



# 2016

**September 20-23**

**Clearwater Beach, FL**

**Sheraton Sand Key Resort**

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*FS* Human Nutrition  
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**September 20-23, 2016**

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Clearwater Beach, Florida

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# Welcome to our 56<sup>th</sup> Annual Program for the Citrus and Beverage Industry!

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This year's conference will once again focus on key issues facing our industry, and will span the topics of the global markets and opportunities to the marketing of new and innovative products. Please join us for discussions on the impact of regulations, particularly FSMA, on our industry, advances in quality and consumer insights, and the evolution, application and outlook of new flavor technology. The Friday morning "Hot Topics" session will focus on new perspectives in thinking about consumers, including the Millennials, and how the industry might change both its marketing and scientific approaches to meet those consumer needs.

Appreciation goes to everyone who has contributed to this year's event. We would like to recognize our committee members, experts across academia, industry and government and who facilitated the selection and invitation of our knowledgeable speakers. We would also like to give a special thank you to our invited speakers, who enthusiastically agreed to share their insights and expertise. Lastly, we'd like to express a very heartfelt thank you to our sponsors, whose generosity enhances the value, affordability and uniqueness of this event each year.

We look forward to the next few days of talks and interaction, with opportunities to meet old friends and business contacts, and the chance to make new ones. Once again, we hope you will find this conference a rewarding and valuable experience.

***Renée Goodrich Schneider***

*Program Organizer*

UF/IFAS Food Science & Human Nutrition

**UF | IFAS Extension**  
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**FSHN**  
Food Science Human Nutrition

## Planning Committee

**Elizabeth Baldwin**

USDA-ARS, Ft. Pierce, FL

**Richard Bogey**

Florida's Natural Growers, Lake Wales, FL

**Jessica Brower**

USDA, AMS, FV, PPB, Winter Haven, FL

**Jennifer Davis**

Firmenich Inc., Lakeland, FL

**Savy DiBenedetto**

Consultant, Daytona Beach, FL

**Renée Goodrich Schneider,**

***Program Organizer***

UF/IFAS Food Science & Human Nutrition  
Gainesville, FL

**Donald L. Hendrix**

Florida Chemical Company, Winter Haven, FL

**David Johnson**

Peace River Citrus, Arcadia, FL

**Robert Kryger**

CitraSource LLC, Winter Haven, FL

**Jon Leonard**

House of Leonard Restaurants, Inc.  
Lakeland, FL

**Kathrine Oglesby**

Firmenich Inc., Lakeland, FL

**Keith Schneider**

UF/IFAS Food Science & Human Nutrition  
Gainesville, FL

**Greg Schrader**

JBT Corporation, Lakeland, FL

**Nick Shields**

The Coca-Cola Company, Apopka, FL

**Linda Staten**

UDSA-AMS, Winter Haven, FL

**Douglas P. Van Strijp**

Southern Gardens, Clewiston, FL

**Yu Wang**

UF/IFAS Citrus Research & Education Center  
Lake Alfred, FL

**Roger D. Waters**

Brown International, Winter Haven, FL

**Elizabeth Webb,**

***Program Chair***

Vincent Corporation, Tampa, FL

**Barry Wilson**

Safe Chem Inc., Zellwood, FL

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*Hotel diagram located on back cover*

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# 2016 Agenda

## International Citrus & Beverage Conference

Tuesday, September 20, 2016	
4:00pm	Registration [Sand Key Room] <i>(until 7:00pm)</i>
Wednesday, September 21, 2016	
7:30am	Registration [Sand Key Room] <i>(until 5:00pm)</i>
7:30am	Morning Refreshments [Island II Room] <i>(until 8:25am)</i> <i>Sponsored by: Vincent Corporation</i>
General Session – Grand Ballroom	
8:30am	<b>Welcome and Introductory Remarks</b> <ul style="list-style-type: none"> <li>- <b>Renée Goodrich Schneider</b>, UF/IFAS Food Science &amp; Human Nutrition, Program Organizer</li> <li>- <b>Susan Percival</b>, UF/IFAS Food Science &amp; Human Nutrition</li> <li>- <b>Saqib Mukhtar</b>, UF/IFAS Office of Dean for Extension and FL Cooperative Ext. Service</li> <li>- <b>Elizabeth Webb</b>, Vincent Corporation, Program Chair</li> </ul>
Session 1 – The Citrus Industry – US and Beyond Moderator: <b>Doug Van Strijp</b> , Southern Gardens	
9:00am	<b>Florida Citrus Outlook and Production Trends</b> - <b>Marisa Zansler</b> , Florida Department of Citrus <span style="float: right;"><i>(pg. 3)</i></span>
9:40am	<b>Bactericides for Citrus – A Regulatory Case Study</b> - <b>Mark Trimmer</b> , Trimmer Consulting
10:20am	Beverage Break [Island II Room] <i>(until 10:40am)</i>
10:40am	<b>Overview of the Mexican Citrus Industry</b> - <b>Ricardo Martínez Zambrano</b> , Citrofrut <span style="float: right;"><i>(pg. 4)</i></span>
11:20am	<b>Conversion of Citrus Peel to High Value Chemicals</b> - <b>Dave Austgen</b> , Earth Energy Renewables <span style="float: right;"><i>(pg. 5)</i></span>
12:00pm	Lunch break <i>(on your own until 1:30pm)</i>



Wednesday, September 21, 2016 (continued)	
Session 2 – Consumer Trends, Perceptions and Marketing Moderator: <b>Nick Shields</b> , The Coca-Cola Company	
1:30pm	<b>North America Juice Marketing</b> - <b>Marie Dobson</b> , Minute Maid <span style="float: right;">(pg. 6)</span>
2:05pm	<b>Low Calorie Juice Beverages – Insights from Marketing Research</b> - <b>Lisa House</b> , UF/IFAS Food Resource Economics <span style="float: right;">(pg. 7)</span>
2:40pm	Break [Island II Room] <i>(until 3:10pm)</i>
3:10pm	<b>Fruit and Vegetable Trends from the West Coast</b> - <b>Tracy Baker</b> , Mattson
3:45pm	<b>Juice Industry Issues and Opportunities</b> <i>(until 4:20pm)</i> - <b>Stephanie Meyering</b> and <b>Diane Welland</b> , Juice Products Association <span style="float: right;">(pg. 8)</span>
6:00pm	Networking Reception [Poolside] <i>(until 7:00pm)</i> <i>Sponsored by:</i> <ul style="list-style-type: none"> <li>• Astral Extracts, Ltd</li> <li>• Brown International Corporation, LLC.</li> <li>• Chemical Systems</li> <li>• CitraSource</li> <li>• Doehler GmbH</li> <li>• Ecolab</li> <li>• FGF Trapani</li> <li>• Firmenich</li> <li>• Florida Chemical Company, Inc.</li> <li>• Givaudan Flavors Corp.</li> <li>• Juice Products Association</li> <li>• Kerry</li> <li>• Quattro Citrus Products, LLC</li> <li>• Separator Technology Solutions US Inc</li> <li>• Sun Rapt Foods, LLC</li> <li>• Takasago International Corporation</li> <li>• Treatt</li> </ul>

Thursday, September 22, 2016	
7:30am	Registration [Sand Key Room] <i>(until 5:00pm)</i>
7:30am	Morning Refreshments [Island II Room] <i>(until 8:25am)</i> <i>Sponsored by:</i> Givaudan Flavors Corp

Thursday, September 22, 2016 (continued)	
General Session – Grand Ballroom	
<b>Session 3 – Food Safety: Regulatory and Consumer Perspectives</b> Moderator: <b>Keith Schneider</b> , UF/IFAS Food Science & Human Nutrition	
8:30am	<b>FSMA Standardized Curricula Update</b> - <b>Robert Brackett</b> , Illinois Institute of Technology (IIT), Institute for Food Safety and Health (pg. 9)
9:15am	<b>Alignment of FSMA with Existing Food Safety Programs</b> - <b>Donald Kautter</b> , US Food and Drug Administration (pg. 10)
10:00am	Beverage Break [Island II Room] (until 10:25am)
10:25am	<b>Recalls and Food Tampering</b> - <b>Douglas Archer</b> , UF/IFAS Food Science & Human Nutrition (pg. 11)
11:05am	<b>Food Decision 2016: Consumer Insights on Food Safety, Nutrition, and Health</b> - <b>Kimberly Reed</b> , International Food Information Council (pg. 12)
11:45am	Lunch break (on your own until 1:30pm)
<b>Session 4 – Flavor and Freshness – Technical Aspects</b> Moderator: <b>Kathy Oglesby</b> , Firmenich Inc.	
1:30pm	<b>Targeting Sweet Taste: The Mechanisms, Modulation and Enhancement of Sweet Detection</b> - <b>Steven Munger</b> , UF Center for Smell and Taste (pg. 13)
2:10pm	<b>Use of Flavoromics Platform for Monitoring and Improving Citrus Flavor</b> - <b>Yu Wang</b> , UF/IFAS Citrus Research & Education Center (pg. 14)
2:50pm	Break [Island II Room] (until 3:20pm)
3:20pm	<b>A Closer Look at the Effects of HLB on Orange Juice Flavor</b> - <b>Anne Plotto</b> , USDA-ARS Horticultural Research Laboratory (pg. 15)
4:00pm	<b>Changes and Opportunities with Citrus Flavor Ingredients (until 4:40pm)</b> - <b>Robert Kryger</b> , CitraSource (pg. 16)
5:30pm	Poolside Reception (until 7:00pm) Sponsored by: <ul style="list-style-type: none"> <li>Enerfab, Ltd</li> <li>JBT Corporation</li> </ul>

Friday, September 23, 2016	
7:30am	Registration [Sand Key Room] <i>(until 10:00am)</i>
7:45am	Buffet Breakfast [Grand Ballroom] <i>(until 8:30am)</i> <i>Sponsored by:</i> <ul style="list-style-type: none"> <li>Bell Chem Corp.</li> <li>BioSun Flavors &amp; Food Ingredients/Colores USA</li> <li>D. L. Newslow &amp; Associates</li> <li>Marc Neil Soudijn Research Foundation</li> <li>Safe Chem Inc.</li> <li>Winniczuk Family</li> </ul>
General Session – Grand Ballroom	
Session 5 – Hot Topics in the Industry Moderator: <b>Richard Bogey</b> , Florida's Natural Growers	
8:30am	<b><i>Special Presentation: Citrus Greening Research</i></b> - <b>Michael E. Rogers</b> , UF/IFAS Citrus Research & Education Center
8:45am	<b>Social Media 101 – What Food Companies Need to Know</b> - <b>Benjamin Chapman</b> , North Carolina State University <i>(pg. 17)</i>
9:30am	<b>Evolving in Changing Times – Promoting Florida Citrus</b> - <b>Shannon Shepp</b> , Florida Department of Citrus <i>(pg. 18)</i>
10:15am	<b>Horticultural Effects of Bactericides – Preliminary Results</b> - <b>Robert Shatters</b> , USDA-ARS Horticultural Research Laboratory <i>(pg. 19)</i>
11:00am	<b>Citrus Objective Measurement Methodology</b> - <b>Mark Hudson</b> , USDA-NASS Florida Field Office
11:45am	Adjourn



# Speaker Abstracts

Listed in order of presentation

*We sincerely thank all speakers for agreeing to share their expertise and work. Many of our speakers have graciously prepared abstracts and we hope these will be useful to you as a possible source of industry practices. While informative, opinions and recommendations expressed in this publication are those of the authors and do not necessarily reflect the views of the Institute of Food and Agricultural Sciences, University of Florida.*



## **Florida Citrus Outlook and Production Trends**

### ***Marisa Zansler***

Florida Department of Citrus, Economic and Market Research, Gainesville, FL

The Florida citrus industry, which has been the leading producer of citrus in the United States for several decades, has experienced a precipitous decline in production over the past 12 years due to a combination of factors, chiefly those associated with pests and diseases. One particular disease, Huanglongbing (HLB), is associated with the 44 percent decline in citrus production since it was first discovered in Florida in 2005. The impacts of HLB have contributed to a decline in U.S. and world citrus availability and higher market prices. Despite the challenges faced by the industry, the Florida citrus industry remains a significant contributor to the State and local economies, and is a notable supplier of citrus products to both the U.S. and world markets. The Florida citrus outlook is presented in four parts based on the 2015-16 citrus season: (1) An examination of production trends impacting citrus availability; (2) an analysis of economic trends in utilization of oranges, grapefruit and specialty citrus; (3) an analysis of trends in Florida orange juice/grapefruit juice movement and ending inventories; and (4) an analysis of trends in U.S. consumption and retail sales of orange juice and grapefruit juice.

### Contact Information

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## **Overview of the Mexican Citrus Industry**

### ***Ricardo Martinez Zambrano***

Citrofrut, S.A. de C.V., Monterrey, Nuevo Leon, Mexico

Mexico has played an important role in the world's citrus industry, both as a producer and processor of a wide range of citrus fruits. Mexico is the leading producer of lime and is gaining a prominent relevance within lemon and orange businesses. Our conversation will provide a historical perspective and analyze the factors that have led to Mexico's growth. We will also discuss the pending risks that lie ahead and the potential impact that they could have on the market. I hope to provide a clear picture of where we are coming from, where we are today and what you can expect from Mexico in the future.

### Contact Information

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Email: ricardo.martinez@citrofrut.com.mx



## Conversion of Citrus Peel to High Value Chemicals

*Cesar Granda* and **David Austgen**

Earth Energy Renewables, Bryan, TX

In this presentation we will describe a novel process for converting citrus peel to high-value short- and medium-chain fatty acids (SCFAs and MCFAs) including acetic, propionic, butyric, valeric, hexanoic, heptanoic and octanoic acids. This new process is based on a modified anaerobic digestion (AD) technology. In conventional AD, biopolymers and fats are converted into short-chain fatty acid intermediates which are then converted into methane and carbon dioxide. In this modified process methane production is inhibited to preserve intermediate SCFAs, and chain elongation is promoted resulting in a fermentation broth rich in both SCFAs and MCFAs. The broth from AD is then clarified and concentrated. Fatty acids are subsequently extracted from the broth and fractionated into high purity individual acids for commercial sale. Initially developed at Texas A&M University, this new process has been proven at lab scale, in batch-pilot operations and in a 3-TPD demonstration facility.

SCFAs and MCFAs, while valuable chemicals themselves, may also be converted into a broad range of derivatives which find use in both high-margin niche markets and large commodity chemical and polymer markets. The simplicity of this new process, its low capex requirements, high fatty acid yields, high product prices, and the ability to utilize of low-value feedstocks like citrus peel offer production economics superior to conventionally produced (from petroleum or palm/coconut oil) SCFAs and MCFAs and returns that substantially exceed drying and pelletization of peel for cattle feed. A high-level economic model will also be presented.

### Contact Information

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Tel: 832-490-6265, Email: [daustgen@ee-renewables.com](mailto:daustgen@ee-renewables.com)

## **North America Juice Marketing**

### ***Marie Dobson***

Minute Maid, Sugarland, TX

Juice marketing is constantly evolving; the consumer and the environment has changed. So how do Juice brands evolve to reach and engage with this ever changing consumer? We'll dig into the impact of category changes, our changing consumer dynamics and also the influence of social in shaping how brands market, reach and engage with consumers.

### Contact Information

Marie Dobson, Brand Manager, Minute Maid, 2150 Town Square Place, Sugarland, TX 77479, USA; Tel: 281-302-4228; Email: mardobson@coca-cola.com

## **Low Calorie Juice Beverages – Insights from Marketing Research**

### ***Lisa House***

UF/IFAS Food and Resource Economics, Gainesville, FL

USDA-FAS data shows that per capita consumption of orange juice in the U.S. has decreased from 5.8 to 3.2 gallons from 1998 to 2012. Possible reasons include increasing prices, decreasing breakfast consumption, increasing concerns about sugar, and increasing beverage substitutes.

In March 2009, a leading company launched not-from-concentrate orange juice with a half the calories and sugar. The product is advertised as “50” with 50% of the calories and sugar (42% juice mixed with water and sweetener). The growing market share of these products may reflect the level of importance of sugar and calorie content from the consumer’s perspective. However, it is unclear if consumers know how the reduction in calories and sugar is achieved.

In this study, we focus on understanding the effect of less than 100% NFC orange juice on orange juice consumers with or without information about the products. To investigate this, we conducted an online survey with a choice experiment to compare willingness to pay across information treatments about calorie and juice content. Overall, consumers preferred regular OJ to light OJ. However, the gap in preferences changed depending on the information provided. When consumers were provided calorie information about each product, the gap of preference between regular OJ and light OJ reduced to 43% compared to the control. When consumers were provided information about juice content, the gap increased to 245%.

### **Contact Information**

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## Juice Industry Issues and Opportunities

***Stephanie Meyering*** and ***Diane Welland***

Juice Products Association

Depending on who you talk to one hundred percent juice can be considered a key morning breakfast staple or a villain which should be banished from the table. Where do the challenges and opportunities lie for the juice industry? The Juice Products Association's *Juice Central* program brings together consumer insights and nutrition research to reach important key stakeholders.

The newest research in juice consumption and nutrition is vital to promote, defend and protect the category against its opponents. Meyering and Welland will discuss the latest and greatest in nutrition research, how it is being shared and why this work is significant to the industry.

### Contact Information

Stephanie Meyering, Account Supervisor, Juice Products Association, Communications, 355 Lexington Ave, Fl 19, New York, NY 10017, USA; Tel: 212-297-2162;  
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Diane Welland, Nutrition Communications Manager, Juice Products Association, Suite 750, 529 14th Street, NW, Washington, DC 20045, USA; Tel: 212-297-2162;  
Email: [dwelland@kellencompany.com](mailto:dwelland@kellencompany.com)

## **FSMA Standardized Curricula Update**

### ***Robert Brackett***

Illinois Institute of Technology, Institute for Food Safety and Health, Bedford Park, IL

The FDA commissioned the Food Safety Preventive Controls Alliance (FSPCA) in 2011 to help the regulated industry comply with several new regulations promulgated under the Food Safety Modernization Act (FSMA). The FSPCA is a public-private training partnership consisting of members of university educators, government scientists, and food industry professionals. The primary goal of the FSPCA was to develop a standardized curriculum and training scheme that would allow individuals to become a “preventive controls qualified individual” (PCQI) that would oversee development and implementations of food safety plans in each facility, as required by the Preventive Controls for Human and Animal Foods regulations. Secondarily, the FSPCA has developed a technical support network to address scientific and technical questions associated with preventive controls. The FSPCA has to date trained over 15,000 and over 600 individuals to become PCQIs for human foods and animal foods, respectively. In addition, the Alliance has trained approximately 900 and 160 Lead Instructors for human foods and animal foods, respectively. In addition to Preventive Controls training and support, FSPCA will also be providing training in support of the Foreign Supplier Verification Program and Intentional Adulteration rules. This presentation will provide details on these and other activities of the FSPCA, additional accomplishments to date, and plans for the future.

### Contact Information

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Tel: 708-563-1577; Email: rbrackett@iit.edu

## **Alignment of FSMA with Existing Food Safety Programs – Juice and Beverage Focus**

### ***Donald Kautter***

US FDA, Office of Food Safety, College Park, MD

The FDA Food Safety Modernization Act (FSMA) enables the Food and Drug Administration (FDA) to better protect public health by helping to ensure the safety and security of the food supply. It enables FDA to promulgate food safety rules that focus on preventing food safety issues rather than relying on detecting issues and reacting to them after they occur. FSMA acknowledges that FDA has previously established preventive control type regulations for juice (Title 21, Code of Federal Regulations (21 CFR) part 120) based on a Hazard Analysis and Critical Control Point (HACCP) concept and requires juice processors to identify significant food safety hazards associated with the products they process and to apply preventive controls to reduce or eliminate the identified hazard(s). The FSMA regulations provide exemptions from certain sections of FSMA where pre-existing FDA regulations require HACCP principles for the processing and importing of juice.

### Contact Information

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## Recalls and Food Tampering

### ***Doug Archer***

UF/IFAS Food Science & Human Nutrition, Gainesville, FL

No one in the food industry likes to think about product recalls, but recalls are necessary to both protect public health and to protect a company or brand reputation. In the public health sense, recalls are a means to remove a potentially hazardous product from the marketplace, and even from consumers' homes. The frequency and scope of food recalls is increasing as regulatory agencies implement new tools such as whole genome sequencing of microorganisms, a technology that permits linking illnesses to a food with a whole new level of sensitivity and accuracy. In the first half of 2016, the finding of *Listeria monocytogenes* in frozen vegetables and a linkage to human illnesses led to a major recall ultimately costing hundreds of millions of dollars.

Under FSMA, preparations for a product recall are mandated for all operations that manufacture, process, pack or hold foods, in short, any food operation that must register with the FDA. Under FSMA there are many exempted operations, such as farms. However, under its broad authorities to protect the public health, recalls can affect even exempted operations such as a farm should FDA conclude that a threat to public health exists. FSMA also gives the FDA a new authority, to order a product recall. Thus, any business of any size involved in the delivery of food to humans needs to understand and address food recalls. To assist the industry, UF/IFAS has updated its "Food Recall Manual" originally published in 2005. The updated Manual is an easy to read and understand guide to the recall process. It is available at no cost and downloadable from the UF/IFAS EDIS system.

### Contact Information

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## **Food Decision 2016: Consumer Insights on Food Safety, Nutrition, and Health**

### ***Kimberly Reed***

International Food Information Council Foundation, Washington, DC

2016 is a big decision-making year for Americans. Not only do we have an upcoming presidential election involving more conversations with new voters, emerging technologies, and changing demographics, we also see more factors influencing Americans' food decisions. There is growing national food dialogue, and Americans are hungry for more information about nutrition and the food system. Gain consumer insights from the International Food Information Council Foundation's *2016 Food and Health Survey*. The *2016 Survey*, which includes a special focus on understanding the complex array of factors that influence food decisions, provides important insights and trends for health professionals, government officials, educators, as well as others who seek to understand and improve the health of *all* Americans. Special focus will include the topics of food safety, sustainability, biotechnology, media influence, and trust.

### Contact Information

Kimberly Reed, President, International Food Information Council Foundation, 1100 Connecticut Ave., NW, #430, Washington, DC 20008, USA; Tel: 202-296-6540; Email: [reed@ific.org](mailto:reed@ific.org)



## **Targeting Sweet Taste: The Mechanisms, Modulation and Enhancement of Sweet Detection**

***Steven Munger***

University of Florida, Center for Smell and Taste, Gainesville, FL

All sweet-tasting compounds, including nutritive sugars and various natural and synthetic non-caloric sweeteners, target a common receptor present in the human gustatory system. This presentation will highlight our current understanding of the mechanisms underlying the detection of sweet stimuli, the identification of synergistic enhancers of sweet taste receptor activation by sugars, and the modulation of sweet taste responsiveness in the mouth by hormones linked to satiety and metabolism.

### Contact Information

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## **Use of Flavoromics Platform for Monitoring and Improving Citrus Flavor**

***Yu Wang***

UF/IFAS Citrus Research and Education Center, Lake Alfred, FL

The great majority of consumers indicate that flavor is the most important factor impacting their preferences and purchases. In order to keep pace with the market and consumer expectations, a flavoromics platform has been developed to provide fundamental information on flavor monitoring and improvements through pre- and post- harvest practices. Flavoromics is an analytical methodology focused on studying flavor compounds (aroma and taste) in agricultural commodities and aimed at linking chemical composition with sensory quality using chemometrics. The appealing flavor compounds in fruits or juice have multiple origins and fates. Some are endogenous to the varieties and may be retained in the finished product. Others significantly influence due to pre- and post- harvest practices such as irrigation, fertigation, fruit handling, juice processing and storage, and are also retained in the finished product. Besides the development of a new variety, modification of pre- and post- harvest practices are alternative ways to manipulate flavor. This will also be achieved using flavoromics. Therefore, the overall goal is to set up a flavoromics platform to monitor and improve citrus flavor through pre- and post- harvest processes.

### Contact Information

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700 Experiment Station Rd., Lake Alfred, FL 33850, USA; Tel: 863-956-8673; Email: [yu.wang@ufl.edu](mailto:yu.wang@ufl.edu)

## **A Closer Look at the Effect of HLB on Orange Juice Flavor**

***Anne Plotto***

USDA, ARS, US Horticultural Research Laboratory, Fort Pierce, FL

Since 2005, the introduction and spread of Huanglongbing (HLB) or citrus greening in Florida has resulted in a progressive decrease in volume and quality of orange juice. In general, juice made from infected, symptomatic oranges (green and lopsided fruit) is less sweet, more sour and more bitter than juice made from non-symptomatic fruit or fruit from healthy trees, and it has a distinct off flavor. Efforts to reduce symptoms in the field by increasing tree vigor with foliar fertilizers (which are readily absorbed) has provided inconsistent results in terms of juice quality. Combining insecticide applications with foliar sprays improved quality of orange juice after 3 years of treatments. Solar thermotherapy is another approach that was shown to slow down the progression of HLB symptoms on the tree, maintaining vigor and reducing fruit drop. Thermotherapy of mature (15+ years old) trees in two commercial groves resulted in juice that was sweeter, less bitter and with more body two years after the application of field heat. The bitter limonoids and flavonoids were decreased and sugar/acid ratio was increased in fruit from trees receiving thermotherapy.

### Contact Information

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## **Changes and Opportunities with Citrus Flavor Ingredients**

***Robert Kryger***

CitraSource, Winter Haven, FL

The basic technology used to manufacture most citrus oil-based flavor ingredients – distillation and extraction – is well-established and many ingredients are based upon processes and raw materials established many years ago. However, given the challenges of the citrus industry today, we are seeing some important changes in the raw citrus oils themselves. Whether the changes are due to citrus greening, horticultural management techniques, or other complex reasons, the result is that it is increasingly difficult to reproduce some of the standard ingredients that the industry relies on. This presentation will outline some of the ingredient changes and how the flavor industry is responding.

### Contact Information

Robert Kryger, CitraSource, 1000 American Superior Blvd., Winter Haven, FL 33880, USA;  
Tel: 863-293-0326; Email: rkryger@citrasource.com

## **Social Media 101 – What Food Companies Need to Know**

***Benjamin Chapman***

North Carolina State University, Raleigh, NC,

In 1996 the Odwalla Juice Company was linked to a tragic outbreak of E. coli O157. Over sixty illnesses including a child's death were linked to the unpasteurized juice creating a fallout that included a then-record fine, a change in processing procedures and ultimately Juice HACCP requirements. Had this event taken place in 2016, the public discussion and trust in the brand would be drastically amplified by social media discussion. Social media has allowed for real-time engagement with consumers but during a crisis many firms become overwhelmed. Gleaned from more recent events, information on how quickly information is moving will be discussed, as well as what information becomes important; strategies for response what the response; and, how to talk about risks during a crisis.

### Contact Information

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## **Evolving in Changing Times – Promoting Florida Citrus**

### ***Shannon Shepp***

Florida Department of Citrus, Bartow, FL

Supplies of Florida orange juice are down, generations are shifting buying power, and today's news comes at consumers in all directions. The marketing target for Florida citrus has a persona of its own, and the Florida Department of Citrus is using new innovations to reach them with information they choose to accept. We're talking about Millennials, and we've gotten to know them pretty well. Next time you get caught in grocery aisle behind someone looking at their cell phone, we might be the reason they are looking. I'll explain how we are using technology to zoom into the Millennials' thought processes and how we are working to make their lives (and shopping decisions) easier.

### Contact Information

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## **Horticultural Effects of Bactericides – Preliminary Results**

### ***Robert Shatters***

USDA-ARS Horticultural Research Laboratory, Fort Pierce, FL

Since the discovery of citrus greening disease in Florida in 2005, citrus production has dropped while costs of citrus production has risen. As a result, finding improved strategies to manage the disease is a primary concern for the Florida citrus industry. Although the bacterium causing this disease is sensitive to a number of bactericides, the inability to demonstrate effective penetration of these bactericides into the plant has prevented the commercial deployment of this strategy. Our lab has recently shown that specific adjuvants can be used to improve penetration of two bactericides that have a long history of use in fruit and nut crops, oxytetracycline and streptomycin in the formulations marketed as FireLine and FireWall, respectively. The results led to a recent collaborative work including the USDA, ARS, U. S. Horticultural Research Laboratory in Fort Pierce, FL, AgroSource, Inc., Jupiter, FL and the Florida Citrus Research and Development Foundation to demonstrate effects of spray applications of these bactericides in commercial grove citrus trees. In applications spanning 1.5 years, improvements in both plant performance/health parameters and reduced bacterial levels in the plant were documented. The improvements were progressive with a higher level of statistical support observed in the second year. Results will be presented showing the tree responses and outlining our continuing work to evaluate and improve effective delivery of these molecules.

### Contact Information

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## Notes

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## Notes

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Wednesday Morning Refreshments

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Wednesday Networking Reception

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