



July 2016

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## Director's Update



### Postharvest Technology of Horticultural Crops Short Course—An International Success!

We were fortunate to have a very diverse group of participants at our 2016 workshop, including attendees from Afghanistan and Argentina to Tobago and Uzbekistan. Participants learned from over 20 instructors who provided key information about handling produce from beneficial and detrimental effects of ethylene to produce safety to disease management after harvest. A smaller group of participants were hosted by over 15 California companies to see produce handling up close and personal. Thank you to all the participants, instructors, students and staff that made this course a success. I hope you will consider joining us next year!

### Uptick in Enrollments

On the heels of the Postharvest Technology of Horticultural Crops Short Course, we have seen steady enrollments for our Fresh-cut Workshop: Maintaining Quality & Safety. This three-day workshop September 13-15 is intended for all levels of fresh-cut produce professionals. See below for more details. Don't miss your chance to attend!

### Last Chance to Advocate for New Talent

We need your help to convince university leadership that *produce quality is important* and that a new CE position in Postharvest Quality Systems and Technology should be prioritized at UC Davis, among many others that have been suggested (see below for more details). If you agree, please [click here](#), and scroll down to add your comments about this position **by July 11**.

--[Beth Mitcham](#)





## 2016 Fresh-cut Workshop

September 13-15, 2016, UC Davis Campus. The fresh-cut industry and this workshop have changed considerably over the past 20 years. Join us if you are new to the fresh-cut industry, or if you want updates on many topics important to the success of the fresh-cut fruit and vegetable sector.

The workshop is relevant to all levels of fresh-cut produce industry professionals—from small, local and regional produce processors to large businesses with nationwide distribution. Food scientists, food engineers, quality assurance personnel and new product development staff as well as representatives from research institutions, the restaurant and institutional food industries, and equipment, packaging and ingredient suppliers will all benefit from attending.

The registration fee is \$1150, and participants may [register on-line](#), or contact our Registration Coordinator, [Ms. Penny Stockdale](#), for more information.

## Produce Safety Workshop—Save the Date!

November 1-3, 2016. This workshop, developed by produce safety expert Trevor Suslow, offers 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. Enrollments open soon!

## Advocate for Us!



## Time is Running Out: Please help us advocate for a new Postharvest Specialist

In light of the recent losses to our team of Postharvest Specialists, we are very excited that our department has submitted a proposal for a new position, "Cooperative Extension Specialist in Postharvest Quality."

This Specialist position will be responsible for statewide leadership in advanced quality management systems for perishable horticultural foods. Innovative integration of the principles of horticultural production with postharvest biology would transect scales-of-production, import and export markets, and international initiatives which include sensory and nutritive quality and the critical issue of reducing food loss.

These requests for positions are highly competitive statewide, and we need your support to advocate for filling this position next year!

**Please write your comments in support of this new postharvest position by July 11, 2016** using the following link. Scroll to the bottom of the page and add your comments. Thank you very much for your support!

Link to comments form from: <http://ucanr.edu/postharvestposition>.

## Featured Postharvest Bookstore Item



## Special Sale! Receive 50% off this month's featured publications: Small-Scale Postharvest Practices: A Manual for Horticultural Crops, 4<sup>th</sup> Edition in English and French

This manual provides extensive information about small-scale postharvest handling practices for a wide variety of crops to maintain quality, safety and reduce losses between harvest and consumption. Many of the techniques described are appropriate for resource-limited farmers in the developing world. Use sale code SSPP50 to apply your discount.

For a complete listing of all our publications see our [bookstore](#).

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## Postharvest Specialists' Updates & Other News



### Irwin Donis-Gonzalez Participates in Guatemala 3-day Course

In early June, Irwin traveled to the Universidad del Valle de Guatemala Campus Altiplano to give 2 talks during the Postharvest Management of Peas and Green Beans Short Course—Postharvest Temperature Management and Postharvest Quality Attributes and Losses of Peas and Green Beans. Approximately 65 small growers and industry representatives participated in the course. Other topics included:

Irwin also helped during the field visits where the participants saw the chimney dryer and the brick and sand evaporative cool box (Zero Energy Cool Chamber, ZECC). He was also part of hands-on experiments to show the importance of correct temperature management and quality assessment, and was the lead for a round table discussing recent postharvest strategies for small growers in developing countries.

### Diane Barrett Earns the 2016 Distinguished Service Award for Outstanding Research

On Thursday, June 16, Diane was recognized at a Special Staff Meeting and Recognition Event, held in Davis at the ANR offices. This award recognizes outstanding accomplishments by UCCE academics over a significant period of time for: academic excellence; innovative methods of obtaining new knowledge; the impact of research on clientele and the level of adoption; and the incorporation of research into extension programs.

After reviewing all the nominations of their colleagues, the Academic Assembly Council Distinguished Service Award Committee recommended that Diane receive this award, and included these remarks:

*The committee recommends Diane Barrett for the Outstanding Research Award. Dr. Barrett, Fruit & Vegetable Products Specialist, has demonstrated an exceptional research program with impacts on both the California food processing industry as well as consumers of processed fruits and vegetables. Highlights include methods to improve peelability and firmness of whole peeled and diced products, decreasing acidity and improving food safety in processing tomatoes, and demonstrating similar nutrient content of fresh vs. processed fruits and vegetables. Dr. Barrett coupled her outstanding research with an outreach and education program that has greatly impacted the food processing industry in California. In addition to her academic successes, Dr. Barrett was applauded for her strong network of colleagues and industry connections, as well as challenging the "status quo" of accepted practices and leaving a lasting legacy in the food industry. The success of Dr. Barrett's program is a testament to the outstanding work in applied research that can be accomplished through UCANR.*

### Mary Lu Arpaia to Present at Upcoming Postharvest Technology Course in Wageningen

This October, Wageningen UR will be hosting its 3<sup>rd</sup> Postharvest Technology course. This course gives participants an in-depth view on: the latest insights in the biology of postharvest development, ripening and deterioration processes in fresh horticultural products; the most important factors for measurement, evaluation and modelling of product quality and loss and current technologies for storage, packaging and handling. Mary Lu will be covering talks on Ripening of Tropical Fruit and Quality Issues of Citrus Fruit as well as co-presenting Demo Websites with Postharvest Information.

The course combines classroom lectures, group discussions on participant cases, demonstrations, hands-on activities and an excursion day. For more information about this course, click [here](#).



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## On Our Website

Stay up-to-date with the Postharvest Technology Center by joining our [Linkedin Group](#)

## New Publications on our Website

Ali Bouzari, Dirk Holstege, and Diane M. Barrett. 2015. [Vitamin retention in eight fruits and vegetables: A comparison of refrigerated and frozen storage](#). Journal of Agricultural and Food Chemistry 2015, 63, 957–962

Elaine D. Berry, James E. Wells, James L. Bono, Bryan L. Woodbury, Norasak Kalchayanand, Keri N. Norman, Trevor V. Suslow, Gabriela López-Velasco, Patricia

D. Millner. 2015. [Effect of proximity to a cattle feedlot on \*Escherichia coli\* O157:H7 contamination of leafy greens and evaluation of the potential for airborne transmission](#). Applied and Environmental Microbiology February 2015 Volume 81 Number 3.

Ioannis S. Minas, Ariel R. Vicente, Arun Prabhu Dhanapal, George A. Manganaris, Vlasios Goulas, Miltiadis Vasilakakis, Carlos H. Crisosto, Athanasios Molassiotis. 2014. [Ozone-induced kiwifruit ripening delay is mediated by ethylenebiosynthesis inhibition and cell wall dismantling regulation](#). Plant Science 229 (2014) 76–85.

## Postharvest Positions

### World Vegetable Center—Deputy Director General--Research

The World Vegetable Center is a non-profit, autonomous international agricultural research center with headquarters in Taiwan and regional offices in Africa and Asia. The **Deputy Director General – Research (DDG-Research)** is a member of the senior management team based at Center headquarters (HQ) in Shanhua, Taiwan. Reporting to the Director General, this position will be supported by a team of global theme leaders and heads of research support services. The successful candidate will work closely with the Center's four regional directors in Africa (Mali, Tanzania) and Asia (India, Thailand). Find the full description [here](#).

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## Postharvest Calendar

- August 7-12, 2016. [3rd All Africa Horticultural Congress of the ISHS](#). North East of Ibadan Township, Nigeria
- September 13-15, 2016. [Fresh-cut Products: Maintaining Quality & Safety Workshop](#). UC Davis campus
- October 17-21, 2016. [III Symposium on Horticulture in Europe \(SHE 2016\)](#). Chania, Greece
- November 1-3, 2016. [Produce Safety Workshop](#). UC Davis campus
- October 11-14, 2016. [Postharvest Technology Course](#). Wageningen Campus, The Netherlands
- February 7, 2017. [FRUTIC Symposium](#). Berlin Germany
- February 8-10, 2017. [Fruit Logistics](#). Berlin, Germany
- July 18-20, 2017. [IX Congreso Iberoamericano de Tecnología Postcosecha y Agroexportaciones](#). UC Davis campus

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## Ask the Produce Docs



**Q.** We are in the process of setting up a food coop and have been gathering information about produce handling procedures. It seems to be common practice among a couple coops we have visited to immerse newly delivered leafy greens in lukewarm water. This is done, I presume, to firm up the texture of potentially wilted produce and to lengthen shelf life. I have a couple questions about this:

- 1) If the product is going straight to the display cooler and not into a walk-in cooler, is this still advisable, given that the immersion warms up the product?
- 2) Is immersion still a good idea if the product has been kept well chilled and shows no wilting? Mostly my concern here is about the potential risk of contamination from additional handling.

Any advice you could give me would be greatly appreciated. Your website has been immensely useful over the last year, but I could not find information on this specific question. (M.D.)

**A.** Probably there is no single answer, since there are always details in a particular handling system that could make a difference. It is true that leafy products absorb warm water more rapidly than cold water, but the difference due to temperature is not large. Most leafy products will absorb cold water easily and therein lies the concern with hydrocooling and sanitation. I would harvest and handle the product so that the water immersion step is not needed. Pay attention to protecting it from water loss in the field (where water loss rate is high). Harvest in the morning when cooler and protect product from direct sun and air movement. Use a paper or plastic cover to the crate or carton or use a thin plastic liner in the carton box. Also reduce the time from harvest to moving to product into a cold room—reduce all delays to cool.

With those general comments, here are my answers to your questions:

*If the product is going straight to the display cooler and not into a walk-in cooler, is this still advisable, given that the immersion warms up the product?*

I am assuming the lettuce is displayed as single heads and that its temperature is 50-70F (10-68C) range after water immersion (I would use cold rather than warm water). Then it likely will cool to the temperature of the display cooler fairly quickly; the cooler should be managed so there is rapid turnover and in your case I would guess you do not need long shelf-life. So even if the lettuce did not cool down to ideal temperature (below 41F), shelf-life and quality would still be adequate.

*Is immersion still a good idea if the product has been kept well chilled and shows no wilting? Mostly my concern here is about the potential risk of contamination from additional handling.*

In this case there is no need or advantage to freshen the product with a water immersion and I agree about increasing the contamination risk. We manage using the principle of "cold and dry" to minimize bacterial growth on leafy greens and others.

Frankly many consumers do not like water on their leafy greens although misting systems are used in some supermarkets. The water often leads to more rapid browning and decay (depend on temperature and lettuce quality).

In summary I would suggest focusing on minimizing water loss during postharvest handling and not immersing the heads. If you find that is not possible without significant quality loss and dehydration, then yes pay attention to the water sanitation. Frequent changes of water will help but if doing a batch system you would want to include a disinfectant.

Check out some of the sanitation related publications by Trevor Suslow at <http://ucfoodsafety.ucdavis.edu/>.

--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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