POSTHARVEST CENTER
UNIVERSITY OF CALIFORNIA

OCTOBER 2017

Director's Update

Another Successful Fresh-cut Products Workshop… and Ag-Water

September was a busy and productive month for the PTC staff and me as we focused our efforts on providing the 22nd version of the always-evolving annual workshop (also with a new title), Fresh-cut Products: The Science and Art of Quality and Safety. A diverse group of 55 participants from 10 countries came to UC Davis for the 3-day course. I was ably joined by 15 academic, USDA ARS, and industry technical experts in delivering both fundamental, applied, and practical how-to information. **Follow this link for a glimpse at the agenda topics and instructors**; we greatly appreciate their contributions to the program. Hats off to all instructors, but I want to give a special nod to Dr. Angelos Deltsidis, PTC Postharvest Specialist and Produce Professional Certificate Program Coordinator, who with mentoring by recently retired workshop leader Marita Cantwell, put on a very involved and popular hands-on demonstration of temperature effects on the quality of fresh-cut products. **Follow this link for pictures of the group activity**. A quick review of on-site written evaluation surveys and several much-appreciated personal e-mails allows us to know with confidence that we substantially achieved our target learning objectives and quality of extending knowledge.

Around the core modules, the program changes each year in response to new and emerging knowledge, practices, and industry or regulatory developments and trends. Whether new to this workshop or interested in a refresher, please consider joining us September 18-20, 2018. As always, feel free to suggest topics for inclusion as a module or questions for our round-table session by contacting us here.

Ag-Water (of course)

I have just returned from Washington D.C. after participating in the COLLABORATIVE FOOD SAFETY FORUM: Collaborative Implementation of FSMA Workshop - Agriculture Water Quality, hosted by the Pew Charitable Trusts and facilitated and moderated by Abby Dilly of Resolve. Subject matter experts joined in a full day of robust dialogue, debate, and discussion of this challenging topic. Representation included produce industry trade and commodity associations, extension research and education specialists from diverse states, academic risk modelers, members of the Produce Safety Alliance, coalition and cooperative representatives of small and very small conventional, organic and Plain farmers (Amish), and representatives from FDA, CDC, USDA, and the National Association of State Departments of Agriculture.

It is premature to share the outcomes other than to mention the unanimous commitment to devise needed improvements, clarity of compliance and implementation surrounding FSMAs ag-water requirements, and that FDA's recent announcements around compliance dates provide sufficient time to adequately address the issue. However, I thought I would share a set of straw-man decision trees and an alternative preharvest ag-water testing scheme I developed about five years ago. My sole purpose at this meeting and here is to catalyze discussion and creative thought around finding a simplified path to answering a consistent grower request, which has spanned the decades since my earliest involvement in developing industry-defined Good Agricultural Practices in 1996: "Just tell me what to do when, how often, how much (or how far), and how to respond."

Below are four model resources to look over and consider

- Irrigation Source Decision Tree
- Qualifying an Ag-Water Source
- Non-complaint Water Source Decision Tree
- Simplifying Ag Water Testing and Reducing Grower Costs

The first three are minor modifications to decision trees I developed in early 2012 for private implementation across a global fresh produce supply network. They were vetted for databased foundation and practical implementation by an international group of growers/fresh processors, and have been in use for over five years. However, over the past two years, I have received many requests and been involved in numerous conversations regarding alternative and practical approaches to ag-water management. As FDA lessened some of the opaqueness to explore such possibilities, I decided to share these recently updated versions among the PTC network.

The last is an attempt to apply a semi-quantitative approach to a simplified and, presumptively, lower cost alternative for characterizing on-farm microbial water quality. For brevity, I won't explain nor provide the lengthy science-based and experiential knowledge that supports the logic path for each yes-no branch point in the decision trees; I find it more productive to display an imperfect framework that begets critical and creative thought. From this starting point, I am curious to explore the views of others interested in providing simplicity and relief to growers covered by FSMA and/or market access standards and audit criteria.

Depending on the volume of feedback, I may choose to provide individual responses or collect comments of both support and dubious criticism into common themes and summarize these in a future note. Please send any thoughtful and constructive input to Heidi at hdmeier@ucdavis.edu, who will assist me in this collaborative effort to provide leadership and technical assistance to our clientele and stakeholders. To borrow a catch phrase from one of my favorite authors, **teamwork makes the dream work**…sappy, right?

One last request: In an effort to give you the best possible experience with our e-newsletter, we ask that you fill out a very short survey on how you use the information in the e-news. As a token of our appreciation, once you complete the survey, you will be entered in a drawing for one of 10 custom and colorful Postharvest Technology blue tooth speakers! Respondents from academic and government institutions will not be included in the drawing, but please still help us refine our communication by participating in the survey.

And one last item as a segue to the PSA Grower Training program below. At the request of PSA, in anticipation of the release of version 2 of the Grower Training manual, I have updated as re-released a 2002 extension article entitled Eliminate "Fecal Conforms" From Your Vegetable and Fruit Safety Vocabulary as part of their resource materials. You can access the file with its accompanying graphic.

Postharvest Education at UC Davis

Produce Safety Alliance Grower Training November 7, 2017

This course presents an integrated approach to understanding Food Safety Modernization Act specifications by blending fundamental, applied, and practical food safety knowledge. Completing this course satisfies the FSMA Produce Safety Rule training requirement outlined in § 112.22(c).

Registration cost has been reduced!

Read More

Featured Postharvest Bookstore Item

Sale! Receive 20% off the Fruit Ripening & Ethylene Management Binder

This publication is the course material, developed and updated for the Fruit Ripening & Ethylene Management Workshop which was held March 17-18, 2015. It includes optimum procedures for ripening a variety of produce, and provides 7 color ripeness charts and numerous color tables and photographs. The publication provides detailed instructions for measuring soluble solids in melons and other fruits, and a helpful resources directory.

Click here to go to the Fruit Ripening page in our bookstore. Use sale code 20FruitRipening to apply your discount. For a complete listing of all our publications see our bookstore.

Postharvest Specialists' Updates & Other News

Mary Lu Arpaia Presents at Wageningen

Currently, Mary Lu Arpaia is in the Netherlands presenting at the Postharvest Technology Workshop. The course offers a mix of lectures, discussions, demonstrations, hands-on activities and excursions.

Postharvest Opportunities

The Postharvest Technology Center has been made aware of three all-expenses-paid opportunities to teach applied postharvest concepts in Ethiopia for a two-week period with flexible dates through the USAID-funded Farmer to Farmer program (more information here). Please click on the following links for descriptions of the opportunities

Vegetable and Fruit Postharvest Handling and Preservation

Small-scale Postharvest Handling Practices of Horticultural Crops

Small-scale Postharvest Handling Practices of Fruits and Vegetables

If you have any questions, please contact Stephanie Tatge at statge@ucdavis.edu or Maria Figueroa at maria.figueroa@crs.org.

On Our Website

Stay up-to-date with the Postharvest Technology Center by joining our Linkedin Group.

New Publications on our Website

G. Hong, C. Crisosto and M.I. Cantwell 2016. Quality and physiology of two cultivars of fresh-cut figs in relation to ripeness, storage temperature and controlled atmosphere, Acta Hortic. 1141. ISHS 2016. DOI 10.17660/ActaHortic.2016.1141.25 Proc. III Int. Conf. on Fresh-Cut Produce: Maintaining Quality and Safety Ed.: M.I. Cantwell

Postharvest Calendar

- October 10-13, 2017. **Postharvest Technology Course.** Wageningen, Netherlands
- October 17-20, 2017. **International Postharvest Unlimited Conference (ISHS)**. Madrid, Spain
- November 7, 2017. **Produce Safety Alliance Training**. Davis area
- November 8-9, 2017. **Advanced Produce Safety Workshop**. Davis area
- November 29-December 1, 2017. **IX Congreso Iberoamericano de Tecnologío Postcosecha y Agroexportaciones**. Santiago, Chile

Ask the Produce Docs

Q. I receive the Postharvest newsletter, and find it very interesting! I would like to know if any research has been done on the use of ethylene absorbers for apples, and the efficacy thereof or not. If so, would this differ for certain varieties, e.g. Royal Gala, Golden Delicious, Granny Smith or Red Delicious? (C.F.)

A. Research has been done on ethylene absorbers for apples, and a number of strategies have been tested, with some success. I'm familiar with the use of potassium permanganate absorbers and catalytic oxidizers (Swingtherm). Ozone lamps (which absorb ethylene by oxidation by singlet oxygen at the lamp surface, sometimes mediated by a titanium dioxide glass catalyst) might also be effective. As you probably know, apples produce a lot of

ethylene in storage if they are harvested close to the ideal maturity. CA storage greatly reduces production and response to ethylene and this is probably one of the reasons that it is so effective. The spectacular effects of 1-MCP on quality of stored apples is another demonstration of the importance of reducing the effects of ethylene in apples. I'm copying Beth Mitcham on this reply - she is closer to the current state of play than I.

Michael Reid

I agree with Michael's comments. The trick with ethylene scrubbing is to get the ethylene concentration low enough. Usually it must be below 1ppm for benefit. This can be challenging for varieties that produce more ethylene, such as Royal Gala, and easier for those that produce less ethylene, such as Granny Smith. The temperature of the fruit will also influence ethylene production. You will want to have the fruit temperature at 0 degrees Celsius or very close to that temperature.

Beth Mitcham

End Notes and Disclaimers

Postharvest Questions. If you have a postharvest question you'd like answered, please send it to 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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