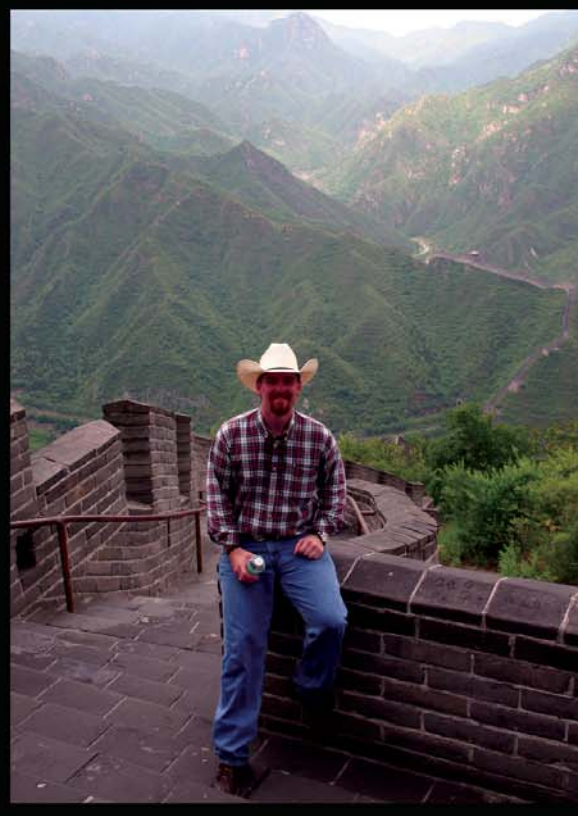
May/June 2023

RESOURCE

engineering and technology for a sustainable world



I wouldn't ((BE ME)) without ASABE

ASABE & Me stories

Doug • Brian • Shane • Heather • Lara • Sushant • Jeremiah

PUBLISHED BY AMERICAN SOCIETY OF AGRICULTURAL AND BIOLOGICAL ENGINEERS

from the President

In April, we held the spring Board of Trustees (BOT) meeting at ASABE headquarters in St. Joseph, Michigan. After a fiercely competitive team-building game of Hammerschlagen (www.hammerschlagen.com), the BOT hammered out four major decisions:

First, approval of the revised statement for the E-03 Inclusion, Diversity, Equity, and Access Committee, titled the "ASABE Policy Statement on Inclusion, Diversity, Equity, and Access." This statement was first developed in 2004, and the update ensures that ASABE will be an inclusive organization that encourages and supports the profession and all of its members.

Second, approval of the revised bylaws for the E-06 Foundation Liaison Committee. The purpose of E-06 is to assist the BOT in defining, developing, and prioritizing fundraising opportunities and needs for recommendation to the Foundation Board, and to recommend ad hoc committees to the BOT, as needed, to manage funds not aligned with an existing committee.

Third, approval to hold a vote by all members to add a fifth council to the ASABE Constitution, to be called the Strategic Initiatives Council. The purpose of the Strategic Initiatives Council is to:

- Facilitate membership-driven strategic cross-cutting initiatives and partnerships.
- Provide oversight of these strategic cross-cutting Society initiatives.
- Hold periodic reviews of these initiatives and make recommendations to the BOT regarding their continuation with possible suggestions, including transitioning to a different structure or termination.
- Ensure that ASABE is seen as a leader in innovative and emerging areas.
- Explore and develop opportunities to incubate new strategic cross-cutting initiatives.

The BOT hopes that the Strategic Initiatives Council will be approved at the AIM in Omaha for full membership voting, thus clearing the way for the Circular Bioeconomy Systems (CBS) initiative to have a structured home from which to operate.

Please support the new council and attend the business meeting at the AIM to vote for ratification. And while you're there, please take a moment to thank the hard-working members of our Board of Trustees for their diligence and thoughtful input in making strategic decisions that will drive ASABE forward.

Fourth, E-05 RISE, BOT, and the Foundation board have been working hard over the past two years to define revised mission, vision, tagline, and logos to position our branding efforts as forward-facing. These were all approved by the BOT and we look forward to their rollout to start at AIM.

See you in Omaha! Until then, thank you for your membership, and share your #ASABEstory!

Keith Tinsey
tinsey.keith@gmail.com

President-elect and Fellow Dana Porter, P.E., hits the nail on the head (*left*), while **Past President and Fellow Paul Heinemann** and **Trustee Travis Tsunemori** have a smooth handoff (*right*).

The BOT and staff divided into two teams for a friendly game of Hammerschlagen. Team 1 (*left*) had an early lead, but Team 2 (*right*) came from behind for the win.

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ON THE COVER:
"I wouldn't be me without ASABE!" Hear from seven members how ASABE has impacted their lives. Their stories begin on page 4.

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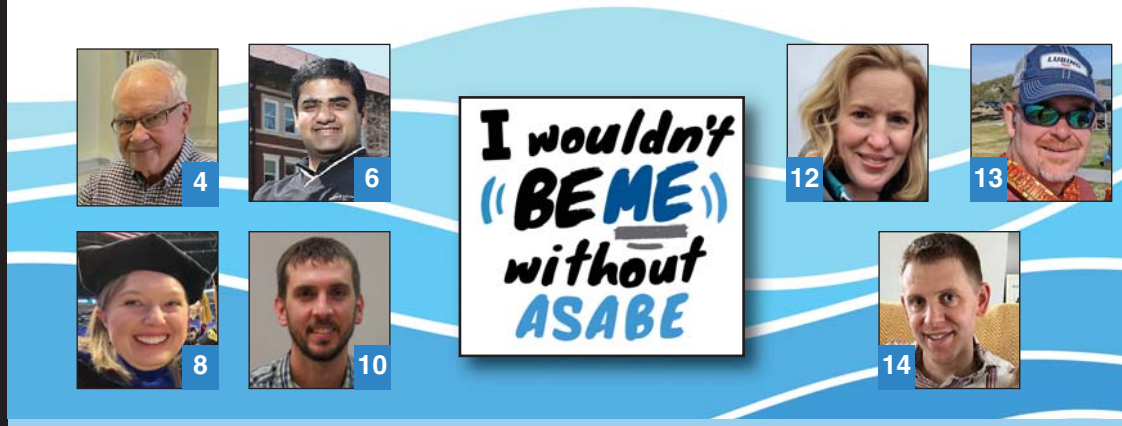

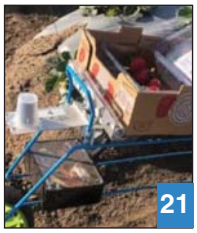

UPDATE

DEPARTMENTS

"I wouldn't be me without ASABE" — That was the theme of my talk at the 2022 AIM in Houston. As ASABE President-elect, my goal was to share my story and the tremendous impact that ASABE has had on my life and career. I thought it was a clever phrase for summarizing my #ASABEstory. Little did I know that "I wouldn't be me without ASABE" would strike a chord with many other members, particularly past **YPC chair and Board of Trustees-elect Gayle Baker, P.E.**

Gayle ran with it and inspired Dolores Landeck, Melissa Miller, and me to develop this theme and encourage other members to share their ASABE stories. Since then, there have been numerous story productions, including the new ASABE podcast channel (titled "The Lead with ASABE"), and this issue of *Resource* features seven "ASABE and Me" stories from some of ASABE's brightest.

In preparation for this issue, *Resource* asked a variety of ASABE members to explain how they chose their careers, how they discovered ASABE, and how ASABE has benefitted them in their work and in life.

Their answers were consistently positive, sometimes surprising, and occasionally funny. The following pages contain responses from seven members, who all have insightful things to say about why "I wouldn't be me without ASABE."

Look in future issues of *Resource* for more "ASABE and Me" stories from our diverse membership.

Read on and share your #ASABEstory!

Keith Tinsey
ASABE President and Fellow

Douglas Bosworth, P.E.

ASABE member since 1962
ASABE Past President and Fellow
Retired from Deere & Co.
Carmel, Indiana

Goldfield High School in Iowa did not have a physics or chemistry teacher, nor did it have a guidance counselor. With a senior class of 16, it was difficult to justify those positions. My solution to career planning was to study the course catalog from Iowa State College to determine a program that would be good for me. My interest in engineering and agriculture both seemed to present good career paths, so when I learned about agricultural engineering, that was the answer.

It was an honor recognizing ASAE award winners.

What was your first experience with ASAE?

My first ASAE experience was an Iowa State student branch meeting. It was impressive to see the officers dressed in suits and to learn of their many active programs. I joined immediately. Being active in the student branch was a good experience, and that activity continued after I became a member of ASAE when I started my 35-year career at John Deere in 1962. My membership led to many leadership activities in the Quad-City Section.

What was your most memorable experience?

Forward to 1992-1993, when I was ASAE president. As I approached my term, we were deeply involved in an organizational change process in the John Deere Harvester Product Development Department. My goal was to initiate a similar change process at ASAE headquarters, which at the time was hierarchical and had some internal conflicts.

A two-day "Team Building" workshop was the first phase of the program, which was very effective in breaking down some personal barriers. The value of this workshop was recognized by headquarters staff, so it was followed by three more workshops led by two John Deere employees. The topics were "Group Problem Solving," "Facilitator Skills," and "A Framework for Change." These workshops led to "Team ASAE," an effective initiation of teamwork and an improved work environment. The on-site champion for this effort was **Past President and Fellow Bill Harriott, P.E.,** who was temporarily on staff during that critical time.


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Within ASAE

Bosworth's Presidential Initiative to Focus on Dealing With Change

ASAE PRESIDENTIAL GOALS 1992-1993

5Cs

Change: Are you prepared?

The 1992-93 Presidential Initiative developed by President Douglas Bosworth will help ASAE members understand the changes affecting our lives and provide the tools essential to help us deal with those changes, both professionally and personally. At the International Winter Meeting Wednesday, December 16, the keynote speakers and Roundtable Discussions will focus on "The Changing World."

Looking at, understanding, and responding to change within our industries will be the thrust of the speakers.

Philip Mirvis, organizational psychologist, will present "Change . . . a Global Perspective." His presentation will stimulate the audience with an analysis of where we are, and of the global changes occurring in the economic, political, technical, and cultural arenas.

Following Mirvis, Peggy Hutcheson, industrial psychologist, will present a perspective of change and the process of change for technical professionals, along with potential future challenges facing ASAE members.

Robert Thompson, dean of agriculture at Purdue University, will then discuss global changes in the food, feed, fiber, and biomass arenas that are associated with the ASAE mission of "Engineering for Agriculture." Thompson's presentation will include topics such as international markets, clientele, resource pools, sustainability versus economic decision base, and technology transfer networks.

Following these three high-powered, visionary presentations, participants will participate in consensus discussions on the issues most significant to the profession. The Roundtable Discussions will emphasize "continuous improvement" with the intent of providing the tools to improve our ability — as individuals and as a Society — to meet the challenges of a dynamic world.

The Roundtable Discussions are organized into five categories:

- Customer Service — Excelling in services to exceed customer expectations.
- Continuity — Leadership and growth to help others use ASAE services.
- Career Development — Planning for personal improvement through professional growth.
- Curriculum Development — Continuing a focus for competitive success.
- Communications — Increasing the ability for sharing in response to social needs.

Discussion topics will be organized from information provided by all ASAE members who choose to participate in this important event. Throughout the fall, ASAE members will be recording the most significant changes they are experiencing in their professions (see "Roundtable Survey" below). Survey responses will be summarized to record the 8 or 10 most common changes developed by the membership. These topics will be the focus of the Roundtable Discussions in Nashville.

Forum to Feature Visionary Keynote Speakers

Change was a major theme during my tenure as ASAE president and was highlighted in the *Within ASAE* publication.

Nothing beats an afternoon completing a puzzle while watching a tractor auction on RFD-TV.

A follow-up goal was to initiate a change process for the entire ASAE organization. The themes of the two international meetings that year were: "The Changing World…Are You Prepared?" and "Leadership in a Changing World." The second meeting was highlighted by a "Workshop on Change" for 50 ASAE leaders that preceded the regular meeting.

In the following year, a historical and exciting event for ASAE was led by **President and Fellow Norm Scott.** He used the previous year's change process to develop "Vision 2007," a plan to lead to ASAE's centennial in 2007. Norm called on Steve Bosserman, the "Workshop on Change" facilitator, to form 13 teams to develop future visions and deliverables. The results included development of a new ASAE governance structure, an ASAE forum, redeveloping ourselves as ASABE to incorporate biological engineering, a transition to a single annual international meeting, and a comprehensive vision for the future.

What was a favorite volunteer experience?

My wife Judy and I celebrated a wonderful wedding day.

My favorite volunteer experience, other than the presidency, was to be one of two ASAE representatives to the Engineering Accreditation Commission of ABET. **ASABE Fellow Gene Haugh, P.E.,** was my partner during those five years. We each led ten engineering accreditation teams, which was a fantastic experience, especially since I had a career in industry. It's important that industry have representation on ABET teams because industry will employ the graduates of engineering education programs.

Another significant experience was the opportunity to teach the Senior Capstone Design course at the University of Illinois Agricultural and Biological Engineering Department for ten years. It was exciting to work with students to form product development teams that solved real-life engineering problems for industry partners. Those students are now leaders in industry, education, and ASABE.

How has ASABE affected your life and career?

ASABE has had a tremendous impact on my career and professional life. The 60-year ASABE member plaque on my office wall represents many memories and achievements, and a journey that's taken me quite far from a small family farm in Iowa.

Sushant Mehan

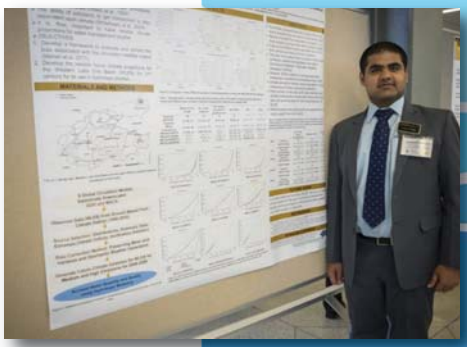
I wouldn't (BE ME) without ASABE

ASABE member since 2015
Postdoctoral Fellow
USDA-ARS Water Management and Systems Research Unit
Fort Collins, Colorado

I hail from India. My father was a high school dropout, and while my mother went to college, she never graduated because she got married in her sophomore year. I was born in Delhi, the country's capital, but I grew up and attended school in Punjab, the food basket of India.

Although I lived in urban areas, I was always close to semi-urban agricultural practices, particularly kitchen gardens. I was intrigued by how a seed turns into a fruit or vegetable using soil, sunlight, and water. I did not know that there was a formal course for studying these things.

My dream career was to be a clinical doctor, but life had another plan for me. After high school, I took the national entrance examinations to secure a place in college. Even though I qualified to attend medical school, my life took a U-turn, and I chose an engineering program for personal reasons.



I studied agricultural engineering at Punjab Agricultural University in Ludhiana, and I worked for John Deere India for a few months before pursuing graduate studies. When I look at myself now, agricultural engineering defines who I am.

After completing my doctorate at Purdue University in 2018, I worked for academic institutions, including The Ohio State University, the University of Wisconsin-Madison, and Colorado State University. I also worked for a for-profit environmental consulting firm in Sacramento, California. Currently, I'm a postdoctoral fellow at the USDA-ARS Water Management and Systems Research Unit in Fort Collins, Colorado.

I have worked for academia, industry, and the federal government. Can you think of any other profession where you can get a feel for all these worlds?

The best thing about my job is its impact. My work is the first line of defense in securing food production and protecting water resources in a world where the population is growing rapidly and where water is becoming a precious resource.

What was your first volunteer role in ASABE?

I first heard about ASABE in 2012 when I was pursuing graduate studies in India and looking for a doctoral program in the U.S. My family's annual income was less than $800, and without a good internet connection or other means of communication, I decided not to pursue ASABE membership at that time.

In December 2014, I came to the U.S. to complete my doctorate at Purdue University. One of the first things I did with my graduate school stipend was enroll as an ASABE member.

My first volunteer role was in 2016 as a member at large for the YPC Executive Committee. Since then, there has been no turning back! It takes a village to promote the value of ASABE membership and retain the college graduates, young professionals, and early-career engineers who may feel left out or are unaware of the benefits of continuing their membership.

In 2013, I pursued precision agriculture by measuring plant light environment using a handheld spectroradiometer .

I lead the Purdue ABE GSA as President at the 2017-18 Symposium

I was a member of the winning team at the 2017 Indiana Soybean Student Competition.

My favorite volunteer position was leading student competitions. The Gunlogson Fountain Wars and the Environmental Design Competition are my favorites, and I try to stay connected with these events as much as possible. Another role I love is serving as a guest associate editor for the ASABE journals. I feel more valued when I can give back to the Society.

How has an ASABE member inspired you?

ASABE member Margaret Gitau motivated me to submit my first session through the NRES-21 committee, and it was a huge success. Since then, I have been chairing and moderating sessions on critical hydrologic modeling and data analytics.

ASABE members Shane Williams, Noel Menard, Gayle Baker, P.E., and **Carolyn Jones, P.E.,** made me feel welcome in the YPC. As a result, I am chairing a committee with nearly 1500 active members.

How have you inspired or guided others in ASABE?

My most significant impact has been at the Continuous Professional Development workshops at the AIM. The attendees appreciate the advice, and they stay in touch later. It is like preparing an army of agricultural and biological engineers who will fight the complex problems the world is facing.

My colleagues and I solving critical water issue problems using advanced data analytics

I was recognized as an "Outstanding Ph.D. Student" of the Nation's Top Agricultural Engineering Program in 2018

Another area where my mentoring has had on impact is encouraging international students, particularly students of Indian descent, to participate in ASABE, and getting involved with the Association of Agricultural, Biological, and Food Engineers of Indian Origin (AABFEIO).

Have you attended the AIM?

My first AIM was in 2016 in Orlando. My reaction to that first AIM was: "Wow! I made the right decision to be an agricultural engineer. I have a community, and I have an identity." After that, I have always made it a priority to attend the AIM, and I have encouraged everyone in my professional circle to attend the AIM at least once.

ASABE is my parent professional organization because:

- I feel a sense of community in ASABE.
- ASABE gives me my identity as an agricultural engineer.
- ASABE helps me connect with like-minded researchers and students.
- ASABE gives me opportunities with negligible political bias.
- I am recognized for what I am by being associated with ASABE.
- ASABE has shaped my career for the better.

My favorite ASABE memory is meeting Darrin Drollinger and his staff, including Sharon McKnight and Dolores Landeck, at the 2016 AIM. To subsidize the registration cost, I volunteered at the registration desk, and I was amazed at how the ASABE staff put this magnificent show together.

It was my first international conference. I had never seen so many intelligent people together under one roof, even though I am from one of the most populous nations in the world!

How has ASABE affected your life and career?

There is no doubt that ASABE has advanced my career. It was instrumental in developing my professional network, which I could not have done alone. As a result of connections I made at the AIM, I have mentored NSF summer interns for the past three years. I also got an opportunity to teach a data analytics workshop because of my participation at the AIM and on several ASABE committees.

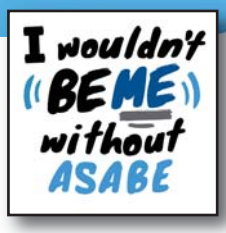
My professional identity, and my passion for the profession, comes from my association with ASABE. ASABE gives me pride in being an agricultural engineer. I hope to learn, grow, and give back to the community by staying with ASABE until the end of my professional journey and beyond. ASABE and I are inseparable.

How would you describe ASABE to others?

ASABE is not just a professional organization where you can find technical expertise in your niche. It is a place of belonging, connection, and involvement with a common goal to promote a more sustainable ecosystem for future generations.

ASABE is a perfect place for any agricultural engineer looking to learn, network, and grow. If your passion is agriculture, food, water, or anything related, then ASABE is available to listen and help.

Heather Preisendanz



ASABE member since 2013
Associate Professor, Department of Agricultural and Biological Engineering
Associate Director of Research, Institute for Sustainable Agricultural, Food, and Environmental Science (SAFES)
The Pennsylvania State University, University Park

As a kid, I always cared about water quality, so I chose environmental engineering as an undergraduate and graduate student. I had no idea I wanted to be an agricultural engineer until I found my academic home in an agricultural and biological engineering department.

Growing up in the woods of northern New Jersey, I didn't know much about agriculture. I went to Rutgers University for my undergraduate degree, and I went to Purdue for graduate school. I quickly learned that I couldn't understand water quality without understanding the links between water and agriculture.

When I was interviewing for jobs, many of the academic positions that fit me best were in agriculture departments. As a result, a rather indirect path led me to agricultural and biological engineering, but I couldn't be happier with where I wound up.

What prompted you to join ASABE??

I heard about ASABE from friends in graduate school who were ABE majors. However, because my degrees were in civil and environmental engineering, I didn't join ASABE until I became a faculty member in ABE at Penn State.

What sets ASABE apart from other professional organizations?

One of the best aspects of ASABE is that its members are extremely supportive of each other, and it's easy to network in ASABE because it's not as overwhelmingly large as other professional societies, yet it's large enough to encompass a wide range of topics.

ASABE also provides excellent opportunities to recognize achievement through numerous awards that reflect the diversity of the members (industry, academia, government) and that also reflect the importance of teaching, research, extension, innovation, leadership, and mentoring. ASABE is also very responsive to its members' needs. For example, this year's AIM is going to offer childcare and summer camp for children of the attendees.

ASABE is particularly supportive and encouraging of its younger members, especially students, and provides many opportunities for them to engage and be recognized for their accomplishments. I'm extremely grateful to have found my professional home in ASABE.

What was your first volunteer role in ASABE?

My first volunteer role was on the Publications Council. My department head encouraged me to find ways to volunteer in ASABE, and my regional chapter (NABEC) needed a representative to the Pubs Council. I served in that role for a few years and then found my permanent home in the NRES-21 (hydrology) community. I've served as secretary and vice-chair, and I'm currently serving as chair of NRES-21. My work with NRES-21 has been my favorite volunteer role because it allows me to support younger members in a way that repays the efforts of senior members who helped me.

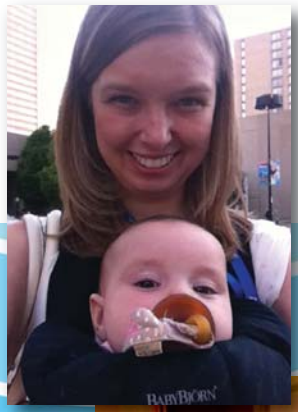
I'm holding wood frog tadpoles at a vernal pool study site in the Scotia Barrens State Gamelands in Central, Pa

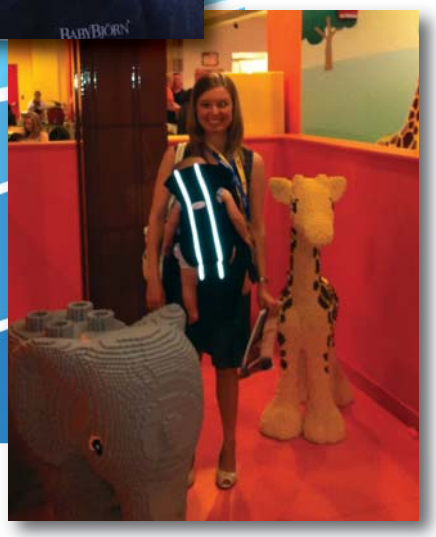
My most recent PhD graduates: ASABE members Katie Hayden and Carla Ndoun, who presented their work at ASABE throughout their time as graduate studens.

As vice-chair of NRES-21, I started a program to match graduate students with mentors from outside of their home institutions, based on their career goals and

interests. This year, with the support of other NRES-21 members, I launched an "Engagement" seminar series to help NRES-21 members get to know each other outside of the AIM. Both of these initiatives have been more successful than I could have hoped for, mostly due to the willingness of older members to support younger members and strengthen professional relationships within the community. It has been a wonderful experience!

Here I am collecting a water sample as part of a study to understand the occurrence of endocrine disrupting compounds in vernal pools along a natural-impacted land use gradient.





In 2013, my daughter Maya and I took on our first AIM together in Kansas City, Missouri. We were very popular with the students at LegoLand!

Maya is a pro at AIM now. At the 2022 AIM in Houston, Texas, she crocheted while I tabled for Penn State at the career fair.

How has ASABE affected your life and career?

ASABE has been extremely helpful in advancing my career. Because I was new to ABE when I joined Penn State's ABE faculty, ASABE has been a wonderful way to network with other experts in my field, start new collaborations, and gain visibility for my research group.

Because of its small-ish size, most members who submit an abstract are able to give a talk or a poster presentation at ASABE conferences, which isn't the case for larger organizations. ASABE also offers excellent publication opportunities, including conference papers and peer-reviewed journals. These opportunities help us to get our research in front of the right audience, where it can be the most impactful.

For new faculty members, establishing a network of faculty contacts at peer institutions is critical. When going up for promotion and tenure, external letters are an essential part of the package. Although I will never know who my letter writers were, I'm sure that having a strong network of senior colleagues in ASABE, who knew me and knew my research, helped me advance to associate professor.

This past year, I was asked to write an external letter for a junior colleague who is up for promotion and tenure. I was more than happy to give back!

What is your favorite ASABE memory?

My favorite ASABE memory is from my first AIM in 2013. I had just joined the faculty at Penn State, and the AIM was only a few weeks away. My department head encouraged me to go, but at the time I was single-parenting my five-month-old daughter Maya. I took her along with me, and it was probably the best decision I made! So many people wanted to meet the new member with the baby that when my department head, **ASABE Past President and Fellow Paul Heinemann,** introduced me to Darrin Drollinger, it was too late—we had already met!

The 2013 AIM was in Kansas City, where there happens to be a LegoLand. Some of the students wanted to go, but they were disappointed to discover that they would only be admitted with a child. Students I didn't know came up to me and asked if Maya and I would please go to LegoLand with them, so that they could get in! I thought that was so funny, and so clever of them to ask me, that of course I agreed! We all had a great time, and although Maya doesn't remember going, she absolutely loves Legos!

Brian Huenink

ASABE member since 1998
Senior Staff Engineer, Deere & Co.
Cedar Grove, Wisconsin

I wouldn't BE ME without ASABE

During my senior year of high school, I had an interview with the chair of the agronomy department at UW-Madison. After I explained my interests, he paused, looked at me, and said, "You're in the wrong place, son. I'm calling the chair of the ag engineering department. You need to go over there and meet with him." I remember saying, "What's ag engineering?"

However, I went and visited with **ASABE Fellow James Converse, P.E.,** who was head of the department at the time. After our discussion, it was pretty clear that I had found a home.

I got my undergraduate and graduate degrees at UW-Madison in 2000 and 2002. In January 2003, I started at John Deere in Waterloo, Iowa, and I've been working for Deere ever since. In the summer of 2003, I married **ASABE member Jill (Grodecki) Huenink**. Jill is also a UW-Madison ag engineering graduate, and she spent some time at Deere early in her career. In 2011, we moved from Iowa to Wisconsin, where I continue to work remotely for Deere while operating the family farm.

What was your first volunteer role in ASABE?

I've been a member for 26 years, so I can't I recall my first volunteer role, but it was probably something in the student branch at UW-Madison. Once I started volunteering, I never stopped.

One of my favorite volunteer positions was early in my career in Iowa. I noticed that transportation was a barrier to participation at ASABE Section events. When transportation was provided, the attendance dramatically increased. So I organized transportation for every Section event for as long as I lived in the area. Those trips to and from the Section events were some of my most memorable ASABE experiences. We shared career advice, we noted each other's bad driving habits, and we built a lot of camaraderie.

How has an ASABE member inspired you?

ASABE Past President and Fellow Tony Kajewski also worked at Deere. He was a friend and a mentor, and his efforts helped me get an interview at Deere at a time when not many companies were hiring. Tony strongly encouraged me to stay active in ASABE, and he was pretty good at keeping me active by telling others, "Oh, Brian can do that." I got volunteered for a lot of ASABE activities, and I'm grateful to Tony for doing that.

How have you inspired or guided others in ASABE?

The 1/4 Scale tractor competition is probably the biggest way I've guided others. In recent years, I haven't been as involved as I was in the past due to family obligations, but I always appreciate it when former 1/4 Scalers thank me for how the competition helped jump start their careers.

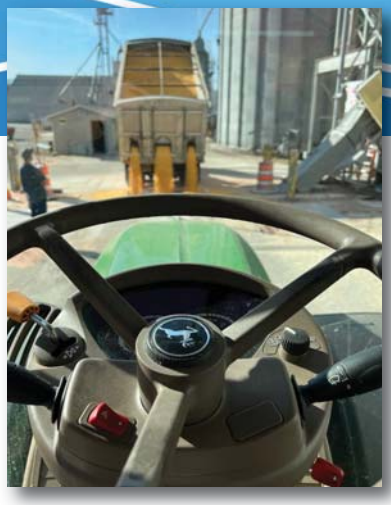
More than ten years later, I still meet new colleagues who say something like, "You probably don't remember me, but you were leading 1/4 Scale when I was involved. Thank you for taking the time to do that!"

Outside of 1/4 Scale, I've tried to encourage others to get involved, the same way Tony encouraged me. It's always rewarding to see younger members step up into leadership positions.

Once a van driver, always a van driver. I was gearing up for a recent 15-passenger van trip with my Deere team.

Have you attended the AIM?

The first meeting I attended was the 1999 AIM in Toronto. I was just a student, and I was hooked. The breadth and depth of the technical content were amazing. I really enjoyed the atmosphere and how kind the senior members were to the student members, how they valued our opinions and input.



Waiting in line to unload corn in the Fall of 2022 at my local Wisconsin grain cooperative.

Since then, I've always made the AIM a priority. I haven't been able to attend every year due to conflicting work and family priorities, but I've never regretted attending, and I wish I could attend every year. I absolutely encourage others to attend!

What is your favorite ASABE memory?

In 2008, I was asked to escort **ASABE Fellow Harold Brock** from his home in Waterloo, Iowa, to the AIM in Providence, Rhode Island. Harold was to be awarded the Cyrus Hall McCormick - Jerome Increase Case Gold Medal for his lifetime achievement. Harold was 93 years old at the time, and he had an amazing career.

At the age of 15, Harold had worked in Henry Ford's workshop, alongside Thomas Edison and George Washington Carver. He even babysat Henry Ford II! Harold eventually served as chief engineer at Ford Tractor. After a 29-year career at Ford, he moved to John Deere and worked for another 13 years as director of tractor engineering.

During our trip to the 2008 AIM, Harold provided me with story after story of his long career. When I asked what kept him going, he said, "You need to keep working with young people. That's the key to staying young at heart." He told me that Henry Ford gave him that advice. Harold passed in January of 2011. With his passing, we lost a direct link to a significant era of engineering history. I'm grateful for the time I got to spend with him.

My daughter and I checked out the National Farm Machinery Show following AETC 2017. She loved the big tractors.

My recent work, close up of the hood and lights of the John Deere 8R tractor. (*photo courtesy Deere & Co.*)

Do you have any funny ASABE stories?

In the summer of 1999, as a student member, I organized a group of students to transport our 1/4 Scale tractor from UW-Madison to the AIM in Toronto. As we were preparing for our trip, a PhD student at UW, who was looking for a ride to the AIM, asked to join us. At the time, "Dumb and Dumber" was one of our favorite movies, so our response was, "Sure, pick 'em up!"

We headed for Toronto with a minivan full of students and a pickup truck with our 1/4 Scale tractor. We were making pretty good time until we hit rain and the truck's wipers stopped working. After several attempts to fix the wipers, we bought a bottle of Rain-X at a gas station and drove on. This is a testimonial for Rain-X. Just ask any one of us how well it worked! Later, the wipers miraculously started working again, and we had no more trouble with them, but Rain-X saved the day.

Later in the trip, the truck's rear brakes went out due to a rusted brake line. I was driving when the brake warning light came on. I pulled over, got out, and looked for damage. Half of the rear axle was drenched in brake fluid. It was a Sunday in Battle Creek, Michigan, so most stores were closed, but we found an auto parts store not far from the highway.

They didn't have the specific brake line in stock, but they had bulk line. We just needed to cut the length and flare the ends. No problem. Except that all our tools were back in Wisconsin.

The clerk behind the counter said he had a "friend of a friend" who could help us out. He said he could show us the way in his car. With no other options, we followed in our truck, with almost no brakes.

The mechanic worked on our truck while we watched, along with the local neighbors, who had gathered to see what was going on. When the work was done, I asked what we owed. The mechanic said, "I dunno, what's it worth to you?" After an awkward pause, we emptied our wallets of what little cash we had, and we were back the road.

Our road trip didn't end there, and neither have the memories or the laughter we've shared over the years. We eventually made it to Toronto, and back home again. And the PhD student who questioned his wisdom in joining us is now **ASABE Past President and Fellow Terry Howell Jr., P.E.** We've been friends ever since.

How has ASABE affected your life and career?

The biggest benefit for me has been the personal relationships I made through ASABE, which provided mentors, peers in other departments within my company, and peers across company borders, as well as connections to academics around the world. Those relationships have helped my career as an engineer.

ASABE has also helped me develop skills that I use every day in my job and in my personal life. At work, I've often been put into roles that require strong interpersonal skills and a high level of collaboration, and ASABE has really helped me develop that skill set.

How would you describe ASABE to others?

When you join ASABE, you get an instant network of peers who collaborate on technical advancement and standards development. ASABE is an organization that really advances the discipline of agricultural and biological engineering. We share what we know. When someone is thinking about joining, I have simple advice: "Do it!"

Lara Moody, P.E.

I wouldn't (BE ME) without ASABE

ASABE member since 1995
Executive Director, Institute for Feed Education and Research (IFEEDER)
Arlington, Virginia

As a freshman at the University of Tennessee, I initially enrolled in civil engineering because I wanted to work in environmental engineering. At the time, the only option was to get a BS in civil and then an MS in environmental. Thankfully, engineering freshman were required to attend weekly seminars where representatives from each engineering department explained their course work and the types of jobs available in their discipline.

My roles have provided opportunities to engage in policy discussions like COP25, a global climate event.

My husband, ASABE member Henry Moody, P.E., and I have been able to travel for business. Here we are in Paris.

I've ensured career choices allow me the flexibility to pursue my non-work passions.

The final week, the speaker was Dr. Roland Mote, head of the ag engineering department. After listening to his presentation, I knew where I needed to be. I introduced myself, set up a meeting, and transferred to ag engineering.

My husband and I met because we both transferred to ag engineering in the same semester. We got married after we finished our BS and MS degrees. After doing research and extension work in the university system for 12 years, I transferred to working for industry trade associations, starting with The Fertilizer Institute, where I focused on fertilizer stewardship and sustainability.

Currently, I'm the executive director for the Institute for Feed Education and Research (IFEEDER), which is the research and education foundation for the American Feed Industry Association.

What was your first volunteer role in ASABE?

My first involvement with ASABE was as an undergrad, participating in the annual regional student rally. As a grad student, I attended and presented at my first AIM. I participated in ASABE events while in school because of the opportunity it provided to get to know my fellow students and to travel and learn about what others were doing. I also love a good industry tour, and the student rallies usually included a tour!

To connect with others and build a network, I started sitting in on committees pretty early in my membership. Beyond serving on committees, my first real volunteer role with ASABE was co-organizing an animal waste conference in the Denver area. That was a great opportunity to take a leadership role, meet folks, and learn more about the industry.

How has ASABE affected your life and career?

As I have transitioned from the academic world to trade associations, and from animal manure to fertilizer to animal feed, I have developed an amazing network of connections. Many of these relationships have arisen from my involvement with ASABE.

These connections continue to serve me, and they continue to surprise my colleagues. Whenever a colleague has a question, needs a contact, or is looking for some technical advice, I always know just who to call.

I wouldn't BE ME without ASABE

Jeremiah Davis, P.E.

ASABE member since 1999
Professor of Biosystems Engineering
Director of the National Poultry Technology Center
Auburn University, Auburn, Alabama

Growing up on a small dryland wheat and cattle farm in the Texas Panhandle, I had to repair a lot of our equipment. I was mechanically minded, and I wanted to be a "consulting agricultural engineer" to help farm families, like mine, improve their farming operations. Little did I know about the highs and lows of earning an agricultural engineering degree, the many lifelong friends I would make, or how my early aspirations would fit into what I now know as the Cooperative Extension System.

I earned a BS in agricultural engineering from Texas A&M, focusing on power machinery with the intent to design and improve the red and green equipment I grew up operating. Due to the economic downturn in 2001, I decided to pursue an MS in agricultural engineering at the University of Kentucky. Several mentors had projects that introduced me to livestock housing systems and controlled environment agriculture. I finished a PhD at Iowa State working with livestock systems. Today, I'm a professor in the Department of Biosystems Engineering and Director of the National Poultry Technology Center (NPTC) at Auburn University.

ASABE has provided me with many opportunities to travel the world. I climbed the Great Wall in China during the 2005 ASABE ILES Conference.

Giving a demonstration on the use of evaporative cooling systems to international participants from Latin America.

My wife Carolyn and I like to incorporate half marathons with our travels around the U.S.

The NPTC was created through a partnership between the Alabama Agricultural Experiment Station (AAES) and the Alabama Cooperative Extension System (ACES) at Auburn University. Every day, I get to work with a close-knit and driven group of faculty, staff, and students who are passionate about improving the sustainability of commercial poultry farms in Alabama and beyond.

Our work involves talking with farmers about their needs, collecting data during on-farm research, and developing practical solutions to the challenges that farmers are facing. We also devote much time and effort to developing training materials and hands-on demonstrations that support our extension workshops, allowing farmers to understand the many complex systems we use in poultry housing systems.

It's extremely rewarding when we see a new idea click with farmers. They say something like, "Thank you! I'm changing that when I get home," or "That's not as hard as I thought," or "You just saved my flock." I love that people find value in our research and in our programs, and that I get to do what I hoped to do so many years ago—help farmers feed the world.

Have you attended the AIM?

The first AIM that I attended as an undergraduate was in Toronto, Canada, in 1999. It was a life-changing experience because it opened my eyes to opportunities that I didn't know existed. I first served ASABE as a national student officer, and I have served in a variety of capacities and committees since. I think I've only missed two or three AIMs in 24 years. I've made lifelong friends who cover the broad swath of agricultural and biosystems engineering and who believe that ASABE is what you make it.

How has an ASABE member inspired you?

That question is hard to answer without leaving out many important people. I am where I am today because of many different ASABE members who have touched my life. Most of the undergraduate students who transfer to our department from other engineering majors give some version of "I like the feel of the Biosystems Engineering Department. Everyone is helpful and friendly!" The same thing applies to the ASABE membership. I like the feel of ASABE. Everyone is helpful and friendly!

I wouldn't BE ME without ASABE

Shane Williams

ASABE member since 2006
Senior Product Engineer, Kuhn North America
Stoughton, Wisconsin

I grew up on a small dairy farm in Barneveld, Wisconsin, that has been in my family since 1855. I owe my passion for agriculture and a lot of what I have become to that farm and what it has taught me. Farm work is never 'work' for me; it's just something that has to get done. Despite that background, I had no idea that agricultural engineering existed until my sophomore year of college.

As a freshman at the University of Wisconsin, I was undecided about choosing a major. My grandfather, knowing I had a knack for math and science and enjoyed working on the farm, asked if I had considered agricultural engineering. I told him I had never heard of it, and I didn't know if it was even an option at UW. The majors that I had been considering were not in engineering or agricultural science.

Late one summer night, while flipping through the course catalog after my second shift job, I looked for agricultural engineering, but there was nothing about it in the catalog. I decided to look up dairy science, but my fingers slipped, and I turned to a random page.

At the top of the page was a major that I'd never heard of before: biological systems engineering. Three sentences into the program description, I knew that BSE was what I was looking for.

Early that fall, I met with a professor in the BSE department to discuss the program and the degree requirements. That meeting confirmed that I'd made the right choice. If my fingers had not slipped while exploring the course catalog, who knows what my life would be today?

Due to the economic conditions when I graduated, there were few job opportunities, so I stayed in school to pursue a master's degree. It was one of the best decisions I ever made. After graduate school, I began working at Kuhn North America as a design engineer. I've been at Kuhn for almost 12 years now. As a senior product engineer, I work on inline wrappers.

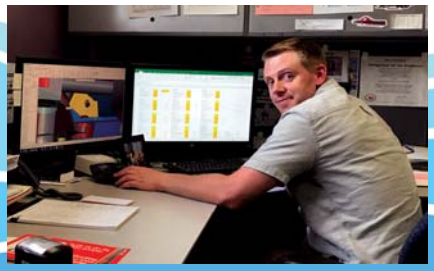
What was your first volunteer role with ASABE?

I've been an active member since I first joined ASABE. I was a regular attendee at the UW-Madison student branch meetings. As an upperclassman, I took on leadership roles in the student branch, as public relations officer, as club representative on our college's student council, and then as coordinator of our annual fundraiser.

During college, I attended as many local section meetings as I could, and after graduation I served as the section membership chair for four years. I was a member of the YPC Executive Committee for ten years (until I aged out), serving as a member at large, council representative, and chair.

I've been active on the ATEC planning committee since 2017, serving as chair of the 2022 conference. My favorite position has been serving on the ASABE Board of Trustees, and I'll continue in that role until the end of the 2023 AIM in Omaha.

Participating in the Society in all of these roles has taught me a lot about time management, working as part of a team, critical thinking, and event planning. Serving on the Board of Trustees has taught me about the inner workings of ASABE and given me an opportunity to help guide the Society now and in the future.



At my desk in the Kuhn North America engineering office.

My wife and I during a sunset cruise through Boston Harbor just before the 2019 AIM.

How has an ASABE member inspired you?

I have been inspired by many people, but three people stand out. The first is my academic advisor, **ASABE member Kevin Shinners,** who encouraged me to attend ASABE events. Kevin also helped me prepare a technical presentation for the 2011 AIM in Louisville that recapped my master's research. **ASABE members Naomi Bernstein, P.E.,** and **Brian Huenink** have also been mentors to me—personally, professionally, and often without realizing it.

A few years ago, while working on an article for *Resource,* I asked a colleague about what kept him involved in ASABE. His answer was essentially: "I saw what others were doing, and I wanted to be like them. I do because they did."

That answer really resonated with me. It was exactly why I'm an active member, but I'd never been able to put it into words. I've seen what Naomi, Brian, and others have to done to guide our Society, and I want to continue their efforts, to further improve ASABE and validate all the work they've done. If not me, then who?

Have you attended the AIM?

I attended my first AIM in 2009 in Reno, Nevada. I was competing in the AGCO Student Design Competition and was chosen to present with my project partner. I might not have attended had I not received free registration for the competition. There were so many people from all over the country, and from around the world, and all of the events and activities seemed overwhelming.

How was I supposed to meet people and get to know them? I didn't take in much of the technical content during that meeting, and I probably focused a little too much on the social side. I enjoyed the IPC (now ISB) events, and I envied those who had achieved leadership positions, but I didn't see where I would fit. Luckily, an opportunity found me.

In my pig costume with the participants in the 2009 YPC "All in Good Fun" contest. Pucker up!

Do you have any funny ASABE stories?

One of my close friends, Naomi Bernstein, was involved in the YPC Executive Committee, and she asked me for a favor during the 2009 AIM in Reno. For the annual YPC fundraiser that year, the "All in Good Fun" contest, the participant who raised the least amount of money would be blindfolded on stage and would have to kiss a pig. There were some challenges that prevented the planners from getting a real pig. Instead, they found a pig costume, but they didn't have anyone to wear it.

When they asked me to wear the costume, how could I say no? It didn't occur to me to ask why I was the right person for the job, but a small part of me had always wanted to be a sports mascot. Maybe this was my chance to live that dream. After the event, when I returned the costume, Naomi told me more about the YPC. It sounded interesting, so I went to the YPC business meeting later that evening.

Discovering the YPC changed the trajectory of my ASABE membership. It allowed me to serve the Society and other young professionals, and it was my reason to continue attending the AIM each year. I haven't missed an AIM since then, and I don't know if I would have attended again had it not been for that YPC meeting.

Because the YPC gave me a reason to attend the AIM each year, I made sure to maximize the value that I got from attending. After all, attending the AIM meant taking time off from work, so it was important that I justified my attendance. I understand that not everyone is able to attend the AIM each year, but I highly recommend taking the opportunity whenever you can.

Accepting the AE50 Award for the OWR 6000 inline wrapper on behalf of Kuhn North America at the 2022 AETC in Louisville.

How has ASABE affected your life and career?

ASABE has provided me with leadership experience, improved my communication and other soft skills, given me many opportunities to work on project management, and provided me with a vast network that I can call on whenever I need guidance. My membership has taught me that ASABE can be a catalyst to increase the impact of what I do.

The thing I love most about ASABE is that even though members may compete with each other professionally, we also know that we have to work together and share our experiences in order to solve the world's grand challenges. Ultimately, we serve the world, and humanity is our customer. I love knowing that my membership allows me to contribute to that mission and hopefully leave the world a little better than it was before.

Throughout my life and career, I've always looked for ways to help others, starting with helping my family on the farm. Becoming an ag engineer has allowed me to help people like my family. And ASABE allows me to work with intelligent, experienced, and dedicated people who expand the ways in which I can help others.

I am especially proud of two things that ASABE has given me:

First, I've worked on three products at Kuhn that have each received an AE50 award, most recently the OWR 6000 inline bale wrapper. Accepting those awards for my team's contributions to production agriculture was very humbling, and being recognized by my professional peers is an honor.

I'm also proud to have been elected to the ASABE Board of Trustees. This is the ultimate vote of confidence from the membership, that they value what I've done and that they trust me to help guide ASABE forward. I'll do everything I can to help our Society thrive.

Celebrating 20 Years of YPC: Collecting the Harvest (2016-2022)

Gayle Baker, P.E.

"Coming of age" is defined in my Merriam-Webster dictionary as the "attainment of prominence, respectability, recognition, or maturity." Twenty years later, we can say that about the Young Professionals Community.

From 2015 to 2016, there were some changes in the YPC. First, we noticed that all the members of the YPC Executive Committee transitioned off the committee or were elected to another position every two years, resulting in a loss of knowledge and experience. As a result, the bylaws were revised to establish a rotation of the elected positions, so that half of the Executive Committee would be elected each year.

We also added a new elected position for a graduate student representative. While grad students had always been a part of the YPC, this position gave the Executive Committee a member who focused specifically on graduate student programming. The development of several social platforms for young professionals also created the need for an elected position to focus on YPC promotion.

Initiative Fund Projects

Under Shane Williams and Chuck Roth, some large initiative fund projects were proposed. The first project was a promotion for standards and technical committee involvement, including a video on the purpose of standards in ASABE. Great memories were made from this project. Noël Menard remembers hanging out at Andy Lenkaitas' cabin to create the video, with the hilarious realization that their strengths did not lie in video production. Thus, they applied for funds to hire professionals.

The other initiative fund project was providing a childcare lounge at the 2016 AIM in Orlando, which was very appropriate in a town that famously caters to families. This project identified a real need, and members with small children took full advantage of the childcare lounge. Other initiative fund projects include an AIM orientation tool and a book club.

As the YPC continued to grow, so did the Society's support, and funds from the general membership aided in developing programming for young professionals. Meanwhile, the "All in Good Fun" fundraiser had run its course and was no longer fulfilling its purpose, so it was retired. Other events took its place, such as a Local Ag 101 info session and local agriculture tours featuring sugarcane production, a winery, wheat and lentil production, and urban agriculture.

The graduate student events had grown from an info session to a department head meet and greet, a professional development session, and a YPC social event. The ASABE info session had developed into two sessions: an AIM orientation and an info session on PE licensure.

2003 - 2023 YPC 20 Years

2016 - 2022 Executive Committees

	2016 Orlando, FL	2017 Spokane, WA	2018 Detroit, MI	2019 Boston, MA	2020 Virtual	2021 Virtual	2022 Houston, TX
Chair	Shane Williams	Shane Williams	Noel Menard	Noel Menard	Gayle Baker	Gayle Baker	Sushant Mehan
Vice/Past Chair	Jonathan Roth	Noel Menard	Shane Williams	Gayle Baker	Noel Menard	Sushant Mehan	Gayle Baker
Membership Development Council Representative	Bailley Thomas	Bailley Thomas	Jason Schuster	Jason Schuster	Jason Schuster	Jason Schuster	Jonah Bolin
Meeting Council Representative	Jason Schuster	Jason Schuster	Austin Roepke	Austin Roepke	Quenton Schneider	Quenton Schneider	Ekramul Haque Ehite
Standards and Technical Council Representative	Noel Menard	Joshua Sander	Joshua Sander	Sarah Yeo	Sarah Yeo	Gilbert Miito	Gilbert Miito
Publications Council Representative	Gloria Teague	Gurdeep Singh	Gurdeep Singh	Sushant Mehan	Sushant Mehan	Samantha Gorbet	Samantha Gorbet
Graduate Student Representative	Qualla Ketchum	Qualla Ketchum	Veronika Vazhnik	Veronika Vazhnik	Sarah Weyer	Sarah Weyer	Vivek Vineshetty
Promotional Communications Rep					Rebecca Kallal	Kaesey Glaess	Emily Nottingham
Members at Large	Amanda Zwilling Luke Zwilling Sonia Zamarripa Allison Graham Austin Roepke Parish Nalavade Ian Hahus Joshua Sander	Gayle Baker Jaskaran Dhiman Allison Graham Rebecca Kallal Sushant Mehan Austin Roepke Meg Sheehan Amelie Sirois-Leclerc Sarah Yeo Joshua Sander	Amelie Sirois-Leclerc Bailley Thomas Gayle Baker Meg Sheehan Sarah Yeo Sushant Mehan Wyatt Hall Hemendra Kumar Wyatt Hall	Rebecca Kallal Hemendra Kumar Rose Mullane Qualla Ketchum Meredith Brock Jed Moorhead Emma Yeo Wyatt Hall	Bailey Adams Meredith Brock Ekramul Haque Ehite Kaesey Glaess Samantha Gorbet Wyatt Hall Sasireka Rajendran Austin Roepke Abby Schaefer Jason Schuster Sarah Yeo Gilbert Miito (ISB)	Abby Schaefer Bailey Adams Ekramul Haque Ehite Emily Fauver Rebecca Kallal Sasireka Rajendran Whitney Lisenbee Wyatt Hall	Sasireka Rajendran Whitney Lisenbee Abby Schaefer Bailey Adams Emily Fauver Chang Chen Wyatt Hall Austin Roepke Kennedy Belknap (ISB)

Forming the Subcommittees

During Shane Williams' and Noël Menard's terms as YPC chair, our monthly meetings began to address Society-wide topics, and the discussions tended to extend beyond the scheduled time. Shane and Noël addressed this need by setting up task forces for topics that were outside our regular meeting. These topics included local section involvement, e-mentorship, non-traditional students, and international collaboration and outreach.

The task forces started out as open-ended discussions, but the task force members were encouraged to develop goals and deliverables. After a year, some of the task forces started to indicate that their topics should be ongoing, and these task forces were converted to subcommittees.

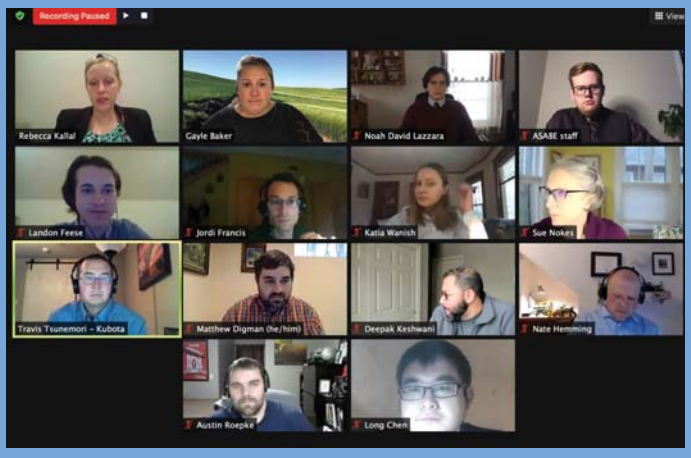
The other catalyst for developing subcommittees was the Covid pandemic in 2020. The conversion to virtual meetings required us to think outside the box. There had always been a concern that, while the YPC was a Society-wide community, little YPC activity was available outside of the AIM. In 2018, this concern led to a revision of the bylaws to convert to an electronic process for nominating and electing members of the YPC Executive Committee.

In 2020, we identified a need to provide regular content in virtual form throughout the year to open up community-wide participation. This led to forming subcommittees to involve more YPC members in YPC programming. Each YPC subcommittee is led by an elected representative who attends meetings of the corresponding ASABE council. The current subcommittees (and their council reps) are:

- Planning meeting events (Meetings Council).
- Developing YPC content (Membership Development Council).
- Promoting technical involvement in ASABE (Standards and Technical Council).
- Developing graduate student content (Graduate Student).
- Developing promotional material (Publications Council and Promotional Communication).

As with the Executive Committee, the challenge with the subcommittees is maintaining continuity, which depends on the level of commitment that individual members can provide. Members of the YPC receive several invitations to participate on the subcommittees, and the amount of time to commit is up to the individual member.

The YPC subcommittees provide an introduction to ASABE, and this approach to increasing member involvement has had some success. A few members who were involved on subcommittees are now on the YPC Executive Committee, and other members have noted how much they learned about ASABE.



YPC gained steam during the "harvest years": the Detroit skyline was the perfect backdrop for the Fun Run/Walk in 2018 (*top*), trying to stay dry while kayaking in Spokane in 2017 (*middle left*), honing our skills during a virtual mock interview session in 2020 (*bottom left*), and a fun evening out in Houston in 2022 (*above*). The YPC harvest has been bountiful!

Gaining Recognition

During my time on the YPC Executive Committee, ASABE leadership often expressed appreciation for YPC's initiatives and promotion of the Society. It's always nice to get a pat on the back, but the real recognition came when the YPC Executive Committee was asked to provide advice on the larger goals of the ASABE.

When Candi Engler was elected ASABE President, YPC members were asked to participate in Society-wide leadership roles, such as the councils, the Foundation Board, and the Board of Trustees. This was a huge recognition of the opportunities that the YPC can provide to young professionals.

Following the theme of Naomi Bernstein's article in the March/April issue of *Resource,* which described planting the seed for the YPC and allowing it to grow, we can see that the seed was an idea, proposed by a group of young members in 2002, to nurture the next generation of ASABE leaders. Twenty years later, ASABE is collecting the harvest.

ASABE member and Past-Chair of YPC Gayle Baker, P.E., Agricultural Services Engineer, Maurer-Stutz, Inc., Peoria, Illinois, USA, gcbaker@mstutz.com.

May/June 2023

update

A large tank of Atlantic salmon in a recirculating aquaculture system at the Freshwater Institute (*photo courtesy of The Conservation Fund*).

The Freshwater Institute has been selected for the NewTechAqua Award Challenge

In brief: The Conservation Fund's Freshwater Institute, an internationally renowned research and development program focused on recirculating aquaculture systems, announced its selection for the 2023 NewTechAqua Award Challenge.

The Freshwater Institute's real-time fish mortality detection system was one of five entries chosen from 47 proposals for the Award Challenge, and it is the only U.S. winner. NewTechAqua, which is based in Belgium, aims to demonstrate that investment in aquaculture research and innovation creates new value chains, markets, growth, and jobs in coastal, offshore, and landlocked areas.

The NewTechAqua Award Challenge seeks solutions that bring economic, environmental, and social benefits to aquaculture. The submitted proposals are evaluated based on factors such as leadership, team management, and potential impact. This was the first year that the Freshwater Institute applied to the Award Challenge.

Recirculating aquaculture systems, which are a specialty of the Freshwater Institute, allow producers to maintain ideal water quality and optimal fish health. However, fish mortality can still occur in such systems due to disruptions such as disease outbreaks and irregular water quality events.

"That's why our scientists proposed a mortality monitoring and alert tool to help farm managers make better-informed decisions for mortality management and maintaining fish health," said Brian Vinci, director of the Freshwater Institute.

The system, designated MortCam by the precision aquaculture team that developed it, uses artificial intelligence and the internet of things (IoT) technology to provide round-the-clock mortality monitoring and trigger an alarm when mortality thresholds are exceeded.

"MortCam consists of an imaging sensor integrated with an edge computing device customized for underwater applications," said team leader Rakesh Ranjan. "The acquired images are used to train a machine learning model for the resource-constrained edge device to detect and count dead fish that accumulate near the tank drain.

The model is deployed on MortCam to log the mortality data at a user-defined frequency. The system generates email

The MortCam prototype (*photo courtesy of The Conservation Fund*).

and text alerts to notify operators of mortality events. These real-time mortality alerts can help operators proactively initiate procedures to prevent additional mortalities.

The development of MortCam is supported by funding from the USDA Agricultural Research Service. The USDA-ARS and the Freshwater Institute have collaborated for over 30 years and share a track record of providing the U.S. aquaculture industry with improved genetic stocks and new technologies for improving recirculating aquaculture systems, fish health, and management practices.

This recent initiative in precision aquaculture seeks to increase yields and product quality while improving production efficiency and enhancing animal welfare, thereby improving the economics of the U.S. aquaculture industry and increasing its competitiveness in the global economy.

As noted by Caird Rexroad, the USDA-ARS national program leader for aquaculture, "Applying precision agriculture to crop and livestock production has benefitted farmers and their ecosystems. Therefore, developing precision aquaculture technologies such as MortCam is a significant advance in our ability to sustainably produce fish while maintaining high standards of animal health and wellbeing."

For more information, contact Rakesh Ranjan, rranjan@conservationfund.org.

For more information on the NewTechAqua Award Challenge, visit https://www.newtechaqua.eu/check-the-selected-entities-newtechaqua-award.

Strawberry harvesters get some help from robot coworkers

In brief: Strawberry season may become streamlined thanks to new robot coworkers developed at UC Davis. Using an innovative prediction and scheduling system, Fragile cRop hArvest-aIding mobiLe robots, or FRAIL-bots, track the picking process of each worker. When a worker has filled a tray with strawberries, a FRAIL-bot is waiting nearby to take the tray to the collection station.

Efficiency is critical for strawberry workers and producers because the workers are typically paid based on how much they pick in a day, while producers regularly deal with labor shortages.

While periodic walking is healthy during the picking process, the workers often need to walk hundreds of feet to and from the edge of the field every time they've filled a tray. Having FRAIL-bots do this task can save up to 25% of the workers' time, which would lead to higher pay.

"This advanced system works in a radically different way from what's out there," said **ASABE member Stavros Vougioukas,** professor of biological and agricultural engineering at UC Davis, who led the project. "It's like if you want to go to the movies using Uber. If Uber knows where you want to go, what time the movie starts, and how long it

Each worker has a customized cart, called iCarrito, that transmits its location and its tray weight. When the tray is full, a FRAIL-bot arrives to carry it to the collection station (*photo courtesy of Stavros Vougioukas/UC Davis*).

takes to get there from your house, it could come to you without you needing to call it. Our system works the same way."

Working with workers

The FRAIL-bots work as a fleet, in conjunction with the workers, to turn a strawberry field into a dynamic system. A customized cart, called an iCarrito, holds a tray of clamshells that the workers fill with strawberries as they pick. Each iCarrito is equipped with GPS, load cells, and wireless communication to tell the system where it is and how full its tray is.

The system can infer the harvesting speed and moving speed of the iCarrito, so it can predict when and where to send a FRAIL-bot to retrieve the full tray and bring it to the collection station at the edge of the field.

"You need to be proactive," said Vougioukas. "For each worker, we know the tray weight, location, and time, so we can extract the moving speed of the cart and the harvesting speed. With this information, we can predict where and when each worker will need tray service."

Because some workers are naturally faster than others, and the same worker won't pick at the same pace every time, the system runs hundreds of different scenarios for when each worker may be ready for tray service. It then combines the scenarios to develop a robust, near-optimal service schedule and assigns FRAIL-bots to the workers using a method similar to how Uber assigns rides.

"We predict, and then we come up with a schedule that's immune to disruption," said Vougioukas, "If we scheduled the robots assuming that our prediction is perfect, then we would be off target a lot of the time."

Workers can opt out of the service by pressing a button on their iCarrito, which gives them the option to not work with the robots or to take a break. The system can also choose not to service certain workers if it would be inefficient, such as if the workers are already near the collection station.

End of a journey

The project began in 2013, and developing the hardware and software from scratch took several years. Vougioukas said the project wouldn't be possible without the work of former doctoral student and **ASABE member Chen Peng,** who developed a large part of the system for his dissertation, and development engineer Dennis Sadowski, who did all of the fabrication and assembly.

In 2020, FRAIL-bots were finally deployed in a strawberry field in Lompoc, California, and they were met with rave reviews. The workers enjoyed having robot coworkers, and they felt relieved that they didn't have to walk long distances. The system has also attracted significant interest from companies, at least one of which is evaluating the technology as a commercial product.

The development team with prototype FRAIL-bots (*left to right*): Rajkishan Arikapudi, ASABE member Peng Chen, ASABE member Stavros Vougioukas, and ASABE member Zhenghao Fei (*photo courtesy of Stavros Vougioukas/UC Davis*).

"We were very happy because it was a long journey," said Vougioukas. "A lot of people were involved in the design, implementation, fabrication, and testing, so seeing the robots in action, doing something useful the way we envisioned it, is a great satisfaction."

Evolving the technology

Despite the success, there's still work to do. For example, Vougioukas eventually wants the FRAIL-bots to carry more than one tray at a time and visit multiple workers in a single deployment, instead of going out and coming back for each tray.

Vougioukas also wants to incorporate an ergonomics routine that tracks how long each worker has been picking and gives the workers an opportunity to take a break and change their posture after a certain period of time.

The team is currently developing an algorithm that gives equitable service to the workers by servicing slower workers more often, so that their pay comes closer to that of the faster workers.

Although the FRAIL-bots were developed for strawberry harvesting, the technology can be being applied to a wide range of crops, and it's currently being evaluated for table grapes. "The system can be extended to any crop that's harvested manually," said Vougioukas, "Any crop that requires the workers to walk back and forth, between where they pick and where they unload, could benefit."

For more information, contact Stavros Vougioukas, svougiokas@ucdavis.edu

ASABE Foundation Work in Focus

ASABE Foundation and YPC Dinner: A Night of Celebration and Trivia

Join the Foundation and YPC on Tuesday, July 11, at AIM in Omaha for an enjoyable evening celebrating our Society—and 20 years of YPC! A bit different from past years, this evening will be a more casual event that will encourage mingling of our diverse membership.

We've planned a night of food and drink, an engaging presentation, and an exciting trivia contest—all taking place at the Charles Schwab Field, home of the NCAA College World Series. This venue is a short walk from the Hilton and provides an amazing backdrop for our evening activities.

The evening includes a dinner buffet, non-alcoholic beverages, a cash bar, and a keynote presentation by Cheryl Mitchell (cherylbmitchell.com). Titled "Across the Generations," Cheryl's presentation will provide stories and strategies for working with people of different generations. With her humor, honesty, and personal experience, Cheryl will leave us feeling hopeful, rather than hopeless, in confronting this common challenge.

Keynote speaker Cheryl Mitchell.

Following the dinner and keynote presentation, join a table for the trivia contest, which begins at 8:30 p.m. You can sign up a team ahead of time, or you can form a team at the Foundation Dinner. If you don't have a team, we will help you find one!

Tickets are $120 per person for ASABE members and $50 per person for ISB and YPC members, which includes the dinner, keynote presentation, and trivia contest (asabe.meetings.org). Get your tickets in advance, prices increase to $140 and $60, respectively, on the day of the event.

Don't miss this entertaining evening celebrating the ASABE Foundation and 20 years of YPC. Reserve a table today, or sign up for a sponsorship opportunity.

ASABE member and ASABE Foundation Trustee Mark Riley, Associate Dean for Research, University of Nebraska, Lincoln, USA, mriley3@unl.edu.

Tuesday, July 11, Charles Schwab Field, Omaha

Trivia Round Sponsor: $1,000

- Pick the topic from a list or help develop trivia questions.
- Advertising includes a mention during the sponsored round, your logo on the big screen, and an event sponsorship display on the tables.

Sponsor the Mulligans: $1,000

- Branded Mulligan stickers will be available for the teams to purchase.
- Advertising includes an event sponsorship display on the tables.

#GetInvolved Sponsor for ASABE Student Tickets: $750

- Purchase eight event tickets that can be given to students at the AIM.
- Advertising includes an event sponsorship display on the tables.

#GetInvolved Sponsor for ASABE Student Tickets: $500

- Purchase four event tickets that can be given to students at the AIM.
- Advertising includes an event sponsorship display on the tables.

Individual Player Sponsorship: $250 or Sponsor a Table

- Sponsor a table with your logo on display. You can place party favors on this table.
- Advertising includes an event sponsorship display on all tables and a sponsorship centerpiece on the sponsored table.

To sponsor this event supporting Foundation and YPC programs, contact **ASABE member and ASABE Foundation Trustee Noël Menard** (MenardNoelR@JohnDeere.com) or **ASABE member and ASABE Foundation Trustee Mari Chinn** (mari.chinn@okstate.edu).

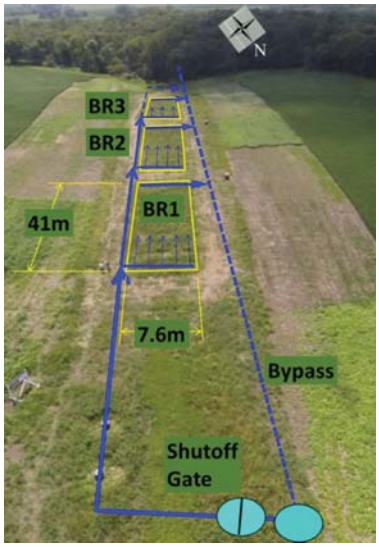
hot off the press

ASABE Journals

Recent research from our publications

ASABE has been a trusted source of authoritative research for well over a century. Our four peer-reviewed journals contain pioneering research in ag and bio engineering. Here are some highlights from our most recently published journals. All journal articles are available free of charge as a member benefit at elibrary.asabe.org/toc.asp.

J of ASABE



Journal of the ASABE

March/April
Vol. 66(2): 367-379
doi.org/10.13031/ja.15496

Can Woodchip Bioreactors Be Used at a Catchment Scale? Nitrate Performance and Sediment Considerations

ASABE member Gary W. Feyereisen, ASABE member Ehsan Ghane, Todd W. Schumacher, Brent J. Dalzell, **ASABE member Mark R. Williams**

Highlights

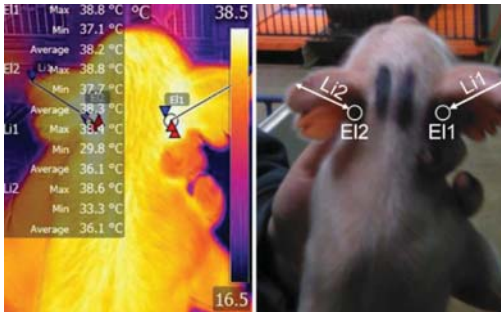
- Novel three-bed, cascading-inlet bioreactor treated agricultural drainage from a 249-ha catchment.
- Nitrate removal rates and load reduction efficiencies were similar to those of traditional single-field bioreactors.
- Sedimentation problems reduced bed life; a sediment sensing and exclusion system solved them.
- This scale provides opportunities for centralized management and nutrient reduction verification.

Journal of the ASABE

March/April
Vol. 66(2): 193-204
doi.org/10.13031/ja.14998

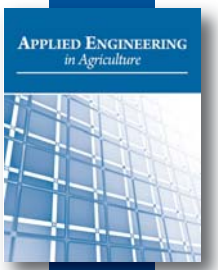
Modeling Neonatal Piglet Rectal Temperature with Thermography and Machine Learning

ASABE member Yijie Xiong, ASABE member Guoming Li, Naomi C. Willard, Michael Ellis, **ASABE member Richard S. Gates**



Highlights

- The rectal temperature and maximum ear base temperature were measured for neonatal piglets after birth.
- Piglets' rectal temperature dropped on average 5.1°C and reached 33.6°C 30 min after birth.
- Machine learning algorithms were evaluated to predict piglet rectal temperature using ear temperatures.
- Machine learning model performance was compared to that of a direct regression using maximum ear base temperature.
- The best machine learning model was 0.2°C more accurate than the direct linear regression model.



APPLIED

Applied Engineering in Agriculture

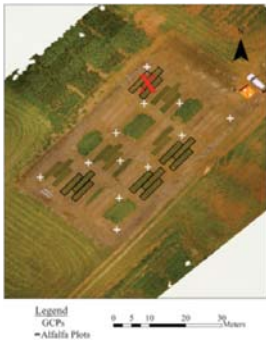
March/April
Vol. 39(2): 153-165
doi.org/10.13031/aea.15157

Computer Vision Approach for Tile Drain Outflow Rate Estimation

ASABE member Sierra N. Young, Meng Han, **ASABE member Joshua M. Peschel**

Highlights

- Vision-based approach for detecting outlet flow of tile drains in a laboratory environment.
- Method accurately detects and estimates flow within 12% or less of ground truth flow rate.
- A real-time application was developed that provides estimated flow rates from collected video.



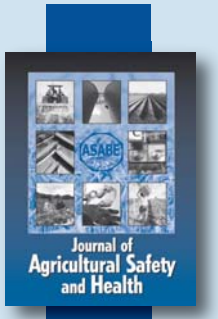
Applied Engineering in Agriculture

March/April
Vol. 39(2): 251-264
doi.org/10.13031/aea.15367

Alfalfa Biomass Estimation Using Crop Surface Modeling and NDVI

ASABE member Ali Bulent Koc, Brendan M. MacInnis, Matias Jose Aguerre, **ASABE member John P. Chastain, ASABE member Aaron P. Turner**

- A UAV with NDVI and RGB cameras captured aerial images of alfalfa plots before and after harvest.
- Structure from Motion (SfM) and crop surface models were used to determine change in alfalfa crop height.
- An equation to predict dry matter fraction (DMF) as a function of NDVI was developed.



JASH

Journal of Agricultural Safety and Health

April/May/June
29(2):
doi.org/10.13031/jash.15457

Equine Assessment Procedures in Professional Association of Therapeutic Horsemanship Unmounted Programs

Sarah Andersen, **ASABE member Michael L. Pate,** Judy Smith, Holly Clement, Rose Judd-Murray

Highlights

- Survey data collected from equine-assisted services programs that offer unmounted (ground) programs document the need for standardized equine safety evaluations.
- 36.7% of respondents used an objectively defined method (i.e., used a defined percentage, number, rating scale, or yes/no checklist that must be achieved by the equine prior to them entering the program), while 63.3% did not use an objectively defined method.
- Common equine safety concerns were biting/nipping, spooking from external stimuli, and stepping on a person's foot.

Honoring the Newly Elected

ASABE recognized 10 new Fellows at the 2022 Annual International Meeting in Houston. In this issue of *Resource*, we highlight three of the 2022 ASABE Fellows.

Fellows must have a minimum of 20 years of active practice in, or related to, the profession of engineering, the teaching of engineering, or the teaching of an engineering-related curriculum. The designation Fellow has honorary status, to which members may be elected but may not apply.

As the ASABE Constitution states, Fellows are "of unusual professional distinction, with outstanding and extraordinary qualifications and experience in, or related to, the field of agricultural, food, or biological engineering." Election to Fellow is one of the highest distinctions an ASABE member can achieve.

Bradley P. Marks, P.E., Professor and Chair, Department of Biosystems and Agricultural Engineering, Michigan State University (MSU), is honored for outstanding contributions in the areas of food safety engineering, professional leadership, and educational excellence.

As chair of the Department of Biosystems and Agricultural Engineering at MSU, Marks is responsible for managing the teaching, research, and outreach programs of the department. He also leads an interdisciplinary research program focused on the microbial safety of ready-to-eat food products.

Marks is an international leader in food safety engineering, impacting industry and regulatory practices. In the low-moisture food sector, Marks led seminal research on the use of a non-pathogenic surrogate organism for validating moist-heat processes for *Salmonella* control in almonds, which has become a standard practice in the industry. He has also advanced methods for modeling pathogen inactivation during dynamic thermal processes of low-moisture products. Recently, Marks led research quantifying the effects of humidity on *Salmonella* inactivation during impingement cooking, which has informed pending changes in regulatory guidance.

Marks has made an impact on the education of young engineers by developing seven biosystems and biological engineering courses, including project-focused first-year design courses and an undergraduate food engineering course sequence. For many years, he served as the undergraduate program coordinator for biosystems engineering at MSU, where he was responsible for curriculum improvement and ABET accreditation.

Pictured above, Brad and his daughters getting ready to hit the road.

D. Raj Raman, P.E., Morrill Professor, Department of Biological Systems Engineering, Iowa State University (ISU), is honored for steadfast leadership in developing and overseeing ASABE-related educational programs and in developing and delivering core courses.

At Iowa State University, Raman maintains an internationally recognized research and teaching program in agricultural and biological systems engineering. He focuses on perennial ground-cover approaches to soil and water conservation. He also devotes time to administrative work in the department and works on undergraduate and graduate recruitment, committee leadership, and membership and staff supervision.

Raman has made major impacts on the academic program. He was instrumental in the development of ISU's biological systems engineering degree program, beginning with developing a new undergraduate program and seeing it through to accreditation. He has developed and taught courses across the curriculum, from first-year engineering problem-solving to capstone design. Raman also directed summer research programs, including NSF Research Experiences for Undergraduates (REU), enrolling more than 220 students.

Raman is a highly respected instructor and has consistently scored very high in student evaluations. In collaboration with **ASABE Fellow Amy Kaleita**, he codeveloped a hybrid-flipped model that is working very well in both entry-level engineering courses as well as an advanced core numerical methods course. He has also codeveloped a highly effective preparatory course for engineering licensure that resulted in a five-fold increase in test takers and a pass rate exceeding 80%.

Pictured above, Raj and his wife Mary at the North Shore of Lake Superior.

Meet the Fellows

Kenneth C. Stone, P.E., Research Agricultural Engineer, USDA Agricultural Research Service, is honored for engineering research that has significantly improved irrigation while conserving and protecting natural resources.

Stone provides leadership and technical guidance for research to solve critical problems in natural resources, water management, and water quality. His research focuses on optimizing water applications, using low-quality water in irrigation, treating animal wastewater, and reducing agriculture's impact on sensitive ecosystems.

As a part of a Presidential Initiative on Water Quality, Stone coordinated a multi-agency team of experts to document the voluntary implementation of improved management practices and their impact on stream water quality. Stone's team advanced the practice of using riparian landscape features and in-stream wetlands for nonpoint-source pollution mitigation, especially in areas with heavy livestock production, and documented measurable improvements in stream water quality.

Throughout his career, Stone has made significant advances in water quality, water management, and irrigation engineering and is recognized as an international authority on these topics. Stone's long career of applied research has been devoted to improving water and nutrient management practices. Early in his career, Stone was a member of a research team that demonstrated the feasibility of applying oil-formulated insecticides to corn through a center-pivot irrigation system. This method increased the formulation affinity and retention on the foliage, thus increasing the efficacy and reducing the pesticide requirement.

Pictured above, Ken, his wife Carol, and their sons at the family farm in Georgia.

events calendar

ASABE CONFERENCES AND INTERNATIONAL MEETINGS

To receive more information about ASABE conferences and meetings, call ASABE at 800-371-2723 or email mtgs@asabe.org.

2023

July 9-12	**ASABE Annual International Meeting.** Omaha, Neb., USA.
Oct. 23-27	**The 2nd Global Evapotranspiration Symposium: Advances, Challenges, and Future Needs in Measurements, Modeling, and Applications.** University Park, Pa., USA.

2024

Feb. 12-14	**Agricultural Equipment Technology Conference (AETC).** Louisville, Ky., USA.
July 28-31	**ASABE Annual International Meeting.** Anaheim, Calif., USA.

2025

July 13-16	**ASABE Annual International Meeting.** Toronto, Ont., Canada.

YPC News & Notes

Welcome, I bid you welcome… to the YPC events at AIM 2023!

2023 is a milestone year for the Young Professionals Community (YPC) as we celebrate 20 years of being an integral part of ASABE. To celebrate this grand occasion, the YPC team has assembled a diverse slate of technical sessions, social events, and professional development opportunities for the AIM in Omaha, Nebraska. Come and join us for these fantastic YPC events, and don't forget the cake mix, butter brickle ice cream, and TV dinners—all invented in Omaha!

Social and Educational Events

Join the ASABE Foundation and YPC for the **ASABE Foundation and YPC Dinner and Trivia** event at Charles Schwab Field, home of the NCAA College World Series. Enjoy a delicious dinner, hear keynote speaker Cheryl Mitchell explain how different generations think and work, and compete with other teams to claim the crown of trivia champion.

Want to build up your step count before sitting in on the various sessions and meetings? Join the YPC-sponsored **Fun Run/Walk** on Sunday morning.

A **Career Fair** is new this year where representatives from industry, academia, and government agencies, all at the forefront of agricultural and biological engineering, will network with potential employees.

Professional Development Events

Expand your knowledge by participating in the YPC-sponsored Continuing Professional Development (CPD) courses. This year's topics include **Computer Vision and Machine Learning for Agricultural and Biological Engineers** and the **Nexus of R and Data in Agricultural and Biological Engineering**.

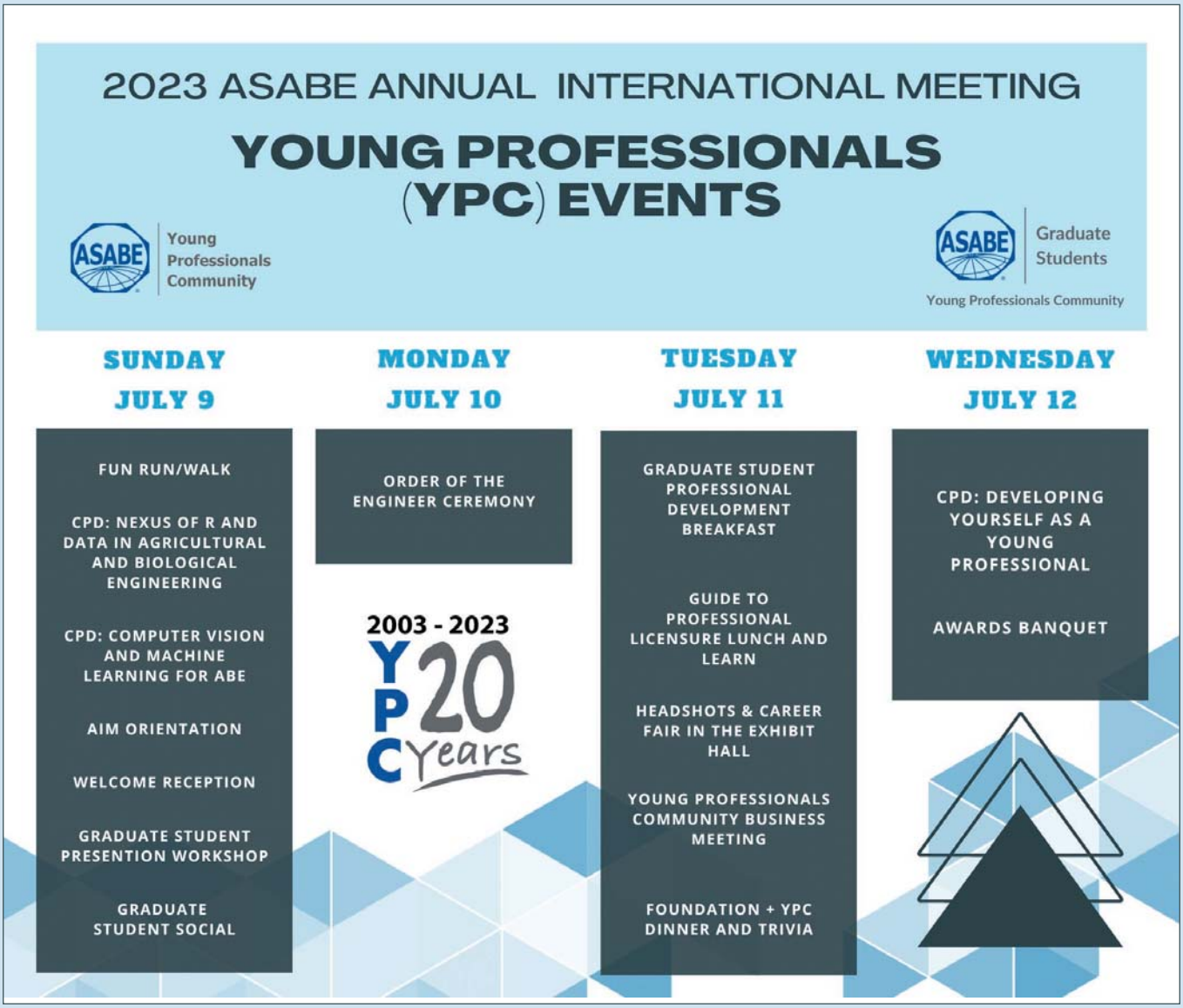
In addition, we have a special CPD dealing with **Developing Yourself as a Young Professional,** covering effective goal setting, successful communication in a team environment, and the power of reflection.

Finally, back by popular demand, is our **Guide to Professional Licensure Lunch and Learn,** where aspiring engineers interested in receiving their license as Professional Engineers will get insights about the PE exam and professional licensure from experienced engineers.

Don't miss your chance to participate in YPC events at the AIM in Omaha. Whether it's the Fun Run/Walk (*top*), the Awards Luncheon (*middle*), or a night on the town (*bottom*), YPC has something for everyone. This year is extra-special with many 20th birthday celebration events planned.

Graduate Student Events

Our grad student members are invited to attend the **Grad Student Presentation Workshop**, which will showcase the



do's and don'ts of technical presentations and give you some tricks for fine-tuning your presentation skills.

At the **Grad Student Professional Development Breakfast**, students can take a personality assessment, develop an awareness of their hidden potential, and strengthen their communication skills.

Leadership Opportunities

The AIM offers various ways for young professionals to influence the future of YPC. Join us for the **YPC Business Meeting**, where we will discuss our future business, elect members to serve on the YPC councils, and present volunteer opportunities on our committees. The open positions on our Executive Committee this year include vice chair, publications representative, standards and technical committee representative, and members at large.

Special Attractions

Whether you are a first-timer or a veteran of prior AIMs, everyone is welcome to attend the **AIM Orientation Session** and use our online tool (available at asabeaimtool.org) to navigate the sessions and meetings.

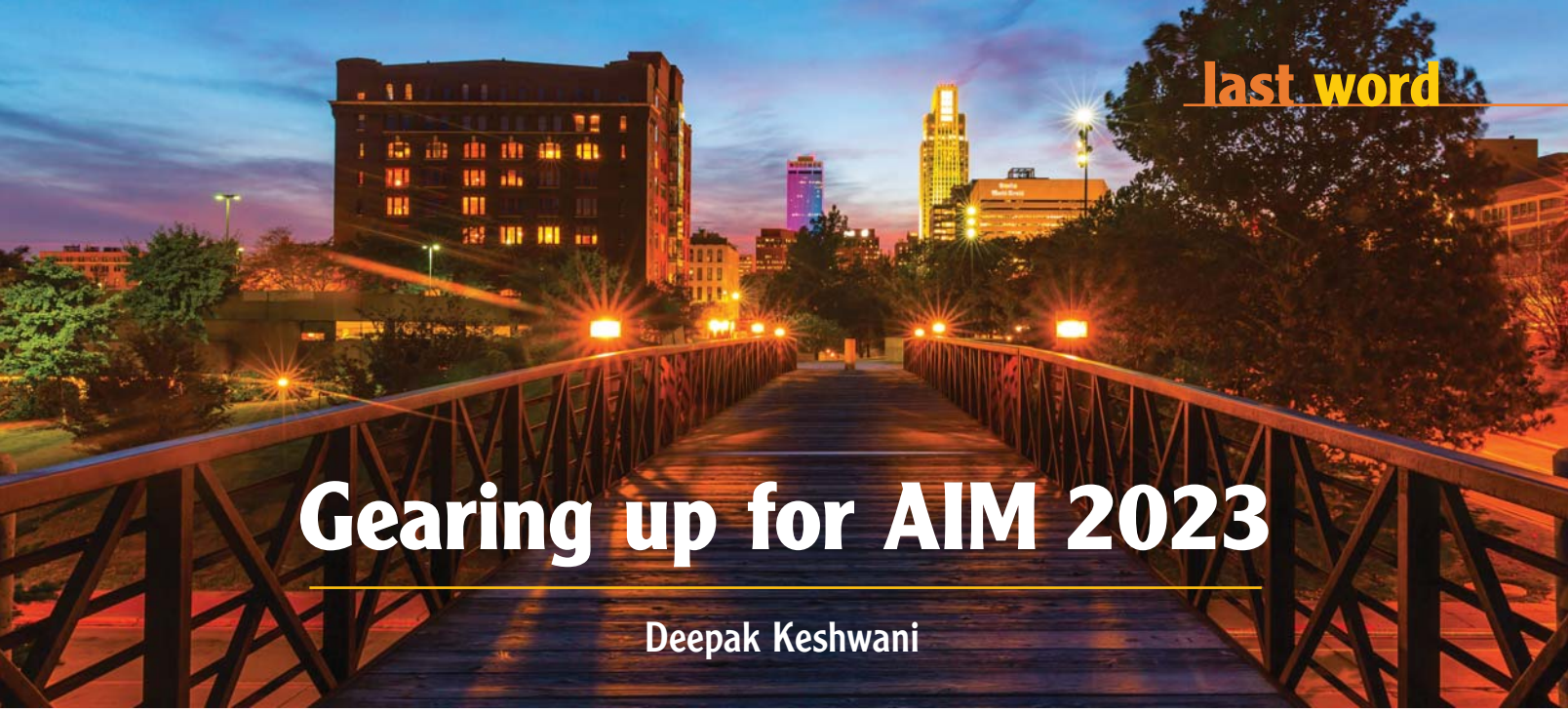
And just like AIM 2022 in Houston, Texas, we will have a **Headshot Booth** for a classy LinkedIn profile picture or an amusing group photo with your friends at the AIM.

Finally, celebrate **YPC's 20th birthday at the YPC Reunion Reception** and **All in Good Fun Pedal Tractor Race**, with past YPC chairs and Executive Committee members reminiscing about their incredible impact on our Society.

Find out more about these events and register for the AIM at asabemeetings.org. We hope to see you in July!

ASABE Member and YPC Meetings Council Rep Ekramul Haque Ehite, Ph.D. Candidate, University of Tennessee, Knoxville, USA, eehite@vols.utk.edu.

professional listings

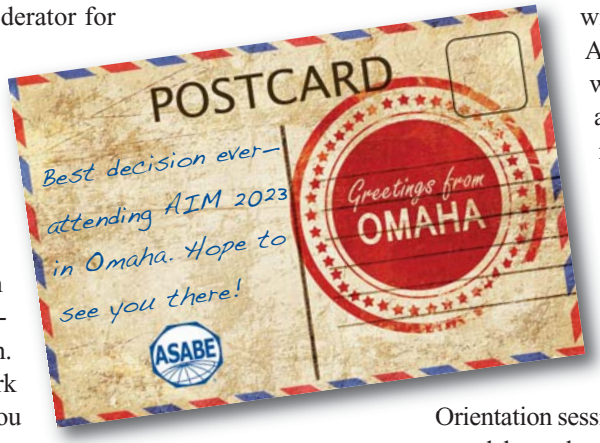


Gearing up for AIM 2023

Deepak Keshwani

AIM 2023 is just around the corner. As I've been gearing up for this big event, I've been reflecting on my experiences at previous ASABE meetings over the years. I joined ASABE as an undergraduate student in 1999. Since then, there have been several important moments in my career that involved interactions at ASABE meetings.

For example, I remember my first presentation at an annual meeting as a nervous grad student presenting my research for the first time. The moderator for that session was very encouraging, and his calm demeanor helped me deal with my nerves. I made it through my presentation, and his kindness meant a lot to me.



In fact, I adopted his approach to moderating a technical session when I got the opportunity to organize and moderate sessions on my own. Years later, I had the privilege to work alongside him as a colleague. (You know who you are! Thank you!)

While I always look forward to learning new things at ASABE meetings and expanding my knowledge base, I especially look forward to the personal interactions that can be transformative in our careers.

We are only a few weeks away from AIM 2023. On behalf of the ASABE Meetings Council, I invite you to join us in Omaha as we gather to learn, share, and help each other make a difference in the world. The program chairs of our various technical communities have been working hard to put together outstanding programs, featuring over 1,000 abstracts.

The local planning committee has organized a range of activities to complement the technical programs. These activities include tours of the University of Nebraska's Farm of the Future (N-Farms), a 103-year anniversary celebration of the Nebraska Tractor Test Lab, tours of nearby companies such as Claas, Lindsay, and Valmont, and a behind-the-scenes tour of the Henry Doorly Zoo, just to name a few. AIM 2023 will also feature a special Circular Bioeconomy Systems Day.

For the first time ever, ASABE will be offering childcare services to AIM attendees. Visit the meetings website (www.asabemeetings.org/) and click on "Kids of AIM" to learn more. The AIM will also be welcoming youth from the local community, who will meet with ASABE members and explore interactive exhibits that highlight our profession.

If you are a first-time attendee, stop by the AIM Orientation session on Sunday, July 9th, to meet other newcomers and learn how to get the most out of your AIM experience. If you are a regular AIM attendee, I encourage you to step outside of your comfort zone. Check out some events that you haven't attended before. Make new connections. Most of all, keep an eye out for first-time attendees. Make them feel welcome! Let's help each other have those personal interactions that make ASABE meetings special.

I look forward to seeing you in Omaha. Come experience Nebraska Nice!

ASABE member and Meetings Council Chair Deepak Keshwani, Director of Undergraduate Programs, Department of Biological Systems Engineering, University of Nebraska, Lincoln, USA, dkeshwani2@unl.edu.

DATE
July 9 - 12, 2023

DESTINATION
Omaha, NE

Meeting Venue
CHI Health Center

Host Hotel
Hilton Omaha

More Info
asabemeetings.org

ASABE 2023 - Annual International Meeting

Hilton Omaha and CHI Health Center
JULY 9-12, 2023
#ASABE23

ASABE 2023 presents a forum to expand awareness of current industry trends, promote and acknowledge innovations in design and technology, and provide opportunities for professional development – all with a focus on the economic, political and societal impacts facing the industry.

ASABE 2023 Highlights

- Networking Opportunities
- More than 1,000 Technical and Poster Presentations
- Professional Development Sessions
- Specialty Sessions which include invited speakers, panel discussions and round-table discussions
- Over 12 Technical and Cultural Tour Options
- Professional Development Hours/Credits
- Career Fair
- New this Year – Kids of ASABE Childcare and Camp During Sessions

Visit **www.asabemeetings.org** to register!