



August 2013

News from the UC Davis Postharvest Technology Center

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**Director's Update**

**Focus on Fresh-cut**

It's great that enrollments are so strong for the September 24-27 Fresh-cut Products: Maintaining Quality & Safety Workshop, organized by Dr. Marita Cantwell! While the majority of those enrolled are from the U.S., we also look forward to meeting participants from Spain, Chile, Russia, Costa Rica, the United Kingdom, Denmark, Guatemala, Mexico, and Australia! It promises to be a great workshop, with a special focus on temperature control and quality issues. [Hurry up and enroll](#) if you'd like to join us this year as we are nearly full!



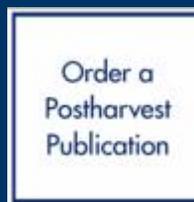
**New Content Added for Certificate Program**

In the past ten weeks our specialists and staff have teamed together to record, edit, and upload more than 20 videotaped lectures and 42 lecture handouts, and have written and reviewed more than 160 questions for the online quizzes associated with earning the Produce Professional Certificate. Altogether, there are now more than 60 videos and 100 lecture handouts available as resources to those working towards their [Produce Professional Certificate](#)!



**Copyright and Citation Request**

We have recently noted a number of other websites and presentations utilizing both slide presentations and handouts authored by members of the Postharvest Technology Center. While we are pleased to see others spreading our mission of reducing postharvest losses and promoting the quality, safety and marketability of fresh horticultural products, our website editor, [Dr. Marita Cantwell](#) joins me in respectfully requesting that appropriate credit, including the full citation, be provided when using our materials, and that appropriate dates of these materials be recorded as well so that readers can know whether the most current information is being referenced. Thanks for helping us with this request.



--[Beth Mitcham](#)

**Postharvest Workshops at UC Davis**

**Fall 2013 Educational Opportunities**



**Nearing Capacity Enrollments for Fresh-cut Products Workshop**

There have been about a dozen enrollments this past week for the 18<sup>th</sup> annual Fresh-cut Products: Maintaining Quality & Safety workshop, which will be held September 24-26 at the UC Davis Alumni & Visitors Center. This 3-day workshop is organized by [Dr. Marita Cantwell](#) and a team of fifteen other experienced academic and industry instructors. The workshop provides an overview of many aspects of the production, processing, packaging,

distribution and quality assurance of fresh-cut fruit and vegetable products. 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.

The enrollment fee is \$1150 for this 3-day workshop, and includes all instruction, instructional materials, lunches, morning and afternoon breaks, and an evening networking reception. To learn more, or to enroll, we invite you to visit the [web page](#) or contact [Ms. Penny Stockdale](#).

### **We invite you to join us for our November 5-7 “Produce Safety: A Science-based Framework” Workshop**

We are pleased to introduce a new workshop, organized by [Dr. Trevor Suslow](#), and which will feature an integrated approach to building a foundation of awareness and improved understanding of the current scientific basis for produce microbial safety systems and preventive controls. The workshop will be held November 5-7, 2013 on the UC Davis campus. This two-and-a-half day interactive workshop is one of the core required components for the Produce Professional Certificate program.



The course delivery is largely interactive, with formal lectures, group assessment of case examples, and break-out group problem-solving challenges. The emphasis of the curriculum is the scientific-basis for audit standards, preparing for using audits, and targeted microbiological testing to improve performance. Key resources and tools for hazard awareness, risk identification, risk-based preventive controls, and verification of corrective actions will be provided. The enrollment fee for this workshop is \$950. To learn more about it or to enroll, please visit the [web page](#) or contact [Ms. Penny Stockdale](#).

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## **Featured Postharvest Bookstore Item**

### **By Popular Demand - Postharvest T-shirts Reprinted**

Our natural/ivory, full-color screen printed T-shirts are a favorite item at the book sales tables during our workshops. After nearly running out of stock on these comfortable 100% cotton T-shirts printed with our logo, we again have a good assortment available through the online Postharvest Bookstore. They are priced very reasonably, at only \$15 for S – XL, and \$18 for XXL!

For shipment to U.S. addresses, please use [this link](#) to order sizes S – XL, and [this link](#) to order XXL. For international shipping addresses, please use our [PDF Order Form](#), and under Add-In item, simply write T-Shirt and the size you would like to order.



## **Postharvest Positions**

### **Equinox Tree & Vine seeks Chief Operating Officer**

Equinox Tree and Vine, a Grower / Shipper with its headquarters in Porterville, Calif. seeks a Chief Operating Officer. Equinox Tree & Vine and its related companies farm over 4,000 acres of citrus, table grapes, nuts, and other crops in California and Oregon. It also owns and operates a citrus packing house in Terra Bella, CA and a grape cold storage facility in Ducor, CA. For more information on the position and how to apply, follow this link: <https://app.box.com/s/7rcx3okqbhmfqroyxzi4>

### **Principal Scientist Position – KR-195-13**

The River Group has an opening for a Principal Scientist position for a leading international marketer and distributor of fresh and processed food products. The position is located in Salinas, California. Preference will be given to applicants with experience in food microbiology, postharvest physiology, processing, new product development and packaging design for fresh-cut vegetables in an industrial or applied research environment, and to bilingual (English/Spanish) applicants. A MS degree or higher is required, with a minimum of 5 years' experience. Applicant

needs demonstrated experience with experimental design. For complete information about this position, email Kim: [kim@therivergroupinc.com](mailto:kim@therivergroupinc.com).

### Senior Research Scientist Position – KR-194-13

The River Group has also announced a Senior Research Scientist position for a leading international marketer and distributor of fresh and processed food products. The position is located in Salinas, California, and will work to effectively lead the research in the area of agricultural practices to increase yield and quality of lettuce and other cold season vegetables, support the development of new products, variety screening, and improve fertilizer and water use efficiency while maintaining environmental integrity. A PhD or MS degree in Agronomy, Horticulture, Plant Science, Soil Science, or closely related field is required. Preference will be given to applicants with experience in vegetable production, soil fertility, water and nutrient management, and to bilingual (English/Spanish) applicants. For complete information about this position email Kim: [kim@therivergroupinc.com](mailto:kim@therivergroupinc.com).

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## What's New on Our Website

### Postharvest Yellow Pages Listings Continue to Expand

The [Postharvest Yellow Pages](#) now includes more than 330 businesses whose contact information is updated annually. Listings include consultants, business services, and labs; controlled and modified atmosphere supplies; chemicals and quarantine treatment systems; cooling and refrigeration; environmental measurements; ethylene scrubbers and action inhibitors; facilities design and construction; fresh-cut and food service equipment and supplies; gas sampling, mixing and analysis; harvesting fruits and vegetables; packinghouses; produce and seed sources; produce expositions and newsletters; publishers; quality evaluation; ripening facilities and supplies; and transportation.



No endorsements of listed sites, supplies, or products is intended, nor criticism implied of those not mentioned. Recommendations for additions or corrections to listings are always welcomed.

### New this month in the "Postharvest Publications Organized by Topic" Library

*This extensive [free postharvest resource library](#) currently offers more than 1,900 articles on a wide variety of topics.*

#### **Apple**

de Freitas, Sergio T., do Amarante, C.V.T., Dandekar, A.M., Mitcham, E.J., [Shading affects flesh calcium uptake and concentration, bitter pit incidence and other fruit traits in "Greensleeves" apple](#). *Scientific Horticulturae* 161 (2013) 266-272.

#### **Ornamental**

Wang, H. G. Liu, C. Li, A.L.T. Powell, M.S. Reid, [Defense responses regulated by jasmonate and delayed senescence caused by ethylene receptor mutation contribute to the tolerance of petunia to \*Botrytis cinerea\*](#). *Molecular Plant Pathology* 14 (2013) 453-469.

#### **Tomato**

Tiwari, G., Slaughter, D.C., Cantwell, M., [Nondestructive maturity determination in green tomatoes using a handheld visible and near infrared instrument](#). *Postharvest Biology and Technology* 86 (2013) 221-229.

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## Postharvest Calendar

- September 2-5, 2013. [VI International Conference on Managing Quality in Chains MOUIC 2013](#). Cranfield, United Kingdom
- September 24-26, 2013. [18<sup>th</sup> Annual Fresh-cut Products: Maintaining Quality & Safety Workshop](#). UC Davis campus
- October 22-24, 2013. [EAPR Post-Harvest Section Meeting](#). Warsaw, Poland

- November 5-7, 2013. [Produce Safety: A Science-based Framework Workshop](#). UC Davis campus
- December 4-6, 2013. [Southeast Asia Symposium on Quality Management in Postharvest Systems](#). Vientian, Lao, P.D.R.
- December 5, 2013. [The Honeycrisp Experience. Production, Harvest and Storage](#). Wenatchee, Washington
- March 25-26, 2014. [20<sup>th</sup> Annual Fruit Ripening & Retail Handling Workshop](#). UC Davis campus
- June 10-13, 2014. [V International Conference Postharvest Unlimited](#). Lemesos, Cyprus
- June 16-27, 2014. [36<sup>th</sup> Postharvest Technology Short Course](#). UC Davis
- August 17-22, 2014. [XXIX International Horticultural Congress](#). Brisbane, Australia
- September 16-18, 2014. [19<sup>th</sup> Fresh-cut Products: Maintaining Quality & Safety](#). UC Davis campus
- November 4-6, 2014. [Produce Safety Workshop](#). UC Davis campus

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## Ask the Produce Docs

**Q.** I work as a Post Production Officer at a Food Processing Plant in South Asia. I am glad to mention here that I have gone through the Postharvest Technology Center's well maintained website on the postharvest techniques of fruits and vegetables.

However, I would like to state that the processing plant that I am working with is still in its initial inception which requires techniques to prevent postharvest losses. A large amount of orange (*Citrus sinensis*) is lost yearly due to lack of postharvest technology related facilities. Our working team has recently come up with converting surplus orange into orange pulp to reduce losses due to spoilage.

Therefore, I would like to inquire if there are any innovative postharvest techniques pertaining to orange fruit in particular. Looking forward to your help. (S.D.)



**A.** I believe you are asking for guidance on general handling of citrus fruits as it pertains to processing. In California our major market is the fresh market and although we have processing plants they are not on the scale that they have in Florida where the vast majority of fruit are processed for juice. I have also forwarded your email to Dr. Mark Ritenour at the University of Florida for his input.

To be successful, whether one is focused on the fresh or processed market, proper handling protocols for the fruit are absolutely essential. Citrus fruit are easily damaged during the harvesting process and are prone to decay due to two wound pathogens, *Penicillium digitatum* (green mold) and *P. italicum* (blue mold). Worldwide these are the two most serious decay pathogens of citrus. It is essential therefore to make sure the fruit are processed or packed in a timely manner following harvest so that these decay pathogens do not cause serious losses. There are several other postharvest pathogens that can also be a problem but these are dependent on the fruit maturity, growing conditions etc. In California, which has a dry Mediterranean climate, we seasonally can have problems with other pathogens but in warmer, more humid climates such as Brazil, Florida, and I imagine in your region, you can have serious losses if the fruit are not processed in a timely manner due to these other pathogens.

For the fresh market we recommend that the fruit be treated with a postharvest fungicide within 24 hours of harvest (the sooner the better, however). For processed product I would use this time frame as a reference and ensure your fruit is processed quickly after harvest. Hot water dips have been found to be efficacious for controlling *Penicillium* and brown rot (caused by *Phytophthora*) and may be something you might want to consider for the processed product if you have to hold the fruit prior to processing for a day or so, but I would not recommend it.

There are several books available on citrus processing. The best source for these books that I have found is Florida Science Source, LLC. They can be found at [www.ultimatecitrus.com/fssource/index.html](http://www.ultimatecitrus.com/fssource/index.html)

-- [Mary Lu Arpaia](#)

*Additional input from Dr. Mark Ritenour:*

Dr. Arpaia's comments are excellent, including resources for more detailed information. Additional information on citrus can also be found at our postharvest website (<http://irrec.ifas.ufl.edu/postharvest/>) and the UF EDIS database (a link is provided at our postharvest website).

I work primarily with the fresh citrus growers/shippers, but have several colleges that work with the processors that I can consult with as well.

In Florida, we experience much more decay pressure due to stem-end-rots (mostly *Diplodia* [now called *Lasiodiplodia*]) and sometime early season *Anthraco*se or *Phytophthora* (brown rot).

While there are many factors that influence the health and holding capacity (shelf life) of the fruit, Dr. Arpaia summarized the most important ones (e.g., rapid, careful handling and the importance of timely fungicide application if delays in processing are anticipated).

Recommendations will depend on the specific conditions and problems that are experienced.

-- Mark Ritenour

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## End Notes and Disclaimers

**Postharvest Questions.** If you have a perplexing postharvest question you'd like answered, please send it to [postharvest@ucdavis.edu](mailto:postharvest@ucdavis.edu), and we'll see if one of our specialists can help.

**Archived Items.** Link to a data store of all our previous "Ask the Produce Docs" questions, or link to archived copies of our monthly e-newsletter as PDF documents.

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