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Director's Note

We are one week away from launching our first virtual Postharvest Technology of Horticultural Crops Short Course with over 150 individuals enrolled from across the globe! Staff are busy making final preparations for this interactive course.

I would like to draw your attention to the new articles added to our website and the research highlights below, including [this article](#) from UC Davis Professor of Agricultural and Resource Economics, Kristin Kiesel about the impacts of the COVID-19 pandemic on the produce industry in California.

Please stay safe and stay healthy. Eat lots of fruits and vegetables – they are great for your health in so many ways!

Beth



*Interim Director,
Beth Mitcham*

Postharvest Education at UC Davis



One more day to register!

[**Enroll Here!**](#)

**Postharvest Technology of Horticultural Crops Virtual
Short Course**

**Seven Weekly Sessions
Wednesdays from June 17-July 29**

This course is an intensive study of the latest technologies used for handling fruits, nuts, vegetables and ornamentals in California, and the underlying biology principals. The new, interactive, virtual format will include pre-recorded video presentations, weekly live overview, highlights and Q&A sessions with instructors, demonstrations, produce experiments (demonstrations and homework), and break-out discussions. The Live Sessions occur every Wednesday from 8 to 12 Pacific Daylight Time for 7 weeks, and will be videotaped in case you are unavailable at this time. It is designed for produce handlers, quality control personnel, service companies, research and extension workers, and business, government or academic professionals interested in current advances in produce handling, storage, transportation, safety and marketing.

The enrollment fee for this short course is only \$1,400 (\$1,000 off the usual registration fee. 2020 may be your best opportunity to enroll in this course, saving on the enrollment fee as well as travel costs! Now is a great time to update your skills and learn about the latest technologies!

We also have a special enrollment rate for students and individuals from developing countries for the 2020 short course. If you believe you qualify for this discount, contact Pam Devine at pwdevine@ucdavis.edu.

The enrollment fee includes access to view pre-recorded videos of all topics and demonstrations, weekly live interactive Zoom meetings with instructors, digital postharvest textbook (English or Spanish) and PDF copies of all presentations.



Fresh-cut Produce Workshop: Maintaining Quality & Safety September 22-24, 2020 Buehler Alumni & Visitors Center on the UC Davis campus

This workshop provides an intensive and substantive overview of fresh-cut production, processing, packaging, distribution and quality assurance. Participants gain working knowledge of established and new procedures through topic-related sessions and demonstrations. Additionally, we will feature discussions on fresh-cut marketing, new packaging, product physiology, microbial control, and sensory evaluation. And our practical demonstration on the impact of temperature on packaged product quality reinforces all the temperature-related discussions.

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. Registrations will be open soon; more information about the [workshop can be found here](#).

On Our Website



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New Publications on our Website

Kiesel, Kristin. 2020. [How is fresh produce adjusting to the public health crisis?](#) Giannini Foundation of Agricultural Economics, University of California.

Vanessa E.T.M. Ashworth, Haofeng Chen and Carlos L. Calderon-Vazquez, Mary Lu Arpaia, David N. Kuhn, Mary L. Durbin and Livia Tommasini, Elizabeth Deyett and Zhenyu Jia, Michael T. Clegg, Philippe E. Rolshause. [Quantitative trait locus analysis in avocado: the challenge of a slow-maturing horticultural tree crop](#). J. AMER.SOC.HORT.SCI. 144(5):352–362. 2019. <https://doi.org/10.21273/JASHS04729-19>

Karin Albornoz, Marita I. Cantwell, Lu Zhang & Diane M. Beckles. [Integrative analysis of postharvest chilling injury in cherry tomato fruit reveals contrapuntal spatio-temporal responses to ripening and cold stress](#). (2019) 9:2795 | <https://doi.org/10.1038/s41598-019-38877-0>

Research Highlights

Fisun G.Çelikel, Michael S. Reid, Cai-Zhong Jiang. 2020. [Postharvest physiology of cut Gardenia jasminoides flowers](#). Scientia Horticulturae 261. <https://doi.org/10.1016/j.scienta.2019.108983>

The authors investigated the postharvest physiology of *Gardenia jasminoides*, and a range of postharvest treatments that might permit its use as a cut flower. The effects of different vase solution treatments, containing a range of biocides, acidulants, carbohydrate sources and/or growth regulators on the postharvest performance of cut gardenia flowers were studied by measuring water uptake (WU), water loss (WL) and relative fresh weight (RFW) of the flowers during vase life. In deionized (DI) water, gardenia flowers wilted after 2–3 days. Pulse treatment with silver thiosulfate (STS) to inhibit ethylene responses had no effect on vase life. However, abscisic acid (ABA) treatment increased vase life to 5 days by reducing WL and maintaining RFW. Vase solutions containing a commercial flower preservative, or combining citric acid, sucrose and aluminum sulfate also doubled the vase life of gardenia flowers. The results suggest that improving water uptake is important for extending the vase life of cut gardenia flowers, and that acidification of the vase

solution is an effective tool.

Nasiru Alhassan, Ron B. H. Wills, Michael C. Bowyer, John B. Golding and Penta Pristijono. 2020. [Pre-storage fumigation with hydrogen sulphide inhibits postharvest senescence of Valencia and Navel oranges and 'Afourer' mandarins](https://doi.org/10.1080/14620316.2020.1749138). Journal of Horticultural Science and Biotechnology <https://doi.org/10.1080/14620316.2020.1749138>.

A short, pre-storage fumigation with hydrogen sulphide (H₂S) gas at 0, 100, 250 and 500 µL L⁻¹ affected development of a range of senescence characteristics of Navel and Valencia oranges and 'Afourer' mandarins during storage at 20°C for five weeks. The greatest beneficial effect was observed with fumigation at 100 µL L⁻¹ H₂S which resulted in reduced incidence of calyx drop, calyx browning and fungal decay and production of ethylene and ethanol for all three citrus species. For Valencia oranges, a lower total soluble solids (TSS): titratable acidity (TA) ratio was observed, arising from both a lower TSS and higher TA than in control fruit. H₂S treatment had no significant effect on the respiration rate in any fruit species. In general, higher concentrations of H₂S were less effective than 100 µL L⁻¹ and often resulted in accelerated loss of quality. The results suggest that H₂S fumigation of citrus prior to storage may be an alternative treatment for delaying the emergence of senescence characteristics such as calyx browning without the use of synthetic auxins.

Postharvest Calendar

- **June 17-July 29, 2020.** [Postharvest Technology of Horticultural Crops Short Course – New Virtual Format](#). Davis, CA
- August 9-13, 2020. [American Society for Horticultural Science Annual Conference](#), Orlando, FL (Virtual & possibly in-person)
- September 22-24, 2020. [Fresh-cut Products Workshop: Maintaining Safety and Quality](#). Davis, CA
- November 9-13, 2020. [9th ISHS International Postharvest Symposium](#). Rotorua, New Zealand - **POSTPONED**
- March 15-17, 2021. Aligning the Food System - Emerging technologies to address grand challenges in the produce industry, Davis, CA

Ask the Produce Docs



Q. What is the best dimension of carton box packing to be used for 40ft reefer containers for optimized weight to space ratio, so that Bell peppers don't get damaged? (M.U.)

A. Bell peppers have a relatively low package density (kg/m³), so you would like to fit 20 pallets in the 40 foot marine container, the maximum number of 1000mm x 1200mm pallets. The boxes should meet your customer's specifications, but will likely be sized to fit 5 or 6 boxes per layer on the pallet. The low density of peppers will allow the boxes to be stacked up to the limit line on the inside of the container. I assume you will be using corrugated fiberboard boxes. Box strength is determined by box design and the strength characteristics of the fiberboard selected. Your box manufacturer can help you select a box that will withstand the high humidity (typically >85%) while the box is in the handling chain. Box corners should be supported by pallet deck boards and boxes should be stacked in columns, not cross-stacked. Boxes should have edge vents that allow vertical airflow through the pallet load. This is especially important if the peppers are not completely precooled before loading.

More details about boxes for marine container shipment and marine container transport are in UC ANR publication 21595, Marine Container Transport of Chilled Perishable Produce, available from the [UC Postharvest Technology Center Bookstore](#).

I hope this is helpful.

-Jim Thompson

Postharvest Questions. If you have a 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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