2020 SOYBEAN BREEDERS WORKSHOP
- Plant Physiology and Agronomy

March 2-4th, 2020
Sheraton Westport Chalet Hotel, 191 Westport Plaza Dr., St. Louis, MO

Registration in Versailles Foyer

Monday, Mar 2nd 10:30 a.m. – 5:00 p.m.
Tuesday, Mar 3rd 7:00 a.m. – 5:00 p.m.

Monday, March 2, 2020 | Room: Versailles 1

Session 1: Breeding and Breeding Innovation | Chair: Zenglu Li, University of Georgia

• 1:00 p.m. Thomas Carter Jr., USDA-ARS: The future of drought tolerance breeding in soybean
• 1:30 p.m. Michelle Graham, Danny Singh and Jamie O’Rourke, USDA-ARS and Iowa State Univ.: Studying IDC in soybean: a model revolution for crop stress adaptation
• 2:00 p.m. Martin Mariani Ventura, Verdeca: Environmental resilience in soybean
• 2:30 p.m. Landon Ries, Corteva Agriscience, Remote sensing in soybean breeding at Corteva

3:00 - 3:20 p.m. Coffee Break | Foyer

Session 2: Breeding and Breeding Innovation | Chair: Rouf Mian, USDA-ARS

• 3:20 p.m. Neil Yu, Bayer CropScience: Soybean breeding innovation at Bayer
• 3:50 p.m. Henry Nguyen, University of Missouri: Soybean genomic resources and genomics-assisted approach to improving drought tolerance
• 4:20 p.m. Timothy Venverloh, VP of the United Soybean Board: USB update

5:00 - 6:00 p.m. Poster session | Versailles 2

Tuesday, March 3, 2020 | Room: Versailles 1

Continental Breakfast | 7:00 - 8:00 am| Versailles Foyer
Hosted by the Commercial Soybean Breeders

Session 3: Abiotic Stress - Drought | Chair: Larry Purcell, University of Arkansas
• 8:00 a.m. Anna Locke, USDA-ARS: Examining slow-wilting physiology in the field  
• 8:25 a.m. Ford Denison, University of Minnesota: Breeding to enhance nitrogen and other benefits from rhizobia  
• 8:50 a.m. Walid Sadok, University of Minnesota: Physiological phenotyping of water-saving traits in soybean  
• 9:15 a.m. Larry Purcell, University of Arkansas: Identification of drought tolerant alleles and genotypes using association mapping  

9:45 - 10:15 a.m. Coffee Break | Foyer

Session 4: Abiotic Stresses other than Drought | Chair: Anna Locke, USDA-ARS

• 10:15 a.m. Kent Burkey, USDA-ARS: Improving the ozone tolerance of soybean – next chapter in the Fiskeby story  
• 10:45 a.m. Jason Gillman, USDA-ARS: Multidisciplinary studies on exotic germplasm resistant to heat-induced seed degradation  
• 11:10 a.m. Courtney Leisner, Auburn University: Physiological and transcriptomic responses to abiotic stress in the soybean seed coat  
• 11:35 a.m. Heng Ye, University of Missouri: Genetic diversity, molecular and physiological mechanisms, and breeding for flooding tolerance in soybean

12:00 - 1:00 p.m. Lunch

Session 5: Production Management | Chair: Seth Naeve, University of Minnesota

• 1:00 p.m. Seth Naeve, University of Minnesota: Variation in soybean composition by environment (mostly)  
• 1:30 p.m. Patricio Grassini, University of Nebraska-Lincoln: Accelerating yield gains through analysis of producer data  
• 1:55 p.m. Ignacio Ciampitti, Kansas State University: N fixation and shifts in soybean seed composition  
• 2:20 p.m. Jeremy Ross, University of Arkansas: Herbicide technologies in soybean: from the perspective of a southern agronomist

2:45 - 3:15 p.m. Coffee Break | Foyer

Session 6: High-throughput Phenotyping | Chair: Aaron Lorenz, University of Minnesota

• 3:15 p.m. Katy Rainey, Purdue University: Scalable and effective phenotyping of longitudinal and physiological traits for soybean improvement  
• 3:40 p.m. Danny Singh, Iowa State University: Developing innovations for advancing breeding outcomes  
• 4:05 p.m. Milad Eskandari, University of Guelph: New tools to improve genetic gain in plant breeding: high throughput phenotyping combined with machine learning
4:30 p.m. Austin Dobbels, University of Minnesota: UAS-based phenotyping of iron deficiency chlorosis tolerance and physiological maturity for soybean breeding

5:00 - 6:30 p.m. Social Hour & Poster Session | Foyer & Versailles 2

Wednesday, March 4, 2020 / Room: Versailles 1

Continental Breakfast | 7:00 - 8:00 a.m. | Versailles Foyer
Hosted by the Commercial Soybean Breeders

Session 7: Reports and announcement | Chair: Zenglu Li, University of Georgia

- 8:00 a.m. Luciano Jaureguy, Corteva Agriscience: Announcement of poster winners
- 8:10 a.m. Michelle Graham, USDA-ARS: SoyGEC Report
- 8:25 a.m. Rex Nelson, USDA-ARS: Soybean Genetics Committee report and SoyBase.org update
- 8:55 a.m. Dechun Wang, Michigan State Univ.: Soybean Germplasm Committee report
- 9:10 a.m. From the floor: Recognitions, retirements, and announcements

Session 8: Breeding, Genetics, and Seed Composition | Chair: David Walker, USDA-ARS

- 9:30 a.m. Bo Shen, Corteva Agriscience: Discovery of four high oil genes and development of next generation soybean output traits
- 10:00 a.m. Khalid Meksem, Southern Illinois University: Applications of TILLING by Exom Sequencing to improve soybean seed oil and protein
- 10:30 a.m. Charles An, USDA-ARS: Application of a big-data driven technology platform to discover soybean trait genes, beneficial alleles and germplasm for seed quality improvement

11:00 a.m. Adjourn

Technicians’ Workshop
Date and time: 1:00 p.m., March 2nd - 5:00 p.m., March 4th, 2020
Organizer: Troy Cary
Room: St. Moritz / Bern
Soybean Seed Composition Workshop

Date and time: 1:30 p.m., March 4th - 12:00 p.m., March 5th, 2020
Organizer: Lisa Weaver
Room: Matterhorn

Wednesday, March 4, 2020 1:30 pm – 5:00 pm

1:30 – 1:45 Welcome

1:45 – 2:30 Modifying Soluble Carbohydrates in Soybean Seed for Enhanced Nutritional Energy Meal
Katy Martin Rainey, associate professor, Agronomy, Purdue University

2:30 – 3:15 High Oleic and Low Linolenic Soybean Variety Development
Andrew Scaboo, assistant professor, Plant Sciences, University of Missouri

3:15 – 3:30 break

3:30 – 4:15 Developing High-Yielding Cultivars and Germplasm with Optimum Oil and Protein Content, and Innovative Oil Attributes for the Current Soybean Market
Leah McHale, associate professor, Horticulture & Crop Science, the Ohio State University

4:15 – 5:00 The Broiler Vertical Integrated Supply Chain: Soybean Use and Opportunities
Michael Kidd, professor, Poultry Nutrition, University of Arkansas

Thursday, March 5, 2020  8:00 am – 12:00 pm

8:00 – 8:15 Welcome

8:15 - 9:00 Increasing Genetic Diversity, Yield, and Protein of US Commercial Soybean Germplasm
Brian Diers, professor, Crop Sciences, University of Illinois; Aaron Lorenz, associate professor, Agronomy and Plant Genetics, University of Minnesota

9:00 - 9:45 Development of High Yielding High Oleic/Ultra-Low Linolenic Acid Soybean Varieties That Have 1-3% Protein Above Commodity Soybeans and Represent Relative Maturities of 1 to 5
Bill Rhodes, director, R&D and Kevin Cook, senior director, R&D, Benson Hill

9:45 - 10:00 Break
10:00 –10:45  **Integrative Modeling and Visualization for the Development of in Silico Crops**  
Amy Marshall-Colon, assistant professor, Plant Biology, University of Illinois

10:45 - 11:30  **Discover Sources, Genes, and Develop New Varieties and Germplasm with Improved Meal Protein Utilizing Diversity in Cultivated and Wild Soybeans**  
Rouf Mian, research geneticist, USDA, Soybean and Nitrogen Fixation Unit, NC

**Closing remarks and wrap up**

### Special Meetings

<table>
<thead>
<tr>
<th>Date &amp; Time</th>
<th>Meeting</th>
<th>Contact person</th>
<th>Room</th>
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<tbody>
<tr>
<td><strong>Sun, Mar 1(^{st})</strong></td>
<td>USB project meeting</td>
<td>Zenglu Li</td>
<td>Alpine I</td>
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<td>1:00 pm - 6:00 pm</td>
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<td><strong>Mon, Mar 2(^{nd})</strong></td>
<td>Genomic Prediction/ Selection Workshop</td>
<td>Aaron Lorenz</td>
<td>St. Moritz/ Bern</td>
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<td>8:30 am - 10:00 am</td>
<td>SoyBase Workshop Meeting</td>
<td>Rex Nelson</td>
<td>Alpine II</td>
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<td>8:30 am - 10:00 am</td>
<td>Soybean Germplasm Committee Meeting</td>
<td>Dechun Wang</td>
<td>Alpine I</td>
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<td>10:00 am - 12:00 pm</td>
<td>Soybean Genomics Executive Committee</td>
<td>Michelle Graham</td>
<td>Alpine I</td>
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<td>1:00 pm - 5:00 pm</td>
<td>Technicians’ Workshop</td>
<td>Troy Cary</td>
<td>St. Moritz/ Bern</td>
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<td>5:30 pm - 6:30 pm</td>
<td>Commercial Soybean Breeders’ Business Meeting</td>
<td>Luciano Jaureguy</td>
<td>Alpine I</td>
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<td>7:00 pm - 8:00 pm</td>
<td>Soybean Genetics Committee</td>
<td>David Grant/Rex Nelson</td>
<td>Alpine II</td>
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<td><strong>Tue, Mar 3(^{rd})</strong></td>
<td>Technicians’ Workshop</td>
<td>Troy Cary</td>
<td>St. Moritz/ Bern</td>
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<td>7:00 pm - 8:00 pm</td>
<td>Uniform Regional Testing - South</td>
<td>Anne Gillen</td>
<td>Alpine I</td>
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7:00 pm - 7:30 pm  Uniform Regional Testing - North  Gary L Nowling/Guohong Cai  Alpine II
7:30 pm - 8:00 pm  SCN Regional Testing  Brian Diers  Alpine II

**Wed, Mar 4th**

7:00 am - 8:00 am  Public-Private Southern Breeders Meeting  Tommy Carter  St. Moritz/Bern
11:00 am - 6:00 pm  USB Seed Composition Workshop  Lisa Weaver  Matterhorn

**Thu, Mar 5th**

8:00 am - 12:00 pm  USB Seed Composition Workshop  Lisa Weaver  Matterhorn

**Workshop Organizers**

Zenglu Li, University of Georgia, Athens, GA  
Rouf Mian, USDA-ARS, Raleigh, NC  
Larry Purcell, University of Arkansas, Fayetteville, AR  
Anna Locke, USDA-ARS, Raleigh, NC  
Seth Naeve, University of Minnesota, Minneapolis, MN  
Aaron Lorenz, University of Minnesota, Minneapolis, MN  
David Walker, USDA-ARS, Urbana, IL  
Rex Nelson, USDA-ARS, Ames, IA

**Executive Board of Commercial Soybean Breeders**

Luciano Jaureguy, Corteva Agriscience  
Keith Merrill, Bayer CropScience  
Clint Steketee, Inari  
Heinrich Wohleser, Bayer CropScience  
Raymond Kennett, BASF  
Clem Weidenbenner (advisor), KG AgriProducts
Acknowledgement

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