DIRECTOR’S NOTE

People have been consuming food and beverages containing caffeine since prehistoric times – mainly in Asia, Africa and Arabic countries – in the form of tea, yerba mate, cacao or chocolate, and coffee.

Coffee grown worldwide can be traced back centuries to the ancient coffee forests of Ethiopia. Legend has it that a goat herder named Kaldi first discovered the potential of coffee beans after noticing how energetic goats became after consuming “berries” or “fruits” from the coffee tree. They literally could not sleep at night!

Kaldi reported this to the abbot of the local monastery, who made a drink with the berries and found that it kept him alert through the long hours of evening prayer. And so, the knowledge of these energizing berries began to spread around the world. It goes without saying that our world was completely different before we started consuming caffeine. Caffeinated beverages entered Europe
around 1650. Before that, people frequently consumed fermented beverages, which proved safer than water.

We know that in comparison to fermented beverages, caffeine fosters a more rational and focused mindset. Therefore, many historians attribute the success of the Industrial Revolution, which began in 1760, to caffeine consumption. Today, around 92% of the world’s population consumes caffeine in one form or another. As one of the most traded agricultural commodities in the world, coffee boasts an estimated annual value of US $200 billion!

Historically, coffee has never been cultivated far from the equator. But the Southern California climate near Santa Barbara, where FRINJ farm is located, is changing our perspective on where coffee can be grown. FRINJ planted its first coffee plant in 2002 and is the only coffee business that controls the entire coffeemaking process – from the field to the cup. The company grew from a unique working relationship between its co-founder, Jay Ruskey, and a California Cooperative Extension Farm Advisor, Dr. Mark Gaskell.

As the Associate Director of the Postharvest Technology Center, I’m pleased that FRINJ continues to have a great relationship with Cooperative Extension at UC Davis. I’m confident that together, we can transform how the “fruit” of California-grown coffee is produced and stored. You never know – our relationship just may change the course of history, as coffee has done since its beginnings.

Stay tuned!

Irwin

Dr. Irwin R. Donis-González, Associate Director of the Postharvest Technology Center at UC Davis, visits FRINJ during a three-day workshop for 24 students and faculty of UC Davis.
September 20-22, 2022

Fresh-cut Products: Maintaining Quality & Safety Workshop

Today’s consumers demand safe, high-quality, fresh-cut products with extended shelf-life and good eating quality, requiring fresh-cut processors and handlers to meet rigorous standards. Fresh-cut products are fresh fruits and vegetables that have been prepared (cleaned, washed, sanitized, cut), packaged, and held under refrigeration until consumption.

Our 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 about fresh-cut marketing, new packaging, product physiology, microbial control, and sensory evaluation.

Join us if you are new to the fresh-cut industry, or if you want essential updates on many topics important to the success of the fresh-cut fruit and vegetable sector. The workshop is relevant to all levels of fresh-cut produce industry professionals—from small, local, and regional produce processors to large businesses with nationwide distribution. Food scientists, food engineers, quality assurance personnel and new product development staff should attend.

REGISTER NOW
Still not sure if you’re ready to register for our Fresh-cut Products Hybrid Workshop, September 20-22, 2022? Watch this video featuring Jeff Brandenburg, CEO and Founder of The Q Fresh Lab and JSB Group, explaining why you should seriously consider it!

Registration Deadline for Fresh-cut Products is Friday, September 16, 2022!
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 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.

Registration opening in early 2023!
MORE EDUCATIONAL POSTHARVEST EVENTS

- October 27-29, 2022. **IFPA’s Global Produce & Floral Show**, Orlando, Florida

- November 7-9, 2022. **European Federation of Food Science & Technology (EFFoST) International Conference**, Dublin, Ireland


- February 9-10, 2023. **Alabama Fruit & Vegetable Growers Association Annual Conference and Trade Show**, Gulf Shores, Alabama

- March 7-9, 2023. **Fruit Ripening & Ethylene Management Workshop**, University of California, Davis

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

- November 11-15, 2024. **Postharvest 2024**, Rotorua, New Zealand

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**RESEARCH CORNER**

**Discriminating pineapple batches for susceptibility to postharvest internal browning**

*Authors: Kamonwan Sangsoy, Diane M. Beckles, Anupun Terdwongworakul, Kietsuda Luengwilai*

*Published in Scientia Horticulturae, sciencedirect.com*
Postharvest internal browning (PIB) is a fruit disorder caused by low temperature storage that negatively impacts the logistics of pineapple (Ananas comosus L. Merr.) export. Weather conditions during the growing period affects fruit biochemical composition and physiological properties at harvest, thereby influencing the severity of PIB in pineapple. In this work, a model was developed to predict the severity of PIB based on fruit attributes measured at harvest and the weather conditions during the growing period.

The overall classification accuracy of the SDA model for predicting PIB was 71.4%, i.e., 6 out of 13 for ‘no PIB’ pineapple batches, 23 out of 31 for ‘mild PIB’ and 21 out of 26 for ‘severe PIB’. The discriminant model was validated using another 18 batches of pineapples and the classification accuracy was similar, i.e., 72.2%. Batches of pineapples with low ascorbic acid, high TSS, low calcium at harvest, and more rain in the 60 days preceding harvest, tended to develop more severe PIB symptoms. Batches of pineapples with high growing degree days, high ascorbic acid, and high calcium at harvest, tended to be free of PIB. This prediction model for PIB of pineapple fruit should be beneficial for packinghouses to prioritize fruit selection for export markets.
Q: Can you comment on the impact of GM on flavor and aroma?

A: There are ~30,000 genes in many plants, and only a relatively small percentage of those would affect fruit flavor and aroma if genetically modified, so generally speaking, creating a GM plant should not automatically affect fruit quality, unless an aroma pathway or one linked to it was altered. However, if the aim is to genetically modify some aspect of fruit ripening, then there could be repercussions for flavor and aroma. Many of the quality changes that occur in ripening fruit, i.e., color changes, fruit softening, increases in sugars, decreases in acids and changes in aroma volatiles, etc., are intertwined and co-regulated. Tinkering with one of these pathways can have knock-on effects on others, sometimes negative. Scientists are trying to develop a deep understanding of the interconnected nature of these quality pathways to make independent manipulation possible. In this way, we could, for example, extend shelf-life but have little to no ill-effect on flavor. I will use this opportunity to talk about flavor and aroma and the possibility of improving them in fruit. Scientists at the University of Florida (UF) are making great progress in this area. Although we may have good ideas about which compounds should have a positive effect on flavor, it isn’t so much the change in an individual compound that matters, but its abundance in relation to others. UF Scientists ask trained consumer panels to test many diverse tomato varieties and to identify fruit with the most pleasing flavor profiles. By analyzing the DNA sequence of good-flavored fruit, a core set of genes that correlate with good flavor were identified. These genes are being combined into a single background by successive cross-breeding of different tomatoes. – Dr. Diane Beckles
Visit our **Produce Fact Sheets** for more information about handling a range of produce types!
Information. For more information, please visit our website or email us.

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.)

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