

USDA NIFA FACT Workshop High Throughput, Field-Based Phenotyping Technologies for the Genomes to Fields (G2F) Initiative

• SUNDAY, JANUARY 28 - TUESDAY, JANUARY 30, 2018 •
 GATEWAY HOTEL AND CONFERENCE CENTER, AMES, IOWA

Workshop Website: www.genomes2fields.org/meetings/nifa-fact-workshop/

SUNDAY, JANUARY 28

Garden Room

- 7:00 p.m. Registration, welcome reception, and poster session
 8:00 p.m. Keynote Speaker: Pat Schnable, Iowa State University
Field-Based Phenotyping: Technologies, Analyses and Community Building

MONDAY, JANUARY 29

Garden Room

- 7:30 a.m. Registration, continental breakfast (South Prairie Room)
 8:00 a.m. Guru Rao, Associate Vice President of Research, Iowa State University
Welcome and Opening Remarks – Opportunities and Challenges in Precision Agriculture
 8:10 a.m. Parag Chitnis, NIFA Deputy Director, Institute of Food Production and Sustainability
NIFA FACT Initiative and Workshop Overview
 8:20 a.m. David Ertl, Technology Commercialization Manager, Iowa Corn Growers Association
The Importance of Genomes to Fields to Corn Growers

Session One: **Data Analysis and Interpretation** (Moderator: Natalia de Leon)

- 8:30 a.m. Kevin Silverstein, UMN International Agroinformatics Alliance (IAA)
Best Practices in Data Collection, Processing and Sharing
 9:00 a.m. Dan Nettleton, Iowa State University, Department of Statistics
Statistical Analysis of Complex Phenotypes Derived from Sequential Images
 9:30 a.m. Break
 10:00 a.m. Matt King, DuPont Pioneer, Bioinformatics Manager
From Satellites to Sequencing: Driving Precision Agriculture through Collaborations and Innovation
 10:30 a.m. Philip Benfey, Duke University
Development of a Root Tracker for Enhanced Breeding
 11:00 a.m. Baskar Ganapathysubramanian, Iowa State University, Mechanical Engineering
Extracting Above Ground Traits from Digital Images: Crowd Sourcing, Machine Learning and High Throughput Computing
 11:30 a.m. Michael Castellano and Sotirios Archontoulis, Iowa State University, Agronomy
Use of Crop Modeling to Explain and Predict Phenotypes

- 12:15 p.m. Lunch with Panel Session – Entrepreneurship in the Ag Sector
South Prairie Room
12:30 – 1:30 pm
Bill Adamowski, ISU Startup Factory
Philip Benfey, Grassroots and High Fidelity Genetics
James Schnable, Data2Bio and Dryland Genetics
Mark White, Prairie Crest Capital
- Session Two: Data Collection** (Moderator: Nathan Springer)
- 1:45 p.m. Duke Pauli, University of Arizona
UAV-related Emerging Technologies
- 2:15 p.m. Liang Dong, Iowa State University, Electrical and Computer Engineering
Microsystems Technology for Agricultural Sensors towards High-Throughput Plant Phenomics
- 2:45 p.m. Lie Tang, Iowa State University, Agricultural and Biosystems Engineering
Field Robotics and 3D Imaging for Plant Phenotyping
- 3:15 p.m. Edgar Spalding, University of Wisconsin – Madison, Department of Botany
Measuring Maize from Seed to Ear by Analyzing Images
- 3:45 p.m. Break
- 4:15 p.m. Discussion
Plans for Deploying New Phenotyping Technologies at G2F Sites and Best Practices for Data Collection, Processing and Sharing
- 5:00 p.m. Panel 1: Collaborators
South Prairie Room
5:00 – 6:30 pm: White paper – break into groups for discussions and reporting
Moderator: Carolyn Lawrence-Dill, Iowa State University
- Panel 2: Graduate Students
North Meadow Room
5:00 – 6:00 pm: What is it like to work in industry?
Brice Floyd, DuPont Pioneer
Ray Riley, Indigo
Ruth Swanson-Wagner, Monsanto
- 6:30 p.m. Dinner followed by poster session (Garden Room)

TUESDAY, JANUARY 30

Garden Room

- 7:30 a.m. Continental breakfast
- Session Three:** (Moderator: Edgar Spalding)
- 8:15 a.m. Jessica Bubert, University of Illinois, Urbana-Champaign (Stephen Moose Lab)
Deployment of High-Throughput Plant Height Mapping System on Genomes to Fields Germplasm
- 8:20 a.m. Matt Baseggio, Cornell University (Michael Gore Lab)
Nutritional Genomics for Sweet Corn: Improving Vitamin Levels for Human Health and Nutrition
- 8:30 a.m. Jinlyung Choi, Iowa State University, Agricultural and Biosystems Engineering (Adina Howe Lab)
The Dirt on Soil Microbiomes
- 9:00 a.m. Lizhi Wang, Iowa State University, Industrial and Manufacturing Systems Engineering
Improved Strategies for Genomic Selection
- 9:30 a.m. Reconvene Group Discussions with Reporting – manuscript management
Moderator: Carolyn Lawrence-Dill
- 11:30 a.m. Workshop closing remarks: Pat Schnable
- 1:00 p.m. DuPont Pioneer visit (for G2F collaborators and students)
Plant genetics and phenotyping facility tour and discussion led by Marion Limberger and Jason Rauscher
- 3:30 p.m. Depart

Note: Conference talks will be broadcast live and recorded for future access (with speaker permission).

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