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Journal of Citrus Pathology

5th International Research Conference on Huanglongbing, Florida, 2017

Agenda

International Research Conference on Huanglongbing

March 14-17, 2017

Tuesday, 14 March 2017

9:00 am – 5:00 pm:	HLB-MAC Committee Meeting – by invitation only
1:00 pm – 4:00 pm	USDA, ARS All Hands Meeting – ARS researchers only
12:00 noon – 9:00 pm:	Registration and Poster set up
7:00 pm – 9:00 pm:	Welcome Reception

Wednesday, 15 March 2017

7:00 – 5:00 pm:	Registration
7:00 – 8:00 am:	Continental Breakfast

8:00 – 8:45 am: Welcome and Introductions

8:45 – 9:45 am:	Keynote Address: *"Black Swans, Dragons and the Phoenix: Rebuilding Citrus after HLB"*

Paul D. Mitchell

Associate Professor, Department of Agricultural and Applied Economics

University of Wisconsin, Madison

Extension State Specialist in Cropping Systems and Environmental Management

Co-Director of UW Extension's Nutrient and Pest Management Program (NPM)International Science and Technology Practice and Policy (InSTePP) Fellow

Paul Mitchell's research program focuses on the economics of crop production, emphasizing pest management and risk management for commodity crops, and specialty crop economics. His published work examines insect and weed management, management of pest resistance, estimation of yield loss functions from pest damage, and economic benefits of pest control at the farm and societal levels. More specifically, his work has focused on corn and soybean, the European corn borer (*Ostrinia nubilalis*) and corn rootworm (*Diabrotica spp*.), Bt corn and herbicide tolerant crops, the herbicides glyphosate and atrazine, with new projects examining the broader economics of crop biotechnology and the economics of neonicotinoid insecticides. His work concerning risk management has focused on crop insurance and federal commodity programs to manage farm income risk, as well as farmer attitudes and beliefs regarding climate change and their likely responses. His recent research on economic issues in specialty crop production has included developing new sustainability metrics for grower groups to document their current sustainability status and plan for improvements, a new method to estimate how plant spacing and tillage affect the size distribution of harvested potato tubers, examining quality of life and profitability tradeoffs faced by small organic vegetable growers and the impacts of market channel choices. His current projects include further improving sustainability metrics, use of cover crop use by small organic vegetable growers, economic analysis of the benefits of methods to address citrus greening (Huanglongbing disease), and improving conventional potato breeding to reduce acrylamide. He is actively involved with the National Initiative for Sustainable Agriculture (NISA) and a member of the Advisory Committee for Monsanto's Corn Rootworm Knowledge Research Program.

9:45 – 10:15 am: Break

10:15 – 12:00 noon: Morning Session:

Session 1A – **Pathogen**				Session 1B - **Cultural Control**	
		Moderator - Dean Gabriel			**Moderator - Jim Graham**
10:15am	1.a.1	Prediction and computational analysis of Liberibacter virulence factors		1.b.1	Development of a screening bioassay for in planta evaluation of bactericidal compounds and it's use in discovery of new bactericidal compounds active

					against '*Candidatus*' Liberibacter asiaticus within citrus
		Lisa N. Kinch, Qian Cong, **Nick V. Grishin**			**Robert G. Shatters, Jr**, Dov Borovsky, Kasie Sturgeon, EricaRose Warwick, Charles A. Powell
10:30am	1.a.2	Responses of *Candidatus* Liberibacter asiaticus to antibiotics in *in vitro* culture assays		1.b.2	'*Candidatus* Liberibacter asiaticus', Causal Agent of Citrus Huanglongbing, is Reduced by Treatment with Brassinosteroids
		Kazuki Fujiwara, Toru Iwanami, Takashi Fujikawa			**Eduardo Canales**, Yamilet Coll, Ingrid Hernández, Roxana Portieles, Mayra Rodríguez, Yunior López, Miguel Aranguren, Eugenio Alonso, Maritza Luis, Lochy Batista, Meilyn Rodríguez, Merardo Pujol, María E. Ochagavia, Viviana Falcón, Ryohei Terauchi, Hideo Matsumura, Raixa Llauger, Mirian Núñez, Melissa S. Borrusch, Jonathan D. Walton, Eulogio Pimentel, Carlos Borroto, Orlando Borrás-Hidalgo
10:45am	1.a.3	The *Ca.* Liberibacter Culturing Consortium (*C*LCC): Developing methods to culture Ca. Liberibacter asiaticus – a game change in HLB research		1.b.3	Evaluation of the control effect of antimicrobials against citrus Huanglongbing via trunk injection
		David R. Gang, Haluk Beyenal, Anders Omsland, Nabil Killiny, Stephen Futch and Judith K. Brown			Jiahuai Hu, Jinyun Li, and **Nian Wang**
11:00am	1.a.4	Small scale system for testing antimicrobial compounds targeting '*Candidatus* Liberibacter asiaticus'		1.b.4	In vitro antimicrobial activity of Zinckicide™ against *Liberibacter crescens*, a surrogate of '*Candidatus* Liberibacter asiaticus'
		Mark E. Hilf			**Eber Naranjo**, Swadeshmukul Santra, Mikaeel Young, Parthiban Rajasekaran, Evan Johnson, Leonardo De La Fuente

11:15am	1.a.5	Phosphatidylcholine synthesis pathway in *Liberibacter crescens* is missing from *Ca*. L. asiaticus and contributes to culturability.		1.b.5	Evaluation in vitro of novel antimicrobial compounds to control growth and biofilm formation of citrus bacterial pathogens
		Ann Bernert, Mukesh Jain, and Dean W. Gabriel			**Hajeewaka Mendis**, Swadeshmukul Santra, Mikaeel Young, Parthiban Rajasekaran, Evan Johnson, Leonardo De La Fuente
				1.b.6	Retracted
11:30am	1.a.6	The discovery of citrate as an important carbon source for culturing *Liberibacter crescens* suggests an HLB management strategy		1.b.7	The roll of bactericides in Huanglongbing management
		Maritsa Cruz-Munoz, Joseph Petrone, Alexa Cohn, Gabriela Conicelli, Cody Artzner, Nabil Killiny, and Eric W. Triplett.			**Stephanie L. Slinski**
11:45am	1.a.7	Streptomycin and oxytetracycline-resistance profiles in *Liberibacter crescens* suggests a management strategy HLB on citrus			
		Alexa Cohn, Kin Lai, Maritsa Cruz-Munoz, Matthew Hunter, and Eric W. Triplett.			

12:00 – 1:15 pm: Lunch

1:00 – 3:00 pm: Florida Citrus Mutual Board Meeting – By invitation only

1:15 – 3:00 pm: Afternoon Session:

Session 2A – **Host Pathogen**				Session 2B - **Vector Control**	
		Moderator – Mark Hilf			**Moderator – Mamoudou Sétamou**
1:15pm	2.a.1	The accumulation of H_2O_2 and ATP in infected citrus plants reflect HLB progression and disease severity		2.b.1	Spray application of different kaolin formulations on sweet orange plants disrupt the settling and probing behavior of *Diaphorina citri*
		Marco Pitino, Cheryl M. Armstrong and Yongping Duan			**M. Miranda**, O. Zanardi; H. Volpe; R. Garcia; N. Roda, E. Prado
1:30pm	2.a.2	Chitin Induces pathogen-associated molecular pattern-triggered immunity that affects Asian Citrus Psyllid feeding behavior in 'Sun Chu Sha' mandarin		2.b.2	UV reflective polyethylene mulch to protect young trees from Asian citrus psyllid and HLB
		Qingchun Shi, Justin George, Shujian Zhang, Stephen L. Lapointe and Ed Stover			**Phil Stansly**
1:45pm	2.a.3	Effect of four strobirulin-based fungicides and salicylic acid on the vascular system plugging and bacterial titer of citrus trees infected with huanglongbing (HLB) in Jamaica		2.b.3	A novel attract-and-kill device for strengthening the management of Asian citrus psyllid
		Bolivar Torres , **Juan Delgado**, Mauricio Flores			**Mamoudou Sétamou**, Andrew Chow, Joseph Patt, Beth Grafton-Cardwell, Nastaran Tofangsazi and Darek Czokajlo
2:00pm	2.a.4	*Candidatus* Liberibacter crescens detected in citrus		2.b.4	Field validation of a system for autodissemination of an entomopathogenic fungus, *Isaria fumosorosea*, to control the Asian citrus psyllid on residential citrus
		J. Rascoe, L.B. Kumagai, P. Woods, V. Hornbaker			**Andrew Chow,** Joseph M. Patt, and Mamoudou Sétamou
	2.a.5	Moved to poster at author's request			

2:15pm	2.a.6	Long-term Study of Huanglongbing Diagnosis using Fibrous Root Tissue		2.b.5	An attract-and-kill strategy for Asian citrus psyllid
		Jong-Won Park, Jim Brockington, W. Evan Braswell, Barry C. Kostyk, Philip A. Stansly, Eliezer S. Louzada, John V. DaGraça, and **Madhurababu Kunta**			**Justin George** and Stephen Lapointe
2:30pm	2.a.7	CLas population dynamics in citrus and ACP		2.b.6	Biological control of the Asian Citrus Psyllid, *Diaphorina citri*, in the lower Rio Grande Valley of Texas using the Ectoparasitoid, *Tamarixia radiata*
		Greg McCollum, David Hall, and Tim Gottwald			**Daniel Flores** and Matthew Ciomperlik
2:45pm	2.a.8	Speed of *Candidatus* Liberibacter asiaticus movement in citrus plants		2.b.7	Genetic solutions for biological control of disease spread by insects – application to Huanglongbing disease of citrus
		Raiol Júnior, L. L., Cifuentes-Arenas, J. C., Lopes, S. A			**Thomas H. Turpen**
3:00pm				2.b.8	Residual impact of field-weathered insecticides on Asian citrus psyllid Diaphorina citri (Hemiptera: Liviidae) nymphs -
					Nastaran Tofangsazi, Beth Grafton-Cardwell and Matthew Daugherty

3:15 – 3:45 pm: Break

3:45 – 5:15 pm: Afternoon Session:

Session 3A – **Pathogen Detection**				Session 3B – **Infection Consequences**	
		Moderator – Greg McCollum			**Moderator – Mike Irey**
3:45pm	3.a.1	Detection of '*Candidatus* Liberibacter species' from citrus in Eastern Africa		3.b.1	Recovering value-added co-products from culled HLB symptomatic and pre-harvest dropped fruit
		Ronel Roberts, Glynnis Cook, Tim Grout, Ivan Rwomushana, Peterson Nderitu, Zuberi Seguni, Chris Materu, Chanel Steyn, Gerhard Pietersen and Hennie le Roux			**Randall G. Cameron**, Hoa K. Chau, Arland T. Hotchkiss, Christina Dorado and John A. Manthey
4:00pm	3.a.2	Evaluation of *nrdB* for improvement of detection in "*Candidatus* Liberibacter asiaticus"		3.b.2	Citrus greening disease or huanglongbing (HLB) impacts on flavor compounds of oranges with compromised abscission zones with secondary infection by the fungus, *Lasiodiploida theobromae*
		Zheng Zheng**,** Meirong Xu, **Xiaoling Deng**			**Elizabeth Baldwin**, Anne Plotto, Jinhe Bai, Wei Zhao, John Manthey, Smita Raithore and Mike Irey
4:15pm	3.a.3	Enhanced "early" detection of Clas infections in citrus		3.b.3	Effect of compromised abscission zone on taste quality of fruit affected with huanglongbing (HLB) and secondarily infected by *Lasiodiploida theobromae*
		McCollum, G., Keremane, M., Kunta, M., LeVesque, C, and Niedz, R., Duan, Y. and Armstrong, C.			**Anne Plotto**, Elizabeth Baldwin, Jinhe Bai, Smita Raithore, John Manthey, Wei Zhao, Mike Irey
4:30pm	3.a.4	Adoption and validation of Ribonucleotide Reductase (RNR)-based real-time assays for detection of HLB '*Candidatus* Liberibacter asiaticus' (*C*Las)		3.b.4	RNA-sequencing analysis of the abscission-related transcriptome in the citrus calyx abscission zone of huanglongbing-affected sweet orange
		Zonghe Yan, John Rascoe, Stefano Costanzo, **Michael Stulberg**, Zhaowei			**Wei Zhao**, Elizabeth A. Baldwin, Jinhe Bai, Anne Plotto, Mike Irey

		Liu, Jianchi Chen, Mark K. Nakhla			
4:45pm	3.a.5	Optimization of PCR for reliable detection of viable *Candidatus* Liberibacter asiaticus (CLas) in citrus and estimation of viable CLas in symptomatic grapefruit leaves of different developmental stages during summer and fall		3.b.5	The effect of HLB on the quality of cold pressed oils from Florida Hamlin and Valencia oranges
		Eliezer Louzada, Omar Vazquez, Sandy Chavez, Jong-Won Park, Pallavi Vedasharan, Madhurababu Kunta			**Brittany Martin** and Renee Goodrich-Schneider
5:00pm	3.a.6	Development of an improved internal control gene assay for Real Time PCR and Digital Droplet PCR detection of *Candidatus* Liberibacter asiaticus		3.b.6	Symptoms of Huanglongbing-affected oranges and associated effects on volatile profiles in peel oil
		Manjunath Keremane, Chandrika Ramadugu, Richard Lee, Mikeal Roose, MaryLou Polek and Greg McCollum			**Jinhe Bai**, Huqing Yang, Wei Zhao, Anne Plotto, Elise Bourcier, Mike Irey, and Elizabeth Baldwin

5:15 – 7:00 pm: Poster Session

7:00 – 9:00 pm: Dinner Provided

Thursday, 16 March 2017

7:00 – 5:00 pm: Registration

7:00 – 8:00 am: Continental Breakfast

8:00 – 10:00 am: Morning Session:

Session 4A – **Host Pathogen**				Session 4B – **Cultural Control**	
		Moderator - Bill Dawson			**Moderator - Evan Johnson**
8:00am	4.a.1	Engineering mobile RNA to enhance citrus defense responses to control citrus greening		4.b.1	Soil and water acidification sustain root density of huanglongbing-infected trees in Florida
		Tina Strauss, Shujian Zhang, Giovana Perazzo, Dean W. Gabriel			**Jim Graham**, Kayla Gerberich, Diane Bright, Evan Johnson
8:15am	4.a.2	Genomic and proteomic investigation of the interaction between citrus and *Candidatus* Liberibacter asciaticus		4.b.2	Nutrition plays a key role in mitigating disease severity and defense towards CLas in Huanglongbing infected citrus
		Jessica Franco, Shree Thapa, Veronica Ancona, Nian Wang, Wenbo Ma and **Gitta Coaker**			**Aditi Satpute,** Manjul Dutt, Jude Grosser
8:30am	4.a.3	Metabolomics, transcriptomics, and proteomics analysis of *C. sinensis* (L.) Osbeck trees graft-inoculated with *Candidatus* Liberibacter asiaticus		4.b.3	'Hybrid' nutrition programs featuring soil-applied Controlled Release Fertilizer (CRF) or frequent treatments with liquid nutrition can improve the health, growth and productivity of HLB-infected trees
		Elizabeth Chin, John Ramsey, Darya Mishchuk, Elizabeth Foster, Michelle Cilia, Kris Godfrey, Carolyn Slupsky			**Grosser, J.W**. and G.A Barthe
8:45am	4.a.4	Changes in primary metabolism of citrus rootstocks following infection with *Candidatus* Liberibacter asiaticus		4.b.4	Mitigating citrus huanglongbing of new plantings in Florida with integrated management
		Ute Albrecht, Kim Bowman, Oliver Fiehn, Hoyoun Kim			Muqing Zhang, Youzhong Huang, Huihong Liao, Chuanyu Yang, , Melissa S. Doud, Yongping Duan and **Charles A. Powell**
9:00am	4.a.5	Symptom variations and molecular markers that illustrate the HLB complexity		4.b.5	Development of the Hydro-Solar Thermotherapy (HSTT) for treatment of HLB infected citrus
		Yongping Duan, Marco Pitino, and			**Aiken, Geoffrey**, Gottwald, Tim, R.,

		Cheryl Armstrong			Kainz, James, Poole, Gavin H., Truett, John
9:15am	4.a.6	Engineering a CRISPR-based antimicrobial system for the treatment of *Liberibacter* infections		4.b.6	Canopy and Root Response of HLB-affected Citrus trees to Steam-generated Thermotherapy
		Jennie Fagen, Evan Braswell, Chase Beisel			**Naweena Thapa**, Sara L. Commerford, Reza Ehsani, Evan G. Johnson, Megan M. Dewdney
9:30am	4.a.7	Investigating the role of secreted proteases during HLB progression		4.b.7	Soil microbial product interactions with HLB in Valencia/Swingle trees over three seasons at three contrasting sites in Florida
		Jessica Franco, Thomas Liebrand, Veronica Ancona, Gitta Coaker			**Jim Syvertsen**
9:45am	4.a.8	Rapid lateral movement between sieve tubes by Candidatus Liberibacter asiaticus in split root trees		4.b.8	Citrus cropping systems under the Huanglongbing expansion in Bhutan
		James Orrock, Harrison Davis, Evan G. Johnson			Kinley Dorji, **Kazuyoshi Yuasa**

10:00 – 10:30 am: Break

10:30 – 12:00 noon: Morning Session:

Session 5A – **Pathogen Detection**				Session 5B - **Host**	
		Moderator – John Hartung			**Moderator – Jude Grosser**
10:30am	5.a.1	Leaf microbiota-based early detection of Huanglongbing in citrus trees		5.b.1	Breeding Rootstocks to Prevent or Mitigate HLB in Commercial Trees
		Nilesh N. Maharaj, Kaitlyn N. Kelly, Johan H.J. Leveau			**Grosser, J.W.,** F. G. Gmitter and W.S. Castle

10:45am	5.a.2	Canine assisted early detection of HLB		5.b.2	Establishing citrus rootstock traits using metabolomics to accelerate development of HLB tolerant rootstocks
		Gottwald, T., Poole, G., Taylor, E., Hall, D., Hartung, J., Bartels, D., McCollum, D., Hilf, M., Luo, W., Louwes, F.			**Ho-Youn Kim,** Kim Bowman and Ute Albrecht
11:00am	5.a.3	Use of HLB detection canines in real world settings		5.b.3	Genome re-sequencing and transcriptome analyses of the constitutive disease resistance (*CDR*) gene family in *Poncirus trifoliata* and its hybrids
		Gottwald, T., **Poole, G.,** Taylor, E., Hartung, J., Hall, D., Bartels, D., McCollum, D., Hilf, M., Luo, W., Louwes, F.			**Nidhi Rawat,** Zhanao Deng, Ute Albrecht, Kim D. Bowman, Yong-Ping Duan, Fred G. Gmitter Jr., Dongliang Du, Ming Huang, Qibin Yu, and Yi Zhang
11:15am	5.a.4	ELISA detection for HLB using a pathogen-secreted protein as the biomarker		5.b.4	Production of non-transgenic mutant plants via Agrobacterium-mediated transient CRISPR expression
		Agustina De Francesco, Kelley Clark, Jianfeng Liu, Deborah Pagliaccia, Thien-Toan Tran, Ashok Mulchandani, Georgios Vidalakis, Wenbo Ma			**Yi Li**
11:30am	5.a.5	ImmuneTissue Prints: a simple and scalable complement to PCR-based assays for the detection of '*Ca*. Liberibacter asiaticus'		5.b.5	Development of disease resistant/tolerant citrus varieties using CRISPR technology
		John Hartung and Fang Ding			**Nian Wang,** Hongge Jia, Xiuping Zou, Shuming Wang, Samiksha Prasad, Zhiqian Pang, Xiaobao Ying
11:45am	5.a.6	Comparative Study of Early Detection Techniques: TX2		5.b.6	Editing *DMR6* orthologs in citrus via a CRISPR/Cas9 system
		Cynthia LeVesque, Cristina Davis, Richard Fink, Kristine Godfrey, Hailing Jin, Manjunath Keremane, Madhura Babu Kunta, Johan Leveau, Wenbo Ma, Greg McCollum, Neil McRoberts,			**Shujian Zhang**, Qingchun Shi, Yongping Duan, Ed Stover

		Joe Morse, Carolyn Slupsky.			

12:00 – 1:15 pm: Lunch and "*A Tribute to Prof. Joseph Marie Bové*" by Juliano Ayres

1:15 – 2:15 Keynote Address: *"The social side of Australian biosecurity: coordination and/or collaboration in emergency response"*

Dr Ryan McAllister

Ryan is a behavioral economist and principal research scientist with CSIRO, ***exploring problems that require cooperation to solve***. He has worked across the Australian rangelands, and extensively in urbanized, coastal communities. Between 2009 and 2012 he ran a major regional scale adaptation initiative, examining the distribution of the economic winners and losers from climate adaptations. ***More recently he has been focusing on community participation in Australia's biosecurity detection and response system***. Previously Ryan worked in statistical roles with the Australian and British governments, and with industry.

2:30 – 3:30 pm: Afternoon Session

Session 6A – **Epidemiology**				Session 6B - **Vector Control**	
		Moderator – Neal McRoberts			**Moderator – Ariel Singerman**
2:30pm	6.a.1	Comparison of distributions of psyllids and plants that were found positive for *Candidatus* Liberibacter asiaticus in Florida		6.b.1	CHMA Design: performance review, concerns, and a risk-based optimization for treasure coast areas in Florida
		Matthew Albritton, Alica Lawrence, Ariena Van Bruggen, **Susan Halbert**, Manjunath Keremane, Xiao-an Sun, Chandrika Ramadugu, and MaryLou Polek			**W. Luo,** T. Gottwald, and F. Louws
2:45pm	6.a.2	Huanglongbing in Texas 2012-2017 – an update		6.b.2	Organic and conventional programs for management of Asian citrus psyllid (*Diaphorina citri*) vector of

					Huanglongbing pathogens
		John V. DaGraça, Madhurababu Kunta, Mamoudou Sétamou, V. Ancona, Eliezer S. Louzada, Olufemi J. Alabi, David W. Bartels, Maurice N. Duffel, and Jon Dale			Jawwad A. Qureshi and **Philip A. Stansly**
3:00pm	6.a.3	Incidence and distribution of *Diaphorina citri* carrying *Candidatus* Liberibacter asiaticus		6.b.3	California strategies for managing Asian Citrus Psyllid within groves and for limiting human-assisted transport
		Rodrigo S. Sassi, Renato B. Bassanezi, Ivaldo Sala, Daniela A. B. Coletti, Julio C. Rodrigues, **Nelson A. Wulff**			**Beth Grafton-Cardwell**
3:15pm	6.a.4	Update on the hot spot cluster analysis of Ct-values from Asian Citrus Psyllid samples		6.b.4	Agent-based model to predict/monitor the efficacy and cost of various ACP control strategies
		David Bartels and Gericke Cook			**W. Luo**, D. Posny, S. Zhang, N. McRoberts and T. Gottwald

3:30 – 4:00 pm: Break

4:00 – 5:00 pm: Afternoon Session:

Session 7A –**Epidemiology**				Session 7B – **Vector Control**	
		Moderator - Neal McRoberts			**Moderator – Ariel Singerman**
4:00pm	7.a.1	Temporal and spatial HLB progress in citrus areas maintained under strict management are highly influenced by neighboring non-commercial citrus plants		7.b.1	Is area-wide pest management useful against HLB? Evidence from Florida
		José Belasque, Josicléa Hüffner Arruda, Gressa Amanda Chinelato, Kelly Pazolini			**Ariel Singerman**, Sergio H. Lence, and Pilar Useche

4:15pm	7.a.2	Calculating historical citrus reduction rate/pattern using aerial photographic and GIS techniques		7.b.2	Postharvest management of asian citrus psyllid in bulk citrus – potential use postharvest fumigants
		W. Luo, T. Gottwald and D. Posny			**Sandipa Gautam**, Nastaran Tofangsazi, Joe Morse, Spencer Walse, and Elizabeth Grafton-Cardwell
4:30pm	7.a.3	Estimating the economic efficiency of various HLB control strategies		7.b.3	After ten years of ACP, no HLB has been observed on citrus plants in Sonora, México
		D. Posny, T. Gottwald, N. Cunniffe and C. Gilligan			**Jose L. Martinez-Carrillo,** Javier Valenzuela-Lagarda, and Alejandro Suarez-Beltran
4:45pm	7.a.4	In-Field Thermotherapy for Combating Citrus Greening (Huanglongbing)		7.b.4	Asian Citrus psyllid predator *Ceraeochrysa valida* (Chrysopidae) tolerant to insecticides. Production, release and effectiveness in field
		Joseph Trotochaud, **Reza Ehsani**			**Clara Yalexy Delgado,** Thiago Antunes

5:00 – 7:00 pm: Poster Session

7:00 – 9:00 pm: Dinner on your own

7:00 – 9:00 pm: IRCHLB Steering Committee Meeting – by invitations only

Friday, 17 March 2017

7:00 – 5:00 pm: Registration

7:00 – 8:00 am: Continental Breakfast

8:00 – 10:00 am: Morning Session:

Session 8A – **Epidemiology**				Session 8B – **Host-Vector Interaction**	
		Moderator – Renato Bassanezi			**Moderator – David Hall**
8:00am	8.a.1	A conceptual framework for the evaluation of HLB surveillance activities.		8.b.1	Correlation of electronic monitoring and stylet pathways elucidate the role of sclerenchymatous ring as a barrier to phloem feeding on citrus leaves by Asian citrus psyllid
		Alexander **Mastin**, Julian Drewe, Frank Van Den Bosch, Timothy Gottwald and Stephen Parnell			**Justin George**, El-Desouky Ammar , David G. Hall, Stephen L. Lapointe
8:15am	8.a.2	Individual-Based Modeling: Simulating the spatial dispersion of HLB and the effects of epidemic on orchard yield under different scenarios of psyllid's migration and sanitary management.		8.b.2	Impacts of host plants on the Asian citrus psyllid proteome and vectoring ability of *Candidatus* Liberibacter asiaticus, the pathogen associated with huanglongbing disease in citrus
		Ana Paula Diniz Marques, Takaaki Ohishi			**Jaclyn Mahoney,** Richard Johnson, Keith Rivera, Kevin Howe, Michael MacCoss, David Hall, John Ramsey, Michelle Cilia
8:30am	8.a.3	Different scenario-based simulations of ACP & HLB dynamics in Central Valley, CA for consideration of disease management		8.b.3	Additional evidence that the environment may be impacting HLB spread in Brazil.
		D. Posny, W. Luo, N. McRoberts and T. Gottwald			**Silvio Lopes**, Fernanda Luiz, Hermes Oliveira, Juan Arenas, Laudecir Raiol Jr
8:45am	8.a.4	A method of determining how to balance survey effort for early detection of HLB across host and vector populations.		8.b.4	pH and oxygen microenvironments in psyllid and citrus phloem
		Alexander Mastin, Frank Van Den Bosch, Timothy Gottwald, Vasthi Alonso Chavez and Stephen Parnell			**Banafsheh Molki,** Phuc Ha, Abdul Rahman mohammed, Nabil Killiny, David Gang, Anders Omsland, and Haluk Beyenal

9:00am	8.a.5	Risk based HLB survey for Hacienda Heights and San Gabriel in Southern CA		8.b.5	Exogenous application of methyl jasmonate and salicylic acid on citrus foliage: Effects on foliar volatiles and aggregation behavior of Asian citrus psyllid (*Diaphorina citri*)
		T. Gottwald, and W. Luo			**Joseph Patt**, Paul Robbins, Greg McCollum
9:15am	8.a.6	Mathematical Modeling of HLB Symptom Development		8.b.6	Screening of rootstock citrus genotypes for resistance to *Diaphorina citri* Kuwayama
		Jo Ann Lee, **Ross Ptacek**, Jed Keesling, Burton Singer, William O Dawson, Susan E Halbert			**Marilene Fancelli**, Lorena Viana Ribeiro, Manuela Souza Rosa, Walter dos Santos Soares Filho, Orlando Sampaio Passos
9:30am	8.a.7	Census-travel risk model to predict points of disease/pest introduction		8.b.7	Evaluation of the presence of HLB in Rutaceae in nature reserves in Misiones, Argentina
		T. Gottwald, W. Luo, T. Riley and F. Louws			**Alberto M. Gochez**, Paula Aranda, Lucia Velozo, Carla Buemo, Manuela Rodriguez, Juan P. Agostini, Liliana Talavera, Paula Alayon Ulaces, Emilio Gaiad, Carina F. Arguelles, Marcos Miretti
9:45am	8.a.8	An update pattern for the successful plantation of Ponkan tangerine (Citrus reticulata) in HLB-infected region in China		8.b.8	Effects of citrus flush quality and psyllid population density on use of vibrational communication signals for *Diaphorina citri* management
		Liu Yong-Zhong, Peng Shu-Ang, Deng Xiu-Xin, Zhang Sheng-Cai, Ding Fang, You You-Li			**Richard Mankin,** Riken Patel, Kayla Norton, Julie Cantillo

10:00 – 10:30 am: Break

10:30 – 12:00 pm: Morning Session:

Session 9A – **Pathogen**				Session 9B – **Vector / Pathogen Vector**	
		Moderator – MaryLou Polek			**Moderator – Judith Brown**
10:30am	9.a.1	Functional characterization of truncated and full length natural variants of a '*Ca.* Liberibacter asiaticus' chromosomal LC1-like repressor.		9.b.1	Comparative proteomics and microscopy provide insights into transmission of *Candidatus* Liberibacter asiaticus by the Asian citrus psyllid
		Alejandra Munoz Bodnar, Laura A. Fleites, Mukesh Jain, Ann Bernert, Dean W. Gabriel			**Kruse, A**., Fattah-Hosseini, S., Saha, S., Ozer, A., Warwick, E., Sturgeon, K., Johnson, R., Lis, J., Shatters, R., MacCoss, M.J. and Cilia, M.
10:45am	9.a.2	A CLas effector targets a specific family of secreted proteases in citrus		9.b.2	Establishment of Asian citrus psyllid isofemale lines from Florida that are efficient or non-efficient in acquisition and transmission of the huanglongbing pathogen *Candidatus* Liberibacter asiaticus
		Kelley Clark, Simon Schwizer, Eva Hawara, Deborah Pagliaccia, Jessica Franco, Nian Wang, Gitta Coaker, Wenbo Ma			**El-Desouky Ammar**, David G. Hall and Michelle Cilia
11:00am	9.a.3	Whole genome sequence analyses revealed that strains of "Candidatus Liberibacter asiaticus" recently found in two California locations were different		9.b.3	Identification of gut epithelium binding peptides that reduce systemic movement of '*Candidatus*' Liberibacter asiaticus within the Asian citrus psyllid vector
		Z. Zheng, F. Wu, L. B. Kumagai, M. Polek, X. Deng, and **J. Chen**			**Robert G. Shatters, Jr**, Dov Borovsky, El-Desouky Ammar, David Hall, Kasie Sturgeon, EricaRose Warwick, Marc Giulianotti, Radleigh G Santos and Clemencia Pinilla
11:15am	9.a.4	The Molecular Mechanism of LdtR, A Global Transcriptional Regulator in the Citrus Pathogen *Liberibacter asiaticus*		9.b.4	Proteome mining: using peptidomics to identify biomarkers of CLas infection in the Asian Citrus Psyllid

		Fernando A. Pagliai, Claudio F. Gonzalez, Graciela L. Lorca			**Laura A. Fleites**, Angela R. Kruse, Richard Johnson, John S. Ramsey, Jaclyn Mahoney, Michael Maccoss, David G. Hall, and Michelle Cilia
11:30am	9.a.5	LotP, a novel Liberibacter asiaticus GroEL interacting protein		9.b.5	Protein interaction networks at the host-microbe interface in *Diaphorina citri*, the insect vector of the citrus greening pathogen
		Kaylie Padgett, Graciela Lorca, Claudio Gonzalez			**Ramsey JS**, Chavez JD, Johnson R, Mahoney J, Mohr J, Robison F, Zhong X, Hall DG, MacCoss M, Bruce J, Cilia M
11:45am	9.a.6	Absence of a functional glyoxalase system in *Candidatus* Liberibacter asiaticus confirms that the bacterium scavenges host cells for its energy requirements		9.b.6	Biocuration: Deciphering the draft genome of Asian Citrus Psyllid one gene at a time
		Mukesh Jain, Dean W. Gabriel			**Prashant S Hosmani**, Surya Saha, Mirella Flores-Gonzalez, Tom D'elia, Wayne Hunter, International Psyllid Annotation Consortium, Susan Brown and Lukas A Mueller

12:00 – 1:15 pm: Lunch

IRCHLB V Business meeting

Discussion of future meetings and venues.

1:15 – 2:15 pm: Keynote Address: *"Integrating growers' preferences and insights from economics into strategic planning for future management of HLB"*

Dr Neil McRoberts

Neil McRoberts is a plant disease epidemiologist and interdisciplinary scientist. He focuses, in particular, on the role of plant disease in crop production sustainability and the interactions between plant diseases, crops and people, both a target for action and a stimulus for the adoption of particular courses of action. Since 2012 he has collaborated extensively on management of HLB in the USA, focusing on the role of growers' decisions on the dynamics of disease spread and using epidemiological analysis to inform industry and state strategic

decision-making in California. His research and outreach program is conducted usually in collaboration with other researchers and typically with some broadly economic angle to the work.

2:30 – 4:00 pm: Afternoon Session:

Session 10A – **Vector / Pathogen Vector**				Session 10B - **Host**	
		Moderator – Bob Shatters			**Moderator – Fred Gmitter**
2:30pm	10.a.1	Molecular strategies to control hemipteran insect feeding (including the Asian Citrus Psyllid, *Diaphorina citri*) through degradation/biosynthetic-inhibition of stylet sheath feeding structures		10.b.1	Can engineered trees protect citrus against huanglongbing (HLB)?
		J. Kent Morgan, Gary A. Luzio and **Robert G. Shatters**			**Manjul Dutt** and Jude W. Grosser
2:45pm	10.a.2	Development of tools to conduct field testing of HLB-associated Liberibacters for disease mitigation		10.b.2	Performance of 'Valencia' sweet orange on twelve rootstocks in two Florida locations indicates rootstock field tolerance to HLB
		Manjunath L. Keremane, **Mikeal L. Roose**, Amy Howe, Susan E. Halbert, Anthony Dickens, Trevor Smith, Olufemi Alabi, Madhurababu Kunta, Mamoudou Setamou, Ryo Kubota, Daniel Jenkins, Richard F. Lee, and Chandrika Ramadugu			**Kim D. Bowman**, Greg McCollum, Ute Albrecht
3:00pm	10.a.3	Visualizing Bacterial Pathogenic-Symbiotic metacommunities of the Asian citrus psyllid using Fluorescent In Situ Hybridization (FISH) and mass spectrometry-based proteomics		10.b.3	Introducing new and licensed Huanglongbing tolerant citrus varieties into California. A case study – Florida.
		Somayeh Fattah-Hosseini, Angela Kruse, John Ramsey, Richard Johnson, Mamta Srivastava, Michael			- Irene Lavagi, Rock Christiano, Greg Greer, Jude Grosser, Frederick Gmitter, Kim Bowman, Ed Stover, Greg McCollum, Ben Rosson, Peggy Sieburth,

		MacCoss, Michelle Cilia			MaryLou Polek, Robert Krueger, and **Georgios Vidalakis**
3:15pm	10.a.4	Combined UPLC-MS/MS and MALDI-MSI analyses identify metabolic differences between *C*Lso-infected and uninfected psyllids		10.b.4	An integrated approach to understand host response and create new citrus cultivars that defy HLB disease
		Xiaolan Wang, Ruifeng He, Jing Wang, Anna Berim, Jeong-Jin Park, Tonja W. Fisher, Judith K. Brown, **David R. Gang**			**Qibin Yu**, Amany Mrra, Lixiao, Yao, Yuan Yu, Matthew Mattia, Dongliang Du, Ming Huang, Yi Zhang, Nidhi Rawat, Zhanao Deng, Fred G. Gmitter Jr
3:30pm	10.a.5	Impact of *Candidatus* Liberibacter asiaticus infection on Asian citrus psyllid transcriptome		10.b.5	Resistance and Tolerance to Huanglongbing in Citrus
		Ruifeng He, Mark Willis, Tonja W. Fisher, Carol A. Soderlund, Kirsten Pelz-Stelinski, Judith K. Brown, David R. Gang			**Ed Stover**, Randall Driggers, David Hall, Goutam Gupta

3:45 – 4:15 pm: Break

4:15 – 5:15 pm: Afternoon Session:

Session 11A – **Vector / Pathogen Vector**				Session 11B - **Host**	
		Moderator - Bob Shatters			**Moderator – Fred Gmitter**
4:15pm	11.a.1	Psyllid vector-Liberibacter interactions at cellular and molecular interfaces		11.b.1	Developing HLB resistance
		Judith K. Brown, T.J. Rast, J.E. Cicero, and T.W. Fisher			**Chandrika Ramadugu**, Manjunath L. Keremane, Thomas G. McCollum, David G. Hall, Richard F. Lee and Mikeal L. Roose
4:30pm	11.a.2	Chemistry between *Candidatus* Liberibacter asiaticus and *Diaphorina*		11.b.2	A growing degree-day model for assessing flush shoot ontogeny in citrus

		citri that disrupts citrus industries			
		Nabil Killiny			**Cifuentes-Arenas, J. C.**, Raiol Júnior, L. L., Lopes, S.
4:45pm	11.a.3	Purification of the Endosymbiont Toxin Diaphorin from *Diaphorina citri* for Structural and Functional Characterization		11.b.3	Deployment of Disease Resistant or Tolerant Citrus Rootstocks and Scions
		Kevin Howe, Stuart Krasnoff, John Ramsey, Jason Hoki, David Hall, Frank Schroeder, Michelle Cilia			**Catherine Hatcher**
5:00pm	11.a.4	Quantifying *Diaphorina citri* invasion dynamics in Southern California citrus groves		11.b.4	Citrus flowering and vegetative growth characteristics in relationship to Asian Citrus Psyllid control in HLB management
		Matt Daugherty, Brett Bayles, Shyam Thomas, Greg Simmons			**L. Gene Albrigo**

5:15 – 7:00 pm: Poster Session

7:30 – 9:30 pm: Conference Banquet

Contributed Posters

Cultural Control

P1.1	Antimicrobial effect of non-antibiotic compounds against '*Candidatus* Liberibacter asiaticus' in HLB-affected citrus plants **-** **Muqing Zhang**, Yun Zhong, Chuanyu Yang, Charles A. Powell, Melissa S. Doud and Yongping Duan
P1.2	Huanglongbing impairs the rhizosphere to rhizoplane enrichment process of the citrus root-associated microbiome **-** Yunzeng Zhang, Jin Xu, Nadia Riera, Tao Jin, and Nian Wang
P1.3	Regulation of gene expression through root application of double-stranded RNA in citrus - **Qingchun Shi**, Eduardo C. de Andrade, Shujian Zhang, Wayne B. Hunter, Robert G. Shatters, Jr and Ed Stover
P1.4	Severity and incidence of HLB in orange trees grown on agroforestry system **-** Ricardo Silverio Machado, Camilo Lazaro Medina, Ondino Cleante Bataglia, Pedro Roberto Furlani
P1.5	The effect of citrus fruits price fluctuation on the occurrence situation of HLB: Based on the Empirical Study of China - Qi Chun-jie, Zhong Chao,
P1.6	Evaluation of sticky traps to capture *Diaphorina citri* under reduced population insect densities in Mexico - **J. Isabel López-Arroyo**, Celso Morales-Reyes, Santos Díaz-Martínez, Jesús Loera-Gallardo, Edgardo Cortez-Mondaca, Ulises Díaz-Zorrilla

Infection Consequences

P2.1	Sensing and UAV technologies to assess Citrus Greening in Puerto Rico - Sunil K Mathanker, **Consuelo Estévez de Jensen**, Alberto Beale
P2.2	A gas chromatography coupled with olfactometry reveals few changes in aroma-active compounds in peel oil extracted from oranges affected by Huanglongbing (HLB) **-** Elise Bourcier, **Anne Plotto**, Jinhe Bai,

	Huqing Yang, Elizabeth Baldwin, Libin Wang, Mike Irey
P2.3	A deeper look into the causes of off-flavor in orange juice affected by Huanglongbing (HLB) - Bruno Dala Paula, Smita Raithore, John Manthey, Anne Plotto, Jinhe Bai, Maria Beatriz Gloria, Elizabeth Baldwin

Host

P3.1	NB-LRR resistance gene mining and variant analysis in *Poncirus* using whole genome re-sequencing - **Nidhi Rawat,** Dongliang Du, Zhanao Deng, Fred G. Gmitter Jr., Qibin Yu, Ming Huang, and Yi Zhang
P3.2	Evidence for a Dominant Huanglongbing Tolerance Gene in Citrus - **Quinton Allen**, Katie L. Rogers, José X. Chaparro
P3.3	Exploring the mechanism of transmissible small nuclear RNA (TsnRNA) induced citrus dwarfing for Huanglongbing management - Irene Lavagi, Greg Greer, Shih-hua Tan, Tyler Dang, Philippe Rolshausen, Carol Lovatt, **Georgios Vidalakis**
P3.4	Selection, molecular and genetic analysis of HLB-tolerant/resistant variants: Re-sequencing of HLB-tolerant and susceptible *Citrus* Plants. **-** Yungsheng Wang, Nidhi Rawat, Feng Luo, Zhanao Deng and YongPing Duan
P3.5	Comparative transcriptional and anatomical analyses of tolerant irradiated sweet oranges and a susceptible sweet orange in response to '*Candidatus* Liberibacter asiaticus' infection **- Amany Mira**, Qibin Yu, Dongliang Du, Fred G. Gmitter Jr
P3.6	The citrus clean plant network in Puerto Rico: Accomplishments **- Consuelo Estévez de Jensen,** Georgios Vidalakis, Félix Roman
P3.7	Resources in the Citrus Genome Database that enable basic, translational, and applied research - **Jodi Humann**, Julia Piaskowski, Sook Jung, Chun-Huai Cheng, Taein Lee, Morgan Frank, Kristin Scott, Ping Zheng, Mirella Flores, Surya Saha, Lukas A. Mueller, Fred Gmitter, Albert Abbott, Dorrie Main1

Host Pathogen

P4.1	Huanglongbing tolerance-associated genes are identified by comparative transcriptomics using bacterial flagellin 22 as a proxy to challenge citrus - **Qingchun Shi**, Vicente J Febres, Shujian Zhang, Gloria A Moore, David G Hall and Ed Stover
P4.2	A Microbiome approach to citrus Huanglongbing **- Philippe Rolshausen**, Sohrab Bodaghi, James Borneman, Tyler Dang, Nichole Ginnan, Johan Leveau, Greg McCollum, Caroline Roper, Paul Ruegger,

	Georgios Vidalakis
P4.3	Mineral nutrient uptake in Huanglongbing-affected sweet orange plants - **Tripti Vashisth**, Changpin Chun, Arnold Schumann
P4.4	Investigation of hexanoic acid as an inducer of Huanglongbing resistance - **Shujian Zhang**, Qingchun Shi, Robert Shatters, David Hall, Justin George, Stephen Lapointe, and Ed Stover
P4.5	Impact of geography, cultivation method, and *Liberibacter* infection on the Citrus microbiome - **Evan Braswell**
P4.6	Differential coexpression analysis using RNA-seq data of citrus infected with '*Candidatus* Liberibacter asiaticus' (*CLas*) - **Dongliang Du**, Yi Zhang, Suqiong Xiang, Ming Huang, Qibin Yu, Antoine Gady, Nidhi Rawat, Zhanao Deng, Fred G. Gmitter
P4.7	A natural variant of *X. citri*, as potential biocontrol of pathogens in citrus - Roxana A. Roeschlin, Facundo Uviedo, **Lucila García**, Celeste Molina, Alejandra Favaro, Sabrina Tasselli, Frederick G Gmitter, José Gadea, María R. Marano
P4.8	Las effectomics identifies a plant immune receptor for the development of durable HLB resistance in citrus - **Marco Pitino**, Cheryl M. Armstrong, Liliana M. Cano and Yongping Duan
P4.9	*Candidatus* Liberibacter asiaticus encodes a functional salicylic acid (SA) hydroxylase that degrades SA to suppress plant defenses - Jinyun Li, Zhiqian Pang, Pankaj Trivedi, Xiaobao Ying, **Nian Wang**
P4.10	Chromosomally-encoded peroxiredoxins (CLIBASIA_00980 and CLIBASIA_00485) of Ca. Liberibacter asiaticus may be necessary for survival and colonization of citrus - **Mukesh Jain**, Alejandra Munoz Bodnar, Shujian Zhang, Dean W. Gabriel

Pathogen

P5.1	Characterization of a ribonuclease of the causing agent of HLB *Liberibacter asiaticus* - Aline L. de Oliveira, **Claudio F. Gonzalez** and Graciela L. Lorca
P5.2	Recent progress of development on culture medium for *Candidatus* Liberibacter asiaticus - Kazuki Fujiwara, Toru Iwanami, **Takashi Fujikawa**
P5.3	Identification of ligand binding pocket of PrbP from *Liberibacter asiaticus* - **Lei Pan**, Christopher L. Gardner, Fernando A. Pagliai, Claudio F. Gonzalez, Graciela L. Lorca
P5.4	BAC-based reconstruction of *Candidatus* Liberibacter asiaticus revealed a genetic locus associated with genome instability - **Cheryl M. Armstrong**, Lijuan Zhou, Marco Pitino, David Hall, and Yongping Duan
P5.5	Assessment of growth media requirements for Liberibacters and making *L. crescens* more Las-like. - **Ann**

	Bernert, Mukesh Jain, Alejandra Munoz-Bodnar, Mike Davis and Dean W. Gabriel
P5.6	Characterization of the outer membrane protein, OmpA, in *Liberibacter* species and its role as phage receptor **- Marta Sena-Vélez**, Mukesh Jain, Dean W. Gabriel and Kathryn M. Jones
P5.7	Development of genome-based anti-virulence therapeutics to control HLB **- Hong Lin,** Xiangyang Shi
P5.8	Molecular characterization of *Candidatus* Liberibacter asiaticus population from Brazil. **- Priscila A. Silva**, Camila G. Fassini, Leandro Peña, Nelson A. Wulff
P5.9	Genetic diversity of the locus CLIBASIA 05640-05650 in strains of Candidatus Liberibacter from Mexico - **E. Iobana Alanís-Martínez**, J. Isabel López-Arroyo, Kenzy Peña-Carrillo, Hilda V. Silva-Rojas, Yolanda Rodríguez-Pagaza, Gustavo Mora-Aguilera
P5.10	Genome sequence and genetic diversity of the Huanglongbing pathogen Cadidatus Liberibacter asiaticus - **Shree Prasad Thapa**, Wenbo Ma, Nian Wang, Veronica Ancona, Gitta Coaker
P5.11	Putative secreted proteins of Candidatus Liberibacter asiaticus are localized in specific cellular compartments and triggered different responses in plants. - **Lucila Garcia**, María Celeste Molina, Pablo S Torres, Jonathan Redes, Juan P Agostini, Adrián Vojnov, José Gadea, & María Rosa Marano

Pathogen Detection

P6.1	Citrus Huanglongbing (HLB) testing and diagnostic KIT **- MAO Run-Qian**, Guo Yang-Yang, Zhang Yu-Hong, Wang Xu-Hui
P6.2	A handheld, smartphone based optical sensor for high-throughput, early-detection of Huanglongbing disease and a platform for managing citrus health - **Perry Edwards,** Victor Bucklew, David Hughes, and Zhiwen Liu

Vector

P7.1	Using long reads, optical maps and long-range scaffolding to improve the *Diaphorina citri* genome **- Surya Saha**, Prashant S Hosmani, Mirella Flores-Gonzalez, Wayne Hunter, Susan Brown and Lukas A. Mueller
P7.2	Morphometric variation of *Diaphorina citri* adults is affected by temperature, photoperiod and rainfall **-** Thomson Paris, **Sandra Allan**, David Hall, Matthew Hentz, Scott Croxton, Ninarika Ainpudi, Philip Stansly
P7.3	Micro-CT Scanning of Asian Citrus Psyllid, *Diaphorina citri,* Anatomy and Feeding - Javier Alba-Tercedor, **Wayne B. Hunter**, Joe Cicero, Susan Brown

Vector Control

P8.1	Florida CHMA performance and implications on citrus production and sampling design - **W. Luo**, T. Gottwald, T. Riley and F. Louws
P8.2	Seasonal and interannual variability in the density of the Asian citrus psyllid (*Diaphorina citri*; ACP) and natural enemies in Southern California **-** Diane Soto, **Anuar Morales-Rodriguez** and Matt Daugherty
P8.3	Host marking and possible effects on mass rearing of *Tamarixia* ***radiata*** **- Xulin Chen** and Philip A. Stansly
P8.4	Longevity of imidacloprid soil drench on citrus nursery stock for sale at retail stores in Florida **- Susan E. Halbert**
P8.5	SmartTrap: Benefits of 3D Printing for psyllid trap development and vector analysis methods - **Amy C. Howe**, Anthony Dickens, James Snyder, Susan Halbert, Trevor Smith and Chandrika Ramadugu
P8.6	Mortality of *Tamarixia radiata* exposed to different insecticides used for the control of *Diaphorina citri* **- Anuar Morales-Rodriguez**, Gregory Simmons & Matt Daugherty
P8.7	FANA and Morpholino Treatments for Targeting Pathogens in Citrus Trees and Psyllids **- Wayne B. Hunter,** Jackie L. Metz, Andres F. Sandoval Mojica, Sidney Altman, Michael J. Boyle, Veenu Aishwarya, Greg McCollum, Kirsten Pelz-Stelinksi.
P8.8	Resources for Reaching Out to Growers and End-users on Approaches to Combating Citrus Greening Disease - **Lemaux, PG,** Grafton-Cardwell, B2, Stelinski L

Vector-Host

P9.1	Attractiveness of *Diaphorina citri* Kuwayama to constitutive volatiles emitted from two citrus genotypes: 'Natal CNPMF 112' and 'Natal Folha Murcha' **- Marilene Fancelli**, Thalita de Freitas albuquerque, Samara Souza Gomes, Maurício Antonio Coelho Filho, Mabel Ribeiro Sousa, Raul Alberto Laumánn, Maria Carolina Blassiolli Moraes, Miguel Borges, Eduardo Augusto Girardi
P9.2	Systems biology resources for the citrus greening disease complex **- Mirella Flores-Gonzalez**, Surya Saha, Prashant S Hosmani, Susan Brown and Lukas A. Mueller

Vector-Pathogen

P10.1	Expression of *Diaphorina citri* hemocyanin protein correlates with color morphology and exposure to the HLB pathogen *Candidatus* Liberbacter asiaticus - Saeed Hosseinzadeh, John Sawyer Ramsey, Hunter B Wayne, Jaclyn Mahoney, David Hall, Michelle Cilia
P10.2	*Wolbachia* protein suppresses holin promoter activity in *Ca.* Liberibacter asiaticus - Mukesh Jain, Alejandra Munoz Bodnar, Laura A. Fleites, **Dean W. Gabriel**
P10.3	Vector-pathogen interactions: Metabolome changes in *Diaphorina citri* associated with infection by *Candidatus* Liberibacter asiaticus - **Anna Berim**, Nabil Killiny, David R. Gang

Saturday, 18 March 2017

8:00 – 12:00 noon: Post conference-associated meetings

8:00 – 12:00 noon: Remove Posters

9:00 – 5:00 pm: NIFA SCRI-CRDE Ancillary Meeting

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