



World Soybean Research Conference Ten

and the 17th Biennial Conference
on the Molecular and Cellular Biology of the Soybean

September 10-15, 2017
Savannah, Georgia USA

Celebrating 250 Years of the Soybean in North America



HOSTED BY:



College of Agricultural & Environmental Sciences
UNIVERSITY OF GEORGIA

Transportation Schedule

SHUTTLE SCHEDULE

Express Schedule (15-20 minute wait)

Sunday, September 10	4pm-9pm
Monday, September 11	7:30am-10:30am & 4pm-7pm
Tuesday, September 12	7:30am-10:30am & 4pm-7pm
Wednesday, September 13	7:30am-10:30am & 4pm-7pm
Thursday, September 14	7:30am-10:30am & 4pm-10pm

Shuttle Route:

Hilton Garden /Double Tree
Hampton Inn/Holiday Inn Express
The Desoto Savannah
Courtyard by Marriott

**Hyatt Regency and Marriott Riverfront guests are encouraged to take the water ferry to and from the Convention Center (see schedule below).*

Attendees who wish to drive and park at the Savannah International Trade & Convention Center will be charged \$5/day.

WATER FERRY SCHEDULE

Conference attendees can take advantage of the complimentary water ferry that runs between the Convention Center (CC), Hyatt (City Hall) and Marriott (Waving Girl). Detailed hours are posted at each dock.

	Express Schedule (Triangle route between CC/Hyatt/Marriott)	Limited Service ONLY (Hyatt to CC ONLY)
Sunday, September 10	8:20am-6:20pm	7:00am-8:20am 6:40pm-Midnight
Monday, September 11	8:20am-6:20pm	7:00am-8:20am 6:40pm-Midnight
Tuesday, September 12	8:20am-6:20pm	7:00am-8:20am 6:40pm-Midnight
Wednesday, September 13	8:20am-6:20pm	7:00am-8:20am 6:40pm-Midnight
Thursday, September 14	8:20am-6:20pm	7:00am-8:20am 6:40pm-Midnight

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Visit Savannah

Be sure to see the sites while you're in town! Savannah's historic district is known for its beautiful squares, historic tours and Southern flare. Sample pralines on River Street and shop at City Market. For more information on Savannah attractions, shopping and dining – visit www.wsrc10.net/savannah-attractions/



Food & Drink



Shopping



Entertainment



Arts & Culture



Outdoor Activities



Tours & Adventure

Useful Information

Wi-fi availability:

Complimentary throughout the Savannah International Trade & Convention Center...Enjoy!

Speaker Ready Room:

Available in Meeting Room 202 on second floor. Speakers should bring their presentations on a USB memory stick, and ensure they get loaded no later than the break preceding their session.

Posters:

Posters will remain up for the whole conference. Official sessions are 4-6 pm M-W and 4-5:30 on Th. Authors of even-numbered posters should be by their poster during Tuesday's session; Authors of odd-numbered posters should be by their poster during Wednesday's session.

Note: All posters submitted by postdocs and graduate students will be judged as part of the poster competition. Winners will be announced following the plenary session on Thursday.

Want to purchase a ticket to the Closing Reception & Banquet at the Hyatt on Thursday, September 14th?

Visit the Registration desk for ticket cost and availability. Must have tickets present to attend!

Want to purchase a ticket for the Post-Conference Tour of the Savannah Ports Authority on Friday, September 15th?

Visit the Registration desk for ticket cost and availability. Must have tickets present to participate!

Download the WSRC 10 Mobile App:

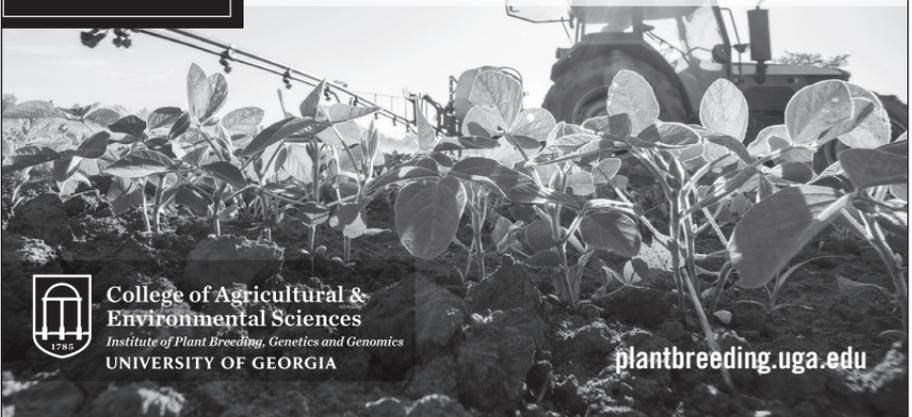
Visit the App Store and search WSRC10 and download for FREE!

In case of EMERGENCY, do not dial 911.

Instead, call Kelley Atkinson, WSRC 10 Meeting Manager. Management staff will communicate all needs with convention center staff for quicker response time from medical personnel and first responders. Kelley Atkinson, 770.634.3715.

GEORGIA SOYBEANS SINCE 1769

It all started in Georgia. In 1769, pioneering Georgia planters took a chance on the first field of North American soybeans. Two centuries later, the University of Georgia's agricultural researchers are still pioneering new breakthroughs in the world's most widely planted crop by building more resilient, sustainable and profitable soybeans.



College of Agricultural &
Environmental Sciences
Institute of Plant Breeding, Genetics and Genomics
UNIVERSITY OF GEORGIA

plantbreeding.uga.edu



GEORGIA SEED DEVELOPMENT

As the sole recipient of University of Georgia developed plant materials, Georgia Seed Development bears the responsibility to produce Foundation Seed that is second to none. By maintaining small quantities with third party verification, we are able to produce the highest quality Foundation Seed to provide to our licensees around the world. While the seed may start with humble beginnings in Georgia, several varieties are grown globally as a result of our staff's meticulous work and the standards we expect from our licensees. From Soybeans to Wheat, Turfgrass to Hydrangeas, Muscadines to Blueberries and Pecans to Peanuts, Georgia's agricultural impact can be seen almost everywhere and we could not be prouder to be involved. To find out more about becoming a licensed grower please visit our website.

www.gsdc.com

Welcome

Dear WSRC attendees:

On behalf of the organizing committee and the US soybean industry, I welcome you to the tenth World Soybean Research Congress. This is an especially notable time and location for soybean in the US. It was in Savannah, Georgia in 1765 that soybeans were first planted in North America. Recently an historical marker was placed at the location where they were planted. It is an exciting time in soybean research, with significant advances in all aspects of production, processing and utilization, many that will be discussed during the scientific program of the meeting. We welcome you to Savannah and hope that the conference is a success for you and that you are able to enjoy historical Savannah, the amazing food and Southern culture. Please let us know if there is anything we can do to make your stay more comfortable.



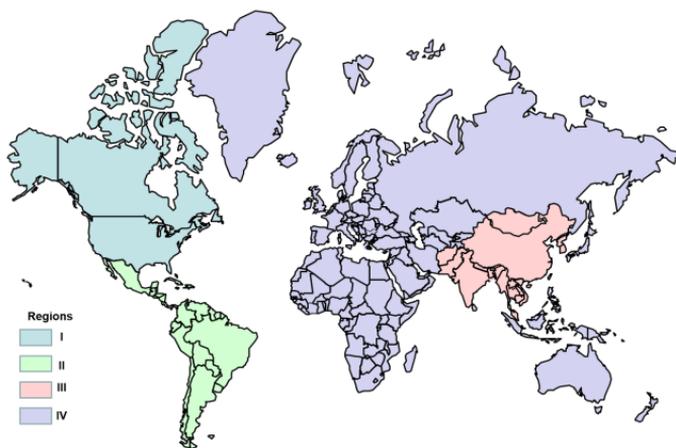
Sincerely,

A handwritten signature in black ink that reads "Scott Jackson". The signature is fluid and cursive, with the first name "Scott" being more prominent than the last name "Jackson".

Scott Jackson

World Soybean Research Conference Award for Lifetime Achievement

The success of soybean around the world completely depends on all the scientists who have worked tirelessly to improve soybean, optimize its cultivation, and develop uses for its seed. Starting with the WSRC VIII, the Continuing Committee started recognizing the contributions the most outstanding scientists working on soybean made over their lifetime. Each region now gets to select and honor its best scientists at each WSRC.



Region I: Dr. Perry Cregan

Dr. Perry Cregan, former research geneticist and research leader of the ARS Soybean Genomics and Improvement Laboratory in Beltsville, Md., was a pioneer in the development of new DNA marker tools, such as SSRs and SNPs, used to identify, describe, and map soybean, wheat, and common bean genes for economically important traits, including resistance to pests and diseases, better tolerance to stresses such as drought, increased yield, and improved seed quality traits. His development of soybean genetic markers and the resultant maps were critical in providing a high quality sequence of the soybean genome. He was also instrumental in the

development of a HapMap of the U.S. Soybean Germplasm Collection. He is a member of the USDA-ARS Science Hall of Fame and Fellow of several professional societies.

World Soybean Research Conference Award for Lifetime Achievement



Region II: Dr. Leonardo Daniel Ploper

Dr. Leonardo Daniel Ploper has had a distinguished career on soybean research, technology development and extension since 1978. He developed the necessary germplasm to control outbreaks of stem canker and frog-eye leafspot. His research into the late season disease complex showed the importance of these diseases in soybean monoculture and no-till systems. Based his research, over 95% of the soybean area in northwestern Argentina receives at least one spray with fungicide leading to increased yield and seed quality. The additional profits of this practice have been estimated in several million dollars. Dr. Ploper devotes an important effort to cultivar development. He has led the most successful public breeding program in the country and has been the first one to release transgenic soybeans. Since 2011, he has been personally involved in the evaluation of advanced lines in South Africa. In addition to his research responsibilities since 2004, Dr Ploper is the Director of the EEAOC, the oldest agricultural research station in Argentina.



Region II: Dr. Álvaro Manuel Rodrigues de Almeida

Dr. Álvaro Manuel Rodrigues de Almeida is a Researcher at the National Soybean Research Center / Brazilian Agricultural Research Corporation (Embrapa Soja). Since 1974, he has worked in phytopathology and has contributed to the development of 47 soybean cultivars by testing soybean lines for the genetic reaction against crop viruses and several other pathogens important for soybean cultivation. Studies coordinated by Dr. Álvaro Almeida identified the virus causing shoot blight of soybean and determined adequate management methods for its control, thus opening all of Paraná and São Paulo states to soybean cultivation. Today this crop is the main source of income in those regions. Over the last 43 years, Dr. Almeida has published 95 articles in scientific journals, 24 book chapters and has oriented or co-oriented more than 70 undergraduate, master's and doctoral students.

World Soybean Research Conference Award for Lifetime Achievement



Region III: Professor Junyi Gai

Professor Junyi Gai, former director of National Center for Soybean Improvement and professor at Nanjing Agricultural University, has been devoting his career in soybean breeding and genetics, and germplasm research. He contributed to the collection and evaluation of 12,000 accessions from Southern China. Through his distinguished career, he has released numerous enhanced germplasm and authored a book of the "Pedigrees of Soybean Cultivars Released during 1923-2005 in China". He established a soybean eco-region system by adopting the maturity group system to soybean production. He served as a director of the National Soybean Breeding Program for

15 years to direct soybean breeding across 24 institutions and contributed to the releases of 25 cultivars from his program. His major and minor gene mixed inheritance model for quantitative traits and statistical analysis procedure have been widely used in plant breeding. Over the last 50 years, professor Gai has published more than 500 research papers in peer-reviewed journals and trained or co-trained 180 graduate students. He is an academician of Chinese Academy of Engineering and distinguished fellow of several scientific societies.



Region IV: Dr. Kyuya Harada

Dr. Kyuya Harada was a professor in Chiba University, Japan. He served as a principal investigator of soybean genomic research team at National Institute of Agrobiological Sciences (NIAS) for three years. Currently, he is a project lead at Osaka University. Since 1980s, Dr. Harada has worked on genetic improvement of soybean protein, discovered genetic variants of many storage protein subunits and elucidated their inheritance. He developed a comprehensive information system for quantitative trait analysis using DNA markers, which has been widely used. The recombinant inbred line population derived from the cross between Moshido and Misuzudaizu that he

developed was used by many soybean researchers to identify various genes for the traits of importance, such as flowering time and protein subunits. The soybean genetic map he developed led to generating a number of pioneering research results on soybean genomic research. He also worked on the analysis of the genomic structure of soybean using synteny with *Lotus japonicus*, and elucidated the mechanism of nodule formation by genome analysis. He has trained numerous graduate students who are active at worldwide soybean research.

On behalf of the **570,000 soybean farmers** in the United States, the United Soybean Board welcomes you to the World Soybean Research Conference.

Learn more about the United Soybean Board and the soy checkoff at www.unitedsoybean.org.



**HOW CAN
YOU BEAT**

**YOUR
HIGH-YIELD
MARK?**



THE ANSWER IS



**WITH
YOU**
— FROM THE
WORD GO

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Program at a Glance

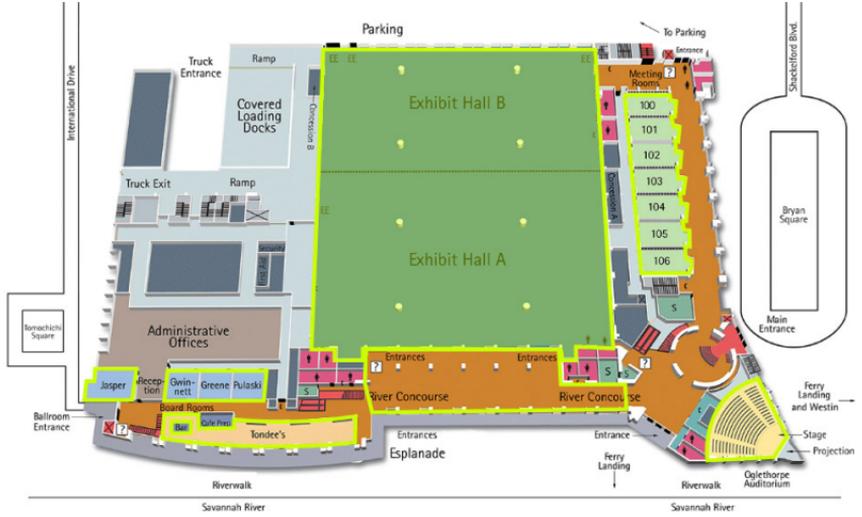
	Monday 11	Tuesday 12	Wednesday 13	Thursday 14
Plenaries <i>Chatham</i> <i>Ballroom ABC</i> 8:30 - 9:30 Regional reports: 9:30-10:00	Future global soybean outlook, <i>Randall Giroux</i>	Proven and proposed health benefits of soyfoods, <i>Mark Messina</i>	A science-based approach to measuring and advancing the sustainability of crop production, <i>Rod Snyder</i>	How Bright is the Future for Soybeans? <i>Krysta Harden</i>
	North America	South America	Europe/Africa	Asia/Australia
Break				
AM concurrent sessions 10:30 - 12:00	1 Joint Breeding/17th Biennial Conference: Optimal designs for genetic improvement <i>Oglethorpe Auditorium</i>	Joint Breeding/17th Biennial Conference: Designing the soybean of the future <i>Oglethorpe Auditorium</i>	USAID soybean program in Africa <i>Room 105/106</i>	Drought tolerance in soybean: physiological and genetic advances using native trait diversity <i>Room 102/103</i>
	2		Current topics in soybean genetics and genomics <i>Oglethorpe Auditorium</i>	Translational genomics <i>Oglethorpe Auditorium</i>
	3 Soybean uses as food and food ingredients <i>Room 100/101</i>	Soy proteins and bioactives <i>Room 100/101</i>	The role of soyfoods and soy protein in meeting global health and nutrition needs <i>Room 100/101</i>	Updates, challenges and opportunities for High Oleic Soybean components <i>Room 100/101</i>
	4 Yield and seed composition response to environmental, crop management, and genetic factors <i>Room 200/201</i>	Seed treatments <i>Room 102/103</i>	Soybean sustainability: documenting, communicating and advancing success through the supply chain <i>Room 203/204</i>	It takes a community: the role of biostimulants and biological products for optimal soybean yields <i>Room 105/106</i>
	5 New & emerging diseases of soybean <i>Room 105/106</i>	The complexities of managing nematodes <i>Room 203/204</i>	Balancing economic and environmental trade-offs in soybean pest management: a focus on neonicotinoid seed treatment use <i>Room 102/103</i>	Strategies for disease & pest management <i>Room 200/201</i>
	6 An uncertain future: how emerging rules and regulations could impact genomics research that utilizes genetic resources and shares genomic data <i>Room 102/103</i>	Emerging frontiers in agronomy and pest management <i>Room 105/106</i>	The global regulatory environment <i>Room 200/201</i>	Intellectual property, law, & licensing <i>Room 203/204</i>

Program at a Glance

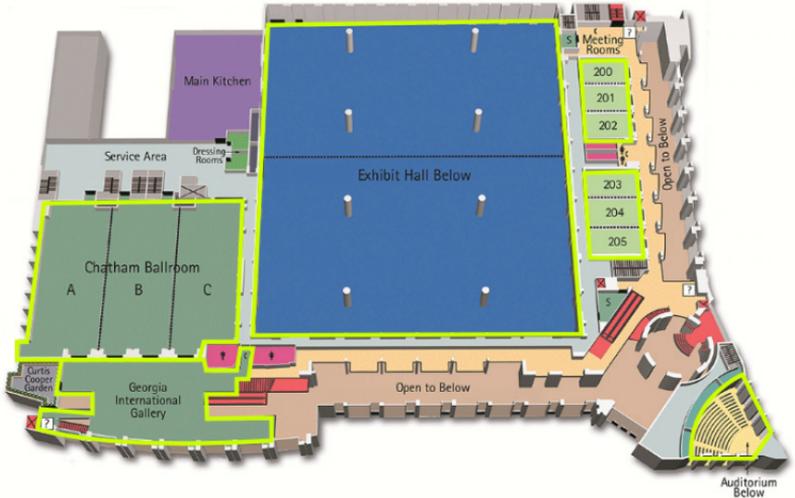
	Monday 11	Tuesday 12	Wednesday 13	Thursday 14
Lunch				
PM concurrent sessions 1:30 - 3:40	1 Soybean germplasm: creation, utilization, dissemination and domestication <i>Oglethorpe Auditorium</i>	Breeding for seed composition <i>Room 105/106</i>	Joint Breeding/17th Biennial Conference: Genomics assisted breeding for accelerating soybean native traits <i>Oglethorpe Auditorium</i>	Breeding for biotic stress <i>Oglethorpe Auditorium</i>
	2 Genomics of stress resistance <i>Room 102/102</i>	Genome diversity and structural variation <i>Room 102/102</i>		Genomics of output traits <i>Room 102/103</i>
	3 Recent developments in processing & utilization <i>Room 100/101</i>	Soybeans as industrial materials <i>Room 100/101</i>	Soybeans and aquaculture <i>Room 100/101</i>	Soybean processing for food and occurrence of bioactive components <i>Room 100/101</i>
	4 Soybean Nutrient Management across the globe <i>Room 105/016</i>	Joint Physiology/Weeds, diseases, & pests: Designing the soybean of the future <i>Oglethorpe Auditorium</i>	Integrating precision agriculture and yield gap analysis to minimize production risks <i>Room 102/102</i>	High-through put phenotyping <i>Room 105/106</i>
	5 Global status of SDS & its control <i>Room 203/204</i>		Managing insect and weed resistance <i>Room 105/106</i>	
	6 Emerging frontiers in breeding and genomics <i>Room 200/201</i>	SoyBase workshop <i>Room 200/201</i>	Marketing, trade and policy <i>Room 200/201</i>	SoyBase workshop <i>Room 203/204</i>
Posters				
PM 4:00 - 6:00	Getting funding from NSF: Strategies for success, by D. Okamura <i>Room 104</i>	Posters (Authors of even-numbered posters should be by their posters)	Posters (Authors of odd-numbered posters should be by their posters)	Posters
	Posters			
Dinner: 6:00 -	On your own	On your own	On your own	Closing reception & lifetime achievement awards banquet

Convention Center Floor Plan

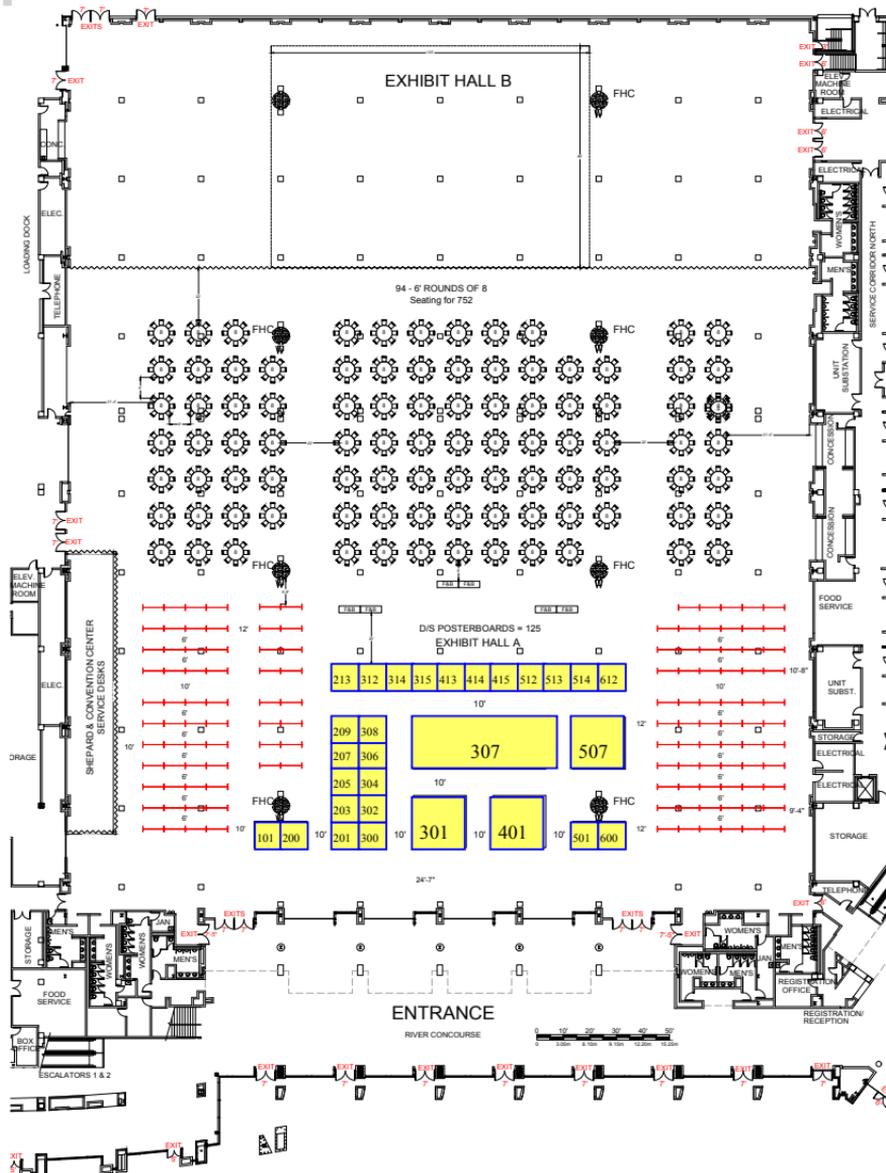
First Floor



Second Floor



Trade Show Floor Plan



Trade Show Schedule

The trade show will be open for attendees to visit with exhibitors on **Monday, September 11th – Tuesday, September 12th** from **8:30am – 6:00pm**.

Morning breaks, afternoon breaks and lunch will be located in the **Exhibit Hall** on **Monday, September 11th – Thursday, September 14th**.

Registration & Information Desk Schedule

Sunday, September 10thnoon – 8:00pm

Monday, September 11th 7:00am – 6:00pm

Tuesday, September 12th 7:00am – 6:00pm

Wednesday, September 13th 7:00am – 6:00pm

Thursday, September 14th 7:00am – 6:00pm

Keynote Speaker



Theodore Hymowitz **Sunday, September 10, 2017** **5:45 pm - Chatham Ballroom**

Theodore Hymowitz is a University of Illinois emeritus professor. He was born to Polish immigrants on the lower east side of Manhattan, New York. He received his B.S. from Cornell University, M.S. from University of Arizona, and Ph.D. from Oklahoma State University. After graduate school he joined the University of Illinois and spent his entire career there working on breeding, genetics and the history of the soybean. While at the University of Illinois he conducted research on the variation in and genetics of biologically

active and anti-nutritional components of soybean seed and conducted plant exploration trips to Asia, Oceania, and Australia to locate potential germplasm resources for soybean varietal improvement. He is a Fellow of several professional societies. Honors include a Fulbright Scholar to India, Loeb Foundation Scholar, Funk Award and the Meyer Medal for his plant exploration activities.

Plenary Speakers



Randal Giroux **Monday, September 11, 2017** **8:30 am - Chatham Ballroom**

Randal Giroux currently holds the position of Vice President at Cargill Incorporated located at the World Headquarters in Wayzata, Minnesota. He has a passion for production agriculture, working globally across Cargill's Animal Protein and Agricultural Supply Chain businesses, and is a recognized thought leader on the integration of technology into the global food system. As part of his portfolio, he is involved professionally with both science and trade organizations across the supply chain and in this capacity, he has

held a number of leadership positions in the trade and has served on several advisory committees. Before joining Cargill, Dr. Giroux was a Program Manager with the Canadian Grain Commission and previous to his public service; he was a National Needs Fellow with USDA. Randal graduated with a PhD in Agriculture from the University of Guelph (OAC).

Plenary Speakers



Mark Messina

Tuesday, September 12, 2017

8:30 am - Chatham Ballroom

Mark Messina is the co-owner of Nutrition Matters, Inc., a nutrition consulting company, an adjunct associate professor at Loma Linda University in California, and the Executive Director of the Soy Nutrition Institute. Dr. Messina devotes his time to the study of the health effects of soyfoods and soybean components. He writes extensively on these subjects, having published more than 80 articles and book chapters for health professionals. Dr.

Messina is the chairperson of the editorial advisory board and writes a regular column for The Soy Connection, a quarterly newsletter that reaches over 250,000 health professionals. He has organized 10 international conferences on soyfoods and is the co-author of three books. Dr. Messina has given over 550 presentations to health professionals in 51 countries.



Rod Snyder

Wednesday, September 13, 2017

8:30 am - Chatham Ballroom

Rod Snyder has served as president of Field to Market: The Alliance for Sustainable Agriculture since March 2014. Field to Market is a diverse alliance working to create opportunities across the agricultural supply chain for continuous improvements in productivity, environmental quality, and human well-being. Prior to this role, Snyder held positions as Public Policy Director for the National Corn Growers Association and Government Affairs Leader for CropLife America. He is particularly recognized for his work at

the intersection of agricultural and environmental issues. He has previously served on the board of directors of the Conservation Technology and Information Center, on the steering committee of the Agricultural Nutrient Policy Council, on the executive committee of Field to Market, and as chair of the Pesticide Policy Coalition. He resides on his family's farm in Shenandoah Junction, West Virginia.

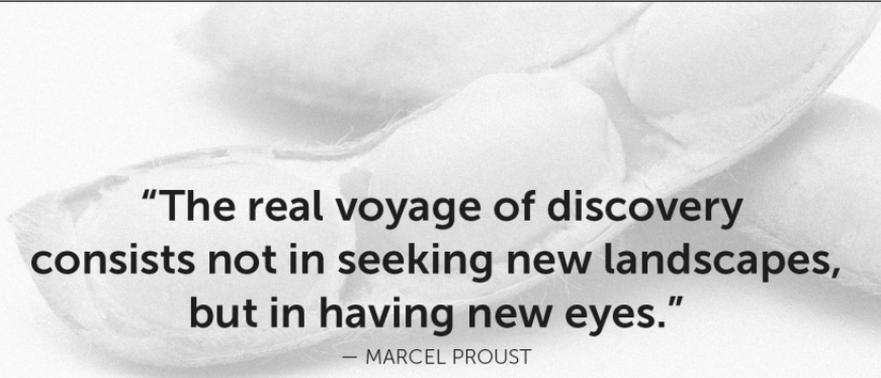
Plenary Speakers



Krysta Harden
Thursday, September 14, 2017
8:30 am - Chatham Ballroom

Krysta Harden is vice president of Public Policy and chief sustainability officer, joining DuPont in February 2016. Most recently, she served as deputy secretary of the U.S. Department of Agriculture (USDA), where she helped to shape food and agriculture policy, including leading implementation of the 2014 Farm Bill. At USDA and throughout her career in agriculture, Ms. Harden has focused on growing the ranks of agriculture and expanding opportunity for women, young people, immigrants,

socially disadvantaged producers, returning veterans and retirees. Prior to her service as deputy secretary, she held USDA leadership positions as chief of staff to the Secretary of Agriculture Tom Vilsack, and assistant secretary for Congressional Relations. Preceding her service at USDA, Ms. Harden spent five years as CEO of the National Association of Conservation Districts (NACD), providing national leadership for natural resource conservation and representing thousands of conservation districts across the nation. In addition to serving as CEO of the National Association of Conservation Districts, she also has worked with the American Soybean Association as senior vice president of Gordley Associates, where she concentrated on conservation and renewable energy issues. She also served 12 years on Capitol Hill, as staff director for the House subcommittee on Peanuts and Tobacco and as chief of staff and press secretary for former Congressman Charles Hatcher.



**"The real voyage of discovery
consists not in seeking new landscapes,
but in having new eyes."**

— MARCEL PROUST

In appreciation of the agricultural scientists
who seek new ways to feed our world
and improve life everywhere.



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Program by Date

SUNDAY SEPTEMBER 10, 2017

Registration River Concourse
12:00 – 5:00 pm

Poster Setup Exhibit Hall
3:00 – 5:00 pm

Opening Ceremony Chatham Ballroom ABC, 2nd Floor
5:00 – 5:45 pm Welcome and Opening Remarks
Scott Jackson, Chair local organizing committee,
University of Georgia
Gary Black, Commissioner of Agriculture, Georgia
5:45 – 6:30 pm Keynote: KS-001 **How the soybean got to North America**
Theodore Hymowitz, Professor Emeritus, University of Illinois

Opening Reception River Concourse
6:30 – 8:00 pm

MONDAY SEPTEMBER 11, 2017

Activities Chatham Ballroom ABC, 2nd Floor
8:30 – 9:00 am **Plenary: PS-01 Positioning soybeans to thrive in the Global Food System** *Randal Giroux*, Cargill Incorporated, Minnesota, USA

9:30 – 10:00 am **Regional Reports: North America**
RR-01 Canada: *Istvan Rajcan*, University of Guelph, Ontario, Canada
RR-02 United States: *Richard Joost*, Smith Bucklin, Missouri, USA

COFFEE BREAK – Exhibit Hall

Concurrent Sessions

10:30 am – 12:00 noon

Joint Breeding / 17th Biennial Conference on the Molecular & Cellular Biology of the Soybean: Optimal Designs for Genetic Improvement

Oglethorpe Auditorium

Conveners: Joe Byrum, Syngenta, USA
 Bill Beavis, Iowa State University, Iowa, USA

Commercial soybean breeding is being transformed into a systems engineering discipline through applications of applied mathematics and operations research. While the impact of OR on optimization of commercial plant breeding programs has been demonstrated to be large, we suggest that the proportional impact will be larger for small genetic improvement projects. The primary purpose of this session is to demonstrate and discuss approaches to design efficient and effective systems for translating discoveries into genetic improvements using principles of operations research and applied mathematics.

- **BM-01 An overview of advanced analytics for improving agricultural systems**
Arnie Greenland, University of Maryland, Maryland, USA
- **BM-02 Maximizing quantitative traits in the mating design problem**
Susan Hunter, Purdue University, Indiana, USA
- **BM-03 Response surface methods for maximizing accuracy of genomic predictions**
Reka Howard, University of Nebraska, Nebraska, USA
- **BM-04 Efficient breeding designs using genomic mating**
Deniz Akdemir, Michigan State University, Michigan, USA

Food, Feed & Nutrition: Soybean Uses as Food and Food Ingredients

Meeting Room 100/101

Conveners: Peter Golbitz, Agromeris, Florida, USA
 Lianzhou Jiang, Northeast Agricultural University, Harbin, China

There are many different types of food products and ingredients processed from the whole soybean. They are used in traditional soyfood products like tofu, soymilk, miso, natto, tempeh and soy sauce, as well further processed into vegetable oil, full-fat and low-fat flours, grits, textured products and other specialty ingredients. The range of products and applications is

wide, from protein-rich meat- and dairy-alternative products, to baking ingredients, snack foods and even as a fresh, green vegetable.

- **F-01 Soybean uses as food and food ingredients**
Peter Golbitz, Agromeris, Florida, USA
- **F-02 Use of whole soy ingredients in food and beverage applications**
Paul Lang, Natural Products, Inc., Iowa, USA
- **F-03 Processing of soybean with extrusion technology for food and feed application**
Mian Riaz, Texas A&M University, Texas, USA
- **F-04 Making soy the preferred source of plant protein**
John Cox, Soyfoods Association of North America, District of Columbia, USA

Agronomy & Physiology: Yield and Seed Composition Response to Environmental, Crop Management, and Genetic Factors

Meeting Room 200/201

Convener: Larry Purcell, Arkansas State University, Arkansas, USA

Soybean yield, quality, and composition are all affected by genotype and environment interactions. To some extent, yield and quality can be managed by planting dates, selection of specific maturity groups, and irrigation where available. This session will consider the impact of management and environment on yield and production risk, regional variations in seed protein, how crop management and genetics interact to affect protein, and genetic discoveries that improve seed quality of soybean maturing in hot environments.

- **A-01 Relating temperature and relative humidity in commercial warehouses to decline in vigor of soybean seed stored for late plantings in Arkansas**
John Rupe, University of Arkansas, Arkansas, USA
- **A-02 Diversifying soybean production risk by managing planting date and maturity group**
Michael Popp, University of Arkansas, Arkansas, USA
- **A-03 The path for the development and release of heat tolerant soybeans**
James Smith, USDA-ARS, Mississippi, USA
- **A-04 Moving from average to maximum soybean yields – what will it take?**
Sotirios Archontoulis, Iowa State University, Iowa, USA

Weeds, Diseases, & Pests: New & Emerging Diseases

Meeting Room 105/106

Conveners: Albert Tenuta, University of Guelph, Ontario, Canada
Daren Mueller, Iowa State University, Iowa, USA

Soybean is one of the most economically important field crops grown in the world and unfortunately, losses caused by both endemic and emerging diseases continue to be a major limitation affecting sustainable soybean production and producer profits. These new emerging soybean diseases are potential invasive threats as they migrate to new geographical areas. Continued global surveillance efforts are critical to early detection, awareness and implementation of appropriate control measures. Speakers in this session will discuss the development, biology and management strategies of various new emerging, invasive soybean diseases.

- **P-01 Soybean Diseases: Their importance and yield impact in the US and the world!**
Tom Allen, Mississippi State University, Mississippi, USA
- **P-02 The current status and implications of emerging soybean diseases in Africa**
Harun Muthuri Murithi, Tanzania and Wageningen University, Tanzania, Netherlands
- **P-03 Taproot decline of soybean, an emerging disease in the southern United States**
Trey Price, Louisiana State University AgCenter, Louisiana, USA
- **P-04 Soybean vein necrosis virus: Why should we care?**
Damon Smith, University of Wisconsin-Madison, Wisconsin, USA

Special Topic: An Uncertain Future: How Emerging Rules and Regulations Could Impact Genomics Research that Utilizes Genetic Resources and Shares Genomics Data

Meeting Room 102/103

Convener: Tom Nickson, Consultant, Missouri, USA

Researchers that utilize genetic materials to collect genomics data (digital sequence information) should be aware of international and national efforts to establish legal means to ensure that benefit sharing occurs when biological resources are used globally. Negotiations under the general title of "access and benefit sharing" are underway in both international and national fora. Researchers that use new genetic techniques, sequence information, and biological materials from ex-situ sources should pay attention to these negotiations. Regulatory developments in some countries are setting rules with regard to accessing and sharing digital sequence information.

- **S-01 ABS 101: an overview of the Nagoya Protocol**
Stephanie Aktipis, National Focal Point for U.S. Government, District of Columbia, USA
- **S-02 Implementation of the Nagoya Protocol at a national/regional level: developing rules in the EU.**
Tom Nickson, Nickson Research and Consulting, St. Louis, MO, USA
- **S-03 Experience working with crops not covered by the International Treaty on Plant Genetic Resources for Food and Agriculture - peanut and soybean**
Scott Jackson, University of Georgia, Georgia, USA
- **Panel Discussion**

LUNCH – Exhibit Hall

Concurrent Sessions

1:30 pm – 3:40 pm

Breeding: Soybean Germplasm: Creation, Utilization, Dissemination and Domestication

Oglethorpe Auditorium

Conveners: Qijian Song, USDA-ARS, Maryland, USA
Lijuan Qiu, Chinese Academy of Agricultural Sciences, Beijing, China

Soybean germplasm is the basic breeding material for improving soybean yield, quality, resistance to biotic and abiotic stresses, etc. and to study the history of the soybean evolution. Each year, new germplasms were collected, evaluated and efficiently utilized world-wide and new methods were developed to create novel germplasms. This section will cover the following topics: progress of soybean germplasm collection, evaluation and utilization; methods and progress of creation of new materials such as mutants, progeny from perennials x annual Glycine crosses, cytoplasmic male sterile lines and lines with special characteristics; construction of soybean core collection, soybean dissemination in the world and soybean domestication or any other germplasm-related topics.

- **B-01 Identifying soybean gene function using random and targeted mutagenesis**
Robert Stupar, University of Minnesota, Minnesota, USA
- **B-02 Domestication history and geographical adaptation inferred from a genome-wide polymorphism map of Korean soybeans**
Soon-Chun Jeong, Korea Research Institute of Bioscience and Biotechnology, Daejeon, Republic of Korea
- **B-03 Contribution of exotic germplasm to the success of a tropical soybean in Brazil**
Marcelo Fernandes de Oliveira, Embrapa, Paraná, Brazil.

- **B-04 Genetic diversity, geographical adaptation and distribution pattern of Chinese soybeans**
Lijuan Qiu, Chinese Academy of Agricultural Science, Beijing, China
- **B-05 Genetic relationship with geographic origins and globe dispersion of soybean**
Qijian Song, USDA-ARS, Maryland, USA
- **B-06 Recurrent selection during soybean domestication**
Jianxin Ma, Purdue University, Indiana, USA

17th Biennial Conference on the Molecular & Cellular Biology of the Soybean: Stress Resistance

Meeting Room 102/103

Conveners: Jamie O'Rourke, USDA-ARS, Iowa, USA
Suk-Ha Lee Seoul National University, Seoul, Korea

The global climate change affects plant growth-regulating factors such as temperature, water, and CO₂. Plant stress physiology plays a crucial role in plant breeding and food security, focusing on how plants' physiology respond to biotic and abiotic stressful environments. Topic will include insights into the development and function of plants from a gene to whole genome and its interaction within biotic and abiotic environments. The goal of the session is to share individual scholar's knowledge on soybean stress physiology to improve crop quality and prepare the future weather conditions.

- **M-01 Prospects for improving the ozone tolerance of soybean**
Kent Burkey, USDA-ARS, North Carolina, USA
- **M-02 Evaluation of salt tolerant soybean germplasm and identification of salt stress tolerance genes**
Rongxia Guan, The Chinese Academy of Agricultural Sciences, Beijing, China
- **M-03 Using latest genomics technologies to study soybean stress biology**
TingFung Chan, The Chinese University of Hong Kong, Hong Kong, Japan
- **M-04 Leveraging genomic tools to dissect iron deficiency tolerance in soybean**
Michelle Graham, USDA-ARS-CICGRU, Iowa, USA
- **M-05 Transcriptomic and genomic approaches to identify soybean genes responsible for UV-B stress**
Jungmin Ha, Seoul National University, Seoul, South Korea
- **M-06 Understanding and improving flooding tolerance in soybean using genetic and genomic tools**
Henry Nguyen, University of Missouri, Missouri, USA

Food, Feed and Nutrition: Recent Developments in Soybean Processing and Utilization

Meeting Room 100/101

Conveners: Keshun Liu, USDA-ARS, Idaho, USA
 Casimir Akoh, University of Georgia, Georgia, USA

Soybeans have versatile end-uses as food, feed, and industrial material thanks to their unique chemical composition and abundant availability. Recent advances in processing technology and breeding have helped to make soybeans into the world's largest source of high quality edible oil and nutritional and functional protein ingredients for feed and food processing. In addition, identity-preserved (IP) food-grade soybeans with special traits have help to create a growing global market for modern and traditional soyfood products. Topics to be covered include specialty soybeans, innovative commercial processes, aqueous extraction, traditional soyfoods modernization, soy-based synthetic oil, and more.

- **F-05 Specialty soybeans: how organic, non-GMO and identity preserved varieties meet the needs of a growing marketplace**
Peter Golbitz, Agromeris, Florida, USA
- **F-06 Vegetable protein concentrates: a process to increase protein concentration of soybean and other oilseeds**
Richard Ozer, Crown Iron Work, Minnesota, USA
- **F-07 Processing soybeans for food and feed through aqueous extraction: current status and challenges**
Keshun Liu, USDA-ARS, Idaho, USA
- **F-08 Progress in science and technology for traditional Chinese fermented soyfoods**
Yanguo Shi and Na Zhang, Harbin Institute of Commerce, Harbin, China
- **F-09 The utilization of novel soy milk ingredients separated by the Ultra Soy Separation (U.S.S)**
Masahiko Samoto, Fuji Oils, Japan
- **F-10 Stearidonic acid soybean oil chemistry – concentration and enzymatic modification**
Cas Akoh, University of Georgia, Georgia, USA

Agronomy & Physiology: Soybean Nutrient Management Across the Globe

Meeting Room 105/106

Conveners: Fernando García IPNI, Buenos Aires, Argentina
Eros Francisco, IPNI, Brazil Program

Soybean removes large amounts of nutrients from the soil, but generally receives low rates of fertilizer. Improved nutrient management may increase soybean yields and thereby help close the yield gap between current and attainable yields. Soybean production systems vary greatly among different regions of the world in terms of cropping, soil, and nutrient management. Responses of soybean to nutrient input can be strongly influenced by crop management practices. This session will address increasing soybean yields through responsible nutrient and crop management to enhance the economic, social, and environmental sustainability of soybean systems. We will discuss the outcome of a three-year global research project investigating nutrient management and its interaction with crop management practices for soybean production systems in high-yielding regions/countries (US, South America) and new regions/countries (Russia, India, China, Africa), with a special presentation dedicated to biological N fixation in high-yield environments.

- **A-05 Breaking yield barriers in soybean through crop and nutrient management**
Ignacio Ciampitti, Kansas State University, Kansas, USA
- **A-06 Nitrogen nutrition: would BNF be sufficient for high-yielding soybeans?**
Fernando Salvagiotti, EEA INTA Oliveros, Argentina
- **A-07 Looking for high yielding soybeans at Sub Saharan Africa**
Shamie Zingore, Sub Saharan Africa Program
- **A-08 Nutrient management of soybean in the Brazilian Cerrado**
Eros Francisco, IPNI, Brazil Program
- **A-09 Reviewing nutrient management for high yielding soybeans in Russia**
Svetlana Ivanova and Vladimir Nosov, IPNI, Central and Southern Russia Programs
- **A-10 Nutrient Expert: a fertilizer decision support tool for soybean**
Ping He and Kaushik Majumdar, IPNI, China and South Asia Programs
- **General discussion: Moderators: Mike Stewart and Fernando García, IPNI, North America and Latin America-Southern Cone Programs**

Weeds, Diseases, & Pests: Global Status of SDS & Its Control

Meeting Room 203/204

Conveners: Daniel Ploper, EEAOC, San Miguel de Tucumán, Argentina
 Mercedes Scandiani, CEREMIC, Universidad Nacional de Rosario,
 Santa Fe, Argentina

Sudden death syndrome (SDS) is an important soybean disease reported in Argentina, Brazil, Canada, Malaysia, Paraguay, South Africa, United States, and Uruguay. It is caused by several species of Fusarium which belong to the F. solani complex (clade 2). These are slow-growing species which have co-evolved with soybean. In this crop, they produce root rot and also typical foliar symptoms not observed in other species of Fabaceae. Yield losses of up to 100% have been reported in very susceptible cultivars under favorable environmental conditions. The main strategies to manage SDS include the use of moderately resistant cultivars and practices which prevent or reduce soil compaction. Seed-treatment fungicides can help prevent early root infection. This session will address different aspects of this pathosystem, including updated information on the taxonomy of the Fusarium spp. involved, and recent advances in SDS epidemiology and management.

- **P-05 An update on the *Fusarium* spp. involved in SDS**
Martin Chilvers, Michigan State University, Michigan, USA
- **P-06 Sudden death syndrome in the United States**
Leonor Leandro, Iowa State University, Iowa, USA
- **P-07 Sudden death syndrome in Brazil**
Ludwig Pfennig, UFLA, Brazil
- **P-08 Sudden death syndrome in Argentina**
Mercedes Scandiani, CEREMIC, Universidad Nacional de Rosario, Santa Fe, Argentina
- **P-09 Advances in sudden death syndrome management**
Yuba Kandel, Iowa State University, Iowa, USA
- **P-10 Meta-analysis for quantitative resistance to soybean sudden death syndrome**
Hao-Xun Chang, Michigan State University, Michigan, USA

Special Topic: Emerging Frontiers in Breeding and Genomics

Meeting Room 200/201

Conveners: Jeffrey Boehm, University of Georgia, Georgia, USA
Edward McAssey, University of Georgia, Georgia, USA

Model crop species like soybean have benefited from the adoption of cutting edge technologies that generate large datasets. This session will discuss advances being made in both genomics and proteomics, as well as methodological approaches to advance breeding efforts and functional genomics.

- **S-04 A novel strategy of genomic selection in breeding for soybeans**
Junyi Gai, Nanjing Agricultural University, Jiangsu, China
- **S-05 A proteomic view of symbiotic nitrogen fixation efficiency in *Bradyrhizobium elkanii***
Bret Cooper, USDA-ARS, Maryland, USA
- **S-06 A single nucleotide deletion in J encoding GmELF3 confers long juvenility and is associated with adaption of tropic soybean**
Hai Nian, South China Agricultural University, Guangzhou, China
- **S-07 Vegetable soybean expansion in India: challenges and opportunities**
Ramakrishnan Nair, World Vegetable Center, Telangana, India
- **S-08 Soybean protein-protein interaction prediction engine (Soybean-PIPE): a computational approach in soybean functional genomics**
Bahram Samanfar, Agriculture and Agri-Food Canada, Ontario, Canada
- **S-09 A versatile approach to define gene-centric haplotypes using dense SNP data**
Aurélie Tardivel, Université Laval, Quebec, Canada

3:40 – 6:00 pm **Snack break & cash bar - Exhibit Hall**

3:40 – 6:00 pm **POSTER SESSION - Exhibit Hall**

4:00 - 5:00 pm **Grantmanship workshop**
Getting Funding from the NSF: Strategies for Success
Diane Okamura, NSF Integrated Organismal Systems, Virginia, USA

Activities Chatham Ballroom ABC, 2nd Floor:

8:30 – 9:00 am **Plenary: PS-02 Proven and proposed health benefits of soyfoods** *Mark Messina*, Nutrition Matters & Soy Nutrition Institute, Nevada, USA

9:30 – 10:00 am **Regional Reports: South America**
RR-03 Argentina: *Rodolfo Rossi*, ACSOJA – Argentine Soybean Chain Association, Santa Fe, Argentina
RR-04 Brazil: *Silmar Teichert Peske*, Universidade Federal de Pelotas, Brazil

COFFEE BREAK – Exhibit Hall

Concurrent Sessions

10:30 am – 12:00 noon

Joint Breeding / 17th Biennial Conference on the Molecular & Cellular Biology of the Soybean: Designing the Soybean of the Future

Oglethorpe Auditorium

Convener: Richard Joost, Smith Bucklin, Missouri, USA

Soybean [Glycine max (L.) Merr.] is a remarkable plant species for its unique biology, evolutionary history, and utility for civilization. First imported to the United States from China in 1765 by Samuel Bowen, the intended purpose was to manufacture soy sauce and vermicelli. One hundred and fifty years later, soybean acreage was still less than 2 million acres and largely used for hay. Today soybean is the second most planted field crop in the U.S., totaling over 80 million acres and producing over 3.9 billion bushels. Only a small percentage of today's soybean crop is used for soy sauce, vermicelli and hay. Instead it is primarily used for animal feed, edible oil and biodiesel. What will the soybean of the future look like? The soybean industry is poised to become a dual oil market with the introduction of high oleic oil beans. But what will be next? This session will delve into how compositional traits might be modified in the future to meet the needs of end users and keep soybean farmers profitable. In addition, with increasing use of technology on the farm, restrictions to inputs, and pressure for sustainability, farming is likely to look very different as well. This session will also explore how soybeans may be modified to fit the needs of the future farmer.

- **BM-05 Perfect beans in the 21st century: the who, what, and how of developing them**
Danny Singh, Iowa State University, Iowa, USA

- **BM-06 Building a better bean: it will take a community that thinks big**
Thomas Clemente, University of Nebraska, Nebraska, USA
- **BM-07 The holy grail of US soybean value**
Gordon Denny, Gordon Denny LLC, USA
- **BM-08 From the ground up, we're all part of the food chain**
Tom Oswald, United Soybean Board Director, Iowa, USA

Food, Feed and Nutrition: Soy Proteins and Bioactives

Meeting Room 100/101

Conveners: Vidyadhar Kawalkar, Food and Nutrition Technology Institution, Bhopal, India
Navam S Hettiarachchy, University of Arkansas, Arkansas, USA

Soybean proteins and many minor compounds (such as isoflavones, tocopherols, lectin, oligosaccharides, etc.) have been identified to be bioactive and have health benefits to humans and animals. Research on this area has provided a major drive for increasing soybean consumption around the world. This session covers soy proteins and other bioactive compounds with respect to their presence, isolation methods and health benefits.

- **F-11 Value added uses of bioactive soy proteins and hydrolysates**
Navam S. Hettiarachchy, University of Arkansas, Arkansas, USA
- **F-12 Presence of soy-derived peptides in animal and human blood after ingestion of enzymatic hydrolysate of soy protein**
Sato Kenji, Kyoto University, Kyoto, Japan
- **F-13 The physiological effects of beta-conglycinin in rats**
Kazunori Koba, Department of Nutritional Science, University of Nagasaki, Nagasaki, Japan
- **F-14 Beyond nutrition: the soy protein and the bioactives**
Vidyadhar Kawalkar, Food and Nutrition Technology Institution, Bhopal, India

Agronomy & Physiology: Seed Treatments

Meeting Room 102/103

Conveners: Daren Mueller, Iowa State University, Iowa, USA
Albert Tenuta, University of Guelph, Ontario, Canada

This session will explore some of the current issues, challenges and opportunities for seed treatment use on soybean. This includes a look at how seed treatments may affect other agronomic practices.

- **A-11 Sensitivity of pathogens to seed treatments**
Anne Dorrance, Ohio State University, Ohio, USA
- **A-12 Neonic seed treatment use in Canada**
Luc Bourgeois, Bayer CropScience Inc., Canada
- **A-13 Possibilities for biological seed treatments**
Tristan Mueller, BioConsortia, California, USA
- **A-14 Adjusting agronomic practices with seed treatment use**
Adam Gaspar, DuPont Pioneer, Iowa, USA

Weeds, Diseases, & Pests: The Complexities of Managing Nematodes

Meeting Room 203/204

Convener: Nathan Schroeder, University of Illinois, Illinois, USA

Plant-parasitic nematodes are a major constraint to soybean production. The soybean cyst nematode continues to be one of the most damaging pathogens of soybeans. In addition, several other nematodes cause yield loss in geographically restricted ranges. This session will highlight the biology and management of plant-parasitic nematode from diverse locations.

- **P-11 Lesion nematodes (*Pratylenchus* spp): the obscure nematode pest of soybean in the North Central U.S**
Ann MacGuidwin, University of Wisconsin, Wisconsin, USA
- **P-12 Stem cells and neurons: new target for SCN control?**
Nathan Schroeder, University of Illinois, Illinois, USA
- **P-13 Finding solutions from the wild-broad resistance to soybean cyst nematodes (SCN) in wild soybean**
Bao-Hua Song,

- **P-14 The changing dynamics of plant-parasitic nematodes in the South and increased prevalence/importance of reniform (*Rotylenchulus reniformis*)**
Charles Overstreet, Louisiana State University, Louisiana, USA

Special Topic: Emerging Frontiers in Agronomy and Pest Management

Meeting Room 105/106

Convener: Anna Locke, USDA-ARS, North Carolina, USA

- **S-10 The contemporary geoeconomy of soy production chain in Brazil and its consolidation in the global market**
Roberto Costa Cunha, Federal University of Santa Catarina, Santa Catarina, Brazil
- **S-11 Influence of seed rate and stages of harvesting on seed yield and quality of soybean cv. Dsb-21**
Ravindaranth Hunje, University of Agricultural Sciences, Karnataka, India
- **S-12 The fate of soybean residue-carbon links to changes of bacterial community composition in Mollisols differing in soil organic carbon**
Tengxiang Lian, South China Agricultural University, Guangdong, China
- **S-13 Prevalence of physiological races of *Phakopsora pachyrhizi* Syd. and molecular variability of its isolates causing Asian soybean rust in India**
Shamarao Jahagirdar, University of Agricultural Sciences, Karnataka, India

LUNCH – Exhibit Hall

Concurrent Sessions

1:30 pm – 3:40 pm

Breeding: Seed Composition

Meeting Room 105/106

Conveners: Kristin Bilyeu, USDA-ARS, Missouri, USA
Jeong-Dong Lee, Kyungpook National University, North Gyeongsang, Republic of Korea

The composition of the soybean seed determines its value as a crop. Soybean seeds in their immature and mature forms have been used for millennia as components of many different human foods, particularly in East Asia. Most modern uses of soybean rely on the two main products produced after processing: vegetable oil and a high protein meal. The purpose of this session is to highlight soybean breeding for improved seed composition affecting the quality of

the vegetable oil, improving the functionality of soybean meal, and composition traits related to soybean seeds for food uses.

- **B-07 Soybean breeding for healthier oils with optimized ratios of omega 6 to omega 3 fatty acids**
Jeong-Dong Lee, Kyungpook National University, North Gyeongsang, Republic of Korea
- **B-08 Soybean breeding in the USA for high oleic/low linolenic acid soybean oil**
Kristin Bilyeu, USDA-ARS, Missouri, USA
- **B-09 Profile analysis: an excellent tool for breeding seed saponin composition in soybean**
Chigen Tsukamoto, Iwate University, Iwate, Japan
- **B-10 Modifying soluble carbohydrates in soybean seed for enhanced nutritional energy meal**
Katy Rainey, Purdue University, Indiana, USA
- **B-11 Challenges and opportunities of breeding for oil quantity and yield in soybean**
Istvan Rajcan, University of Guelph, Ontario, Canada
- **B-12 Identification of meta-QTLs associated with protein and oil contents and compositions in soybean [*Glycine max* (L.) Merr.] seed**
Kyujung Van, The Ohio State University, Ohio, USA

17th Biennial Conference on the Molecular & Cellular Biology of the Soybean: Genome Diversity and Structural Variation

Meeting Room 102/103

Conveners: Paul Chomet, NR Gene, Missouri, USA
Steven Cannon, USDA, Iowa, USA

*The first genome assembly of *Glycine max* laid the foundation for genomics based improvements in soybean breeding. With next-gen sequencing cost reductions, we are now accumulating large sequence data sets from diverse soy lines. SNPs constitute much of the variation that has been identified to date although structural variants also play a significant role in genome variation. The analyses of sequence variants will be key to advancements in soy breeding, causative variation underlying traits, and plant biology overall. This session will focus on the discovery, description, organization and utilization of sequence and structural variation in soybean germplasm.*

- **M-07 Transmission of on-target and off-target mutations in a series of CRISPR/Cas9-induced soybean plants**
Robert Stupar, University of Minnesota, Minnesota, USA

- **M-08 Exploiting *Medicago* structural variation to discover novel genes for nodulation and symbiosis**
Nevin Young, University of Minnesota, Minnesota, USA
- **M-09 Detection and genetics of structural diversity in soybean**
Matt Hudson, University of Illinois, Illinois, USA
- **M-10 Dissecting the genetic basis of resistance to soybean cyst nematode for soybean breeding**
Yinghui Li, Chinese Academy of Agricultural Sciences, Beijing, China
- **M-11 Identification of large deletions in soybean lines using a genotyping-by-sequencing (GBS) approach**
Marc-André Lemay, IBIS, Quebec, Canada
- **M-12 Structural and transcriptomic comparisons between soybean reference genomes and soybean's Australian wild relatives**
Jacqueline Campbell, Iowa State University, Iowa, USA

Food, Feed and Nutrition: Soybeans as Industrial Materials

Meeting Room 100/101

Conveners: X. Susan Sun, Kansas State University, Kansas, USA
Jin Zhu, Chinese Academy of Sciences, Beijing, China

Soybeans as Industrial Materials session focuses on the development of affordable and widely available intermediate chemicals and bio products from soybean and its ingredients, such as soybean meals, protein concentrates, oils, and hulls as renewable resources with minimum impact on human health and the environment. Chemicals and bio products include, but not limited to adhesives, surfactants, coatings, composites, water absorbents, acrylates, epoxies, foams, polyols, high performance structural materials, and fuels. We invite you to submit abstracts and presentations in the areas of developing affordable and enabling intermediate chemicals and bio products that improve soybean production and benefits of soybean growers, processing industries, end user industries, and environment.

- **F-15 Emulsion polymerization of soybean oil-based acrylic monomers**
Andriy Voronov, Coatings and Polymeric Materials, North Dakota State University, North Dakota, USA
- **F-16 Progress on soybean oil-based thermosetting resins**
Jin Zhu, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences

- **F-17 Use of soy protein and oil as feedstocks for valuable renewable polymer materials**

Jinwen Zhang, School of Mechanical and Materials Engineering, Washington State University, Washington, USA

- **F-18 Limitations of polymers derived from soybean**

Xiuzhi Susan Sun, Grain Science and Industry, and Bio and Agr Engineering, Kansas State University, Kansas, USA

Joint Physiology / Weeds, Diseases, & Pests: Designing the Soybean of the Future

Oglethorpe Auditorium

Conveners: Bret Cooper, USDA-ARS, Maryland, USA
Christian Bredemeier, Federal University of Rio Grande do Sul, Rio Grande do Sul, Brazil

Physiology and pathology have always been connected in the plant sciences. Genetic improvements to plant physiology have helped thwart diseases. At the same time, plant diseases have revealed underlying secrets of plant biochemistry, cell structure, and anatomy. This session aims to take a contemporary look at the intersection between physiology and pathology and promote a perspective for designing a soybean for the future through these disciplines of study.

- **AP-01 Molecular insights into nematode-induced changes to hormone physiology and signaling**
Melissa Mitchum, University of Missouri, Missouri, USA
- **AP-02 Potyviral effector targets and viral co-opting of the untranslated protein response in soybean**
Aadra Kachroo, University of Kentucky, Kentucky, USA
- **AP-03 *Phakopsora pachyrhizi* (soybean rust) effector candidates that alter plant immune responses**
Steve Whitham, Iowa State University, Iowa, USA
- **AP-04 *Phakopsora pachyrhizi* secretome expressed during soybean interaction and characterization of effector candidate families**
Francimar Marcelin-Guimaraes, Embrapa, Paraná, Brazil
- **AP-05 Physiological and molecular basis of flooding tolerance in soybean**
Christian Bredemeier, Universidad Federal do Rio Grande do Sul, Porto Alegre, Brazil

Special Topic: SoyBase Workshop

Meeting Room 200/201

Presenter: David Grant, USDA-ARS, Iowa, USA

The tutorial will present an overview of the data and tools available at SoyBase. The templates used for submitting research results to SoyBase will be presented along with examples of their use. Ample time will be available for questions from the audience.

3:40 – 6:00 pm **Snack break & cash bar - Exhibit Hall**

3:40 – 6:00 pm **POSTER SESSION - Exhibit Hall**

4:00 – 6:00 pm **Even-numbered poster authors will be present**

Wednesday September 13, 2017

Activities Chatham Ballroom ABC, 2nd Floor:

8:30 – 9:00 am **Plenary: PS-03 A Science-Based Approach to Measuring and Advancing the Sustainability of U.S. Crop Production**
Rod Snyder, Field to Market: The Alliance for Sustainable Agriculture, District of Columbia, USA

9:30 – 10:00 am **Regional reports: Africa/Europe**
RR-05 Africa Report: *Antony Jarvie*, PANNAR Seed, KwaZulu-Natal, South Africa
RR-06 Europe Report: *Donal Murphy-Bokern*, Head of Innovation and Research, Donau Soja Organization, Austria

COFFEE BREAK – Exhibit Hall

Concurrent Sessions

10:30 am – 12:00 noon

Breeding: USAID Soybean Program in Africa

Meeting Room 105/106

Convener: Brian Diers, University of Illinois, Illinois, USA

The topic of this session is the use of soybean in development in Africa. It will specifically focus on results from the USAID funded soybean value chain project and other topics related to how soybean can be produced profitably and utilized in developing countries in Africa.

- **B-13 Soybean for Africa: an economist's perspective**
Pete Goldsmith, University of Illinois, Illinois, USA
- **B-14 Genetic improvement of soybean in Ethiopia: implications for the countries agricultural growth and development**
Abush Tesfaye, Ethiopian Institute of Agricultural Research, Ethiopia, Africa
- **B-15 Progress in the SARI soybean breeding program under the Soybean Innovation Lab**
Nicholas Denwar, CSIR-Savanna Agricultural Research Institute, Ghana, Africa
- **B-16 Soybean breeding in Africa: IITA achievement and future outlook**
Godfree Chigeza, IITA, Lusaka, Zambia
- **B-17 Identifying allele combinations for maximizing soybean adaptation to tropical environments**
Kristin Bilyeu, USDA-ARS, Missouri, USA
- **B-18 The role of soy-based foods in complementary feeding**
Juan Andrade, University of Illinois, Illinois, USA
- **B-19 Determinants of soybean adoption and performance in Northern Ghana**
Courtney Tamimie, University of Illinois, Illinois USA

17th Biennial Conference on the Molecular & Cellular Biology of the Soybean: Current Topics in Soybean Genetics and Genomics

Oglethorpe Auditorium

Conveners: Robert Stupar, University of Minnesota, Minnesota, USA
Wenbin Li, Northeast Agricultural University, Heilongjiang, China

This session will focus on the emerging projects and cutting-edge discoveries in soybean molecular genetics and applied genomics. Presentations will focus on the mechanisms of soybean gene regulation and the identification of genes governing soybean responses to biotic and abiotic stresses. Furthermore, presentations will address new tools and strategies to enhance soybean genetic improvement.

- **M-13 SoyaGen: an integrated and applied genomics project for short-season soybean**
Francois Belzile, Pavillon Charles-Eugène Marchand, Quebec, Canada
- **M-14 The evolutionary novelty of microRNAs and their targets in soybean and other legumes**
Blake Meyers, Danforth Center, Missouri, USA
- **M-15 Combining genomics and effector biology to develop new ways to combat *Phytophthora sojae***
Brett Tyler, Oregon State University, Oregon, USA
- **M-16 Abiotic stress related genes confer tolerance to drought, salt, and low temperature in soybean**
Yongguang Li, Northeast Agricultural University, Harbin, China

Food, Feed and Nutrition: The Role of Soyfoods and Soy Protein in Meeting Global Health and Nutrition Needs

Meeting Room 100/101

Conveners: Mark Messina, Nutrition Matters & Soy Nutrition Institute, Nevada, USA
Andreas Altemueller, Smith Bucklin, Missouri, USA

For centuries, soyfoods have been widely consumed throughout much of Asia. Outside of Asia soy has gained in popularity over the past several decades as the consumption of the traditional Asian soyfoods and soy-based Western foods has markedly increased. Evidence indicates that this trend will continue, since soy can meet the health and nutritional needs of a growing world population. The sheer numbers of ways by which soy protein can be consumed make it easy to be embraced by different cultures. The greater demand for high-quality protein such as soy

protein also helps reduce risk of chronic diseases. The quality of soy protein is similar to that of animal protein but it favorably affects markers of coronary heart disease in contrast to many other sources of protein. Soy protein may also help to address the obesity epidemic through its satiating effect and by protecting against obesity-induced liver disease which is now occurring even in young people. In addition, studies show that soy protein by itself, when combined with other high-quality proteins, is able to promote lean tissue accretion. Therefore, soy protein can have a role in preventing sarcopenia. Age-related loss of muscle mass with its associated functional decline is an important public health concern because of the increasing number of older people. While many trends favor greater soy consumption, the rampant misinformation about soy becomes a counterbalancing factor. Claims that soy exerts adverse effects are refuted by the totality of the scientific literature but greater efforts are needed to make sure the public understands this is the case.

- **F-19 Current evidence for role of soy in support of health across the lifespan**
Michelle Braun, DuPont Nutrition & Health, St. Louis, MO
- **F-20 Protein needs for a growing global population: current and future landscape**
Phil Kerr, Serio Nutrition Solutions, LLC
- **F-21 Emerging benefits of soy protein on liver and metabolic health**
R. Scott Rector, University of Missouri and Harry S Truman Memorial VA Hospital, Columbia, MO
- **F-22 Setting the record straight: refuting the misinformation about soyfoods**
Mark Messina, Nutrition Matters & Soy Nutrition Institute, Nevada, USA
- **Panel Discussion**

Agronomy & Physiology: Soybean Sustainability: Documenting, Communicating and Advancing Success Through the Supply Chain

Meeting Room 203/204

Convener: Shawn Conley, University of Wisconsin, Wisconsin, USA

This session will discuss methods that successfully document and advance the US soybean sustainability continuum from behind the farm gate through the supply chain and to the customer.

- **A-15 Sustainability and domestic and international soybean policy**
Ron Moore, President of American Soybean Association, Missouri, USA
- **A-16 Building and scaling a pre-competitive framework for agricultural supply chain sustainability efforts**
Rod Snyder, President Field to Market, District of Columbia, USA

- **A-17 A practical approach to soybean sustainability metrics**

Paul Mitchell, Associate Professor of Agricultural Economics, University of Wisconsin, Wisconsin, USA

- **A-18 Growing farm returns through soil health**

Nick Goeser, Director of Soil Health and Sustainability; Soil Health Partnership, Missouri, USA

Weeds, Diseases, & Pests: Balancing Economic and Environmental Trade-offs in Soybean Pest Management: a Focus on Neonicotinoid Seed Treatment Use in Row Crop Agroecosystems

Meeting Room 102/103

Convener: Anders Huseth, North Carolina State University, North Carolina, USA

Meeting agricultural demands of the growing global population, while balancing consequences of increased scale and the intensity with which a limited array of pest management practices are being deployed will require a better understanding of the trade-offs involved with soybean pest control and the many challenges these interventions present. To date, the intensification of existing row crop production systems has focused on advanced breeding coupled with technology driven pest management to maximize yields (e.g., seed treatments, GE herbicide tolerant and insect resistant traits). Unfortunately, some of these changes to row crop pest management are thought to be the underlying cause for unanticipated impacts on non-target arthropods, increased pest pressure, and further reliance on pesticides for profitable production. In this symposium, we will compare and contrast current research to better understand interactions between neonicotinoid seed treatment use in soybean and the effects these insecticide interventions can have on farmer profit, pest control, insecticide resistance, and ecosystem services. To conclude, the final theme of this symposium will be a short discussion designed to help attendees contextualize these findings into a realistic production framework, identify research priorities, and generate new questions that will improve the sustainability of soybean production worldwide.

- **P-15 Economic value of neonicotinoid seed treatments in US soybean**

Paul Mitchell, University of Wisconsin, Wisconsin, USA

- **P-16 Neonicotinoid seed treatment use for soybean aphid: opportunities and limitations**

Matt O'Neal, Iowa State University, Iowa, USA

- **P-17 Pollination on soybean: importance and impacts of pest control practices**

Decio Gazzoni, EMBRAPA, Parana, Brazil

- **P-18 Areawide use of neonicotinoid seed treatments drives thrips resistance in the Southeast US row crop production region**
Anders Huseeth, North Carolina State University, North Carolina, USA

Business & Legal: The Global Regulatory Environment

Meeting Room 200/201

Convener: Ray Shillito, Bayer Crop Sciences, North Carolina, USA

In the present environment where 83% of the global soybean acreage is enhanced by Biotechnology, the regulatory environment for Biotech has a significant effect on trade and introduction of commercial varieties and traits, and therefore also affects research into new soybean traits. Regulation of biotechnology, although nominally based on the Codex and OECD guidelines, is heterogeneous and varies from one country or trading block to another. This variability leads to asynchronous approvals of new traits, and to the delay of making improved traits available to farmers as they wait for approval in importing countries. Uncertainty around global evolution of regulatory frameworks and how new breeding techniques will or will not be regulated are also affecting the speed and direction of technology development. Differences in Varietal Registration and Phytosanitary requirements also affect movement and commercialization of improved seed. This session will explore the consequences of regulatory requirements on research and the development of improved varieties and traits, and particularly the effect of high regulatory hurdles on Academic research and variety development. We will review the regulatory situation and look to the future of regulations as new technologies such as gene editing come to market.

- **L-01 Global regulatory environment for traditional biotech (including asynchronous approvals)**
Ann Tuttle, Bayer CropScience, North Carolina, USA
- **L-02 Experiences of an academic with the regulatory environment**
Tom Clemente, University of Nebraska, Nebraska, USA
- **L-03 GM and varietal registration in Brazil, and the effect of gene editing technology on regulations**
Alexandre Nepomuceno, CNPSO, Brazil
- **L-04 New plant breeding approaches in soy and the future (includes gene editing)**
Feng Zhang, Calyx, Minnesota, USA

LUNCH – Exhibit Hall

Concurrent Sessions

1:30 pm – 3:40 pm

Joint Breeding / 17th Biennial Conference on the Molecular & Cellular Biology of the Soybean: Genomics Assisted Breeding for Accelerating Soybean Native Traits

Oglethorpe Auditorium

Conveners: Oswald Crasta, Dow AgroSciences, Indiana, USA
 Ricardo Vilela Abdelnoor, Deputy Head of Research- Soybean,
 EMBRAPA, Brazil

Recent advances in genomic and high performance computing technologies are great asset for further improving soybean germplasm diversity and breeding varieties for increased yield and native traits to meet the growing needs in farmers' fields worldwide. This session will cover both industry and academic perspectives on genomic assisted breeding in soybean for improving (Useful) genomic diversity and accelerating genetic gain and native traits in elite germplasm.

- **BM-09 Genomic assisted breeding overview**
Aaron Lorenz, University of Minnesota, Minnesota, USA
- **BM-10 Using genomics for high-resolution haplotype characterization and identifying novel trait-associated variation**
John Woodward, DuPont-Pionner, Iowa, USA
- **BM-11 The role of germplasm as a key factor in the changes of crop production systems and yield increase in South America**
Marcos Quiroga, GDM Seeds, Brazil
- **BM-12 Opportunities and challenges in soybean genomics assisted breeding**
Hongwu Jia, Bayer, USA
- **BM-13 Application of genomic breeding systems to accelerate native traits and the rate of genetic gain in soybean breeding**
Rajat Aggarwal, Dow Agro Sciences, Indiana, USA
- **BM-14 Plant breeding: the intersection of analytics and big data**
Warren M. Kruger, Monsanto, Missouri, USA

Food, Feed and Nutrition: Soybeans and Aquaculture

Meeting Room 100/101

Conveners: Bridget Owen, Soy Aquaculture Alliance, Indiana, USA
Andy Tauer, Soy Aquaculture Alliance, Indiana, USA

Aquaculture is the fastest growing food production sector on Earth. The growth in this sector is driven by increasing global demand for the healthy and delicious protein resources aquaculture delivers. Soybeans are an important resource for fin fish and shrimp aquaculture, providing nutritious, economic, and sustainable protein and lipids. This session updates latest research on expanding soy usage in aquafeeds in this diverse and dynamic industry.

- **F-23 Soy in Aquaculture – US soy’s investment in aquaculture research**
Andy Tauer, Soy Aquaculture Alliance, Indiana, USA
- **F-24 Improving feed formulations for juvenile Red Drum, *Sciaenops ocellatus*, through nuclear magnetic resonance based metabolomics**
Aaron Watson, South Carolina Department of Natural Resources, South Carolina, USA
- **F-25 High soy shrimp feeds for the pacific white shrimp *Litopenaeus vannamei***
D. Allen Davis, Auburn University, Alabama, USA
- **F-26 Development of low cost feed grade soybean protein concentrates for aquafeed**
Keshun Liu, Rick Barrows, and Steve Hart, USDA-ARS, Idaho, USA
- **F-27 Utilization of protein source from soy in aquaculture feed**
Toshiro Masumoto, Kochi University, Kochi, Japan

Agronomy & Physiology: Integrating Precision Agriculture and Yield Gap Analysis to Minimize Production Risks

Meeting Room 102/103

Convener: Shawn Conley, University of Wisconsin, Wisconsin, USA

In this session, we will discuss tools and techniques to apply precision agriculture to soybean production systems. Real world examples that take the complexities of on-farm application into consideration will be presented. Case studies that characterize management-related yield variation, estimate yield gaps and identify management decisions to improve soybean yield and productivity will be presented.

- **A-19 Precision agriculture, big data, and future of farming**
Raj Khosla, Colorado State University, Colorado, USA

- **A-20 Application of precision agriculture technologies and analytics tools in soybean**
Peter Kyveryga, Iowa Soybean Association, Iowa, USA
- **A-21 Combining field surveys and a spatial framework to identify causes of yield gaps over large geographic regions**
Juan Ignacio Rattalino Edreira, University of Nebraska-Lincoln, Nebraska, USA
- **A-23 Unravelling the effect of on-farm management on soybean yield using grower supplied field data**
Spyridon Mourtzinis, University of Wisconsin, Wisconsin, USA

Weeds, Diseases, & Pests: Managing Insect and Weed Resistance

Meeting Room 105/106

Conveners: Matt O'Neal, Iowa State University, Iowa, USA
Erin Hodgson, Iowa State University, Iowa, USA

We have invited speakers from Universities within the US to discuss their respective experiences and research tackling the issue of resistance. These speakers include entomologists (3) and weed scientists (2) who are dealing with pests that have evolved resistance to pest management practices. Our final speaker will discuss a novel approach that stakeholders within Iowa are developing to address this issue at the community level for all pests that attack field crops, including soybeans, a major crop within the Midwest and Iowa.

- **P-19 The weed resistance reality in the U.S.: where we've been and where we're headed**
Kevin Bradley, University of Missouri, Missouri, USA
- **P-20 What to do when over-zealous herbicide use exacerbates pest management problems**
David Mortensen, Penn State, Pennsylvania, USA
- **P-21 Dangers at home and abroad- why dispersal matters in soybean insect resistance management**
Dominic Reisig, North Carolina State University, North Carolina, USA
- **P-22 Evidence for soybean aphid resistance to pyrethroid insecticides and considerations for insecticide resistance management**
Robert Koch, University of Minnesota, Minnesota, USA
- **P-23 Managing soybean aphid virulence: a genetic perspective**
Andy Michel, Ohio State University, Ohio, USA

- **P-24 Iowa pest resistance management plan: implementing a community-based approach**

Steve Bradbury, Iowa State University, Iowa, USA

Business & Legal: Marketing, Trade and Policy

Meeting Room 200/201

Convener: Marshall Martin, Purdue University, Indiana, USA

Since 1960, global soybean production has expanded more than 10-fold, and is expected to continue to grow dramatically. The United States, Brazil, and Argentina are the three largest producers and exporters of soybeans. China is the largest importer of soybeans (about two-thirds of total global soybean trade), followed by the European Union, Mexico, Japan and Taiwan. In 2015, China alone accounted for nearly 35% of the exports from the United States, one-half the Brazilian soybean exports, and about 11% from Argentina. Processed soybeans are the world's largest source of animal protein feed and the second largest source of vegetable oil. Economic success for soybean farmers, processors, and traders requires an understanding of trade policies, currency exchange markets, transportation logistics, and regulatory requirements. This session will explore these issues from an industry, government, and academic perspective.

- **L-05 An overview of global soybeans supply and demand situation**
John Baize, John C Baize and Associates, Virginia, USA
- **L-06 Will protectionism thwart global oilseed growth?**
Joseph Glauber, International Food Policy Research Institute, District of Columbia, USA
- **L-07 Grower perspectives on the global trade policy landscape**
Ron Moore, American Soybean Association, Illinois, USA
- **L-08 South American supply outlook: challenges and opportunities**
Marcos Daziano, University of Bueno Aires, Bueno Aires, Argentina

3:40 – 6:00 pm **Snack break & cash bar - Exhibit Hall**

3:40 – 6:00 pm **POSTER SESSION - Exhibit Hall**

4:00 – 6:00 pm **Odd-numbered poster authors will be present**

Activities Chatham Ballroom ABC, 2nd Floor:

8:30 – 9:00 am **Plenary: PS-04 How Bright is the Future for Soybeans?**
Krysta Harden, DuPont-Pioneer, USA

9:30 – 9:45 am **Regional Reports: Asia/Australia**
RR-07 Asia & Australia Report: *Tianfu Han*, Chinese Academy of Agricultural Sciences

9:45 – 10:00 am **Announcement of Poster and NSF Travel Award Winners**

COFFEE BREAK – Exhibit Hall

Concurrent Sessions

10:30 am – 12:00 noon

Breeding: Drought Tolerance in Soybean: Physiological and Genetic Advances Using Native Trait Diversity

Meeting Room 102/103

Conveners: Tommy Carter, USDA-ARS, North Carolina, USA
Eligio Morandi, Universidad Nacional de Rosario, Santa Fe, Argentina

Summer drought is the most important limitation to soybean production. Irrigation is not commercially viable in many cases. Thus, stress-tolerant varieties will be our most important weapons in soybean's continuing battle with adverse weather. To date, very few drought resistant soybean varieties have been developed. The reason is that drought tolerance in soybean is a new breeding target with a short history. The discovery of the first drought-tolerant soybean (from Japan) was reported only in 1989. Breeders taking up the 'drought challenge' are finding that drought tolerance is both 'hard to breed for' and difficult to understand. To realize the full potential of this complex trait in farmers' fields, the soybean community needs the help of dedicated physiologists who can grapple with those complexities and coach our applied breeders to success. This session highlights advances of physiologists in our understanding of native trait diversity for drought response.

- **B-20 Untangling traits, mechanisms, and alleles associated with delayed wilting, canopy temperature, and C13/C12 ratio**
Larry Purcell, University of Arkansas, Arkansas, USA
- **B-21 Targeting physiological traits for drought tolerance: water conservation and nitrogen fixation**
Tom Sinclair, North Carolina State University, North Carolina, USA

- **B-22 Exploring soybean root architecture – genetic diversity, markers, and improvement**
Felix Fritschi, University of Missouri, Missouri, USA
- **B-23 Physiological and molecular approaches in breeding for drought tolerance in soybean**
Omar Borsani, Agronomía, Montevideo, Uruguay

17th Biennial Conference on the Molecular & Cellular Biology of the Soybean: Translational Genomics

Oglethorpe Auditorium

Convener: Gary Stacey, University of Missouri, Missouri, USA

The session will have four speakers focusing on using modern genetic and functional genomic methodologies for gene discovery and crop improvement in soybean. The program reflects the global importance of soybean and the variety of research taking place worldwide. The session also will provide wide coverage with talks focusing on exploiting natural variation in soybean (e.g., GWAS), to mutational breeding approaches, especially to improve seed traits, to efforts to increase soybean stress tolerance. The presentations will also highlight the variety of uses that can be made of the soybean genome sequence to move science forward and in a way to support translation to be improve soybean crop production.

- **M-17 Development of sequencing for genotyping within soybean breeding programs**
David Hyten, University of Nebraska, Nebraska, USA
- **M-18 Genome aided gene discovery in soybean for crop improvement**
Minviluz G. Stacey, University of Missouri, Missouri, USA
- **M-19 Soybean proteomics to identify the abiotic stress tolerant mechanism**
Setsuko Komatsu, University of Tsukuba, Tsukuba, Japan
- **M-20 Genomics survey for genes related to domestication and improvement in soybean**
Zhixi Tian, Institute of Genetics and Developmental Biology, Beijing, China

Food, Feed and Nutrition: Recent Updates, Challenges and Opportunities for High Oleic Soybean Components

Meeting Room 100/101

Conveners: Andreas Altemueller, Smith Bucklin, Missouri, USA
Susan Knowlton, DuPont Pioneer, Missouri, USA

According to industry estimates, high oleic soybeans could reach ~18 million acres by 2023 which would make them the 4th largest row crop in the US. With this advancement, the superior functional properties of its components such as the oil itself, the lecithin and the resulting meal after the crush, are of increasing interest to the industry and are being evaluated in a variety of applications. While the breeding and genetics of high oleic soybeans are discussed in other sessions, the latest developments in food applications and commercial uses, including results from a clinical trial incorporating the positive nutritional oil profile into a variety of foods will be highlighted in this session.

- **F-28 Introduction to high oleic soy: overview of technical and commercial status**
Susan Knowlton, DuPont Pioneer, Delaware, USA
- **F-29 Low trans solid fat functionality: the role of interesterified high oleic soybean oil based shortenings**
Tom Tiffany, ADM Oils, Illinois, USA
- **F-30 Use of high oleic soybean oil to improve cardio metabolic health in at-risk adults**
David Baer, USDA, Maryland, USA
- **F-31 Use of biotechnology to improve soy protein ingredients**
Dan Staerk, DuPont Nutrition and Health, Missouri, USA
- **F-32 Functionality and application of high oleic soybean oil for the replacement of partially hydrogenated oils: an industry perspective**
Guillermo Napolitano and Yubin Ye, Nestle Development Center, Ohio, USA

Agronomy & Physiology: It Takes a Community: The Role of Biostimulants and Biological Products for Optimal Soybean Yields

Meeting Room 105/106

Convener: Maud Hinchee, Agriscen Sciences, Texas, USA

Increases in yield in agricultural production have primarily relied upon improved soybean genetics and conventional management practices such as fertilization and the use of chemical pesticides. However, as systems biology advances, it is becoming more evident that the soil microbiome and the phytobiome can have profound effects on plant growth, development and health. In addition, signaling molecules, such as microbial secondary metabolites or by-products, and plant growth regulators, can be used to improve plant stress tolerance, vigor and yield. This session introduces newly emerging basic and applied research in the area of plant biostimulants, biological products and the influence of the phytobiome or rhizobiome on plant growth and development, with a special emphasis on soybean production.

- **A-24 Overview of biostimulants and plant growth-promoting bacteria**
Joseph Klopper, Auburn University, Alabama, USA
- **A-25 Navigating the world of biostimulants**
Brian Cornelius, Agriscen, Texas, USA
- **A-26 "Plants wear their guts on the outside..." A quote from D.H. Janzen, 1985**
Ann Hirsch, University of California, California, USA

Weeds, Diseases, & Pests: Strategies for Disease & Pest Management

Meeting Room 200/201

Convener: Richard Joost, Smith Bucklin, Missouri, USA

Soybean [Glycine max (L.) Merr.] was first introduced to North America over 250 years ago. Like most new introduced plant species, the soybean enjoyed a brief period of relative freedom from pest and disease pressure, with the exception of generalist pests that frequently attack many plant species. Over time, many of the pests and diseases that had evolved with their soybean host in its native Asia gradually found their way to the Western Hemisphere. Often these pests and diseases were introduced without their necessary alternate hosts and/or the parasites/predators that evolved with them in Asia. The developmental dynamics of these pests and diseases; including their life history, distribution and spread have a significant impact on their control and management in soybean production systems. This session will focus on insect and fungal disease pests of soybean, their spread and distribution, life history and the management practices that have been developed to control them in soybean production systems.

- **P-25 *Phytophthora* and other soil-borne diseases of soybean**
Anne Dorrance, The Ohio State University, Ohio, USA
- **P-26 Development and management of kudzu bug and brown marmorated stink bug**
Jeremy Greene, Clemson University, South Carolina, USA
- **P-27 Crop management for stink bug control**
Adeney Bueno, EMBRAPA,
- **P-28 How the soybean aphid genome and transcriptomics provides insight into molecular mechanisms of adaptation to aphid resistant soybean**
Andy Michel, Ohio State University, Ohio, USA

Business & Legal: Intellectual Property, Law, and Licensing

Meeting Room 203/204

Convener: Brent Marable, University of Georgia Research Foundation, Georgia, USA

Over the last few decades, advancements in soybean research and innovations by industry and academia have included in part higher yields, increase disease and pest resistance, enhanced nutritional qualities, and advanced breeding techniques. Intellectual property protection allows developers of such new innovations, including new soybean varieties and improved traits, an opportunity to recoup their investments, while also confronting many of the economic, environmental and health issues faced as a global society. This session will explore these issues from both industry and academic perspectives including an international purview.

- **L-09 The good, the bad and the off-type - strategies for variety protection and licensing**
Dana Rewoldt, Iowa State University, Iowa, USA
- **L-10 IP issues - building your fence while avoiding the thicket**
Sheree Rybak, Klarquist Sparkman, LLP, Oregon, USA
- **L-11 Licensing for a fist full of dollars - foundational systems for soybean licensing and agreements**
James Weatherly, Seed Innovation and Protection Alliance, Colorado, USA

LUNCH – Exhibit Hall

Concurrent Sessions

1:30 pm – 3:40 pm

Breeding: Breeding for Biotic Stress

Oglethorpe Auditorium

Conveners: Istvan Rajcan, University of Guelph, Ontario, Canada
Tianfu Han Chinese Academy of Agricultural Sciences, Beijing, China

The session is designed to cover topics around breeding of soybeans for resistance to biotic stress such as pest and diseases. Classical and molecular approaches towards this goal will be explored including with emphasis on genes and that govern resistance and define host-pathogen relationships.

- **B-24 Role of *Rhg1* and other resistance genes in controlling SCN in soybean**
Brian Diers, University of Illinois, Illinois, USA
- **B-25 Defense and counter defense during *Phytophthora sojae*-soybean interaction**
Yuanchao Wang, Nanjing Agricultural University, Jiangsu, China
- **B-26 *Arabidopsis* nonhost resistance genes for enhancing disease resistance in soybean**
Madan K. Bhattacharyya, Iowa State University, Iowa, USA
- **B-27 Fine-mapping and characterization of a novel gene conferring resistance to soybean mosaic virus**
Xue Zhao, Northeast Agricultural University, Harbin, China
- **B-28 Contribution of genetics to the integrated management of Asian soybean rust in Brazil**
Carlos Alberto Arabal Arias, Embrapa Soja, Parana, Brazil
- **B-29 Genomic context as a determinant for soybean aphid resistance mechanisms and synergistic effects of gene stacking**
Gustavo MacIntosh, Iowa State University, Iowa, USA

17th Biennial Conference on the Molecular & Cellular Biology of the Soybean: Output Traits

Meeting Room 102/103

Conveners: Anthony Kinney, DuPont Pioneer, Iowa, USA
Thomas E. Clemente, University of Nebraska, Nebraska, USA

This session will focus on the latest advances in improving soybean seed composition through the use of advanced genetic methods, including systems approaches to soybean breeding, biotechnology and genome editing. The presentations, with speakers from academic, government and industry institutions, will highlight efforts to increase the seed oil and protein content as well as improving oil and meal quality of soy for feed, food and aquaculture.

- **M-21 System approaches to increasing the oil content of soybeans**
Leah McHale, The Ohio State University, Ohio, USA
- **M-22 Biotechnology approaches to improving soybean composition**
Knut Meyer, DuPont Pioneer, Iowa, USA
- **M-23 Synthetic design of soybean for improved aquaculture feed traits**
Ed Cahoon, University of Nebraska, Nebraska, USA
- **M-24 Enhancing the amino acid composition of soybeans**
Hari Krishnan, USDA
- **M-25 Improving soybean composition by genome editing**
Glenn Bowers, Calyxt
- **M-26 A Zinc Finger Transcription Factor GmZF-1, regulates isoflavone biosynthesis in soybean**
Junming Sun, Chinese Academy of Agricultural Sciences, Beijing, China

Food, Feed & Nutrition: Soybean Processing for Food and Occurrence of Bioactive Components

Meeting Room 100/101

Conveners: Keshun Liu, USDA-ARS, Idaho, USA
Vish Prakash, International Union of Nutritional Sciences, Ramaiah University of Applied Sciences, Bangalore, India

Soybean is versatile with respects to its end uses as food, feed and industrial material. There are also many ways of processing soybeans into various food products, either traditional products like tofu or modern ones like soy oil and protein products. Soybean is also known as a powerhouse of bioactive components, many of which have been shown to be health beneficial.

Speakers of this session, representing various countries across continents, discuss about latest research on processing soybeans into traditional and modern soyfoods and ingredients, occurrence of soy bioactives with respects to genetic variation and quantification, and community effort for soy awareness.

- **F-33 The research process in the aqueous enzymatic extraction of vegetable oil and protein**
Lianzhou Jiang and Liang Li, Northeast Agricultural University, Harbin, China
- **F-34 Production of vegetable protein concentrates and biologically active substances based on 3D-structuring principle**
Natalia Khabibulina, Partner-M JSC, Kaluga, Russia
- **F-35 Protein particles in soymilk and its role in controlling the quality of tofu**
Shuntang Guo and Yangling Wan, China Agricultural University, Beijing, China
- **F-36 Spermidine in soybean: genetic variation of a potential health component**
Johann Vollmann, BOKU University, Vienna, Austria
- **F-37 Quantification of kunitz trypsin inhibitor in soybean through densitometry**
Vineet Kumar, ICAR-Indian Institute of Soybean Research, Indore, India
- **F-38 The effect of soya awareness training for community success. A comparative study in South African communities**
Abdulkadir Egal, Vaal University of Technology, Vanderbijlpark, South Africa

Special Topic: High-throughput Phenotyping

Meeting Room 105/106

Conveners: Zenglu Li, University of Georgia, Georgia, USA
Andrew Scaboo, University of Missouri, Missouri, USA

There is currently a major emphasis in both the public and private sectors to enhance research on development of rapid and precise crop phenotyping methods to accelerate the development of improved crop cultivars. Field-based high-throughput phenotyping provides important tools for unravelling complex questions concerning crop development and response to the environments by connecting plant genotypes to phenotypes. These emerging phenotyping technologies will increase the capacity and precision of agricultural research by reducing the time and resources involved in evaluating large field based research experiments. In this session, the development and applications of high-throughput phenotyping methods and platforms in crop research will be presented and discussed.

- **S-14 Utilizing multi-spectral readings to differentiate genotypes in two soybean NAM populations**
William Schapaugh, Kansas State University, Kansas, USA
- **S-15 Shifting the field R&D paradigm to technology driven phenotyping**
Bobby Brauer, Monsanto Company, Missouri, USA
- **S-16 Use of water trough collectors in the field to evaluate drought tolerance of soybean**
Junkui Ma, Shanxi Academy of Agricultural Sciences, China
- **S-17 Phenotyping Solutions for Basic and Applied Research in Plant Biology and Agriculture**
Todd M. DeZwaan, LemnaTec Corporation
- **S-18 Using ultra-high resolution multispectral drone imagery for high-throughput phenotyping**
Kevin Price, AgPixel, Iowa, USA
- **S-19 Experiences in field phenotyping: from hand-helds to UAVS**
Jeffrey White, USDA-ARS, Arizona, USA

Special Topic: SoyBase Workshop

Meeting Room 203/204

Presenter: *David Grant*, USDA-ARS, Iowa, USA

The tutorial will present an overview of the data and tools available at SoyBase. The templates used for submitting research results to SoyBase will be presented along with examples of their use. Ample time will be available for questions from the audience.

3:40 – 6:00 pm **Snack break & cash bar - Exhibit Hall**

3:40 – 5:30 pm **POSTER SESSION - Exhibit Hall**
Posters must be removed by 6:00 pm

7:00 – 10:00 pm **Closing Reception/Awards Banquet – Hyatt Regency Ballroom**
Separate ticket purchase required and are available at the registration desk, while supplies last.

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The Association of Mato Grosso Soybeans and Maize Producers (Aprosoja) is a representative non-profit making body made up of rural producers linked to Mato Grosso's soybean and corn crops. Its central objective is to unite the class, valuing it.

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