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### Director's Note

Here in California, signs of spring are everywhere if one looks closely. The almonds are blooming, bulbs are flowering and the grass is starting to grow again. In your area, it may be time to decide what crops to plant for upcoming harvests. The selection of variety can have a large influence on product yield, disease resistance and quality. In addition to field performance, postharvest quality, performance and shelf life are strongly influenced by variety selection. Published studies can be found that outline these postharvest characteristics for various crops, but more work is needed. I recommend that growers reach out to research and extension personnel in their area to learn about the latest relevant studies, and consider the results in their decision process.

It is my distinct pleasure to announce that our colleague Irwin Donis-Gonzalez has agreed to serve as Associate Director of the UC Postharvest Technology Center. Irwin is a Cooperative Extension Specialist in the Department of Biological Engineering at UC Davis. [Dr. Donis-Gonzalez's expertise](#) includes improved food processing technologies, refrigeration and drying processes, and food safety.

Finally, we are excited to open registration for our first two extension courses for 2021. See the details below and consider joining us!

Beth Mitcham



*Interim Director,  
Beth Mitcham*



*Associate Director,  
Irwin Donis-Gonzalez*

## Postharvest Education at UC Davis

### Fruit Ripening and Ethylene Management Workshop

Virtual, April 13-22, 2021



Live Sessions twice weekly for two weeks.

This popular workshop focuses on how to increase profits by reducing losses at the receiving end, and delivering ready-to-eat, delicious fruits and fruit-vegetables to the consumer. Topics will include ripening facilities and equipment, maturity and quality relationships, biology of ethylene production, sensory quality, temperature management, retail, physiological disorders and other losses, and demonstrations on measuring sensory quality, instrumental quality, and environmental parameters. Please visit our [website](#) for more information.

[Click Here to Register!](#)

## Postharvest Technology of Horticultural Crops Short Course

Virtual, June 3-June 24, 2021

Live Sessions twice weekly for four weeks.

This course is an intensive study of the biology and current technologies used for handling fruits, nuts, vegetables and ornamentals in California. It is designed for research and extension workers, quality control personnel in the produce industry, and business, government or academic professionals interested in current advances in the postharvest technology of horticultural crops. Please visit the [website](#) for more information.



[Click Here to Register!](#)

### Our Website & Social Media

#### Highlights of New Publications on our Website

**Bethany J. Hausch, Mary Lu Arpaia, Zachary Kawagoe, Spencer Walse, and David Obenland. 2020. [Chemical Characterization of Two California-Grown Avocado Varieties \(\*Persea americana\* Mill.\) over the Harvest Season with an Emphasis on Sensory-Directed Flavor Analysis](#). *J. Agric. Food Chem.* 2020, 68, 15301–15310**

*The primary goal of this research was to gain a better understanding of avocado flavor, specifically which volatiles make a significant contribution to the flavor, how the flavor changes over the harvest season, and how the volatile odor profile is linked to oil and water contents. The study characterized avocado's aroma-active volatiles and used information about its overall composition, such as lipid profile, to discuss likely biosynthetic origins. To achieve this, two varieties, "Hass" and "3-29-5" (GEM), were evaluated during their commercial harvest period for dry weight, moisture content, oil content, fatty acid composition, and aroma profile. Oleic acid (>50%) was the prominent fatty acid in the oil of both varieties. The majority of the aroma active compounds in avocado are lipid-derived. The most notable compounds are 1-octen-3-one (mushroom; with a flavor dilution factor as high as 8192), hexanal (grassy), (Z)-4-decenal, an unknown, and (E,E)-2,4-nonadienal. Over the mid-to-late harvest season, a decline in hexanal and an increase in octanal were observed. In contrast to "Hass", the hexanal content was relatively stable in "3-29-5".*

**George A. Manganaris and Carlos H. Crisosto. 2020. [Stone fruits: Peaches, nectarines, plums, apricots](#). *Journal of Food Measurement and Characterization* (2020). DOI: 10.1016/B978-0-12-804599-2.00017-X In book: *Controlled and Modified Atmospheres for Fresh and Fresh-Cut Produce* (pp.311-322)**

*This article provides a short overview of important quality factors of stone fruits and a nice review of the response of peaches, plums and apricots to controlled and modified atmospheres, including an extensive list of references.*

#### Follow Us:



### Postharvest Calendar

- April 13-22, 2021. [Fruit Ripening & Ethylene Management Workshop](#). UC Postharvest Technology Center. Virtual Weekly Sessions
- May 5-6, 2021. [Western Food Safety Summit](#). Hartnell College. Offered virtually.
- May 18-20, 2021. [Fruit Logistica](#). Berlin, Germany. Hybrid offering.
- June 3-24, 2021. [Postharvest Technology of Horticultural Crops Short Course](#). UC Postharvest Technology Center. Virtual Weekly Sessions
- June 22-July 20, 2021. [Center for Produce Safety Research Symposium](#). Center for Produce Safety. Virtual Weekly Sessions
- September 28-30, 2021. [Fresh Cut Products: Maintaining Quality and Safety Workshop](#). UC Postharvest Technology

Center, Davis, CA

- November 2-4 2021. **Produce Safety Program Implementation Tools**. UC Postharvest Technology Center, Davis, CA. Details to follow.
- January 18-20, 2022. **Aligning the Food System - Emerging technologies to address grand challenges in the produce industry**. UC Postharvest Technology Center. Davis, CA

## Ask the Produce Docs



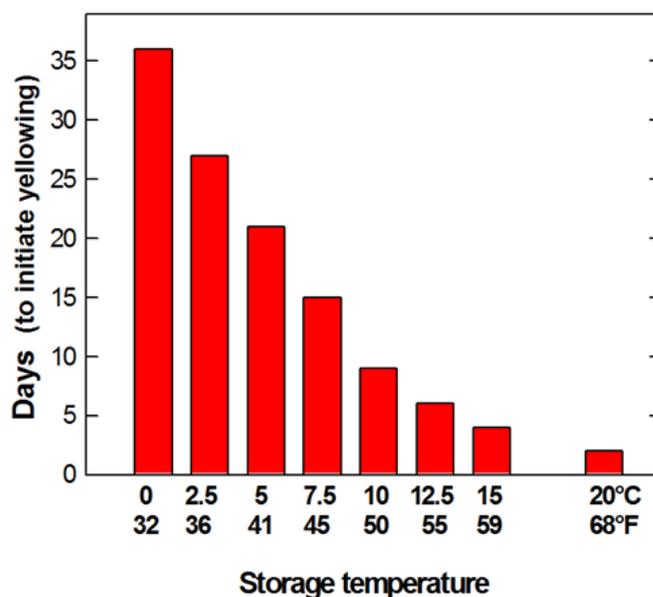
Q. I work in a factory where we process frozen broccoli, we receive the raw material from fields and it is in storage about 4 or 5 days before we process it. I need information about the consequences of presence CO<sub>2</sub> (around 800 ppm) and CO (around 100ppm). The temperature in the cold storage is around 10 C and the humidity around 85%.

A.A.

A. The CO<sub>2</sub> and CO levels will not detrimentally affect the quality of the broccoli, however storage at 10C for 4-5 days will result in some loss of nutrients even if yellowing is not yet visible. Dropping the temperature to 5C or lower would be beneficial. See the graph below to put temperature into perspective. The relative humidity is of importance only if you are getting dehydration of some of the product during that period. Often the top crates in a room will suffer dehydration and may need to be covered (with empty containers or carton covers). Slight dehydration is not an issue if the broccoli is frozen. I am mainly thinking about the quality of the product for fresh market.

Also since CO is toxic to humans, there are guidelines about worker exposure in relation to concentration. Although you are no doubt aware of this, here is a link to an [OSHA fact sheet](#) about CO. I hope this is helpful.

--Marita Cantwell



**Postharvest Questions.** If you have a 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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**Editorial Review.** Beth Mitcham

**Writing and Coordinating Publisher.** Pam Devine, Beth Mitcham, Marita Cantwell

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