POSTHARVEST CENTER
UNIVERSITY OF CALIFORNIA

DECEMBER 2019

What's Key in this Issue

Director's Note

Center Director
Florence Zakharov

It has been a pleasure working with the dedicated staff at the UC Postharvest Technology Center for this past year. As we are wrapping up another very successful year, I am delighted to announce that Dr. Beth Mitcham is returning as Center Director! Please join me in welcoming Dr. Mitcham back in this role; and I hope to see many of you at our upcoming Fruit Ripening and Ethylene Management workshop in March 31-April 1, 2020!

Thanks to Florence for her leadership to the Center and another successful year of sharing knowledge about best handling practices for fruits, vegetables and flowers! I am excited to take the reins once again. We have some exciting programming coming in 2020 so please stay tuned. We just opened up registration for both the Fruit Ripening and Ethylene Management workshop and the Postharvest Technology of Horticultural Crops Short Course in 2020. We hope to see you and your associates there.

Interim Director
Beth Mitcham

With rich and always evolving workshop-based trainings and website content, our mission is to be a robust and responsive resource for maintaining produce quality and safety across all scales of the produce supply-chain. We hope that you enjoy the free content offered on our website and Produce Facts Apps, and would appreciate your support to help us continue to provide this content for the benefit of the produce industry!

Please Give to the Postharvest Endowment

We established our endowment fund in 1989 as the main renewable revenue source to support extension and applied research activities related to fresh produce. There are three main funds associated with the endowment:

- Postharvest Student Support. Your gift provides access to students who could not otherwise afford to attend Postharvest Technology Center courses at UC Davis, and contribute to their professional development.
- Postharvest Program Endowment. These funds are the main support for the maintenance and improvement of the center website that almost 30,000 users a month access from all reaches of the world.
- Postharvest Technology Center. Giving to this fund will strategically support the highest priority activities. Our current priority is to leverage these funds to expand our resources for distance-learning and global outreach.

Thank you in advance for your tax-deductible donation! We greatly appreciate your support and will use it to help us carry on the mission of reducing postharvest losses and improving the quality and safety of produce around the world. You can donate online here or call the Postharvest Technology Center at 530-752-6941 to talk to us in person.

Postharvest Education at UC Davis

Registration is Open for March 31-April 1 Fruit Ripening & Ethylene Management Workshop!

This 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, and phychological disorders. Demonstrations of physical and sensory quality and environmentalmeasurements included. Please visit the website for more information.

Enroll Here!

Registration is Open for June Postharvest Technology Short Course!

This course is a one or two-week 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..Week two is an optional tour of postharvest operations in California. Please visit the website for more information.

Enroll Here!

Scholarship Available for Postharvest Technology of Horticultural Crops Short Course

Once again, through support from the Leonard and Marsaille Morris Trust, we are able to offer a full scholarship for the Postharvest Technology of Horticultural Crops Short Course in 2020. The goal of the scholarship is to provide an opportunity for an individual from a emerging-economy country, pursuing a career in horticultural science who otherwise would not have the opportunity to participate in postharvest training in a developed country and who will take the postharvest biology and technology knowledge gained back to their home country to benefit others in the region.

Interested individuals who meet the criteria described above should apply through this application no later than 11:59 p.m. (PST) on January 15, 2020.

The selected recipient will only be responsible for air travel to Sacramento or San Francisco, personal expenses, passport, travel visa, and other related costs. Course fees, on-the ground transportation in the U.S., lodging, and a food allowance will be provided as part of the scholarship. Applications will be reviewed by a panel of postharvest specialists. The selected recipient will be notified no later than February 5, 2020.

On Our Website

Stay up-to-date with the Postharvest Technology Center by joining our Linkedin Group.

New Publications on our Website

Cantwell M. and M. Saltveit. Tolerance of sugar snap peas to modified atmospheres with high concentrations of carbon dioxide. Proc. XI International Controlled and Modified Atmosphere Research Conf. Eds.: Amodio M.L. and G. Colelli Acta Hort. 1071, ISHS 2015.

Ngamchuachit, Panita, H. K. Sivertsen, E. J. Mitcham, and D. M. Barrett. Effectiveness of calcium chloride and calcium lactate on maintenance of textural and sensory qualities of fresh-cut mangos Journal of Food Science 79, (5):786-794, 2014

Research Highlights

Treatment of litchi fruit with 0.4mM melatonin retarded the development of skin browning during storage and inhibited lipid degradation. (*Wang, T. et al. 2020. Melatonin alleviates pericarp browning in litchi fruit by regulating membrane lipid and energy metabolisms. Postharvest Biology Technology Volume 160. China*)

Near infra-red sensors able to predict nitrate, dry matter and soluble solids content in spinach leaves. (*Antonio Entrenas et al. 2020. Simultaneous detection of quality and safety in spinach plants using a new generation of NIRS sensors. Postharvest Biology and Technology Volume 160. Spain)*

USDA shows that sulfur dioxide-emitting liners reduced gray mold in stored blueberries. Liners with less vent area were more effective in reducing weight loss. *(Saito, et al. 2020. Influence of sulfur dioxide-emitting polyethylene packaging on blueberry decay and quality during extended storage. Postharvest Biology Technology, Volume 160. United States*)

Researchers in Italy studied changes in the volatile compounds (volatilome) emitted from fresh cut nectarines. Results suggest the potential to predict shelf-life based on volatile compounds. (*Ceccarelli, et al. 2020. Nectarine volatilome response to fresh-cutting and storage. Postharvest Biology Technology Volume 159. Italy*)

Potassium permanganate-impregnated sepiolite (magnesium silicate clay) ethylene scavenger maintained quality of apricots during storage, including reduced decay and weight loss. (*Alvarez-Hernandez et el. 2020. Postharvest quality retention of apricots by using a novel sepiolite-loaded potassium permanganate ethylene scavenger. Postharvest Biology Technology Volume 160, Spain, Mexico*)

Postharvest Calendar

- March 9-10, 2020. Global Forum for Innovations in Agriculture Abu Dhabi 2020, Abu Dhabi, UAE
- March 31-April 1, 2020. Fruit Ripening & Ethylene Management Workshop. Davis, CA
- June 15-26, 2020. Postharvest Technology of Horticultural Crops Short Course. Davis, CA
- September 22-24, 2020. Fresh-cut Products: Maintaining Safety and Quality Workshop. Davis, CA
- November 9-13, 2020. 9th ISHS International Postharvest Symposium. Rotorua, New Zealand

Ask the Produce Docs

Q. Hello, I am a 10th grader who has recently won my county's Science Fair, and will be competing at the State Level with my project entitled, "Does ripening affect the amount of DNA in fruit?" I was wondering if you could answer a few questions.

1. Is there a correlation between the ethylene hormone and the enzymes associated with ripening?

2. Does ethylene cause a fruit such as a banana to spoil?

3. Does ethylene trigger protein synthesis? In other words does the ethylene hormone have a direct correlation to DNA in the fruit?

Thank you for your time! (U.D.)

A. Here are my answers to your questions:

1. *Is there a correlation between the ethylene hormone and the enzymes associated with ripening?* It depends on whether ethylene is key to the ripening process. There are fruits that ripen with ethylene involvement and those that ripen without ethylene involvement. For something like banana, the answer would be yes. For a fruit such as strawberry, the answer would be no.

2. *Does ethylene cause a fruit such as a banana to spoil?* Spoilage is the last stage before death. Since ethylene will trigger the ripening process in banana then the fruit will rot faster than a banana not treated with ethylene. However, the untreated banana is not edible since it has not gone through the ripening process.

3. *Does ethylene trigger protein synthesis*? Yes, especially in fruits which require ethylene for the ripening process. *In other words does the ethylene hormone have a direct correlation to DNA in the fruit?* The correlation is not to DNA, but to RNA levels which will then lead to protein synthesis.

Marita Cantwell

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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