumpkin and Winter Squash Produce Fact Updated

The Recommendations for Maintaining the Postharvest Quality of [Pumpkin and Winter Squash Produce Fact Sheet](#) was recently updated by Marita Cantwell and Trevor Suslow. There are 13 new images available in the [Photo Album](#), along with updated information about Temperature and Modified Atmospheres and Disorders of Pumpkin and Winter Squash.

Grain Resources Added

Under the Postharvest Related Section of our website we have added links to several websites that are focused on the [postharvest handling of grains](#).

New in September 2014 in the "Postharvest Publications Organized by Topic" Library

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

Citrus Fruit

Pupin, F., V. Bikoba, W.V. Biasi, G.M. Pedroso, Y. Ouyang, E.E. Grafton-Cardwell, E.J. Mitcham, [Postharvest control of Western Flower Thrips \(Thysanoptera: Thripidae\) and California Red Scale \(Hemiptera: Diaspididae\) with Ethyl Formate and its impact on citrus fruit quality](#). *Journal of Economic Entomology* 106 (2013) 2341-2348.

Grape

Teles, C.S., B.C. Benedetti, W.D. Gubler, C.H. Crisosto, [Prestorage application of high carbon dioxide combined with controlled atmosphere storage as a dual approach to control *Botrytis cinerea* in organic 'Flame Seedless' and 'Crimson Seedless' table grapes](#). *Postharvest Biology and Technology* 89 (2014) 32-39.

Postharvest Losses

Affognon, H., C. Mutungi, P. Sanginga, C. Borgemeister, [Unpacking Postharvest Losses in Sub-Saharan Africa: A Meta-Analysis](#). *World Development* 66 (2015) 49-68.

Tomato

Zhang, L., D.M. Barrett, M.J. McCarthy, [Characterization of the red layer and pericarp of processing tomato using magnetic resonance imaging](#). *Journal of Food Science* 78 (2013) E50-E55.

De Freitas, S.T., A.J. McElrone, K.A. Shackel, E.J. Mitcham, [Calcium partitioning and allocation and blossom-end rot development in tomato plants in response to whole-plant and fruit-specific abscisic acid treatments](#). *Journal of Experimental Botany* 65 (2014) 235-247.

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Postharvest Calendar

- October 6-10, 2014. [60th Annual Meeting of the Interamerican Society for Tropical Horticulture and 4th Colombian Horticulture Congress](#). Medellin, Colombia.
- October 14-17, 2014. [Postharvest Technology Course](#). Wageningen, The Netherlands
- October 15, 2014. [Reducing Food Losses from Farm to Market](#). Free Webinar.
- October 18, 2014. [UC Davis Reception at PMA Fresh Summit](#). Anaheim, CA
- November 4-6, 2014. [2nd Annual Produce Safety Workshop](#). UC Davis campus
- November 12-14, 2014. [VII Congreso Iberoamericano de Tecnología Postcosecha y Agroexportaciones](#). Quito, Ecuador
- December 8-11, 2014. [3rd Asia Pacific Symposium on Postharvest Research, Education and Extension](#) (ISHS). Ho Chi Minh City, Viet Nam
- February 23-27, 2015. [Small-Scale Postharvest Technologies Short Course/Study Tour](#), Arusha, Tanzania
- March 17-18, 2015. [21st Fruit Ripening & Retail Handling Workshop](#). UC Davis campus
- June 15-26, 2015. [37th Annual Postharvest Technology of Horticultural Crops Short Course](#). UC Davis
- September 13-18, 2015 III International Conference on Fresh-cut Produce. ISHS. UC Davis campus.

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Ask the Produce Docs



Q. Are modified/controlled atmospheres useful for pumpkins and winter squash? We want to store pumpkins longer than we can achieve currently with just ambient temperature storage.

A. First there are many factors that affect the postharvest storage potential of pumpkins and winter squash. Production conditions, variety, careful harvest to avoid injury to the stem end and fruit surface, and adequate curing all contribute to obtaining good storage life. For short periods (1-2 months), pumpkins and winter squash can be stored in the range of 10-25C (50-77F), but after this initial period, chilling symptoms may appear on those stored as low as 10C and excessive water loss and surface drying will appear on those stored at 20-25C. The recommended storage temperature is 15C (59F) as noted in the updated Produce Facts on Pumpkins and Winter Squash on our website (<http://postharvest.ucdavis.edu/pfvegetable/PumpkinWinterSquash/>).

Long before exploring the use of a more costly technology such as controlled atmospheres, you should work on optimizing the storage temperature of the pumpkins—15C is a good target storage temperature. After doing that, the focus should be on managing relative humidity. Generally about 70% RH will provide a good balance between minimizing weight loss and favoring decay organisms. To my knowledge, controlled or modified atmospheres are not used on winter squash and pumpkins. There is limited research in this area. A recent study at the University of Georgia compared CA (3%O₂ + 5%CO₂) stored fruit with ambient conditions (air) and found the former to yield more marketable fruit after 2-3 months. However, the CA was conducted at 10C, so the positive effect was a combination of temperature and CA. In other tests on winter squash, atmospheres with about 7% CO₂ helped reduced degreening, but this would be of little benefit to pumpkins harvested at full color.

--[Marita Cantwell](#)

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Q. Our problem is that acorn squash turn orange after about 2 months of storage at room temperature. What causes them to turn orange and how can we store them better?

A. There are acorn squash of different colors, but yes, the green skinned Acorn squash will eventually turn color as they age in storage. This can be related to storage temperature and possibly ethylene exposure. The warmer the storage temperature, the more susceptible they will be to degreening. This is due to chlorophyll breakdown and unmasking of the yellow-orange carotenoids. I would avoid delays from harvest to cooling for storage, maintain the storage temperature near recommended (about 55-59F or 12.5-15C) and make sure they are not stored with any ethylene producing products. Also propane forklifts produce ethylene as a byproduct of internal combustion and therefore avoid using those in the squash storage area or ensure there is a lot of ventilation to remove any ethylene. Any squash with decay will also produce ethylene, so remove decayed squash.

--[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, 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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