A message from
ASABE President Stephen Searcy

Welcome to the 2018 Annual International Meeting of the American Society of Agricultural and Biological Engineers in Detroit, Michigan. I extend special welcome to first time participants, international attendees and pre-professionals. I am confident you will find the meeting a good investment of your time.

The meeting program has a wide array of opportunities for you to gain knowledge in the technical sessions, make new or meet old friends in the social events, contribute to ongoing programming efforts in technical communities, and to celebrate the accomplishments of peers in the awards ceremonies. I especially recommend the keynote address by Margaret Catley-Carlson on Monday morning and the following panel discussion on producing more food with less water. Whatever your preferred activities, there is much to be gained by active participation. When you see an interesting group meeting or event in the program, go! Nearly all activities are open to all interested participants. You will gain more value from the meeting by actively participating.

I want to thank the Michigan Section members, particularly the Michigan State University staff and students, for their efforts to host an outstanding meeting. They are working to enhance the experience for all participants. Thank them for their efforts when you have the chance.

As you review the many diverse topics being discussed in this meeting, you will see that ASABE members and AIM participants are addressing the critical issues facing our planet: feeding, clothing and sheltering the world’s population in a sustainable manner. I urge you to contribute to these efforts by engaging actively. Enjoy the meeting!

ASABE MEETING & CITY APPS

Download the free LOOPD Events App at the App Store for access to:

• Program, Events and Tours
• Connect with Attendees
• Create a Personal Schedule

ACCESS CODE: 762987
USERNAME = Your Email
PASSWORD = Last Name (case sensitive)

Download the free COBO CENTER App at the App Store to use the following features:

• Interactive Visitor Guide of the Area for Hotels and Restaurants
• Interactive Directions
• Cobo Center Floor Plans

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ASABE Code of Conduct: Harassment & Safety Policy

ASABE is dedicated to providing a safe, hospitable, and productive environment for everyone attending our events, regardless of ethnicity, religion, disability, physical appearance, gender, age, or sexual orientation. All participants, attendees, ASABE staff, and vendors shall be treated with respect and consideration, valuing a diversity of views and opinions, in a considerate, respectful, and collaborative manner. It is important to remember that a community where people feel uncomfortable or threatened is neither healthy nor productive. Accordingly, ASABE prohibits intimidating, threatening, or harassing conduct during our meetings and conferences.

This policy applies to speakers, staff, volunteers, guests, students, contractors, exhibitors, and attendees participating in the sessions, tours, social events, and other activities of ASABE. Participants violating these rules may be sanctioned or expelled from the meeting or conference, without warning or refund, at the discretion of ASABE leadership.

Harassment of ASABE participants will not be tolerated in any form. Harassment includes offensive gestures or verbal comments related to ethnicity, religion, disability, physical appearance, gender, age, or sexual orientation in public spaces, deliberate intimidation, stalking, following, harassing photography or recording, sustained disruption of talks or other events, inappropriate physical contact, circulation of written or graphic material that denigrates or shows hostility or aversion, and unwelcome attention. Participants asked to stop any harassing behavior are expected to comply immediately and without retaliation.

If a participant or exhibitor engages in harassing behavior, ASABE leadership may take any action they deem appropriate, ranging from a simple warning to the offender to expulsion from this and future meetings and conferences. If you are being harassed, notice that someone else is being harassed, or have any other concerns, please do not hesitate to contact ASABE staff who can work with appropriate ASABE leadership to resolve the situation. Harassment and other code of conduct violations reduce the value of our event for everyone. Confidentiality will be honored to the highest extent permitted without compromising the rights of others.

ASABE staff will be happy to help participants contact convention center/hotel/venue security or local law enforcement, and otherwise assist those experiencing harassment, to enable them to feel safe for the duration of the meeting or conference. Anyone experiencing or witnessing behavior that constitutes an immediate or serious threat to public safety at our meetings and conferences in the convention center is advised to locate a house phone and ask for security. We value your attendance, and want to make your experience as productive and professionally stimulating as possible.

Adopted 4/22/2016
WHAT TO ATTEND
The schedule for the 2018 ASABE Annual International Meeting includes more than 186 general and concurrent sessions, along with over 200 meetings presented by ASABE and its councils and committees. Attendees are free to attend any sessions. Attendees do not have to be part of a specific community to attend an open session.

All attendees are encouraged to attend the Sunday Welcome Reception, the opening General Session and Keynote address on Monday morning and the Awards Luncheon on Wednesday.

A meeting orientation session is scheduled on Sunday, July 29 at 11:00AM at Riverfront Salon West for those unfamiliar with the ASABE Annual International Meeting.

PROGRAM MATERIALS
Annual Meeting attendees may choose from a range of resources to navigate the meeting, including:

Final Program Booklet
This traditional printed guide to the meeting, which you are reading now, is organized by date and time for all events, followed by the technical program, committee meetings and list of exhibitors. It includes a brief description of each session, and speaker names and titles. It also contains venue maps and information on sponsors and exhibitors.

RECOMMENDED DRESS
Wear comfortable shoes! Attire at the meeting is mixed, with primarily business casual. Business attire is appropriate for meetings and banquets. A light jacket is recommended even when indoors as convention center and hotel meeting space can be chilly.

NAME BADGES
Please wear your name badge at all times when you are attending functions within the conference center. This badge informs us that you are a registered conference attendee and it will allow access into meetings, the exhibit hall and meal functions.

SPOUSE/GUEST LOUNGE
Location: Riverfront Salon West
Hours: Monday & Tuesday- 8:00AM-5:00PM
         Wednesday - 8:00AM-12:30PM
With a full meeting registration, a Spouse/Guest will receive a name badge, and may enjoy the comfort and convenience of the Spouse/Guest Lounge located at Riverfront Salon West.

Spouse/Guest Registration includes the Welcome Reception, Spouse/Guest Brunch and Wednesday Awards Lunch.

KIDS CORNER
This special place is designed for the youngest Annual Meeting attendees. Kids Corner is a parent and child resting area. Kids Corner is available Monday thru Wednesday during show hours and is located in room 341 at the Cobo Center. An adult must accompany a child at all times.

CHILD CARE SERVICE
Please check with your hotel for local companies that provide in-room childcare services.

ACCESSIBILITY AND DIETARY NEEDS
If you have needs that you did not include on your registration form, we usually can provide special dietary meal requests if given advance notice. Each dietary request will be handled on a case-by-case basis. For accessibility assistance, we respectfully request as much advance notice as possible.

ELECTRONIC DEVICES
As a courtesy to your colleagues, please turn off or silence all electronic devices during the session, workshops and plenary addresses.

PHOTOGRAPHS/VIDEO TAPING
Photographs and video taping or recording of presentations is strictly prohibited. Persons failing to comply will be asked to leave the meeting room.
ICLASS ASABE SPRAY TECHNOLOGY AND HORTICULTURE TOUR

Thursday, July 26 thru Saturday, July 28
Sponsored by WinField United and MS 23/6
Location: Off-site

International Congress of Liquid Atomization Spray Systems (ICLASS) ends on Thursday, July 26 in Chicago, then ASABE AIM begins July 29. This two-day tour provides transport from Chicago ICLASS meeting to ASABE AIM, and a good opportunity to see some of the diverse Great Lakes agriculture and horticulture of the Michiana region with a focus on spray technology. Tour will arrange for Hotel in Chicago Thursday night post-ICLASS, departing first thing Friday AM with stops at WinField United Fair Oaks Farms, AgTec Sprayers/ Superb Horticulture, and several cutting-edge vineyard and orchard operations. There might be a winery or two, and Saturday night we’ll overnight in a Lake Michigan resort town to take in some coast culture on one of the longest best freshwater beaches in the world. Tour concludes Saturday evening July 28 at the Marriott Hotel in Detroit, home of the 2018 ASABE AIM. Visit https://WinField.cvent.com/ICLASS-ASABETour for registration and complete tour information. Space will be limited.

SUNDAY, JULY 29

E#2

YPC 5K/RUN/1 MILE WALK

Sunday, July 29 – 7:00AM-8:30AM
LOCATION: Meet near ASABE Registration Desk

Join us for a beautiful 5k run or 1 mile walk along the Detroit River. That is 2,000 steps if you’re tracking that. The route will leave the Cobo Event Center and follow the river walk. We will meet at the registration desk at 7 am to walk to the starting area. The running/walking will start at 7:30am from the Cobo Event Center. Every participant will receive a piece of ASABE/YPC swag. We look forward to you joining in on the fun and fitness. This event is sponsored by the YPC. Pre-registration is required.

COST: $20.00

E#3

GALE HOLLOWAY MEMORIAL GOLF OUTING TO SUPPORT THE ASABE FOUNDATION

Sunday, July 29 – 7:30AM-1:00PM
LOCATION: Meet near ASABE Registration Desk

Join us for a relaxed golf outing at a local course and help support the efforts of the ASABE Foundation to promote our society. All levels of golfers are welcome-this will be a four-person scramble format (all play from the best shot). Green fee, cart and lunch included in price. Additional fees for club rental.

COST: $110.00

THURSDAY, JULY 26

CPD #1

ANATOMY OF AN OPEN SOURCE APP: LEARN TO BUILD AN APP AND RELEASE OPEN SOURCE
CANCELLED

SATURDAY, JULY 28

E#1

YPC DINNER SOCIAL

Saturday, July 28 – 7:00PM-9:00PM
Location: Meet near ASABE Registration Desk

What better way to kick off AIM than with the Young Professional Community’s Social? Come join us for dinner, games, and bowling at the Punch Bowl Social in downtown Detroit. There is plenty to do at this fun place! The social begins at 7pm. Meet at the ASABE registration desk and we will make the 10 minute walk together! All undergraduate, graduate students, and members under 35 years old are invited to this event. Bowling, food and drink available for purchase.

COST: Preregistration is required

ASABE SILENT AUCTION & PICK-A-PRIZE

Opening Reception through Tuesday
LOCATION: Atrium

Don’t miss the fun! Place a bid on unique items and take a chance to win a high-value raffle prize, all in support of YOUR Foundation. Proceeds benefit the KEYS Fund for Student Development and Humanitarian Outreach.

CPD #2

“WEIGHT OF EVIDENCE”-WATERSHED MODEL CALIBRATION WITH HYDROLOGIC SIMULATION PROGRAM-FORTRAN (HSPF)

Sunday, July 29 – 8:00AM-5:00PM
CANCELLED
CPD #8
PROFESSIONAL ENGINEERING EXAM QUESTION WRITING SESSION
Sunday, July 29 – 8:00AM-5:00PM
LOCATION: 338
Sponsored by EOPD-414
LEARNING OBJECTIVES: Licensed Professional Engineers are welcome to participate in a day-long effort to write and evaluate agricultural and biological engineering Professional Examination test questions. Persons attending must be licensed professional engineers and provide their PE number(s) to participate.
COST: No Charge. Preregistration is required.

CPD #3
DESIGNING AGRICULTURAL APPLICATIONS FOR HANDHELD MOBILE DEVICES
Sunday, July 29 – 9:00AM-12:00PM
LOCATION: 142A
Sponsored by ITSC-254
Instructor: Mario R. Mondaca Duarte, University of Wisconsin, Madison, WI
LEVEL OF DIFFICULTY: Entry
TARGET AUDIENCE: Engineers and researchers interested in starting to develop App for handheld mobile devices.
LEARNING OBJECTIVES: (a) Understand the basic App development process (b) Become familiar with the tools required for App development (c) Develop a simple App.
COST: $120.00

CPD #4
GRADUATE STUDENT INVOLVEMENT
Sunday, July 29 – 10:00AM-12:00PM
LOCATION: 142B
Sponsored by YPC
Instructor: Qualla Jo Ketchum, Virginia Tech, Christianburg, VA
LEVEL OF DIFFICULTY: Entry
BENEFITS: This course will assist professionals and graduate students alike in developing or improving on a professional and dynamic resume or curriculum vitae. This is an interactive workshop so please bring a current copy of your CV/resume as well as questions and we will work through them together. During this course, we will also have professionals on hand from industry and academia to answer questions and critique updated resumes so that you are more prepared for that next stage in your career.
COST: $35.00

ASABE BOARD OF TRUSTEES
Sunday, July 29 – 10:30AM-1:30PM
Location: 331A

AIM MEETING ORIENTATION
Sunday, July 29 – 11:00AM-11:30AM
LOCATION: Riverfront Salon West
Join YPC/IPC for an orientation on the Annual International Meeting. What should you do, who should you talk to, and what should you take away from the meeting? Also, take this opportunity to learn about the Young Professional Community and International Preprofessional Community. This is a great event for the first time attendees!

CAREER FAIR
Monday, July 30
9:30AM-12:00PM
Location: 260

POSTER INFORMATION
Size of poster boards: 44.5 inch wide by 44.5 inch deep
Mount poster using push pins.
Posters must be removed no later than 15 minutes after the session.
T#1

DETROIT UP CLOSE & PERSONAL: A CITY TOUR
Sunday, July 29 – 12:45PM-3:45PM
LOCATION: Tours depart at riverfront entrance of Cobo Center on Atwater Street

This fun, informative and interactive tour provides an overview of the highlights, architecture, landmarks, history, and recent revitalization in Detroit. Learn information about the buildings – both historic, renovated, and replaced – murals and public art, and hear prohibition stories! The tour includes Downtown, the International Riverwalk, Campus Martius, Woodward Avenue, Brush Park neighborhood, and Midtown/Cass Corridor, with stops along the way. Tour includes deluxe motor coach transportation, professional guide and all stops.
COST: $40.00

ABET OUTCOMES ASSESSMENT AND CRITERION UPDATES
Sunday, July 29 – 1:30PM 3:30PM
LOCATION: 140E

Moderator: Sonia Maassel Jacobsen, University of Minnesota, Roseville, MN

This session will cover the assessment of program student outcomes including the development of rubrics and how to use the capstone course for multiple outcomes assessment. Transitioning from the current ABET EAC Criteria 3 and 5 to the new elements of these criterion will also be discussed. - panel

YPC 5K / RUN / 1 MILE WALK
Sunday, July 29
7:00AM-8:30AM
Meet near ASABE Registration

CPD #5
INTRODUCTION TO DATA SCIENCE IN AGRICULTURE WITH PYTHON
Sunday, July 29 – 2:00PM-4:00PM
LOCATION: 142B
Sponsored by YPC

Instructors: Gurdeep Singh, The Climate Corp, St Louis, MO
Sushant Mehan, Purdue University, West Lafayette, IN

LEVEL OF DIFFICULTY: Entry
TARGET AUDIENCE: University students, researchers, and other professionals interested in using data science for generating insights.
LEARNING OBJECTIVES: (a) Understand the basics of data science and its application with python (b) Get familiar with python in context to machine learning (c) Build a simple machine learning model
BENEFITS: Implementing data science skills in engineering and research can potentially improve learning outcomes.
COST: $45.00

ASABE COUNCILS
Sunday, July 29 – 1:30PM-3:30PM
PUBLICATIONS COUNCIL
LOCATION: 331A
MEETINGS COUNCIL
LOCATION: 331B
STANDARDS COUNCIL
LOCATION: 331C
MEMBERSHIP COUNCIL
LOCATION: 332
CPD #6
A CRASH COURSE FOR SUCCESS IN WRITING, PRESENTING, AND REVIEWING PEER-REVIEWED CONFERENCE ABSTRACTS, PAPERS AND PRESENTATIONS
Sunday, July 29 – 2:00PM-4:00PM
LOCATION: 142A
Sponsored by Meetings Council
Instructor(s): Dee Jepsen, Ohio State University, Columbus, OH
Gretchen Mosher, Iowa State University, Ames, IA
Sindhu Sankaran, Washington State University, Pullman, WA
Debabrata Sahoo, Woolpert Inc, West Columbia, SC
LEVEL OF DIFFICULTY: Entry
TARGET AUDIENCE: Students, young professionals, entry level researchers, and anyone looking to improve their writing, presentation, and reviewing skills for conference venues.
LEARNING OBJECTIVES: The course will be divided into three parts to help participants understand the peer-reviewed process common with most professional conferences. Learning objectives will focus on three areas: Writing successful abstracts for presentation, presenting an engaging conference presentation for a short time slot in a conference program, and tips on providing a constructive peer review for abstracts and papers.
DESCRIPTION: Presenting at professional conferences provide opportunity for professional development at all levels of a career. At early stages, conferences offer opportunity for research to be disseminated to a broad spectrum of individuals. Preparing a meaningful abstract, technical paper, and presentation requires planning and adherence to a structured protocol. There are benefits along the way to receive feedback from conference reviewers and attendees to help improve your writing and presenting styles. Later, during mid and late career seasons, persons are needed to serve on reviewer panels and mentor junior faculty and students. At this time, skills are needed to provide an effective, constructive review of colleagues’ papers. Reviewers have a responsibility to their peers that will later add rigor and value to the overall success of the conference. This session will provide tips on developing successful papers and presentations for conference venues; it will also offer suggestions on reviewing conference abstracts and research manuscripts. These skills will add value to ASABE and other professional conferences.
COST: $20.00

FOUNTAIN WARS PRESENTATION JUDGING
Sunday, July 29 – 2:30PM-4:30PM
LOCATION: 140B
Are you interested in the preparation and creative behind the scenes efforts of the different Fountain Wars teams? Come listen to the oral presentation phase of the competition and get a heads up on what is going to be displayed at the building-testing phase that takes place on Monday.

COMMITTEE LEADERSHIP TRAINING
Sunday, July 29 – 3:00PM-4:30PM
LOCATION: 140G
What to expect as part of the leadership team of an ASABE committee. Discussion on Bylaws, Agendas, Rosters and general expectations as well as question and answer.

ALPHA EPSILON ANNUAL MEETING
Sunday, July 29 – 4:00PM-5:30PM
LOCATION: 331B
Alpha Epsilon will be having their annual meeting again! Each chapter is encouraged to have at least one member attend. We will have door prizes!

American Society of Agricultural and Biological Engineers

WELCOME RECEPTION
Sunday, July 29
4:30PM-6:00PM
Location: Atrium
All meeting registrants are invited to attend our welcome reception. This is a good time to network with other attendees and to make further plans for dinner after the reception. The Detroit Visitors Bureau will have a representative available to assist you in making your dining reservations.
INTERNATIONAL PREPROFESSIONAL COMMUNITY (IPC) BUSINESS MEETING AND SOCIAL
Sunday, July 29 – 5:30PM-7:00PM
LOCATION: 142C
This is the main event of the International Preprofessional Community at AIM 2018. The current IPC officers will focus on networking with other students, electing new IPC officers, and briefly reviewing what sessions IPC members should plan to attend to make the most of the conference. Attendance to this meeting is expected for all students and especially those in undergraduate competitions. Come represent your school and preprofessional chapter! All students are highly encourage to come to this function. All pre-professional are invited to attend our social which follows our business meeting. This is a good time to network with other attendees and to make further plans for dinner after the reception. Refreshments will be served. Registration is required but there is no charge for this event.
COST: Preregistration is required

E#25
ALUMNI RECEPTION OF COLLEGE OF BIOSYSTEMS ENGINEERING AND FOOD SCIENCE, ZHEJIANG UNIVERSITY
Sunday, July 29 – 6:30PM-10:00PM
LOCATION: Off-site
Alumni and visiting professors of College of Biosystems Engineering and Food Science, Zhejiang University are invited to enjoy a reception at a local restaurant and catch up with old friends. Please send email to xwang2@illinois.edu by July 27th if you plan to attend.
COST: No Charge for Zhejiang Alumni
$30.00 guests

OKLAHOMA STATE UNIVERSITY ALUMNI AND FRIENDS DINNER
Sunday, July 29 – 6:30PM-9:00PM
LOCATION: Off-site
Come join the Oklahoma State University Alumni and Friends Dinner to be held Sunday, July 29 at 6:30PM. The dinner will be held at “The Detroit Seafood Market” restaurant located at 1435 Randolph Street. The restaurant is within walking distance of the Renaissance Center. If you would like to walk as a group to the restaurant, please meet in the lobby of the Renaissance Center at 6:00PM Sunday. There will be a set menu of $25.00 with a variety of 3-4 entrees to choose from for dinner. Come and see old friends and make new ones! Hope to see you there! GO POKES!!!

E#4
WOMEN IN ASABE SPEED NETWORKING
Sunday, July 29 – 6:30PM-7:30PM
LOCATION: 141
Would you like to visit with other women who participate in the annual meeting and perhaps share some of your same interests? This is the opportunity for you! Participants are divided into mentors and mentees. When the cowbell rings, mentees move to another table to meet other women while the mentors stay at a table to host and encourage conversation. The hour allows enough time to sit at 7-9 tables; arrive on time to maximize the benefit.
COST: Attendee: preregistration is required;
Mentor: preregistration is required

Silent Auction & Raffle
in the Exhibit Hall
Fun begins at Sunday’s Welcome Reception!
MONDAY, JULY 30

E#5
PRAYER BREAKFAST
Monday, July 30 – 6:30AM-8:00AM
LOCATION: 142A
The Fellowship of Christian Agricultural and Biological Engineers invites all meeting registrants, spouses and guests to the interdenominational prayer breakfast. The continental breakfast will begin promptly at 6:30AM and conclude at 8:00AM. Pre-registration is required.
COST: $15.00

E#24
MSU ALUMNI BREAKFAST
Monday, July 30 – 6:30AM-7:45AM
LOCATION: 140G
MSU Alumni please join Michigan State University Faculty and Students for a continental breakfast and fellowship hour to kick-off the 2018 AIM meeting. Go Green!!
COST: $10.00

E#6
CORNELL FRIENDS, FAMILY AND ALUMNI BREAKFAST
Monday, July 30 – 7:00AM-8:00AM
LOCATION: 142B
An informal gathering of Cornell friends, family and alumni over coffee and breakfast. Alumni and past associates are encouraged to attend.
COST: $10.00

GUIDE TO PROFESSIONAL LICENSURE
Monday, July 30 – 7:00AM-8:00AM
LOCATION: 140F
Studying for a Professional Licensure Exam? Or just have questions about which Professional Licensure Exam is right for you? Come join us to ask our panel of experts questions and get answers on questions like: why take a licensure exam? which exam is right for you? what is covered on a licensure exam? and how can ASABE help you prepare for the exam?

E#7
MEET AND GREET BREAKFAST WITH DEPARTMENT CHAIRS AND SENIOR FACULTY
Monday, July 30 – 7:00AM-8:00AM
LOCATION: 141
This networking event is meant to connect late-career graduate students with department chairs/heads as well as senior faculty members to discuss opportunities for future research and/or faculty position openings. This is a YPC sponsored event, open to all graduate students as well as interested faculty members.
COST: $15.00 Faculty
$10.00 Student

ASABE GENERAL SESSION / RECOGNITIONS / KEYNOTE SPEAKER
Monday, July 30 – 8:00AM-9:30AM
LOCATION: Grand Ballroom B
ASABE President Stephen Searcy welcomes each of you to the 2018 ASABE Annual International Meeting. Our Keynote Speaker is Margaret Catley-Carlson, Patron and Past Chair of the Global Water Partnership.

The following awards will be presented at this General Session: ITSC Paper Award; Educational Aids Blue Ribbons; Outstanding Reviewer; Outstanding Associate Editors; Conference Recognitions; Superior Paper; Standard Development.

Keynote Speaker:
Margaret Catley-Carlson
Ms. Catley-Carlson has ten honorary degrees and is an Officer of the Order of Canada.
Special Session:

WATER SECURITY PANEL DISCUSSION

PRODUCING MORE FOOD WITH LESS WATER: DOES TECHNOLOGY, MANAGEMENT, OR POLICY PROVIDE THE BEST BANG FOR OUR BUCK? – PANEL DISCUSSION

Monday, July 30 – 9:30AM-10:30AM

LOCATION: Grand Ballroom B

Sponsored by E-2050

Moderator: Sherry Hunt, PhD, Research Leader for USDA-ARS Hydraulic Engineering Research Unit, Stillwater, OK

ASABE is dedicated to the advancement of engineering applicable to agricultural, food, and biological systems. ASABE members work to develop efficient and environmentally sensitive methods to produce food, fiber, timber, and renewable energy sources for an ever-increasing world population. The U.S. and other world leaders are challenged everyday with producing more food with less water. Droughts occurring in different parts of the world not only impact our water availability, but also affect our water quality as soils become vulnerable to erosion causing water contamination. In addition, floods are just as devastating, affecting everything from agricultural production and processing to transporting goods to the consumer. Water is at the center of economic prosperity regardless of where you are located in the world. So how are we equipped to handle these challenges laid before us? Are there improved methods for harnessing excess water for clean and safe reuse or recharge of our aquifers? Does technology, management, or policy provide the best bang for our buck when it comes to producing more food with less water? This panel discussion is intended explore these questions and much more.

Panelists include:

Margaret Catley-Carlson, Vice Chair of the Canadian Water Network Board and patron and past chair of the Global Water Partnership. She is actively involved in supporting improved water resource management and the twin issues of agricultural productivity and rural development.

Ed Barnes, PhD., Senior Director of Agricultural and Environmental Research, Cotton, Inc.

Indrajeet Chaubey, PhD., Associate Dean and Director of International Programs in Agriculture, Purdue University and Professor, Dept of Agricultural and Biological Engineering and Dept of Earth Atmospheric and Planetary Sciences, Purdue University

Steve Evett, PhD., Soil Scientist at the USDA-ARS Soil and Water Management Research Unit

ASABE CAREER FAIR

Monday, July 30 – 9:30AM-12:00PM

LOCATION: 260

The Career Fair is just one of the many highlights of the ASABE Annual International Meeting. It is an outstanding networking opportunity that allows interested individuals to connect with the Fortune 500 companies, agricultural and bio-based businesses, bio-research companies and major land grant universities looking for qualified candidates. The ASABE Career Fair provides an opportunity for employee and potential employees to come together informally and share information. Academia will also be represented with opportunities at the masters and doctoral level. Employers register their job positions at the registration desk and receive an interview table number. These openings are posted with the table number located near the ASABE registration desk for review. Prospective employees are invited to seek out employers of interest and exchange information.

E#8

SPOUSE/GUEST LUNCH

CAMPUS MARTIUS PARK

Monday, July 30 – 9:30AM-1:00PM

LOCATION: Tour departs water entrance of Cobo Center on Atwater Street

Gather at the Cobo Center for an introduction to Detroit with a discussion of what makes Detroit a unique and interesting place to visit. Small groups will then make their way to one of the top new restaurants in the city, while guides point out highlights along the way and orient you to the city. You may see locations you want to explore in more detail on your own, places to relax, and some great eating establishments to note for a visit during the rest of your stay. We will make our way to Campus Martius Park – the very center of Detroit. Here we will enjoy a festive luncheon at the Parc which specializes in "refined Detroit cuisine" and has impressed diners since it opened. The chic interior is highlighted by panoramic windows for a perfect view of Detroit.

Includes: Guides and seated 3-course lunch. Note that we plan a leisurely walk with guides for the 5 blocks from Cobo to Parc, however please let us know if you require transportation.

COST: Included in Spouse/Guest Registration

Extra tickets $55.00
Session #110
CURRENT ACHIEVEMENTS AND NEW R&D TRENDS IN RENEWABLE ENERGY RESOURCES AND TECHNOLOGIES – INVITED SPEAKERS
Monday, July 30 – 9:30AM-12:00PM
LOCATION: 142C
Sponsored by ES-210
Moderator: Lin Wei, South Dakota State University, Brookings, SD

Overview achievements and improvements (e.g. efficiency, cost) of current renewable energy resources and technologies including solar, wind, geothermal, hydropower, and biopower; provide perspectives of new R&D trends of these technologies, policy, market and their impact on agricultural production sustainability, rural economy and environmental protection in the coming decades.

Time | Title/Author
--- | ---
9:30AM | Introduction
James Dooley, Forest Concepts LLC, Auburn, Washington
9:55AM | Microwave-assisted Gasification of Solid Wastes for Electricity Generation
Roger Ruan, University of Minnesota, St Paul, Minnesota
10:15AM | Integration of Solar Energy for Thermochemical Conversion Processes
Sushil Adhikari, Auburn University, Auburn, AL
10:35AM | BREAK
10:45AM | Process Optimization of Campus Hybrid Solar Power System
Idowu Adewumi, Federal College of Agriculture, Ibadan, Nigeria
11:05AM | Renewable Energy Sustainability and Safety Indicators for Selected Greenhouse Production Facilities in North America
Jaime Thissen, University of Illinois Urbana-Champaign, Urbana, Illinois
11:25AM | Optimizing the Use of Renewable Energy Systems on Irish Dairy Farms
Michael Breen, Cork Institute of Technology, Millstreet Town, Cork, Ireland
11:45AM | Discussion

Session #122
TRANSFER OF CONCEPT ON PRECISION AGRICULTURE FOR SUSTAINABLE GLOBAL CROP PRODUCTION – PANEL DISCUSSION
Monday, July 30 – 9:30AM-12:00PM
LOCATION: 354
Sponsored by MS-54, E-2050
Moderator: Ganesh C. Bora, Mississippi State University, Mississippi State, MS

Transfer of concept, not transfer of technology, is key to successful global adaptation of precision agricultural technology to optimize resources for sustainable crop production. When the concept works for the particular crop or in a region, the technology can be developed locally.

Panelists include:
Dr. John Schueller of University of Florida
Dr. Yubin Lan of South China
Dr. Dharmendra Saraswat, of Purdue University
Dr. Michael Ngadi of McGill University
Dr. Akindele Folarin Alonge of Uyo Nigeria

Session #123
NATURAL RESOURCES & ENVIRONMENTAL SYSTEMS DISTINGUISHED LECTURE – INVITED SPEAKERS
Monday, July 30 – 10:30AM-12:00PM
LOCATION: Grand Ballroom B

Agricultural and biological engineers play a key role in addressing water security and water quality issues through research, teaching, and extension efforts. In this invited session, award-winning leaders from the NRES community offer their perspectives on the challenges we, as a society, face. These speakers also seek to inspire us to develop sustainable solutions those challenges.

Time | Paper # | Title/Author
--- | --- | ---
10:30AM | Introduction | Kenneth Stone, USDA-ARS, Florence, SC United States
10:30AM | 1801861 | Opportunities and Advancements in Precision Irrigation
11:00AM | 1801860 | Water Quality “The Reality Show”
Kati Migliaccio, University of Florida, Gainesville, Florida United States
11:30AM | 1801898 | Dimensions of Animal Agriculture at the Nexus: Food, Energy, Water, Soils, a Cow Pie at a Time
Daniel Andersen, Iowa State University, Ames, Iowa United States

Career Fair
Monday, July 30
9:30AM-12:00PM
Room 260
See poster board near registration for job listings.
BOYD-SCOTT GRADUATE RESEARCH AWARD

Monday, July 30 – 12:00PM-2:30PM
LOCATION: 250B
The Graduate Student Research Award (GSRA) Competition sets out to recognize excellence in the conduct and presentation of agricultural and biological engineering research carried out by graduate student members. The competition is held in two parts: a written competition and an oral presentation for the top three finalists in the M.S. and Ph.D. categories, which is held at the ASABE Annual International Meeting. Winners will be recognized at the AEM/ASABE Student Awards Breakfast on Wednesday.

T#2
LOCAL AGRICULTURE TOUR: COMPOST, VERTICAL HYDROPONICS, AND MICRO-DISTILLERY

Monday, July 30 – 12:30PM-5:30PM
LOCATION: Tours depart water entrance of Cobo Center on Atwater Street
Tours depart from the riverfront entrance of Cobo Center on Atwater Street. Please arrive 15 minutes prior to departure. Join the YPC in exploring downtown Detroit by touring the year round vertical farming system found at Artesian Farms and the local established spirit production at Two James Spirits Micro-Distillery. All ages welcome.
COST: $30.00

FOUNTAIN WARS COMPETITION

Monday, July 30 – 1:00PM-8:00PM
LOCATION: Cobo Square
Fountain Wars is a competition aimed at students in their sophomore and junior years of study. It provides students with hands on experience in engineering design and most importantly the students have a great time. Teams are given two and a half hours to build a fountain that completes two technical tasks and provides an aesthetic display.
Team check-in and Build 1:00PM-5:00PM
Team test / Adjustment in Fountain and Competition 5:00-8:00PM

PAST PRESIDENTS ROUNDTABLE

Monday, July 30 – 2:30PM-3:30PM
LOCATION: 259

Session #137
SOLUTIONS TO AGRICULTURAL WATER SUSTAINABILITY AND SECURITY IN INDIA AND OTHER DEVELOPING COUNTRIES – INVITED SPEAKERS

Monday, July 30 – 2:30PM-5:00PM
LOCATION: 140E
Moderator: Vivek Sharma, University of Wyoming, Powell, WY
Sponsored by AABFEIO
Efficient management of agricultural water resources is vital to agricultural productivity worldwide, especially in India, which is one of the most irrigated country in the world. This session will specifically focus on agricultural water sustainability and security issue in terms of water quantity and quality in India and other developing countries. Invited speakers will highlight the solution to agricultural water sustainability and security problems.

Target Audience: AABFEIO and ASABE members with interest in learning major agricultural water management challenges in India and other developing countries.

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper #</th>
<th>Title/Author</th>
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<tbody>
<tr>
<td>2:30PM</td>
<td></td>
<td>Introduction</td>
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<tr>
<td>2:35PM</td>
<td></td>
<td>Water Resources is the Weakest Link to Achieve Food Security: An Agricultural and Biological Engineering Perspective</td>
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<tr>
<td>Dr. Indrajeet Chaubey, Associate Dean and Director of International Programs in Agriculture; Professor, Dept of Agricultural and Biological Engineering; Professor, Dept of Earth, Atmospheric and Planetary Sciences, Purdue University, West Lafayette, IN</td>
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<tr>
<td>3:05PM</td>
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<td>Improving Water Management, Agricultural Production and Food Security in Drought-Prone Areas</td>
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<td>Dr. Christopher Neale, Director of Research, Robert B Daugherty Water for Food Global Institute at the University of Nebraska, Lincoln, NE</td>
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<td>3:35PM</td>
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<td>Role of Government Policies in Meeting Water Security Needs of India in 2050</td>
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<td>Dr. Rameshwar Kanwar, Dept of Agricultural and Biological Systems Engineering, Iowa State University, Ames, IA</td>
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<td>4:15PM</td>
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<td>Safe and Responsible Use of Wastewater in Agriculture</td>
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<td>Dr. Shiv O. Prasher, Distinguished James McGill Professor, Dept of Bioresource Engineering, McGill University, Quebec Canada</td>
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<td>4:40PM</td>
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<td>Panel Discussion and Questions</td>
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</tbody>
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2018 Fountain Wars Competition

2017 Fountain Wars Competitor

**Sunday, July 29th**
Location: Room 140B
2:30pm-4:30pm—Fountain Wars Oral Presentations

**Monday, July 30th**
Location: Cobo Square
1:00pm-5:00pm—Team Check-in and Build
5:00pm-8:00pm—Team Test/Adjustment and Competition

Many teams will compete, but there will only be one winner!
The competition is open for all to view. Come root for your team to win!

Team list as of June 21, 2018

University of Nebraska
North Carolina State University
Kansas State University

Iowa State University, Team 1
Iowa State University, Team 2
Oklahoma State University

University of Florida
Session #138

APPROPRIATE-SCALE MECHANIZATION FOR GLOBAL FOOD SECURITY – INVITED SPEAKERS

Monday, July 30 – 2:30PM-5:00PM

LOCATION: 140F

Moderator: Ajit Srivastava, Michigan State University, East Lansing, Michigan

It is expected that global food production needs to double by the year 2030 due to population growth and diet transformation. Nearly 80% of 500 million farmers in the world are classified as small-holder farmers holding less than 2 ha. To increase expected food production, small-holders must become more productive. Agricultural mechanization is critical to increasing farm productivity. Therefore, it is imperative that appropriate-scale mechanization be developed and adopted by these farmers to meet production targets. This session provides a platform for researchers to share emerging technologies suitable for small-holder farmers.

Time | Paper # | Title/Author
--- | --- | ---
2:30PM | Introduction | 
2:35PM | 1801837 | Attributes of Appropriate-Scale Mechanization
Alan Hansen, University of Illinois, Urbana, Illinois United States (Presenter: Alan Hansen) (Alan Hansen)

2:50PM | Taking a Participatory Farming Systems Approach to Mechanizing Maize Production in Burkina Faso
Tim Harrigan, MSU, East Lansing, Michigan United States (Presenter: Tim Harrigan) (Tim Harrigan, Robert Burdick, Vinsoun Millogo, Michelle Kere, Burkina Faso)

3:05PM | A Low-cost Locally-made Maize Planter in Burkina Faso
Robert Burdick, Tillers International, Scotts, MI United States (Presenter: Robert Burdick) (Robert Burdick, Tim Harrigan, Vinsoun Millogo)

3:20PM | A Comparison of Direct Seeding and Conventional Seeding for Paddy in Cambodia
Ronald Averill, Michigan State University, East Lansing, Michigan United States (Presenter: Saruth et al.) (Chad Saruth, Lor Lyhour, Seng Savath, Yoeurng Suytroeurng)

3:35PM | 1801841 | Appropriate-scale Thresher for Small-holders in Africa
Kerry Clark, University of Missouri, Columbia, MO United States (Presenter: Kerry Clark)

3:50PM | BREAK |

4:00PM | 1801839 | A Solar-powered Bean Thresher for Zambia
Adam Lyman, Michigan State University, East Lansing, MI United States (Presenter: Ron Averill) (Adam Lyman, Ron Averill)

4:15PM | Appropriate-scale Post-harvest Storage System
Carlos Campabadal Teran, Kansas State University, Manhattan, KS United States (Presenter: Carlos Campabadal Teran) (Carlos Campabadal Teran)

4:30PM | 1801842 | A Solar-powered Two-Wheel Multi-Purpose Traction Platform

4:45PM | Ogun Tractor: An Affordable Open-sourced Design for Small-holder Farmers
Horace Clemmons, Cleber, LLC, Raleigh, NC United States (Presenter: Horace Clemmons) (Horace Clemmons)

5:00PM | 1801904 | Appropriate-Scale Mechanization in China
Minli Yang, China Agricultural University, Beijing, China, People’s Republic of (Presenter: Minli Yang) (Minli Yang)

5:15PM | Closing Comments
Alan Hansen

Session #152

AGRICULTURAL DRAINAGE: PAST, PRESENT AND FUTURE – HONORING THE CAREER OF DR. NORM FAUSEY – INVITED SPEAKERS

Monday, July 30 – 2:30PM-5:00PM

LOCATION: 140G

Sponsored by NRES-23

Moderator: Lindsay Pease, USDA ARS, Columbus, OH

This special session is in honor of ASABE Fellow Dr. Norman Fausey. Dr. Fausey retired from the USDA-Agricultural Research Service in 2016 after a 50+ year career in the area of agricultural drainage. Invited presenters will highlight the impact of Dr. Fausey’s career on past, current, and future agricultural drainage issues. Following the invited presentations, we will open the floor for all to share a few words on how Dr. Fausey has influenced the field of agricultural drainage and the people within it.

Time | Paper # | Title/Author
--- | --- | ---
2:30PM | Introduction - Lindsay Pease

Invited Speakers
R Wayne Skaggs, North Carolina State University, Raleigh, NC United States
Ehsen Ghan. Michigan State University, East Lansing, Michigan United States
Mark Williams, USDA-ARS, West Lafayette, Indiana United States

Open Discussion
Session #155

VULNERABILITY ASSESSMENT OF LAND RESOURCES FOR SUSTAINABLE DEVELOPMENT – INVITED SPEAKERS

Tuesday, July 31 – 2:30PM-5:00PM
LOCATION: 334

Sponsored by NRES-26

Moderator: Aavudai Anandhi, Florida A&M University, Tallahassee, FL

This invited technical session addresses developing vulnerability assessments for land resources and also explores ways to link these assessments for sustainable development of the land resources through bioremediation. The speakers will address soil and water components of land resources; their vulnerability and sustainability to changes in land-use. The invited presentations are given by multi-disciplinary professionals (e.g. engineers, agronomists, soil scientists, environmentalists, geologists) who share case studies, lessons learned, overviews of cutting-edge technologies and design strategies, and best practices that are aimed at improving the land resources sustainability through vulnerability assessments. This multi-disciplinary approach through a series of talks can open up avenues to explore stressors important for vulnerability assessments and how the stressors can be represented using indicators for land resources and bioremediation.

2:30PM Introduction

2:35PM 1801862 Vulnerability Assessment of Land Resources for Sustainable Development - Session Overview past, present and next steps
Aavudai Anandhi, Florida A&M University, Tallahassee, Florida United States (Presenter: Aavudai Anandhi) (Aavudai Anandhi)

2:50PM 1801863 A Vulnerability Assessment Framework for Land Resources

3:05PM 1801878 Land-Use Changes and Ecosystem Functions
Gang Chen, Florida A&M University, Tallahassee, Florida United States (Presenter: Gang Chen) (Gang Chen, Anandhi Aavudai)

3:20PM BREAK

3:30PM 1801864 Winter Cover Crops to Sustain Soil in the Great Plains
M B Kirkham, Kansas State University, Manhattan, KS United States (Presenter: M.B. Kirkham) (M.B. Kirkham, O.W. Freeman, K.L Roozeboom, S.A. Staggenborg)

3:45PM 1801865 Vulnerability of Reactive Zones within Riverbank Aquifers Impacting the Accumulation of Trace Elements within Permeable Natural Reactive Barriers
Saugata Datta, Kansas State University, Manhattan, KS United States (Presenter: Saugata Datta) (Saugata Datta, Aavudai Anandhi, Robert Finkelman)

4:00PM 1801866 Simultaneous Utilization of Multiple BMPs as a Means of Mitigating Uncertainty in Reduction of Agricultural Non-Point Source Pollution
Nathaniel Bailey, Florida A&M University, Tallahassee, FL United States (Presenter: Nathaniel Bailey) (Nathaniel Bailey)

ORDER OF THE ENGINEER INDUCTION CEREMONY

Monday, July 30 – 4:00PM-5:00PM
LOCATION: 258

Engineering graduates and registered engineers are invited to accept the Obligation of the Engineer and a stainless steel ring which is worn on the little finger of the engineer’s working hand. All graduates of ABET accredited engineering programs; seniors in ABET accredited programs within two academic years of graduation; licensed PEs; and members of the Canadian Calling by reciprocity are invited to join the Order. All inductees must be present to accept their certificate and ring at the induction ceremony. The cost of entering the Order is $15.00 and inductees may register with Tina Schultz at schultz@asabe.org before the meeting or in person at the membership booth at the meeting. Learn more about the Order here - http://www.order-of-the-engineer.org/.

ASABE ROBOTICS STUDENT DESIGN COMPETITION

Monday, July 30 – 4:00PM-6:00PM
LOCATION: Riverfront Salon East

The ASABE Robotics Competition is a student design competition that was conceived in 2006. The aim of the competition is to encourage undergraduate as well as graduate students to develop innovative robotic solutions to real life problems in the Agricultural arena. The competition is open to students in one or more departments from a single University. There is no maximum number of team members per team, so multiple teams from a single University are allowed. Every team should have a faculty adviser who is also the contact person with ASABE. There are no classes or leagues, every team will work on the same Challenge.

Robotics Competition Testing
Monday, July 30 - 4:00PM-6:00PM
LOCATION: Riverfront Salon East

Robotics Judges Orientation
Monday, July 30 - 5:00PM-6:00PM
LOCATION: 142B

Robotics Round 1
Tuesday, July 31 - 8:00AM-10:00AM

Robotics Round 2
Tuesday, July 31 - 10:30AM-12:30PM

Robotics Round 3
Tuesday, July 31 - 2:00PM-4:00PM