



What's Key in this Issue

[Upcoming Workshops](#)

[Our Website & Social Media](#)

[Postharvest Opportunities](#)

[Postharvest Calendar](#)

[Ask the Produce Docs](#)

Director's Note

One year into the pandemic and distance learning, and with the light at the end of the tunnel getting brighter by the day, it seems a good time to reflect on a few of the positive developments from the past year's mostly negative disruptions. I am referring to a few of the benefits of using Zoom and other platforms to communicate and share information. While not discounting the disadvantages of this virtual approach for many students, for adults, it can create opportunities.

For example, by offering our regular short courses and workshops virtually, the Postharvest Technology Center has been able to bring these events to a broad audience at a reduced price and without the need to travel to California. Many other groups have offered similar events. University of California Cooperative Extension Farm Advisor Margaret Lloyd is offering a lunchtime speaker series for her organic vegetable growers. The [Organic Agriculture Seminar Series](#) runs January 23 through May 4 with 15 weekly presentations that growers can join live via Zoom or watch later. Beth had the opportunity to talk about maintaining freshness and nutrients in harvested vegetables on February 23. Here is the [link to watch this presentation](#) and to view the [summary leaflet](#).

While the highlighted benefits of virtual offerings are clear, we think we are all looking forward to the day when we can meet again face to face. Going forward, we are considering ways to continue our virtual offerings in conjunction with our in-person courses and workshops. In Fall 2021, we have two in person workshops planned at UC Davis; our Fresh Cut Products: Maintaining Quality & Safety Workshop in late September and our new Produce Safety Program Implementation Tools Workshop in early November. Hope you can join us on campus for one of these workshops!

Beth & Irwin



*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

Don't wait--less than a month left to Register!



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 handling, physiological disorders and other losses, management of ethylene, and demonstrations on measuring sensory quality, ripening changes, 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 a four-week 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, and break-out discussions. The course 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. Please visit the [website](#) for more information.

[Click Here to Register!](#)

Our Website & Social Media

Highlights of New Publications on our Website

Anne Elise Stratton, John W. Finley, David I Gustafson, Elizabeth J. Mitcham, 5 Samuel S. Myers, Rosamond L. Naylor, Jennifer J. Otten, Cheryl A. Palm, 2021. [Mitigating sustainability tradeoffs as global fruit and vegetable systems expand to meet dietary recommendations](#). Anne Elise Stratton *et al* 2021 *Environ. Res. Lett.* in press <https://doi.org/10.1088/1748-9326/abe25a>.

A diverse group of authors addresses the challenges to increasing production of fruits and vegetables to meet global needs for a healthy diet in an environmentally and economically sustainable manner. The opportunities and challenges are discussed with three case studies, including avocado, leafy greens, and tomato value chains.

Mabel Addai, 2021. [Assessing the causes and effects of food loss and food waste: A comparative analysis of Ghana and Sweden](#). Lund University Submitted January 2021.

About a third (1.3 billion ton per year) of global food production is lost or wasted from the initial stages of farm production down to final household consumption and this global challenge has undesirable environmental, economic, and social effects. Few comparative studies have been conducted to leverage on the different experiences of countries, especially between developed and emerging economies, where food loss occurs at different stages of the food supply chain. This Master's Thesis investigated the causes of food loss and waste in Ghana and Sweden and determined stages of the food supply chain at which food is greatly wasted and lost. The study explored the effects of food loss and waste in relation to production and consumption in both countries and assessed how the problem of food loss and waste is addressed in a sustainable way by both countries. The study found, contrary to existing scholarly narrative, that food loss at the pre-consumer and food waste at the consumer stages of the food supply chain are prevalent in both Ghana and Sweden. Overall, the study points to a rethink of the stereotypical differences between "developed" and "developing" country stereotypes relative to the drivers, pressures and responses to food loss and waste to allow for cross-context learning.

Follow Us:





Postdoctoral Research Associate

This position at WSU-TFREC (WSU, Wenatchee, WA) will support the research activities in physiology and pomology (apple and pear) in tree crops in Washington. The incumbent will perform a wide range of duties mainly focused on flower biology and thinning with particular focus in determining the optimum crop load for relevant cultivars in WA apple regions, study the effect of pruning severity on flower bud development, yield and fruit quality. Required qualifications include PhD in horticulture, biological, chemical, physical or agricultural sciences. Salary commensurate on education and experience. For more information and to apply please [click here](#). Screening of applications will begin March 19, 2021. Please direct other questions regarding the position to Darla Ewald at dewald@wsu.edu. WSU is an EO/AA educator and employer.

Postharvest Calendar

- March 29-31, 2021. [All Africa Horticultural Congress](#) Senegal. Virtual Workshop.
- April 13-22, 2021. [Fruit Ripening & Ethylene Management Workshop](#). UC Postharvest Technology Center. Virtual Sessions two times per week.
- 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 Sessions two times per week
- 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. Details to follow.
- 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've a question, do you use durometers to measure firmness in tomato? If so, could you share information and cost of these equipment with me, my company (Dedicated to tomato production) intends to acquire equipment that allows us to measure the firmness of the tomato, currently we take it with a manual texturometer, though we are interested in equipment where there is no human intervention.

I'm also interested in knowing if they have equipment to measure brix without the need for the tomato to be crushed.

G.N.

A. Thank you for your question. Tomato firmness is challenging to measure because of the internal structure of the fruit. You can get different values when you press on the surface if you are over a locule opening or over the locule wall. In a whole fruit, you cannot know where you are measuring. For this reason, two approaches have been taken depending on your objectives in measuring firmness.

1. You can use a flat plate to compress the entire tomato fruit a few millimeters and measure the resistance to compression. The plate should be bigger than the diameter of the fruit.
2. If you are more interested in the changes in firmness of the tomato pericarp (the outer part of the fruit), you can remove a piece of pericarp tissue (a cork borer works nice for this) and then use a rounded probe ~2/3 the diameter of the pericarp disc to compress

the inner side of the pericarp 1-2 mm. Again, you will measure the resistance to compression.

Both of these measurements can be done with a [Texture Analyzer](#) although this is an expensive piece of equipment.

The durometer has been used to measure whole tomato firmness successfully. The [OO type durometer](#) is best, and if you purchase a stand you will want to use one with "[air-dampened controlled rate of descent](#)". The stand will help to remove any operator-induced variability. I suggest speaking with the manufacturer if you decide to purchase one.

While I have not tried it, I think you may be able to use the durometer to measure the inside of the pericarp disc in #2 above, and this should provide a reasonably accurate measurement. Make sure your disc is at least 1/3 bigger than the durometer probe. You will likely need to create your own scale for firm to soft. The durometer readings can be influenced by the user if a stand is not used, and some training is required to "calibrate" how the probe is pressed onto the flesh.

As to your question about measuring brix (soluble solids) without crushing the tomato. I recommend you look into the [F-750](#) near-infrared device from Felix. I do not know if they have a model for tomato, but if they do, this would be a good device for this purpose.

I hope this is helpful.

--Beth Mitcham

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.

Frequency of Distribution. This publication is produced regularly, or as special issues by the UC Postharvest Technology Center.

For more information, we invite you to [visit our website](#) or [email us](#).

Subscribe/Unsubscribe. If you or a colleague wish to receive this free monthly e-newsletter, [click here](#) to subscribe. If you no longer wish to receive this publication, please click on "reply" to this email and type "unsubscribe" in the subject line.

Copyright/Legal Notices. Kindly observe all [copyright and legal notices](#).

Editorial Review. Beth Mitcham

Writing and Coordinating Publisher. Pam Devine, Beth Mitcham

The University of California does not discriminate in any of its policies, procedures, or practices. The University is an affirmative action/equal opportunity employer.



POSTHARVEST TECHNOLOGY CENTER e-NEWSLETTER | <mailto:postharvest@ucdavis.edu>