Postharvest news you can always use.

DIRECTOR’S NOTE

In recent weeks, many people across the United States have been exposed to extremely cold weather, including freezing rain, sleet, and snow. Many would agree it has been downright miserable – and we are dreaming of spring weather!

Produce can also react negatively to cold temperatures by freezing or suffering from chilling injury. Both conditions severely impact produce quality and generally result in a trip to the waste can. Produce can be subjected to damaging low temperatures in the production field, and during storage, transport, or wholesale/retail handling.

So, how can you tell the difference between freezing and chilling injury? Freezing injury results when product temperature decreases to the point where water inside the product freezes and ice crystals form. This will not occur at 0°C (32°F), but at a lower point, because the dissolved materials inside produce juices depress the freezing point. The temperature at which freezing occurs, “the freezing point,” is related to a product’s
soluble-solids content, or the amount of dissolved solids in the fruit or vegetable. For example, in table grapes, the highest freezing temperature is -2.7°C (27.1°F), but can be as low as -3.0°C (26.6°F). Freezing causes the rupture of cell membranes. Once the product thaws, water soaking is visible within the tissues.

Chilling injury is a different type of problem. Chilling injury occurs at non-freezing temperatures that are below the optimal temperature for the specific type/variety of fruit or vegetable. Plants that originate in tropical and subtropical climates are generally chilling sensitive and have optimal temperatures ranging from 5 to 15°C (41 to 59°F), depending on the product. When sensitive produce is exposed to chilling temperatures, they may develop a range of symptoms including discoloration, failure to ripen, loss of flavor, and bumpy skin. The severity of the symptoms depends on how low the temperature fell below the optimum and the length of exposure. Often, the symptoms are invisible until the product is warmed for retail display.

Of course, we still want to cool chilling-sensitive produce to their lowest safe temperatures to preserve quality and extend shelf life. If you are wondering about the best temperatures for handling your produce items, please refer to our Produce Facts Sheets or our free Produce Facts App on iOS or Android.

Beth
2023 FRUIT RIPENING & ETHYLENE MANAGEMENT
Hybrid Workshop

March 7-8, 2023

Intensive Instruction
Learn what it takes to deliver delicious fruits and fruit-vegetables to consumers and increase profits by reducing losses at the receiving end.

Demonstrations & Q&A Sessions
Our workshop is jam-packed with lectures, demonstrations, Q&A sessions and our popular, not-to-be-missed Fruit Ripening Jeopardy game!

Networking Opportunities
Meet and mingle with fellow fruit-ripening professionals. Rub shoulders with instructors. Expand your professional network through invaluable face-to-face interactions.

CLICK HERE TO REGISTER
2023 POSTHARVEST TECHNOLOGY OF HORTICULTURAL CROPS
Short Course

CLASSROOM LEARNING
June 19-23

FACILITY TOURS
June 26-30

Intensive Instruction
Taught by some of the world’s foremost experts in
c postharvest biology from industry and academia,
optimized for both in-person and virtual participation.

California Facility Tours
Put your new knowledge into practice during a week’s
worth of in-person tours, led by experts at well-known
postharvest facilities.

Networking Opportunities
Meet and mingle with fellow postharvest professionals.
Rub shoulders with instructors. Expand your professional
network through invaluable face-to-face interactions.

Registrations are now open!
ADDITIONAL POSTHARVEST EDUCATION OPPORTUNITIES

March 13-17, 2023
2023 Florida Postharvest Horticulture Tour, Gainesville, Florida

May 7-12, 2023
ISHS International Symposium on Almond and Pistachio, UC Davis

May 14-17, 2023
Postharvest Unlimited Conference & Postharvest Ornamentals Symposium, Wageningen University, The Netherlands

November 11-15, 2024
Postharvest 2024, Rotorua, New Zealand
Mary Lu Arpaia and Angelos Deltsidis, coordinators of this year's *Fruit Ripening & Ethylene Management Workshop*, recently visited General Produce in Sacramento, California, among other ripening/citrus-degreening facilities in southern California, to film behind-the-scenes videos that will be shared at the workshop, March 7-8, 2023. Register today! [https://lnkd.in/gBzA5JPC](https://lnkd.in/gBzA5JPC)

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**RESEARCH CORNER**

**Preservation of Postharvest Quality of Fresh-cut Cauliflower through Simple and Easy Packaging Techniques**

Publication: [Applied Food Research](https://www.appliedfoodresearch.com)

Authors: Nasrin, Taslima Ayesha Aktar; Yasmin, Latifa; Arfin, Most.Sadia; Rahman Khokon, Md. Atiqur; Molla, Mohammad Mainuddin; Sabuz,
These authors investigated the impact of various packaging methods on the shelf life and sensory quality of fresh cut cauliflower florets stored at 4°C, including an unpackaged control, Styrofoam tray wrapped with cling film, polypropylene box, 1% perforated low-density polyethylene (LDPE), sealed LDPE, and vacuum LDPE. All packaging reduced cauliflower water loss and the rate of color darkening and maintained higher firmness and sensory quality. There were no differences among the various packages after 10 days of storage. After 20 days, the vacuum LDPE package had higher sensory scores. Vacuum LDPE packages also had lower bacterial counts than all other packages and unpackaged product after 10 and 20 days of storage.

QUESTION
I’m curious about the shelf life of avocado. Here in the tropical islands, once we harvest avocado, its shelf life starts right away.

ANSWER
Depending on the cultivar, keep mature-green avocados between 5 and 13°C (41-55°F) BEFORE conditioning/ripening to reduce your chilling injury and have more uniform ripening. If you are not using forced air to ripen, then you should avoid temperatures above 21°C or 70°F. Once ripe, avocados can be stored between 2 and 4°C to extend their shelf life. Immature fruit will give you the most problems when ripening, so make sure you receive physiologically mature fruit to start with.
Visit our Produce Fact Sheets for more information about handling a range of produce types!
Our website needs your help!

The Postharvest Technology Center got its start more than 44 years ago, back when the internet seemed like science fiction.

Today, our 11-year-old website remains the go-to source for produce information for many, and is the primary way we share our latest research findings, produce-handling recommendations, and course information.

You may have recently tried to visit our website, only to be met with a blank screen or warning message. This means it's time for an upgrade and we need your support to complete the task.

Please consider making a tax-deductible donation today!

Thank you for your support!
Postharvest Questions. Please send your postharvest questions to postharvest@ucdavis.edu, and we'll see if one of our specialists can help! (Our answers to "Ask the Produce Docs" questions represent the best understanding of the current state of knowledge at the time of the latest update and does not represent an exhaustive review of all research results. Answers are for guidance only. Recommendations may vary from those listed because of, but not limited to, geographical differences, cultivar differences, maturity at harvest or ripeness, growing conditions, grade and quality at harvest, temperature management practices after harvest, and use of special treatments. The UC Postharvest Technology Center and individuals answering the questions are not responsible for any losses, injury to you, any other person, or any property. Further, users agree to release the UC Postharvest Technology Center and individuals answering the questions from all claims and liability related to use of any content.)

Archived Items. Please visit our datastore of all previous “Ask the Produce Docs” questions and answers, and peruse archived copies of our PDF e-newsletters.

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Editorial Review. Beth Mitcham


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