

# POSTHARVEST TECHNOLOGY CENTER

## August 2010 News from UC Davis

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### News from the Center

#### **Fresh-cut Products Workshop Adds Five New Instructors**

The *Fresh-cut Products: Maintaining Quality & Safety Workshop* balances academic and industry perspectives, trends and know-how for these value added products. This 3-day workshop provides an overview of many issues on the production, processing, packaging, distribution and quality assurance of fresh-cut products, and takes place September 14-16 on the UC Davis campus.



Dr. Marita Cantwell, the Faculty Director of the course says, "The Workshop evolves each year and we are pleased to have 5 new instructors in 2010 to add to our great instructor base. This year, the course will place more emphasis on raw material quality, sensory quality of fresh-cut products, and sanitation."

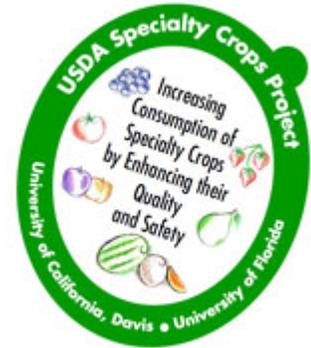
Previous attendees have cited the excellence of the course material as well as the chance to network with other food professionals as benefits of attending. Operations, quality assurance, manufacturing and maintenance managers, as well as anyone interested in assuring the quality of fresh-cut produce would take away valuable information from this workshop. The training provides a solid overview of this product category and is relevant to all levels of fresh-cut produce industry professionals—from small, local and regional produce processors to large businesses with nationwide distribution.

See the web page <http://postharvest.ucdavis.edu/Announce/freshcut.shtml> for more information or to register on-line. Cost for the course is \$1050 and includes all program

handouts, lunch and morning and afternoon refreshments each day. Questions about registration can be answered by Ms. Penny Stockdale at (530) 752-7672 or [pastockdale@ucdavis.edu](mailto:pastockdale@ucdavis.edu).

### Media Attention for the USDA SCRI Grant “Increasing Consumption of Specialty Crops by Enhancing their Quality & Safety”

Postharvest Technology Center Faculty Director Beth Mitcham has been kept busy this week responding to media requests for interviews: two television news crews taped interviews with her on campus, and she also went to a Sacramento news studio and taped a television interview. The project receiving attention is already almost a year underway, and is a collaborative effort between UC Davis and the Univ. of Florida to find ways to provide better tasting produce, with a focus on stone fruit, tomatoes, blueberries, strawberries, melons and pears. In addition to Beth Mitcham, other UC Davis Postharvest Technology Center project team members include Christine Bruhn, Diane Barrett, Marita Cantwell, Roberta Cook, Carlos Crisosto, Linda Harris, Trevor Suslow, and Jim Thompson. A strong team of stakeholders are also supporting the grant’s undertakings.



## What’s New on our Website this Month

### New Articles Added to Postharvest Publications Organized by Topic

Our datastore now contains over 1,100 postharvest documents, organized by topic, and is searchable by title or author.

- Short anaerobiosis period prior to cold storage alleviates bitter pit and superficial scald in Granny Smith apples, Edna Pesis, Susan E. Ebeler, Sergio Tonetto de Freitas, Malkeet Padda, and Elizabeth J. Mitcham. *J. Sci. Food Agric.* 90:2114-2123 (2010)
- Chilling injury susceptibility in an intra-specific peach [*Prunus persica* (L.) Batsch] progeny, C.M. Cantin, C.H. Crisosto, E.A. Ogundiwin, T. Gradziel, J. Torrents, M.A. Moreno, Y. Gogorcena. *Postharvest Biology and Technology.* 58:79-87 (2010)
- Distinctive symptoms differentiate four common types of berry shrivel disorder in grape, Mark N. Krasnow, Mark A. Matthews, Rhonda J. Smith, Jason Benz, Ed Weber, Ken A. Shackel. *California Agriculture* 64:155-159 (2010)
- Potential of *Escherichia coli* O157:H7 to grow on field-cored lettuce as impacted by postharvest storage time and temperature, James L. McEvoy, Yaguang Luo, William Conway, Bin Zhou, Hao Feng. *International Journal of Food Microbiology* 123:506-509 (2009)
- Combining biological control with physical and chemical treatments to control fruit decay after harvest, Wojciech J. Janisiewicz, and William S. Conway. *Stewart Postharvest Review*, 16 pages, March (2010)
- Physicochemical properties and bioactivity of fungal chitin and chitosan, Tao Wu, Svetlana Zivanovic, F. Ann Draughon, William S. Conway, and Carl E. Sams. *Journal of Agricultural and Food Chemistry.* 53:3688-3894 (2005)
- Preliminary evaluation of apple germplasm from Kazakhstan for resistance to postharvest blue mold in fruit caused by *Penicillium expansum*, Wojciech J. Janisiewicz, Robert A. Saftner, William S. Conway, Philip L. Forsline. *HortScience* 43:420-426 (2008)
- Chemical changes in the cortical tissue and cell walls of calcium-infiltrated ‘Golden Delicious’ apples

during storage, Catherine O. Chardonnet, Craig S. Charron, Carl E. Sams, William S. Conway. *Postharvest Biology and Technology* 28:97-111 (2003)

- Improving biocontrol using antagonist mixtures with heat and/or sodium bicarbonate to control postharvest decay of apple fruit, William S. Conway, Britta Leverentz, Wojciech J. Janisiewicz, Robert A. Saftner, Mary J. Camp. *Postharvest Biology and Technology* 36:235-244 (2005)
- Control of blue mold of apple by combining controlled atmosphere, an antagonist mixture, and sodium bicarbonate, William S. Conway, Wojciech J. Janisiewicz, Britta Leverentz, Robert A. Saftner, Mary J. Camp. *Postharvest Biology and Technology* 45:326-332 (2007)
- Histological effects of calcium chloride in stored apples, W. Robert Trentham, Carl E. Sams, William S. Conway. *J. Amer. Soc. Hort. Sci.* 133:487-491 (2008)
- Isolation, purification and characterization of a polygalacturonase produced in *Penicillium solitum*-decayed 'Golden Delicious' apple fruit, Wayne M. Jurick II, Ivana Vico, James L. McEvoy, Bruce D. Whitaker, Wojciech Janisiewicz, William S. Conway. *Phytopathology* 99:636-641 (2009)
- Extension of green bell pepper shelf life using oilseed-derived lipid films from soapstock, J.C. Beaulieu, H.S. Park, A.G. Ballew Mims, M.S. Kuk. *Industrial Crops and Products* 30:271-275 (2009)
- Non-destructive evaluation of post-harvest peach fruit softening, R. Scorza, W. Anger, D. Peterson, K. Bett, E. Champagne, J. Beaulieu, D.A. Ingram. *XIth Encarpia Symp. On Fruit Breed. & Genetics* pp. 269-273 (2004)
- Characterization and semiquantitative analysis of volatiles in seedless watermelon varieties using solid-phase microextraction, John C. Beaulieu, Jeanne M. Lea. *J. Agric. Food Chem.* 54:7789-7793 (2006)
- Color, flavor, texture, and nutritional quality of Fresh-cut fruits and vegetables: desirable levels, instrumental and sensory measurement, and the effects of processing, Diane M. Barrett, John C. Beaulieu, Rob Shewfelt. *Critical Reviews in Food Science and Nutrition* 50:369-389 (2010)
- Volatile and quality changes in fresh-cut mangos prepared from firm-ripe and soft-ripe fruit, stored in clamshell containers and passive MAP, John C. Beaulieu, Jeanne M. Lea. *Postharvest Biology and Technology*. 30:15-28 (2003)
- Effect of storage on sensory properties of fresh-cut cantaloupe varieties, K.L. Bett-Garber, J.C. Beaulieu, D.A. Ingram. *Journal of Food Quality* 26:323-335 (2003)
- Within-season volatile and quality difference in stored fresh-cut cantaloupe cultivars, John C. Beaulieu. *J. Agric. Food Chem.* 53:8679-8687 (2005)
- Volatile changes in cantaloupe during growth, maturation, and in stored fresh-cuts prepared from fruit harvested at various maturities, John D. Beaulieu. *J. Amer. Soc. Hort. Sci.* 131:127-139 (2006)
- Effectiveness of bacteriophages in reducing *Escherichia coli* O157:H7 on fresh-cut cantaloupes and lettuce, Manan Sharma, Jitendra R. Patel, William S. Conway, Sean Ferguson, and Alexander Sulakvelidze. *Journal of Food Protection* 72:1481-1485 (2009)
- Optimizing concentration and timing of a phage spray application to reduce *listeria monocytogenes* on Honeydew Melon tissue, Britta Leverentz, William S. Conway, Wojciech Janisiewicz, Mary J. Camp. *Journal of Food Protection* 67:1682-1686 (2004)

We were getting so many fresh-cut articles, we decided to create two separate categories: one for [fresh-cut fruits](#), and one for [fresh-cut vegetables](#).

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## Postharvest Specialists' Activities

### SCRI Grant Stakeholder Meeting held in Monterey

A stakeholder meeting was held by Project Director Beth Mitcham for the UC-UF Specialty Crops Project, "Increasing Consumption of Specialty Crops by Enhancing Quality and Safety", in Monterey, California on Saturday July 31<sup>st</sup>. Several center members were in attendance or participated through web-conference in a lively discussion with industry stakeholders about strategies for enhancing the flavor quality of fruits and vegetables in commercial handling realities. Several colleagues from the University of Florida, including co-Director Jeff Brecht also participated. The next stakeholder meeting will be held in October at PMA's Fresh Summit.

### Postharvest Specialists Mitcham and Harris Speak at ASHS Meeting at Palm Desert

Center member Beth Mitcham attended the American Society for Horticultural Sciences meeting in Palm Desert, California where she presented two posters and an invited talk about the USAID Horticulture Collaborative Research Support Program for which she serves as Associate Director. Linda Harris was an invited speaker on the topic of Food Safety for nut crops. Marita Cantwell was an invited speaker to discuss postharvest handling for local food systems and also presented two posters.

### Diane Barrett to Coordinate Processing Technologies Short Course

A unique new short course "How to Deliver Fresh Food Quality via Advanced Processing Technologies" is the first of its kind to focus on the ability to deliver fresh-like food quality and potential health benefits through advanced processing technologies such as Ohmic, High Pressure, Continuous and Batch Microwave Processing. The course will be offered on October 26, 2010 at the UC Davis Buehler Alumni Center, from 8:00 – 5:00, and will feature presentations and demonstrations by graduate students from four leading universities working on advanced processing technologies. Instructors are from UC Davis, Ohio State University, US Natick Army Soldier Center, Washington State University, and North Carolina State University.

### HACCP Programs Offered at UC Davis

Postharvest Specialist Linda Harris will be an instructor in two upcoming programs held at the UC Davis campus: Basic HACCP: A Food Safety Program (November 15-17, 2010); and Advanced HACCP: Verification, Implementation and Other Challenges (November 18-19, 2010). Both programs are accredited by the International HACCP Alliance. For more information link to: <http://www.extension.ucdavis.edu/ag>

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## Postharvest Center's Workshops @ UC Davis

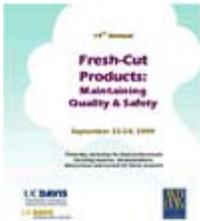
### 2010-2011 UC Davis Postharvest Learning Opportunities

- *September 14-16: Fresh-cut Products: Maintaining Quality & Safety* - 15<sup>th</sup> Annual, at the UC Davis Buehler Alumni Center's AGR Room. *Registration is open. Just a few spaces left!*
- *October 26: How to Deliver Fresh Food Quality via Advanced Processing Technologies*– at the UC Davis Buehler Alumni Center's AGR Room. *For more information.*
- *November 30-December 2: Advanced Topics in Microbial Safety of Fresh Produce Workshop* – at the UC Davis Buehler Alumni Center's AGR Room. *More details coming in next month's newsletter.*
- *February 15-18, 2011: Better Process Control School* – Activities & Recreation Center's Ballroom on the UC Davis campus. *For more information.*

- *April 26-27, 2011: **Fruit Ripening & Ethylene Management Workshop** - 17<sup>th</sup> Annual, at the UC Davis Buehler Alumni Center's AGR Room.*
- *June 13-24, 2011: **Postharvest Technology Short Course** – 33<sup>rd</sup> Annual, on the UC Davis campus, with the optional field tour covering the San Joaquin Valley and Coastal California. *For more information.**

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## Featured Postharvest Publication



### **“Fresh-cut Products: Maintaining Quality & Safety” Now on Sale!**

We are pleased to offer a 30% discount on the comprehensive “Fresh-cut Products: Maintaining Quality & Safety” publication. This material was updated for our September 2009 workshop, and includes a 376 page binder, 4 separately bound publications in a portfolio, and a 2-GB Memory Stock containing PDF files of all binder documents. To order a copy for your library, please use our [Order Form](#) and be sure to note “30% Special” to receive your discount.

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## Postharvest Positions

### **Jacobs Farm/Del Cabo Hiring a Packinghouse Manager at their New Boston Facility**

The new Jacobs Farm/Del Cabo facility is approximately half the size of their San Francisco facility, and they are searching for someone to run the new facility. A Bachelors or Masters degree in Ag Business is preferred.

Excellent computer skills, and bi-lingual (English-Spanish) preferred. See:

[http://www.blueskysearch.com/employers.JacobsFarm\\_9267.htm](http://www.blueskysearch.com/employers.JacobsFarm_9267.htm)

### **JBT FoodTech Hiring 3 or More Lab Technicians**

JBT Food Tech is adding a new lab on-site at POM Wonderful in Del Rey, California, and are in need of at least three experienced lab technicians proficient in gas chromatography or GC/mass spectrophotometry. For more information contact Doug McDowell ([doug.mcdowell@jbt.com](mailto:doug.mcdowell@jbt.com)).

### **UC Davis Department of Food Sciences Offers Job Board**

A new ‘beta’ test job board is now available, courtesy of the Department of Food Science & Technology, at <http://wineserver.ucdavis.edu/fstjobs/>. Employers are able to upload and then remove the positions according to their business’s needs.

### **Volunteer Technical Assistant Requested for Improved Quality of Rice Paddy Processing**

Winrock International is seeking one volunteer who has experience with value-added rice processing, including improved parboiling, milling, polishing of paddy rice. For more information contact Darla Embry ([dembry@winrock.org](mailto:dembry@winrock.org)).

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## Postharvest Calendar: Upcoming Conferences, Courses and Workshops

- September 8-10, 2010. **Asia Fruit Logistica 2010.** Hong Kong.
- September 14-16, 2010. **Fresh-cut Products: Maintaining Quality and Safety Workshop.** 15<sup>th</sup> Annual. UC Davis campus.

- September 27-29, 2010. **Fourth edition of the European Short-course on “Quality & Safety of Fresh-cut Produce”** Mesagne (BR) Italy.
- October 25-28, 2010. **International Workshop on Biological Control of Postharvest Diseases: Challenges and Opportunities.** Leesburg, Virginia.
- October 26, 2010. **How to Deliver Fresh Food Quality via Advanced Processing Technologies.** UC Davis Campus.
- October 26-30, 2010. **Second International Fruticultura 2010.** La Habana, Cuba.
- November 4-7, 2010. **IACSC Conference and Expo.** San Antonio, Texas.
- November 30-December 2, 2010. **Advanced Topics in Microbial Safety of Fresh Produce Workshop.** UC Davis Campus.
- February 6-9, 2011. **WFLO Institute.** Atlanta, Georgia.
- February 9-11, 2011. **Fruit Logistica 2011.** Berlin, Germany.
- February 15-18, 2011. **Better Process Control School.** UC Davis campus.
- April 26-27, 2011. **Fruit Ripening & Ethylene Management Workshop.** 17<sup>th</sup> Annual. UC Davis campus.
- April 30-May 4, 2011. **IARW-WFLO Annual Convention & Expo.** New Orleans, Louisiana.
- May 10-12, 2011. **Methods of Measuring Fruit and Vegetable Quality.** UC Davis campus.
- May 23-26, 2011. **Postharvest Unlimited 2011.** Wenatchee, Washington.
- June 13-24, 2011. **Postharvest Technology Short Course.** 33<sup>rd</sup> Annual, UC Davis campus/field tour.
- July 17-21, 2011. **Second International Conference on Quality Management of Fresh Cut Produce: Convenience Food for a Tasteful Life.** Torino, Italy.
- December 3-6, 2011. **International Conference on Quality Management in Supply Chains of Ornamentals.** Radisson Hotel, Bangkok, Thailand. Contact Sirichai Kanlayanarat (66)2-470-7720 or [gmsco@kmutt.ac.th](mailto:gmsco@kmutt.ac.th).
- December 3-6, 2011. **Southeast Asia Symposium on Quality Management in Postharvest Systems (SEAsia2011).** Bangkok, Thailand. Contact Sirichai Kanlayanarat (66)2-470-7720 or [sirichai.kan@kmutt.ac.th](mailto:sirichai.kan@kmutt.ac.th)

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## Ask the Produce Docs

**Q.** I am an agricultural economist with an interest in the fruit & vegetables sector. I have been asked to lead a team to commercialize a piece of software which will be of great assistance to the food packaging industry. Use of this software will extend the shelf life of fruit and vegetables by 2 or 3 days and this should greatly reduce the problem of waste, which I understand to be a major problem in this sector. There are 2 issues which I would appreciate your assistance on:

- 1) An estimate in US\$ of the amount of waste in the fruit and vegetables sector on an annual basis and an indication as to whether the scale of the problem is growing or in decline.
- 2) Your estimate as to the reduction in the above figure that would be achieved if the shelf life of fruit and vegetables could be extended by 2 days. (J.S.)



**A.** Current research has largely neglected system-wide produce losses but the estimates developed by the landmark study by NSF-RANN 35 years ago are believed by most industry experts to remain valid. That research developed broad ranges of losses at each stage of the distribution system but taken together reached as high as 16% of all fresh produce, which converts to more than \$ 17 billion in 2009. –[Roberta Cook](#)

**Estimated ranges of Losses in the  
Fresh Produce Distribution System**

<u>Distribution</u> Activity	<u>Losses</u> Percent <sup>1</sup>
Transportation	2.80 – 5.00
Wholesaling	2.50 – 5.03
Retailing	2.74 – 6.58
System Losses	9.04 – 16.61

<sup>1</sup>Percentage losses are based upon dollar values of losses in each phase of distribution as a percentage of the wholesale value of products entering the distribution system.

**Q.** I would first like to note that your web site is a great help, keep up the great work.



I do have a question regarding brix levels on grape-tomatoes. We have done some testing here at our facility regarding brix testing for grape tomatoes. The question that we have is, does the brix level change if the grape tomatoes are stored at different temperatures? We found that they do not. We ran the test of storing some at 52 degrees and stored another amount at 60 degrees. The Brix levels did not change on either one. Could you provide us your opinion/test that you have done in this area and let me know your findings? (M.L.)

**A.** Glad to know that you find the website useful to your business.

We have conducted some work on grape tomatoes and that is summarized at:

<http://postharvest.ucdavis.edu/datastorefiles/234-1531.pdf>. Click on tomato and the grape tomato summary is the last paper added.

In that paper there are both analyses of sugars and % soluble solids. Yes, it is true that you can expect little change in soluble solids (see Figure 1 in the above-mentioned paper), but sugars are only a part of the soluble solids measurement (acids, soluble pectins, etc. contribute to the reading) and if we measure sugar directly we do see a decrease with storage (see Table3 for example). In the case of grape tomatoes, % titratable acid is high (and this is a substantial contributor to the % soluble solids reading). – Marita Cantwell

*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.*

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