

POSTHARVEST TECHNOLOGY CENTER

May 2010 News from UC Davis

QUICK LINKS

- [News from the Center](#)
- [What's New on our Website](#)
- [Postharvest Specialists Activities](#)
- [Postharvest Workshops @ UC Davis](#)
- [Featured Postharvest Publication](#)
- [Postharvest Positions](#)
- [Postharvest Calendar](#)
- [Ask the Produce Docs](#)

News from the Center

Mango Best Handling Practices Webinar

The National Mango Board in collaboration with the University of Florida and the UC Davis Postharvest Technology Center will host a Mango Best Handling Practices Webinar on Thursday, June 3, 2010 at 12:30 p.m. (PDT). Topics will include: the mango's journey from tree to consumer; assessment of mango quality, using the new Mango Maturity & Ripeness Guide; and best practices for mango handling. The webinar is offered free of charge, and will be valuable for mango importers, wholesalers and brokers, retail distribution center and quality assurance personnel, and buyers, category managers and merchandisers. To reserve your spot visit <http://www.mango.org/handling>.



Just a few Spaces Left for the 32nd Annual Postharvest Technology Short Course

On June 14th, about 85 people will gather together on the UC Davis campus for the 32nd Annual Postharvest Technology Short Course. Lead faculty Marita Cantwell, Trevor Suslow, Beth Mitcham, and Michael Reid will again provide the organization leadership of this amazing short course. A dynamic and interactive agenda is planned, with a wide spectrum of current postharvest topics, from basic principles to very specific product handling information.



[Register On-Line](#)

Of particular interest this year, the optional Field Tour segment will run from June 21-25, and participants will visit a range of postharvest operations in the Central Valley, Monterey Coast, and San Francisco Bay Area.

Research and extension workers, quality control personnel and other professionals interested in current advances in postharvest technology of horticultural crops are invited to attend this two-week intensive study of current technological procedures used for handling fruits, nuts, vegetables, and ornamentals in California. The base registration fees of \$1750 for the 1-week session; or \$2750 for the 2-week session are an excellent value.

For complete information or to register, please see the [web page](#).

2010 Walnut Dehydrator Workshops Offered in Chico and Modesto



We are pleased to announce that the very popular Walnut Dehydrator Workshops will be offered in Chico on Monday, June 28th, and Modesto on Tuesday, June 29th. Course organizer Jim Thompson is collaborating with Don Osias from Applied Instrumentation in Walnut Creek, California, and the workshop agenda will include topics such as: Dryer Design Principles - Determining Equipment Capacity, Burner Installation & Air Recirculation; Class Design of a 25 & 50 ton Dryer; Huller/Dryer Cost Study; Dryer Control Systems; and Designs of the Future. The cost for either session is \$80/person and includes lunch and instructional materials. We invite you to see the workshops' [web page](#) for more information or to register on line.

Fresh-cut Products: Maintaining Quality & Safety Workshop

The 15th Annual Fresh-cut Workshop is now accepting enrollments from those interested in learning more about fresh-cut products (cleaned, washed, cut, packaged and refrigerated fruits and vegetables). This is a rapidly expanding food category for the produce industry, food processors, retailers, and food service operators. Dr. Marita Cantwell, course academic coordinator, has assembled a dynamic team of instructors who offer a wide range of fresh-cut expertise. A series of hands-on and interactive sessions will be included. The course will be held September 14-16, 2010 on the UC Davis campus. For more information or to enroll, please see the course [web page](#).



2nd Fresh Produce Marketing Strategies Short Course a Success

With fantastic views of the Bay and Golden Gate bridges out the windows, top notch instructors, and forthright interactive dialogue between the participants, there was much positive to be said for the May 5-7, 2010 Fresh Produce Marketing Strategies Short Course. Dr. Roberta Cook's carefully crafted agenda took informational marketing topics, and then interwove them with dynamic industry presenters and leading-edge marketing strategists and researchers.



Feedback from the participants included comments such as, "The overall course provided the information necessary to inspire & stimulate a refreshed way of thinking of our category. The interaction was great..." and "This course was excellent—thank you so much for all your hard work! I look forward to attending in the future!"

[\[Back to Top\]](#)

What's New on our Website this Month

New Article Added to Postharvest Publications Organized by Topic

- [Future of Modified Atmosphere Research](#) by A.A. Kader. Acta Hort ISHS 857:213-218 (2010)

Produce Fact Added in Spanish for Chile Pepper

With much appreciation for the translation efforts of Eleta Treja and Marita Cantwell, the new [Chile Peppers Produce Fact](#) we added to our web site last month is now available in Spanish:
<http://postharvest.ucdavis.edu/Produce/ProduceFacts/Espanol/chile.html>

Additions to the Postharvest Yellowpages

One of the most popular sections of our web site, the [Postharvest Yellowpages](#) had eight new companies added this month. We also added a new subcategory "Fiberboard Shipping Containers" along with several

companies providing supplies of this type. “This is an excellent resource for the postharvest community” said Center Faculty Director, Beth Mitcham. “Searchable by category or company, you can find the supplies or tools you need for your project.”

[\[Back to Top\]](#)

Postharvest Specialists' Activities

Stakeholder Discussion Series of the Produce Safety Project

Postharvest Technology Extension Specialist Trevor Suslow recently completed participation in an intensive outreach program organized by the Produce Safety Project, a component of the Safe Food for a Healthy Life initiative of the Pew Charitable Trusts at Georgetown University <http://www.producesafetyproject.org/>. Suslow prepared an Issue Brief (17p) entitled Standards for Irrigation and Foliar Contact Water <http://www.producesafetyproject.org/admin/assets/files/Water-Suslow-1.pdf>, and contributed to content and review of Co-Managing for Food Safety and Ecological Health in California's Central Coast Region (<http://www.producesafetyproject.org/admin/assets/files/wildlife.pdf>) by Lowell, Langholz, and Stuart under direction from the Nature Conservancy. In addition, Suslow participated as a presenter and technical facilitator in the six regional Stakeholder Discussion Series that brought industry, public health, extension, NGO's, and environmental agencies together for face to face interactions with the FDA and USDA around the pending FDA rulemaking on produce safety regulations. Meetings were held in Rochester, NY, Columbus, OH, Tifton, GA, College Park, MD, and Seaside, CA from February 19 to April 27, 2010. One half-day session in CA was held in Spanish. Summaries of the discussion and outcomes of each meeting will be posted at the PSP website.

Presentation at United Fresh 2010 Expo

In other recent activities, Trevor Suslow presented two talks at the United Fresh 2010 Expo in Las Vegas in April. With co-presenter Drew McDonald of Taylor Farms, an Overview of Pathogen Testing of Fresh and Fresh Cut Produce was given in the Fresh Cut Learning Center. A second presentation was provided by Suslow in the Food Safety Demo Center entitled Overview of UCGAPs Produce Safety Applied Research Program. Both were very well attended.

Suslow was invited by FDA/CFSAN to give an expanded and more technical version of this presentation at the College Park, MD facility and to share the outcomes of recent environmental and postharvest investigations of contaminated leafy greens and melons.

Barrett's Activities in Spain

Dr. Diane Barrett gave a presentation titled Optimization of Quality in Processed Fruits and Vegetables to the Department of Food Technology at the Polytechnic University of Valencia, Spain. She also helped the department initiate a series of Research Seminars to be given by graduate students in the department each week. While on sabbatical in Spain, Dr. Barrett is learning about new techniques of potentially nondestructive analysis of fruits and vegetables, including impedance spectroscopy and the electronic tongue.

Reviewing Composting Criteria

Specialist Linda Harris was a reviewer for the Issue Brief Composting Criteria for Animal Manure by Erickson, Critzer, and Doyle of the University of Georgia <http://www.producesafetyproject.org/admin/assets/files/PEW-PSP-Composting-Manure-Narrative-v4-2.pdf> and former Postharvest Technology Executive Director Jim Gorny attended some of the Discussion Series meetings in his new role representing FDA.

Does Fruit Taste as Good as it Looks?

A review and report of Dr. Adel Kader's speech, given after receiving his honorary doctorate at the Polytechnic University of Cartagena, was reported by Alicia Namesny in the Horticom News: <http://www.horticom.com/pd/article.php?sid=76037>

Davis Newspaper Interviews Specialists about Food Safety

Postharvest Specialist Christine Bruhn was one of two specialists interviewed in April by the Davis Enterprise

about the topic of food safety. During the entertaining interview, Bruhn contributed a number of savvy food safety tips including, "Keep fruits and vegetables in your refrigerator's produce drawer. Don't wash your vegetables before you put them away - adding water at that stage will only encourage bacteria growth." To read the entire article: <http://www.foodscience.ucdavis.edu/two-fst-food-safety-experts-interviewed-by-davis-enterprise/>

[\[Back to Top\]](#)

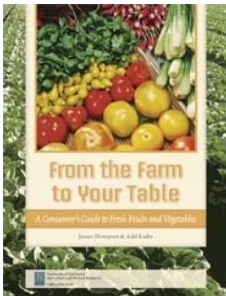
Postharvest Center's Workshops @ UC Davis

2010 UC Davis Postharvest Learning Opportunities

- **June 14-25: Postharvest Technology Short Course** - 32nd Annual, scheduled to be held on the UC Davis campus. *Registration is now open. Note: Limited spaces remain.*
- **September 14-16: Fresh-cut Products: Maintaining Quality & Safety** - 15th Annual, scheduled to be held on the UC Davis campus. *Registration is now open.*
- **April 26-27, 2011: Fruit Ripening & Ethylene Management Workshop** - 17th Annual, scheduled to be held on the UC Davis campus.

[\[Back to Top\]](#)

Featured Postharvest Publication



Consumer-Focused Booklet Receives Award

Postharvest Technology Center members James Thompson and Adel Kader recently received notice that they had been selected to receive a 2010 Educational Aids Blue Ribbon Award for their colorful consumer focused handbook "From the Farm to Your Table: A Consumer's Guide to Fresh Fruits & Vegetables".

This 16 page booklet offers information that will help consumers pick good-quality, healthy fruits and vegetables that are a vital part of one's daily diet. Information on how to handle those fresh fruits and vegetables once you get them home, and also how growing and harvesting factors affect quality is also included. There are flow diagrams that show the number of steps between the field and your table, and tables that show which items should be stored in the refrigerator and which should be stored on the counter.

The UC Davis Postharvest Technology Center is pleased to offer these publications for sale at \$7/copy, with a special volume discount available for 10 or more copies.

(For a table of contents and more information, please see:
http://postharvest.ucdavis.edu/Pubs/Pub_Desc_21643.pdf)

To order a copy for your library, please use our [Order Form](#).

[\[Back to Top\]](#)

Postharvest Positions

Research Assistants in Postharvest Technology – University of Nottingham Malaysia Campus

Applications are invited for post-grad and post-doc positions based within the School of Biosciences. The successful candidates will join an enthusiastic team of researchers working on novel approaches to the enhancement of the shelf-life of fruits and vegetables. Knowledge of microbiology, pathology, biochemistry, physiology and postharvest technology of fruits and vegetables would be advantageous. A good command of English, good communication and interpersonal skills, and the ability to work independently are required. Applications should be sent by 6/15.10. For additional information contact:

Salma.AbdKadir@nottingham.edu.my.

Postdoctoral Fellowships in Postharvest Technology, Stellenbosch University, South Africa

The Postharvest Technology Chair at the University of Stellenbosch is seeking applications from candidates who have obtained their PhD within the last five years in one of the following research themes: 1) Packaging Technology; 2) CFD Modeling of Airflow, Heat, and Mass Transfer; 3) Non-destructive Quality Measurement and Modeling; and 4) Impacts of Postharvest Research and Interventions. Responsibilities will include conducting original research/reviews and preparation of scientific articles for publication. Will also provide support, guidance and mentorship of postgraduate students. Relevant research experience is required as well as the ability to think critically, a passion for research, and possession of excellent written and oral communication skills. Please contact Linus Opara (opara@sun.ac.za) for more information. The closing date for applications is 6/20/10.

Dow AgroSciences Seeking a Field Horticulturist/Harvista Support Located in Washington

AgroFresh Inc., a business aligned with Dow AgroSciences, has an exciting and challenging opportunity for a Field Horticulturist for the new Harvista Preharvest product line. The successful candidate will be responsible for grower relations, technical support and logistics management for Harvista Preharvest 1MCP treatment in the northwestern U.S. tree fruit industry. A BS, or better, in agriculture/horticulture is required. A minimum of five years experience in grower relations and field horticulture is preferred, with contacts in the Washington apple and pear grower industries. For complete information and to apply on-line see: <http://careers.dowagro.com/job/Washington,-Field-Horticulturist,-Harvista-Job/821857/>

Viticulture Research Director Sought by the California Table Grape Commission

The California Table Grape Commission is pleased to announce the expansion of its viticulture research program through the creation of a viticulture research director position. Key areas of responsibility include program planning, budget development and management, project management, program evaluation, industry communication and grantsmanship. A minimum of a master's degree in viticulture or a related area of science and five years of professional experience in the research field or grape industry are required. The application deadline is 6/14/10. For more information contact Ross Jones at ross@grapesfromcalifornia.com

Three Corporate QA Manager, 2 QA Analyst Positions in Growing California Food Company

ARG, Inc. is seeking candidates for three Quality Assurance positions, and two Quality Assurance Analyst positions with a growing food company located in Oxnard, California. The QA Manager positions specify 8+ years' experience in quality, a degree in a QA field or agricultural business, 4+ years experience in perishables and raw products, and good knowledge of food regulatory rules. The QA Analyst position requires a related degree, 4+ years of QA background with 2+ in raw products/perishable foods. Spanish is a plus for both position descriptions. Contact Ron Christensen for more information: ronc@argpeople.com.

Vegetable and Fruit Extension Specialist at Kansas State University (repeated from April)

The Kansas State University's Department of Horticulture, Forestry and Recreation Resources has an opening for an Assistant Professor of Horticulture. This is a 12-month, tenure-track position that is 60% extension and 40% research, and will focus on the improvement of production, quality and profitability of the vegetable and fruit industries of Kansas, with a focus on integrated and sustainable production systems addressing organic methods. A Ph.D. in Horticulture or closely related Plant Science discipline, earned or all but dissertation is required. For questions about the position contact Jason Griffin (jgriffin@ksu.edu). Screening of applicants will begin August 1, 2010.

[\[Back to Top\]](#)

Postharvest Calendar: Upcoming Conferences, Courses and Workshops

- June 14-25, 2010. **Postharvest Technology Short Course**. 32nd Annual. UC Davis campus.
- June 22-26, 2010. **VI Congreso Iberoamericano de Tecnologia Postcosecha y Agroexportaciones**.

Merida, Mexico.

- June 27 to July 2, 2010. **Gordon Research Conference on Postharvest Physiology**. Tilton, New Hampshire, USA
- August 2-4, 2010. **Asia Pacific Symposium on Postharvest Research Education and Extension**. Bangkok, Thailand
- August 22-27, 2010. **28th International Horticultural Congress**. Lisbon, Portugal.
- September 8-10, 2010. **Asia Fruit Logistica 2010**. Hong Kong.
- September 14-16, 2010. **Fresh-cut Products: Maintaining Quality and Safety Workshop**. 15th Annual. UC Davis campus.
- April 26-27, 2011. **Fruit Ripening & Ethylene Management Workshop**. 17th Annual. UC Davis campus.

[\[Back to Top\]](#)

Ask the Produce Docs

Q. I was recently in Uganda and found that the region has a lot avocado trees. They produce more fruit than the people in the region can eat before they go bad. As you know, this is a third world country and electricity is only available in the larger cities (most of the time). Is there a simple process that can be used to increase the shelf life of the avocados, may be like the one used on Washington apples? (S.H.)



A. I am sorry to say, without refrigeration you do not have much hope of stopping avocados from ripening. Once they are off the tree and not refrigerated they will ripen. How fast will depend on how mature they are. The best way to store avocados is on the tree. Most varieties have a 2 to 4 month harvest window; some varieties, like the Hass will hang successfully on the tree for even longer. One possibility for use of the excess fruit would be to make avocado oil. Avocados have very fine oil, of similar quality to olive oil.—Mary Lu Arpaia



Q. Could you tell me how many pounds of ethylene I would need to put in a kiwi ripening chamber that is 73,000 cubic feet, in order to reach 200ppm? (S.M.)

A. For ripening we use ethylene as a gas in a cylinder using a flow meter. It is very hard and erratic to measure by weight very small amounts of ethylene for this application. We calculated that you will need approximately 0.0011 lb of ethylene (C₂H₄) for your conditions.

I suggest that for your case, you should use the "shot" system for ethylene application technique. The "Shot" system is one technique by which ethylene can be applied to kiwifruit. Always make sure the ripening room or truck is "well sealed". A measured amount of ethylene is introduced into the room. The room can be completely full. Ethylene shots from a cylinder may be applied by flow using a gauge (flow meter) that registers the discharge of ethylene in cubic feet per minute. The required ethylene application is made by adjusting the regulator to give the appropriate flow rate and then timing the delivery of gas. The amount of gas needed for a room is calculated by using the following information:

C = ppm of ethylene required

V = volume of room in cubic feet

F = flow rate of gas (measured from flow meter) in cubic feet per minute (CFM)

T = time (in minutes) for which gas is allowed to flow

Plug this information into the following formula:

$$T = (C \times V) / (F \times 1,000,000)$$

For your 73,000 cubic feet chamber, a desired ethylene concentration of 200 ppm, and ethylene flow rate of 5 cubic feet per minute (CFM), the equation would be as shown below:

$(200 \text{ ppm} \times 73,000 \text{ cubic feet}) / (10 \text{ cubic feet per min}^* \times 1,000,000) = \text{Time (minutes)}$

$14,600,000/5,000,000 = 2.92 \text{ minutes} \approx 3 \text{ minutes}$

(To convert the above equation from cubic feet per minute to milliliters per minute, multiply by 28.32).

Time of application is easily measured with a stopwatch. The room should be ventilated before each application by opening the doors for at least one-half hour after 6 or 12 hours of application. In the case of kiwifruit just harvested or stored for less than a week, kiwifruit should be treated for at least 12 hours (then venting). If kiwifruit have been in cold storage for more than a week, a 6 hour ethylene treatment will trigger ripening. In both cases, a ventilation fan should be provided.

It looks complicated but it is not. --[Carlos H. Crisosto](#)

Link to a data store of all our previous “[Ask the Produce Docs](#)” questions and answers, or link to archived copies of our [monthly E-Newsletter](#) as PDF documents.

[\[Back to Top\]](#)

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Editorial Review: Adel Kader (lead), Trevor Suslow, Pam Devine, Jim Thompson, Roberta Cook, Beth Mitcham

Writing: Mary Reed, Diane Barrett, Trevor Suslow, Mary Lu Arpaia, Carlos Crisosto

Layout & Design: Mary Reed

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