

# POSTHARVEST TECHNOLOGY CENTER

## October 2010 News from UC Davis

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### Director's Update

During a brief lull in our educational programs, the Postharvest Technology Center has been actively adding new, free content to our website. We realize that access to our web resources is of great value to the postharvest community based on the number of page views each day. We are planning a major site renovation to make the information even easier to access. Please consider showing your appreciation through a donation to our postharvest endowment to support this free service.

--Elizabeth Mitcham



### News from the Center



#### **Endowment Contributions Assist with Postharvest Web site Update**

We are making progress on the huge task of updating our 1,150+ page web site, and would like to express our grateful appreciation to the following endowment contributors:

- [AgroFresh](#)
- [Melissa's World Variety Produce](#)
- [Resnik Foundation](#)

We continue to seek contributions to our 2010 Endowment Campaign, especially from those who frequently use and benefit from our web site. Please use our [handy form](#) to fax or mail in your contribution. Please take a moment to view the complete list of our generous contributors by linking to:

<http://postharvest.ucdavis.edu/about/contributors.shtml>

### Are you Interested in E-books?

Please take a few minutes to complete a survey that will help us as we look at future revisions of our Center's publications: <http://ucanr.org/ebook-survey>

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## Postharvest Center's Workshops at UC Davis

### 2010-2011 UC Davis Postharvest Learning Opportunities

- *February 1-2, 2011 (California)/May 4-5, 2011 (Florida): **Delivering More Flavorful Produce.** This workshop is sponsored by a USDA Specialty Crops Research Initiative grant. *Registration will open in mid-November.**
- *March 1-3, 2011 (California)/April 27-29, 2011 (Florida): **Advanced Topics in Microbial Safety of Fresh Produce.** This workshop is sponsored by a USDA Specialty Crops Research Initiative grant. *We will begin accepting applications for enrollment in mid-November.**
- *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. *Registration will open in mid-November.**
- *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. Registration will open in mid-November.**
- *September 13-15, 2011: **Fresh-cut Products: Maintaining Quality & Safety** – 16<sup>th</sup> Annual, at the UC Davis Buehler Alumni Center's AGR Room.*

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## Featured Postharvest Publications

**Everything's on Sale**

**20% Off**

Code: "NOV20"



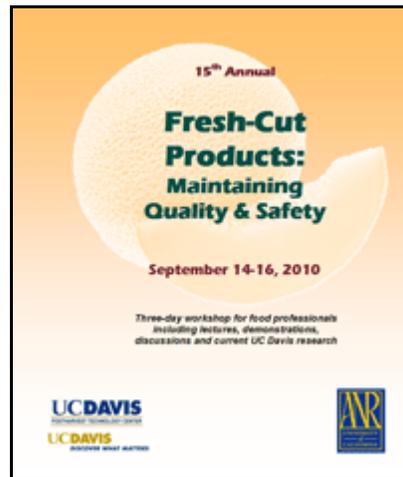
### WOW! November Discount on Everything In Stock

Through November 30<sup>th</sup>, and for the very first time, we are offering a 20% Discount on all items in our stock. Whether you're interested in Produce Quality, Stone Fruit, Pears, Strawberries, Fruit Ripening or Fresh-cut Products – it's all on sale. For a complete listing of all our publications see: [http://postharvest.ucdavis.edu/Pubs/pub\\_list.shtml](http://postharvest.ucdavis.edu/Pubs/pub_list.shtml). To order a copy of any of our titles for your library, please use our [Order Form](#) and be sure to note "NOV20" to receive your discount.

### **New: Fresh-cut Products: Maintaining Quality & Safety (2010)**

Edited and compiled by Dr. Marita Cantwell, this title includes a 410 page binder, 4 separately-bound publications in a portfolio and a Pen Drive containing .pdf files of all binder documents.

**Description:** The binder includes lecture notes, demonstration handouts and the first page of each referenced publication included on the Pen Drive. This publication is the course material from the Fresh-cut Workshop at UC Davis, September 14-16, 2010. Instructors included Diane Barrett, Jeff Brandenburg, Jeff Brecht, Christine Bruhn, Marita Cantwell, Robin Chilton, Roberta Cook, Mike Domingos, Merete Edelendos, Barry Eisenberg, Rudi Groppe, Linda Harris, Justin Kerr, Karan Khurana, Elizabeth Mitcham, Florence Negre-Zakharov, Anuradha Prakash, Joan Rosen, Mikal Saltveit, Trevor Suslow, James Thompson, and Glenn Young.



To order a copy of this new publication, please use our [Order Form](#).

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### **What's New on Our Website this Month**

#### **New French translations of Produce Facts**

We appreciate the efforts of Mohamed Ben Amor in translating the following produce facts into French: [Delphinium](#), les dauphinelles ou pieds-d'alouette; and [Aster](#), michaelmas pâquerette. Link to our complete list of [produce facts](#).

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

Our [datastore](#) now contains over 1,300 postharvest documents, organized by topic, and is searchable by title or author.

[Identification of appropriate postharvest technologies for improving market access and incomes for small horticultural farmers in Sub-Saharan Africa and South Asia](#). WFLO Grant Final Report, and [slide deck](#) information, Lisa Kitinoja, 323 pgs. (March 2010)

[Integration of continuous biofumigation with \*Muscodor albus\* with pre-cooling fumigation with ozone or sulfur dioxide to control postharvest gray mold of table grapes](#), Franka Mlikota Gabler, Julien Mercier, J.I. Jiménez, J.L. Smilanick. Postharvest Biology and Technology 55:78-84 (2010)

[Influence of fumigation with high concentrations of ozone gas on postharvest gray mold and fungicide residues on table grapes](#), Franka Mlikota Gabler, Joseph L. Smilanick, Monir F. Mansour, Hakan Karaca. Postharvest Biology and Technology 55:85-90 (2010)

[Whole-leaf wash improves chlorine efficacy for microbial reduction and prevents pathogen cross-contamination during fresh-cut lettuce processing](#), Xiangwe Nou and Yaguang Luo. Journal of Food Science 75:283-290 (2010)

[Antimicrobial effect of acidified sodium chlorite, sodium chlorite, sodium hypochlorite, and citric acid on \*Escherichia coli\* O157:H7 and natural microflora of fresh-cut cilantro](#), Ana Allende, James McEvoy, Yang Tao, Yaguang Luo. Food Control 20:230-234 (2009)

[Postharvest management of insects in horticultural products by conventional and organic means](#),

[primarily for quarantine purposes](#), Lisa G. Neven. Stewart Postharvest Review 11 pg. (2010)  
[The Occurrence of Codling Moth in low latitude countries: Validation of pest distribution reports](#),  
Michael J. Willett, Lisa Neven, and Charles E. Miller. HortTechnology 19:633-637 (2009)

A total of 101 articles were added to the datastore this month, including quite a few from authors who work for the USDA Agricultural Research Service. They feature a variety of topics, including: [insect control](#), [fresh-cut vegetables](#), [fresh-cut fruit](#), [tomato](#), [broccoli](#), [lettuce](#), [strawberry](#), and [grape](#).

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## Postharvest Specialists' Activities

### Postharvest Technology Short Course in Alexandria, Egypt

Between September 18 and 22, 2010, Dr. Adel Kader participated in teaching a postharvest technology short course organized by Dr. Awad Hussein and his associates (University of Alexandria) and Mr. Mohamed Korany (Union of Producers and Exporters of Horticultural Crops) in Amria, near Alexandria, Egypt. The course was greatly appreciated by the 65 participants who came mostly from the private sector. The plan is to hold this course annually and to open it to Arabic-speaking participants from the Middle East Region.

### Postharvest Physiology in Vietnam

Dr. Michael Reid recently traveled to Vietnam where he taught a class in postharvest physiology at the Hanoi Agricultural University.

### Michael Reid to Celebrate His Retirement

On November 13<sup>th</sup>, Michael Reid will celebrate his retirement with a BBQ dinner at the Putah Creek Lodge on the UC Davis campus where friends and family will join to wish him well. For more information please contact Ms. Penny Stockdale ([pastockdale@ucdavis.edu](mailto:pastockdale@ucdavis.edu)).

### Central Valley Postharvest News

The October 2010 issue of Dr. Carlos Crisosto's Central Valley Postharvest News features abstracts from the September 12-17 International Symposium on Kiwifruit (Italy), and can be accessed with the following link: [http://www2.uckac.edu/postharv/PDF%20files/CVPN\\_Oct2010.pdf](http://www2.uckac.edu/postharv/PDF%20files/CVPN_Oct2010.pdf).

### 4th European Short-course on Quality & Safety of Fresh-cut Produce in Italy: 27-29 September 2010

We congratulate Professor Giancarlo Colelli and Dra Maria Luisa Amodio, and their associates (University of Foggia, Italy) on organizing a very successful short course on quality and safety of fresh-cut produce in which more than 90 persons participated. Drs. Marita Cantwell, Adel Kader, and Trevor Suslow from UC Davis, Jeff Brecht from the University of Florida, USA; George Nanos, University of Thessaly, Greece; and Drs Maria Teresa Sanchez, Maria Isabel Gil, and Francisco Artes-Hernandez from Spain were among the course instructors. PDF files of the PPT presentations of the instructors are available at: <http://www.agraria.unifg.it/postharvest>

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## Postharvest Positions

### Lleida, Spain: Postdoctoral Position in Plant Physiology and Biochemistry

A post-doctoral contract is available in the Physiology and Biochemistry group at the IRTA Institute (Postharvest

Department) located in Lleida. Applicants must have a Ph.D. in Agriculture/Biology or Food Technology, experience in fruit physiology, and be fluent in English or Spanish. Candidate must have knowledge of non-destructive measurement techniques and their statistical analysis. Priority will be given to candidates that have a Ph.D. from a renowned research group, international experience, and publications in peer review journals with a high impact factor. They offer a contract of 2 years with the possibility of extension. Interested candidates should send a CV and letter to [Christian.larrigaudiere@irta.cat](mailto:Christian.larrigaudiere@irta.cat).

### QA Positions Available

Pat M. DiFuria & Associates has openings for the following positions, as well as several others not included below. For additional information email Pat at: [patdifuriaco@cs.com](mailto:patdifuriaco@cs.com):

**Food Safety Director**, salary starting \$125K - \$150K, Modesto or Fresno. Requires degree in one of the food sciences, and 7-10 years food experience. Position will develop formal process for HACCP, customize microbiology programs, develop BU best practice, develop sound quality and regulatory standards.

**Internal Compliance Director**, salary starting \$125K - \$150K, Modesto or Fresno. Requires BS in Food Science and 7-10 years of food experience. Position will serve as resource to plant Quality Managers, oversee 3<sup>rd</sup> party customer audits, develop sanitation standards, develop supplier approval program for raw material, conduct supplier reviews.

**External Customer Compliance Director**, salary starting \$125K - \$150K, Modesto or Fresno. Requires BS in Food Science or related area and 7-10 years food experience. Position manages customer compliance, serves as interface for OSVI with customers, assists sales with problem solving issues, and provides regulatory support with FDA.

### Food Scientist Position at Del Monte

Del Monte Fresh Produce Company is recruiting for a food scientist or Research Associate to work in its Research & Development Laboratory located in Richmond, Calif. Applicants must have a BS or MS degree in biological or agricultural sciences with training and experience in food science. Position's responsibilities include testing protocols for fresh-cut R&D projects, conducting sensory analysis on fresh-cut fruits and vegetables, evaluate shelf life of samples, and to record, analyze and report the data. Send your resume to [EFiroozabady@freshdelmonte.com](mailto:EFiroozabady@freshdelmonte.com) and [Xliu@freshdelmonte.com](mailto:Xliu@freshdelmonte.com).

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## Postharvest Calendar: Upcoming Conferences, Courses and Workshops

- November 4-7, 2010. **IACSC Conference and Expo**. San Antonio, Texas.
- February 1-2, 2011. **Delivering More Flavorful Produce Workshop**. (California Session on the 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.
- March 1-3, 2011. **Advanced Topics in Microbial Safety of Fresh Produce Workshop**. (California Session on the UC Davis campus.)
- April 26-27, 2011. **Fruit Ripening & Ethylene Management Workshop**. 17<sup>th</sup> Annual. UC Davis campus.
- April 27-28, 2011. **Advanced Topics in Microbial Safety of Fresh Produce Workshop**. (Florida Session in Wimauma, Florida)
- April 30-May 4, 2011. **IARW-WFLO Annual Convention & Expo**. New Orleans, Louisiana.

- May 4-5, 2011. **Delivering More Flavorful Produce Workshop.** (Florida Session at the University of Florida - Gainesville 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.
- September 13-15, 2011. **Fresh-cut Products: Maintaining Quality & Safety.** 16<sup>th</sup> Annual. UC Davis campus.
- 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.** Firstly, thanks very much for the newsletters we receive from your institution. It's really inspiring reading. We would appreciate very much if you could respond to the following question.

We are evaluating our practice of transport and storage of our produce. We are looking at your "[Compatible Fresh Fruits and Vegetables During 7 Day Storage](#)" (Thompson & Kader, UC Davis 1999) chart. Dry onions are placed in group 3, 55 – 65 °F, even though the optimal temperature is set to be 32 °F. Can you please explain the reason for the placement of the dry onions in group 3? (A.B.)



**A.** You are correct, the recommended long term storage conditions for onions are 0°C and 65 to 70% relative humidity. However onions generally have a long shelf life compared with most produce and decay caused by high relative humidity or condensation is a key source of postharvest loss. Cold rooms in retail stores and home refrigerators usually have high humidities, above the recommended levels, so we recommend short term storage in warm, unrefrigerated areas that usually have low relative humidities.

Our recommendations in the seven-day storage chart not only consider optimum produce storage conditions but also the compromises that must be made in the less than optimum options we have in retail distribution and home storage. –Jim Thompson



**Q.** I have a question regarding chilling injury in whole fresh pineapples. The Vazhakkulam Variety of Pineapple, grown in India, shows Chill Injury i.e. formation of brown spots/ ring around the centre stem of the fruit when stored at 7-10 °C, 85-90% RH and 10-13 °C, 85-90% RH for a storage period of beyond 10 -14 days.

We conducted various storage trials and observations were :

1) Chill Injury was persistent up to Storage Temperature of 17 °C, 85-90% RH for a storage period of beyond 10-14 days.

2) There was no Chill Injury at Storage Temperature of 19 °C, 85-90% RH for storage period of beyond 14 days. But, entire skin of fruit turned yellow, crown leaves started drooping, fruit pulp was dark yellow in color, soft, loose, lacked firmness, very sweet (TSS: > 18 ° Brix) and loss of flavor.

Do you have any recommendations to overcome this problem? (A.J.)

**A.** Research conducted at the University of Hawaii indicated that waxing the pineapple (not including the crown leaves) to create an internal carbon dioxide concentration between 5 and 8% reduces incidence and severity of chilling injury (endogenous brown spot) in pineapples shipped at 8 to 10 °C (Paull and Rohrbach, 1985; Rohrbach and Paull, 1982). Heat treatment (38 °C air for 24 hours) has also been shown to be effective in reducing this physiological disorder (Akamine, 1976). You may want to test the efficacy of these two treatments in reducing chilling injury of the pineapple variety that you have in your region.

#### Additional references

Akamine, E.K. 1976. Postharvest control of endogenous brown spot in fresh Australian pineapples with heat. HortScience 11:586-588.

Paull, R.E. and K.G. Rohrbach. 1985. Symptom development of chilling injury in pineapple fruit. J. Amer. Soc. Hort. Sci. 110:100-105.

Rohrbach, K.G. and R. E. Paull. 1982. Incidence and severity of chilling induced browning of waxed 'Smooth Cayenne' pineapple. J. Amer. Soc. Hort. Sci. 107:453-457.

--Adel Kader

*If you have a postharvest question that you'd like answered, please send it to [postharvest@ucdavis.edu](mailto:postharvest@ucdavis.edu).  
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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