United Fresh Produce Association  
Food Safety & Technology Council Meeting  
McCormick Place, Chicago IL  
June 8 2015, 8:30 am – 4:00 pm

Draft Minutes

Council Members Present:  
**Suresh DeCosta, McDonalds, Chair**  
Francis Adenuga (for Drew McDonald), Church Brothers  
Felice Arboisiere, Taco Bell  
Megan Arnold, C.H. Robinson Worldwide  
Tony Banegas, Ready Pac Foods  
Roger Becker, Gold Coast Packing Company  
Mike Bentel, J & J Family of Farms  
Rod Bernard, Southern Specialties  
Ian Bessell, Covance  
Sam Bierschwale, Lipman  
Sally Blackman, CPMA  
Mike Bledsoe, Village Farms  
Dan Botts, FFVA  
Jeffrey Brandenburg, The JSB Group  
Jim Brennan, SmartWash Solutions  
Donna Lynn Browne, Naturipe Farms  
Megan Chedwick, Church Brothers  
Chris Christian, California Strawberry Comm.  
Jim Cranney, California Citrus Quality Council  
Tom Daniel, Sterilox Fresh  
Hari Dwivedi, bioMerieux Industry, USA  
Chris Dzuik, H-E-B  
Bob Elliott, Sunkist Growers  
Harold Ewell, N2N Global  
Thomas Fenimore, GLOBALG.A.P NA  
Scott Grow, G.O. Fresh  
John Gurrisi, Chiquita Brands International  
Margaret Hardin, IEH Laboratories  
John Headrick, Monsanto  
Melissa Herbert, Neogen Corporation  
Peter Hill, Alpine Fresh  
Joe Holt, Earthbound Farm  
Scott Horsfall, California LGMA  
Bill Hurst, University of Georgia  
Michael Jantschke, PRO*ACT  
Beverly Kempf, Club Chef  
Justin Kerr, Factor IV Solutions  
Andy Kesler, McDonald’s  
Karan Khurana, Pulse Instruments  
Jeanna Kilmer, Silliker  
Guy Latreille, Veg Pro International  
Tom Lovelace, McEntire Produce  
Mike Machoving (for Donald Mayfield), Cabbage, Inc.  
Bob Mills, The Harbinger Group  
Gurmail Mudahar, Tanimura & Antle  
Gail Murray, Disney Consumer Products  
Beth Oleson, GFVGA  
Elis Owens, Birko  
Courtney Parker, N2N Global  
Bill Pool, Wegmans Food Markets  
Joshua Porbeni, Club Chef  
Gale Prince, Your Food Safety Coach  
Joan Rosen, JC Rosen Resources  
Sam Schlagetter, Freshway Foods  
Aaron Schneider, Dole Fresh Vegetables  
Gurjit Shergill, Taylor Farms  
Marshall Sherman, Walter P. Rawl & Sons  
Nancy Shimabukuro, Walter P. Rawl & Sons  
Stacy Stoltenberg, Dupont Qualicon  
Hilary Thesmar, Food Marketing Institute  
Angela Valadez, Publix Super Markets  
Rich Varley, KiVar Chemical Technologies  
Jon Wall, North Bay Produce  
Richard Walsh (for Heidi Hau), Ecolab  
Tom Young, Food Defend  
Bob Ziel, McEntire Produce  
Brian Zomorodi, Ready Pac Foods

United Fresh Staff:  
David Durkin, OFW Law  
David Gombas  
Erin Grether

Guests:  
Eva Almenar, Michigan State University  
Susan Bach, Agric. and Agri-Food Canada  
Tom Barnes, Naturipe Farms  
Jonathan Bentley, Dole Berry Farms  
Robert Brackett, Inst. Food Safety & Health  
Jeff Brecht, University of Florida  
Marita Cantwell, UC Davis  
Kristine Concepcion, National Mango Board  
Jill Dunlop, FFVA  
David Eisenberg, Anresco, Inc.  
Cheryl Enlow, Renaissance Food Group  
Mario Estrada, Chipotle Mexican Grill  
Lihua Fan, Agric. and Agri-Food Canada  
Kathleen Glass, U. Wisconsin FRI  
Craig Greenspan, US Foods
I. Meeting Called to Order

Council Chair Suresh DeCosta welcomed the attendees and asked for self-introductions. The Council was reminded of the United Fresh antitrust guidelines. The Council approved the minutes of the January 2015 Council meeting without change. The agenda was approved without change.
II. Safe Food for Canadians Act Regulations

Sally Blackman reported that the new regulations under the Act will replace thirteen Canadian food inspection regulations, affecting imported, exported and interprovincially traded foods. A preliminary text of the proposed regulations was released April 17. As an example of the proposed requirements, Section 81 says that operations with more than $30,000 gross food sales for the previous 12 months and who grow or harvest fresh fruits or vegetables must prepare, keep and maintain a written Preventive Control Plan for any activity that they conduct in respect of those fresh fruits or vegetables.

Regarding traceability, the draft regulation proposes that operations must prepare and keep documents that include: the common name of the food; a lot code; the name and principal place of business of the person by or for whom the food was manufactured, prepared, stored, packaged or labelled; the date on which the food was provided and the name and address of the person to whom it was provided unless the food was sold at retail; and, if applicable, the name and address of the person who provided the food to them and the date on which it was provided. Blackman noted that the label requirements are compatible with Produce Traceability Initiative label/GTIN guidelines. If retained in the final regulation, traceability records must: be kept for two years after the day on which the food was provided to another person or sold at retail; be accessible in Canada; be provided to the Minister of Agriculture within 24 hours after the receipt of the request (or within a shorter time limit as determined by the Minister); and, if provided electronically, be in one file in plain text that can be imported into and manipulated by standard commercial software.

A CFIA License is required by fresh fruit and vegetable operators importing and selling interprovincially as well as exporters who require certification for export. Membership in The Fruit and Vegetable Dispute Resolution Corporation (DRC) will still be required to do business in fresh produce in Canada. Grade standards will be held in the Canadian Grade Compendium prepared by CFIA, and will be incorporated by reference into the regulations. Non-resident importers who do not have a place of business in Canada, but operate in a country with a food safety system recognized in Canada, can ship product directly from their country of residence. Importantly, however, they cannot ship product from another country. The USA is the only country presently in the process of being recognized by Canada. An equivalency agreement between the two is being negotiated and a Canada-FDA Food Safety Systems Recognition Arrangement is expected to be finalized by Fall 2015. Foods imported for further processing are not covered by the non-resident importers requirement, and a license is not required by the importer to import such foods.

CFIA has requested comments by July 31, 2015. CPMA will continue to monitor and participate in the rulemaking.

III. Audits Harmonization and Produce Safety Compliance

Ken Petersen described recent audit activities by USDA Agricultural Marketing Service. He reminded the Council that AMS is not a regulatory or food safety agency. Rather, they administer the USDA GAP&GHP Program, a voluntary, user fee-based program that verifies an operation has developed and implemented a food safety program that incorporates good agricultural practices (GAP) and good handling practices (GHP). Examples include Mushroom GAPs, Tomato GAPs, LGMA and audits performed to the Harmonized Standards. Petersen reported that, in FY 2014, AMS conducted more than 4,000 GAP audits in the United States, Puerto Rico, Canada, and Chile. Audits are performed by more than 250 trained, licensed Federal personnel and/or Federal-State cooperators; they do not accredit
outside entities to perform audits. All auditors meet strict training and evaluation requirements as outlined in the AMS Auditor Criteria.

Petersen noted that there is no generally accepted method for determining equivalency between audit standards/audit processes, and the result is the current state of audit proliferation/audit fatigue. He also noted the growing proliferation of market access requirements (aka “riders”), requirements for auditor accreditation and requirements to upload audits to buyer-specific databases, all of which are adding to cost.

Meanwhile, he reported that the Produce GAPs Harmonized Food Safety Standard is gaining in use and acceptance; USDA has performed over 1,200 Harmonized Audits. USDA used the Harmonized Standard in developing the Global Markets Addendum to meet buyers’ needs for small farm audits. Petersen said that the greatest challenge for USDA-AMS is buyer recognition, particularly among those requiring GFSI. GlobalGAP, SQF and IFS are three GFSI-benchmarked schemes that have adopted the Harmonized Standard.

He also described the USDA-FDA Joint GAPs Review Project, which is comprised of AMS, FDA and National Association of State Departments of Agriculture (NASDA) staff and is intended to assure alignment of the USDA GAP&GHP Program (including the Harmonized Standard) with the final Produce Safety Rule. This will figure in FDA’s implementation and compliance strategy, enable better collaboration between agencies, and provide a basis for auditor and investigator training. In response to a question, Petersen said that, thus far, their evaluation concludes that the Harmonized Standard meets the requirements of the Produce Safety rule; a final evaluation will be made after the final rule is published later this year.

IV. Simply Clean Validation

Bob Ziel briefed the Council on a collaborative effort by McEntire Produce to validate and optimize their Simply Clean system, a fresh-cut produce wash system that uses showers instead of flumes (Ziel described the system at the January Council meeting). The effort includes individuals from USDA ARS (Council member Yaguang “Sunny” Luo), Johns Hopkins, MIT, University of Illinois and Harvard University. Objectives of the study include: eliminate wash water as a vehicle of cross-contamination; determine when product is “clean” in process; reduce chlorine-organic by-products; improve quality and shelf life of products; and build a more sustainable system. One of the key advantages of the system is that organic load build-up in the water, which can affect antimicrobial efficacy, is minimized.

Ziel noted that McEntire Produce intends to offer the system to the fresh-cut industry, and Simply Clean had a booth on the show floor for those who want more information.

While the study is just beginning (four trials with two products) Luo has reported that this non-immersive wash system “seems nice and easy” and “is readily amenable to frequent product change over.” She expects the study to be completed in time to report at the September Council meeting.

V. Institute for Food Safety and Health (IFSH) Research Briefing

Dr. Bob Brackett provided an update on research being performed at IFSH. He reminded the Council that IFSH is part of the Illinois Institute of Technology (IIT), located in Bedford Park, and is a consortium between IIT, FDA (IFSH is the location of FDA’s Division of Food Processing Science & Technology) and industry (more than 60 member companies), with over 100 scientists. They have over 30 active collaborative research projects with FDA in
the areas of Food Processing & Packaging, Food Microbiology & Virology, Food Chemistry and Allergens, Proficiency Testing and Methods Validation, and Nutrition.

Some of their current microbiology projects of interest to the fresh produce industry include virus mitigations in fresh produce (particularly berries), *Listeria* behavior in fresh-cut produce (developing predictive growth models in a variety of fresh-cut commodities, and developing data for FDA’s *Listeria monocytogenes* Risk Assessment), *Salmonella* behavior in spices and botanicals, enhancing sprouts food safety, and validation strategies for fresh produce washing to prevent cross-contamination (including evaluation of potential indicator organisms and procedures for surrogate selection). They are developing a project to investigate *Listeria* behavior in caramel apples, and they are a participant in FDA’s GenomeTrakr whole genome sequencing project. Brackett reminded the Council that IFSH has a BL3 pilot plant facility, allowing scientists to work with human pathogens in large scale equipment, including a flume fresh-cut wash system.

In response to a question, Brackett suggested that Council members wanting to learn more about any of the IFSH projects could communicate through David Gombas, who serves as an advisor on several of the projects.

VI. S-294 Research Briefing

United Fresh has partnered for over 10 years with the “S-294” group, representing over 60 land grant university faculty, USDA ARS scientists, public and private sector and international scientists researching quality and safety of fresh-cut vegetables and fruits. Current S-294 Chair, Dr. Eva Almenar from Michigan State University, described her research focus areas as well as those of nine of her faculty colleagues and also covered some of their current projects, including: enhancing the competitiveness of Niagara grapes, expanding processing and export opportunities for Michigan growers; cross-contamination studies to quantify pathogen transfer and redistribution on produce during processing; rapid concentration/detection of foodborne pathogens from wash water for enhanced safety of fresh fruits and vegetables; and an integrated approach to enhance the microbial safety of fresh-cut fruit and vegetable products during processing, packaging, and retail display.

Dr. Angela Shaw, Iowa State University, provided similar information for herself and twelve of her faculty colleagues including their fresh and fresh-cut research areas and some present projects: use of antimicrobial packaging films to extension shelf life in leafy greens; cover crops/strip tillage to reduce human/plant disease in melons; and effects of light and plant density on flavor, shelf life, and growth on lettuce and basil in hydroponics.

Dr. Susan Bach provided similar information for herself and colleagues at Agriculture and Agri-Food Canada, including projects on: natural antimicrobials to ensure safety/quality and shelf life of fresh-cut fruit and vegetables; characterization of heat-resistant molds in low bush blueberries and blueberry products; development, improvement and commercialization of value-added fruit and vegetable products.

Dr. Jeff Brecht briefed the Council on faculty and research efforts by him and colleagues in University of Florida’s Horticultural Sciences, Food Science & Human Nutrition, and Plant Pathology Departments.

Dr Marita Cantwell described her research efforts and those of Dr. Diane Barrett, Fruit and Vegetable Products Specialist at UC Davis. Dr. Bill Hurst described the faculty and fresh produce-related efforts at University of Georgia. Similar information was provided for
current research initiatives at Auburn University, Mississippi State University and USDA Eastern Regional Research Center.

All of this background information was provided to the Council in an effort to stimulate an exchange between United Fresh members and the S-294 group, to get to know each other better and strengthen interaction between industry and S-294 members, to help develop meaningful proposals that can address current industry needs and, ultimately, to improve the quality and safety of fruits and vegetables. To that end, the Council was asked to think about current research needs, to be discussed in the afternoon.

VII. What Have You Heard?

A regular agenda item, Council members shared information that may be of general interest.

- Gail Murray asked what United Fresh is considering regarding social accountability standards and audits, noting that such are proliferating without control. Gombas noted the Wednesday Super Session and Thursday post-show conference with GLOBALG.A.P, both of which were addressing the topic.
- Brian Zomorodi suggested that United Fresh develop readiness subcommittees to help members and the industry prepare for the FSMA final rules, which are expected later this year.
- Donna Lynn Browne suggested that United Fresh convene a working group to review and comment on the recently released FDA guidance on the Voluntary Qualified Importer Program. Her initial review had raised some concerns, such as foreign suppliers’ records having to be in English, regardless of the native language. Gombas agreed that a working group would be invited.
- Gombas described his participation in an FSPCA pilot workshop to meet training requirements for qualified individuals for the Preventive Controls rule. He reminded the Council that much of the training is aimed at non-produce operations, and that fresh-cut model preventive control plans are needed to avoid fresh-cut personnel being taught to develop plans not suitable to their operations. He intends to ask for volunteers for a working group to develop at least two plans: one for a fresh-cut bagged leafy greens product, and one for a manual cut fresh fruit product.

Joint meeting with FMI Food Safety Committee

When the Council reconvened in the afternoon, DeCosta welcomed FMI Vice President, Food Safety Programs Dr. Hilary Thesmar and members of the FMI Board Food Safety Committee. Thesmar thanked DeCosta for the opportunity to meet together, and invited interested members of the Council to attend the FMI Food Safety Committee meeting the next day.

VIII. Industry Research Needs

Almenar and Shaw asked the Council for their “wish list” of fresh and fresh-cut produce quality and food safety research. Some of the research ideas suggested:

- How to tell if biofilms on equipment are viable, or how to detect viable biofilms.
- Differences in attachment properties of pathogens on equipment
- Targeted variety selection for fresh-cut products, instead of trial and error
• How to determine the minimum setback distance between a growing field and animal feeding operation
• Variances from the Produce Safety rule for water quality for different commodities
• Composting requirements for green waste (non-animal based) vs. animal based compost
• Genetic authentication techniques to prevent/detect counterfeit varieties for economic benefit
• Relationship between shelf-life of fresh-cut produce and growth of spoilage microorganisms and human pathogens

IX.  Listeria – the organism

Dr. Martin Wiedmann, Cornell University, provided the Council with background information on Listeria. There are approximately 1,300 human cases of listeriosis and 255 deaths per year in the US; illnesses can occur as epidemic and sporadic cases. The illness causes septicemia, abortion and encephalitis in humans and more than 40 animal species, and can have a long incubation period before symptoms appear (7-60 days). It affects predominantly elderly and immunocompromised people, pregnant women and newborns, but is thought to have a high infectious dose: at $10^{10}$ cfu/serving, the dose-response model predicts a median death rate of 1 in 667 servings for pregnancy associated/neonatal listeriosis. Listeria can grow at refrigeration temperatures, which is novel among human foodborne pathogens, but is killed by standard pasteurization-type heat treatments.

Listeria is common in certain/many environments. Wiedmann showed data collected in urban and natural environments in New York State, indicating a prevalence of L. monocytogenes ranging from 1.3% to 8%, with Listeria species often found at around 30% prevalence. He noted that in the 2003 USDA-FDA Listeria Risk Assessment, fresh produce was considered only a moderate risk, but with a large uncertainty because of a lack of data. He described the watershed event of listeriosis linked to coleslaw in 1981, and two more recent outbreaks linked to fresh-cut celery in 2010 and whole cantaloupe in 2011. He also described more common recalls due to detection of L. monocytogenes in fresh produce but not linked to any illnesses.

Wiedmann described the phenomenon of Listeria persistence in food processing plants, and how persistence issues have been linked to some outbreaks. He noted that all of the recent listeriosis outbreaks linked to fresh produce appear to be the result of contamination by Listeria persisting in the handling facility, not from the growing area. He showed data from several operations where the same ribotype of Listeria persisted and recurred for years, at times appearing to be just transients. He showed one example where L. monocytogenes persisted in microcracks in a facility’s rubber floor mats despite sanitation, and could not be eliminated until the mats were removed. He noted the benefits of mapping swabbing sites and results, both pre-op and in process, and reviewing the results over time to detect when and where occasional positives indicate a resident population. But he also noted that facilities are reluctant to do aggressive sampling because of a perception that Listeria should never be found, which is contrary to reality and risking a food safety problem.

Wiedmann also showed data collected in New York State in preharvest environments where L. monocytogenes was detectable in 15% of 588 samples, compared to a prevalence of 4.6% for Salmonella and 2.7% for STEC, demonstrating its ubiquitous presence in the field. He noted some environmental factors to have higher likelihood for L. monocytogenes detection; e.g., locations within 38 m of mapped waterways were about 3 times more likely to have a positive detection than locations further away. Moist soils had a higher likelihood
of isolation (31%) than dry soils (10%), and moist soil samples within 62.5 m of a pasture had a higher likelihood of isolation (50%) than locations further away (7.5%).

He closed with four take home messages:

- **Listeria** as a concern will NOT go away.
- There always will be *L. monocytogenes* positives in products and environmental samples; goal has to be to prevent and reduce illnesses and keep recalls small and confined.
- A new approach is needed: (i) the industry needs to test for *Listeria*, find it, and communicate it; (ii) regulatory agencies and academics need to stop sending signals that suggest zero *Listeria* positives is the goal, particularly in environmental samples.
- New approach to *Listeria* risk assessment in industry: not “Is *Listeria* a risk”, but “what has to happen for *Listeria* to be a risk”.

X. **Listeria** and Caramel Apples

Dr. Kathleen Glass, University of Wisconsin Food Research Institute, briefed the Council on the 2014 listeriosis outbreak linked to commercially produced, prepackaged caramel-coated apples. Three caramel apple processors were linked to the illnesses; all sourced their apples from a single packing facility in California. PFGE and WGS linked *L. monocytogenes* environmental isolates collected at the apple packing facility to the outbreak strains.

The individual components of the caramel apple have properties outside of Listeria’s normal growth range, making growth unexpected: the pH of apples is 3.6-4.0, and caramel has a water activity less than 0.80. Also, the caramel is applied at a lethal temperature, making survival unexpected. However, her first inoculated trial revealed a 3 log increase after 7 days at 25°C. Although dipping contaminated apples into the hot caramel killed approximately 1 log of the pathogen, survivors may be harbored in the stem or calyx regions or *Listeria* in the stem area may be translocated to the core, protecting the organism from the heat of the caramel.

Her next study tested a hypothesis that penetrating apples with a stick may allow juice from the apple to migrate to the surface, and create a microenvironment where the juice pH is neutralized by the caramel and nutrients from the caramel are dissolved in the juice at a higher water activity. Apples were inoculated with the outbreak strain of *L. monocytogenes*, divided into two groups – with and without sticks – dipped into 195°F commercial caramel apple dip, cooled and held at room or refrigerated temperature. In triplicate trials, apples with stick and at room temperature showed a 3-4 log increase in *L. monocytogenes* by 3 days. Apples without stick and held refrigerated showed no growth by 28 days. Apples with stick and held refrigerated showed slow growth – about 1 log in 14 days; apples without stick and held at room temperature showed slower growth than with stick – about 1 log in 7 days.

Glass advised a short term fix for the caramel apple industry: since caramel apples are normally distributed refrigerated, limit out-of-refrigeration storage and display (e.g. <12 h) and add consumer labeling to store refrigerated. Meanwhile, her future research will examine the outbreak strain – does it have unusual resistance to environmental factors like pH and water activity? She also intends to explore use of preservatives and other growth inhibitors when added to the caramel dip or apple wax.

XI. **Open Discussion on Listeria**
Dr. Mickey Parish, FDA CFSAN, joined the Council in an active discussion on the risk and regulatory policies regarding *L. monocytogenes* on fresh and fresh-cut produce and in handling operations. It was noted the listeriosis outbreak linked to Blue Bell ice cream is another watershed event: this is the first outbreak in a food not expected to support growth, and where an abundance of samples are available for testing. FDA obtained pallet-loads of the ice cream from the Blue Bell facility and has performed thousands of tests. Parish said that some samples had levels in the thousands per serving, but most had very low and none had the very high levels generally thought to be needed to cause illness. As a consequence, and until the outbreak can be better understood, it is unlikely that FDA will consider increasing its tolerance for *L. monocytogenes* in RTE foods.

Parish said that FDA recognizes that *Listeria* occurs naturally in the environment and can be expected on fresh produce at some low but non-zero frequency. He suggested that the industry should focus on detecting and eliminating facility and equipment entrenchments, such as those identified at the stone fruit and apple packing facilities investigated last year. He reported that FDA will publish a revised guidance on *Listeria* (the 2008 draft document was never finalized), although probably not before the final Preventive Controls rules are published later this year. He also commended the Council on publishing the *Guidance on Environmental Monitoring and Control of Listeria for the Fresh Produce Industry*.

**XII. Next Meeting**

The next scheduled meeting of the Council will be Monday, September 28 2015 at the Hyatt Regency Capitol Hill, during the annual Washington Conference.

Having reached the end of the agenda, the meeting was adjourned.