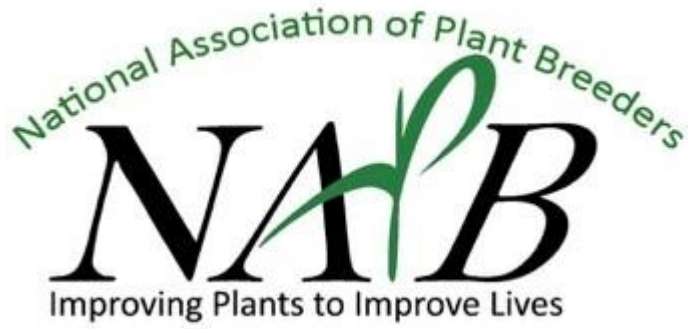


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Welcome Letter: NAPB President Todd Campbell



It's a great day to be a plant breeder and member of NAPB

Attending a scientific meeting and networking among our peers provides us a unique opportunity to renew the spark of passion for the work we do as plant breeders. We return home from a scientific meeting with new ideas, energy, and relationships. As I return home from our recent annual meeting in Guelph, I personally feel the 'energy bump' as it relates to my own plant breeding program. I also feel as optimistic as ever about our scientific discipline and the impact it can have and is having on our world. Look no further than the makeup of our organization. As I write, NAPB is sustaining over 400 members of which one third are students. Over 100 students participated in our annual student poster competition. Our organization also recognized the inaugural class of Borlaug scholars. To reinvigorate your own passion for plant breeding, talk with these students and scholars, listen to their ideas, and harness their energy and passion. Many of them would also make wonderful employees!

NAPB has come a long way in a very short time. In 2008, your NAPB was created from the work of the Plant Breeding Coordinating Committee (PBCC), a multistate coordinating committee of the State Agricultural Experiment Stations within the US Land Grant University System. The idea was to create a professional, scientific organization to advocate for a cohesive national plant breeding agenda in which strong public and private sectors work independently and together so that both the value and importance of plant breeding are known and appreciated. How did NAPB get where it is today? **Passion, hard work, diligence, and collaboration. NAPB is a grassroots, member driven, all volunteer organization.** In addition to continued support from the private and public sectors in the US, Canada, and abroad, I want to specifically highlight several key partnerships that have been important for our growth and impact: 1) PBCC, 2) Alliance of Crop, Soil, and Environmental Sciences (ACSESS), 3) American Seed Trade Association (ASTA), 4) Agronomic Science Foundation (ASF), and 5) Seed World. Thank you!!

As incoming President of NAPB, I want to briefly share with you my vision for leading our vibrant organization over the next year. First, as we embark on our next 10 years, our organization will go through a strategic planning process this year. This effort is being led by NAPB Past President Wayne Smith and will lay the groundwork for where NAPB goes next. You will all learn more about this process as we move through the year. I encourage you to share your ideas. Second, I want to maintain and grow our fruitful collaborative partnerships listed above while also forming new ones. These are critical to advancing our plant breeding discipline, making our organization strong, and highlighting plant breeding's impact on humanity. Third, I would like to challenge all of you to take the opportunity to tell someone what you do and why it is important for our world. We all have an important story to tell, and we should take the time and energy to explain it to a non-scientific audience. It might be an elementary or high school, a civic organization, a different scientific or professional organization, or an elected official. Take the time and tell them the tremendous stories of plant breeding impacts. Tell them Norm Borlaug and the Hunger Fighters sent you!

A handwritten signature in black ink that reads "B Todd Campbell". The signature is written in a cursive, slightly stylized font.

2018 NAPB Award Winners

By Jim McFerson, Chair, NAPB Award Committee

At its 2018 annual meeting, the National Association of Plant Breeders (NAPB) presented three awards in recognition of Lifetime Achievement, Plant Breeding Impact, and Early Career Scientist. In addition, three awards were presented to graduate students for the top posters at the conference and eight students (four undergraduate and four graduate) were recognized as Borlaug Scholars. Hosted by the University of Guelph, Guelph, Ontario, Canada from 7-10 Aug, the meeting was held in coordination with the annual meeting of the US Plant Breeding Coordinating Committee (PBCC) and attracted over 250 participants, including over 100 students.

The 2018 NAPB awardees exemplify the very best in plant breeding research, education, outreach and leadership. They model persistent dedication and a passionate devotion to applying their plant breeding skills and technical excellence to promote food security, quality of life, and a sustainable future. They are committed to supporting the next generation of the plant breeding discipline. These outstanding professionals inspire plant breeders and scientists everywhere. All three professional awardees will present invited talks at the next NAPB/PBCC annual meeting, to be hosted by the University of Georgia, from 25-29 Aug in Pine Mountain, Georgia.



Attendees from the 2018 NAPB Annual Meeting in Guelph, Ontario. Over 250 plant breeders participated, including over 100 students. For more photos, check out our facebook page or search for #NAPB2018 on social media

Lifetime Achievement Award

Dr. Shawn Kaeppler, Campbell Bascom Professor of Agronomy, University of Wisconsin Madison

This award, recognizing distinguished long-term service to the plant breeding discipline through research, teaching, outreach, and leadership, was given to Dr. Shawn Kaeppler, a Professor of Agronomy at the university of Wisconsin Madison.

Kaeppler received his B.S. degree in Genetics at the University of Wisconsin-Madison in 1987, and his Ph.D. degree in Plant Breeding and Plant Genetics at the University of Minnesota under the mentorship of Ronald Phillips. He was a faculty member at the University of Nebraska-Lincoln from 1992 to 1995 in the role of Plant Cytogeneticist. He has been a faculty member in the Department of Agronomy at the University of Wisconsin-Madison since 1995 working in the areas of Maize Genetics and Breeding and Crop Functional Genomics.

He has served as the Director of the Wisconsin Crop Innovation Center since 2016. Kaeppler is a Fellow of the Crop Science Society of America and has been recognized as a Rothermel-Bascom Professor and Campbell-Bascom Professor at the University of Wisconsin-Madison. He has served as Editor of Crop Science, on the Maize Genetics Executive Committee, on the Genomes to Fields Executive Committee, and is incoming president-elect of the Crop Science Society of America.

Kaeppler has taught graduate and undergraduate courses in plant breeding and plant genetics, including an undergraduate Plant Breeding and Biotechnology course that introduced a number of students into careers in plant breeding.

From a childhood that included judging dairy cattle, Kaeppler has been fascinated by genetics and breeding. An overall passion has been understanding how genetic variation results in altered phenotypes, and how that knowledge can be harnessed to make better crops. His collaborative team has made significant discoveries in crop epigenetics, somaclonal varia-



tion, and crop genome composition including extensive presence-absence variation. He has made important discoveries in maize seed size and composition, and maize abiotic stress tolerance.

As outcomes of his research goals, he develops maize lines with utility to seed producers in the northern maturity zones. His team at the Wisconsin Crop Innovation Center develops transformation and editing approaches for many crops including new genotype-independent approaches for previously recalcitrant crop species. Dr. Kaeppler accepts this award recognizing the strengths of his amazing colleagues, collaborators, students and staff throughout his career. Discoveries made as part of a strong team effort are always the most fulfilling and enjoyable.

Plant Breeding Impact Award

Donald Bockelman, Monsanto (retired)

This award recognizes an individual in the public or private sector who has made significant advancements in the field of plant breeding, specifically in the area of applied variety and/or technology development. The 2018 recipient is Donald Bockelman, a corn breeder who retired from Monsanto in July, 2018 after 37 years of highly impactful plant breeding activities.

Don began his career in Farmer City-IL with O's Gold in August 1980, upon the completion of a graduate degree in Plant Pathology, working on Goss' Wilt. After the 1984 Upjohn Purchase of O's Gold, and integration with Asgrow, he moved to Monmouth-IL in 1987 where he remained until his retirement this last July breeding corn with focus on the central Corn Belt.

Along his career Don has also played key roles beyond corn breeding, earlier in his career as a plant pathologist providing technical and disease inoculum production support for Asgrow corn breeding, later as part of the Monsanto breeding Technology organization Don was involved in the discovery of QTL's for disease resistance, control of flowering time, Photoperiod response and general trait-marker association analyses in Temperate/Tropical breeding populations.

Don has had a very successful track record at the challenging task of developing commercial lines containing exotic germplasm and has developed 25 PVP corn variety patents contributing to multiple hybrid PVP patents, and has also contributed on three patents involving breeding methodology.

Inbreds developed by Don represented step changes in Monsanto's product performance for North America and have had significant relevance outside NA as part of the global germplasm exchange. If we were to grow in a single year all hybrids containing inbreds developed by Don along his career, we will cover a significant portion of the Central Belt market.



The focus for most of his career has been introgressing diverse global germplasm into North American temperate germplasm. He played a major role in managing, evaluating germplasm, and promoting diversity efforts within Monsanto. In his breeding role, multiple breeding methodologies were explored using conventional, DH, and molecular breeding schemes. He coordinated Monsanto's in-kind breeding and testing support to USDA-ARS Germplasm Enhancement of Maize (GEM).

Don developed his interest on diverse germplasm early in his career as a research assistant and plant pathology graduate student at Kansas State University, where he assisted in research on two then emerging corn disease threats in the late 70's, Goss's bacterial wilt and corn lethal necrosis. Don explored exotic germplasm as sources of disease resistance to temperate germplasm.

Equally important to his commercial success are his contributions to promote breeding for diversity efforts around the world and mentoring many new corn breeders and research team members. People from every world region have enjoyed spending time with Don in the field and have benefited from his passion for corn breeding, knowledge of global germplasm, and perspective on diversity breeding.

Along his career, Bockelman has received multiple Monsanto recognitions including the Above and Beyond Award for the germplasm team effort, Commercial Impact Award, multiple Best New Inbred Code Awards and the Career Award for outstanding lifetime achievements.

Early Career Scientist Award

Dr. Jeffrey Endelman, Assistant Professor, University of Wisconsin-Madison

This award recognizes a scientist in early stages of their plant breeding career who exhibits the ability to establish strong research foundations, to interact with multi-disciplinary teams, and to participate in relevant professional societies.

The 2018 recipient of the NAPB Early Career Scientist Award is Dr. Jeff Endelman, Assistant Professor at the University of Wisconsin-Madison and leader of the potato breeding program.

Endelman studied computational science for many years before discovering his calling as a plant breeder. As a graduate student in bioengineering at Caltech, he developed computational methods to optimize the *in vitro* evolution of enzymes and spent many weekends observing native plants in the wilderness areas of southern California.

Endelman left academia for two years to work on small vegetable farms, by which time he realized a career in plant breeding was the perfect way to combine his interests. He returned to graduate school to complete a PhD in Crop Science at Washington State University, where he conducted research on barley breeding and genetics. Toward the end of his PhD he created the software package *rrBLUP* for genome-wide prediction, which has been cited over 500 times. As a postdoc at Cornell University, he continued to research genomic selection by improving its theoretical foundation for inbred lines and investigating the optimal allocation of resources.

In 2013 Endelman joined the faculty at the University of Wisconsin-Madison to lead the potato breeding program. Over the past five years, he has overseen the release of 10 potato varieties, spanning all US market categories (chip; French fry; russet, red, and yellow fresh market).

One of the challenges with commercial potato is that it is autotetraploid, meaning the genome is organized in groups of four homologous chromosomes rather than homologous



pairs. The Endelman group has developed several tools to facilitate molecular breeding in autotetraploids, including software to determine allele dosage for SNP array and GBS markers, software for genome-wide association analysis, and methods to partition genetic variance. In 2018 UW-Madison became the first potato breeding program in North America to implement genomic selection, based on a training set of 570 clones.

Endelman has been active in training students and postdocs at UW-Madison. He teaches an undergraduate course on “Genetically Modified Crops” and graduate courses on genetic mapping, polyploid genetics, and selection theory. One MS student, one PhD student, and three postdocs have been trained in his lab so far, and he has served on the thesis committee of 14 other graduate students.

Student Poster Award Winners

1st Place

Genomic prediction strategies for evaluating trait stability in a multi-parent hexaploid wheat population

Paul Mihalyov, Washington State University

Paul is currently finishing up a Ph.D. in Molecular Plant Sciences at Washington State University. After doing a “rotation” in plant pathology under Dr. Axel Elling, he joined a spring wheat breeding program led by Dr. Michael Pumphrey. For more details, check out this month’s graduate student spotlight (page 12).



2nd Place

Identification and characterization of fast-neutron induced mutations underlying altered seed composition phenotypes for improvement of soybean seed composition

Elizabeth Prenger, University of Georgia

Elizabeth is earning her M.S. at the University of Georgia working with soybean breeding and genetics under Dr. Zenglu Li. Elizabeth’s research will be featured in our graduate student spotlight in the January newsletter.



3rd Place

FaRCa1: A major locus for resistance to anthracnose fruit rot in strawberry

Natalia Salinas, University of Florida

Natalia is third-year PhD student in the strawberry breeding program at the University of Florida under Dr. Vance Whitaker. Natalia’s research will be presented in our graduate student spotlight in the April newsletter.



Want to learn more?

All poster abstracts can be found on the NAPB [website](#)

Borlaug Scholars



2018 NAPB Borlaug Scholars and Mentors, Guelph, ONT

By Donn Cummings, NAPB Borlaug Scholars Committee Chair

The NAPB Borlaug Scholarship is an exciting new travel scholarship and mentoring program. The Borlaug “Green Revolution” legacy of breeding better plants, promoting global food security, and mentoring young emerging scientist is well known and respected worldwide. This award builds on that strong foundation. This program assists and encourages both undergraduate and graduate students who are seeking careers in plant improvement. Students are selected through a national search to receive assistance with travel expenses to attend the society’s annual meetings. These students are also mentored by experienced leaders in the plant breeding profession in this program. The inaugural class of 2018 consists of 8 scholars from 5 states and 6 institutions:

Congratulations to the Class of 2018 NAPB Borlaug Scholars!

Undergraduate Students:

Andrew Herr, Iowa State University
Dorothy Kirsh, St Mary’s University
Katelyn Fritz, Iowa State University
Tavin Schneider, Montana State University

Graduate Students:

Adam Bolton, University of Wisconsin
Austin Dobbels, University of Minnesota
Elizabeth Prenger, University of Georgia
Kevin Falk, Iowa State University

These winners were selected from 50 nominations in national competition. They received travel funds, recognition at a special breakfast in their honor, and were connected with experienced mentors from among the NAPB professional members. Mentoring at the meetings, as well as over the next year(s) is a real opportunity for building professional networks. Scholars received free registration to the annual meetings and student membership in NAPB. NAPB welcomes these new members!

Borlaug Scholars, cont.

The Borlaug Scholars Committee wishes to thank all first-year donors for making this program a success! A special thank you goes to **Monsanto** (now Bayer) for being the first corporate partner to add financial support the **NAPB Borlaug Scholars Fund**. The **Seed Innovation and Protection Alliance** (SIPA) is recognized for a very generous contribution. In addition, **Corteva** added support by printing the posters introducing each of the winners displayed at the conference.

A special thank you goes to the **Agronomic Science Foundation (ASF)** for agreeing to host the NAPB Borlaug Scholarship Fund so that it can be managed to provide these scholarships well into the future. **Sara Uttech** at ACSESS is recognized for strong administrative support for Borlaug Scholars this year.



At the Awards Banquet in Guelph, Donn Cummings, Chair of the NAPB Borlaug Scholarship Committee announced the **\$Grow It!** Campaign for the remainder of 2018. This campaign is providing **\$10,000 of matching funds** to members of NAPB who make personal contributions to the NAPB Borlaug Scholarship Fund **by Dec. 31, 2018**. Professional member donations will be matched equally, while student member donations will be matched 2:1. Any member contributions of any amount will be matched up to the maximum limit of \$10,000. Donn described the matching funds as “low hanging fruit” to be harvested. He encouraged all members to donate at least \$20 or more, so that the fund will grow by a minimum of \$20,000K in 2018, if all the available matching funds will be realized before the opportunity expires. He encouraged members to help **“pick the cherries”** by making donations **today**. All donations are to be made by credit card at the NAPB website: www.plantbreeding.org > About Us > Donate. Or, just click this link: <https://www.a-s-f.org/napb-borlaug-scholars-donations> to donate online using your credit card. NAPB is a 501(c)3 organization and your donations may be tax deductible.

Members can also contribute to this program by **volunteering to be a mentor** at: www.plantbreeding.org/awards/mentor/application.

NAPB Borlaug Scholars application for 2019 will begin Jan. 3, with a **final deadline of March 21**.

Non-member plant science professionals and students are encouraged to **join NAPB today!** (Please go to <https://www.plantbreeding.org/membership/join-renew>. Encourage a friend or colleague to join NAPB!

Diversity Enhancement Scholars

This year, six students, including both undergraduate and graduate, were awarded the NAPB diversity enhancement Travel Scholarship to attend our NAPB Meeting at University of Guelph. Awardees were asked to write a short report on the various sessions held during the meeting. Below are a few excerpts describing the experiences of this year's awardees.

Pre-Conference Soft Skills Workshop

"The show really kicked off the next day with a preconference workshop led by Dr. Sherry Harsch-Porter. She instructed us in a workshop called "WHO You Are is How You Lead" sponsored by Monsanto and Corteva Agriscience™, Agriculture Division of DowDuPont™. Previously to attending the workshop she had us fill out an online questioner from Wiley called Everything DiSC-Workplace. We learned about the different behavioral patterns people fall into and ways to interact with personalities that clash with our own. She also taught us about career derailers and why people follow influential leaders. Dr. Harsch-Porter had many wise sayings such as "Use influence over those who you don't have direct control over", "Behaviors are flexible, even if only for temporary", "You need to setup a situation that allows your intrinsic motivation to come out" and "A good leader always speaks last. Be able to read the room". Even though the workshop lasted only four hours, I felt like I took a lifetime of experience away."

~ Aron Felts

Session One

"I was fortunate enough to be one of the Diversity Travel Award Scholars for the 2018 conference at the University of Guelph. The first session of the conference was captivating, humorous, and eye opening as Dr. Elizabeth Lee, conference coordinator, gave a welcoming introduction and brief background of the program with great excitement. Everyone in the room felt as if they were getting briefed on an important mission as she explained that our pens were able to write in zero gravity! What more could a plant breeder ask for?"

~ Amaja Andrews



2018 Diversity Enhancement Scholarship Winners, Above: from left to right, Aron Felts, Rito Medina, Emily Tolbert, Jodi Callwood, and Stephen Harvey. Below: mentor Dr. Elizabeth Lee and Amaja Andrews.



Diversity Enhancement Scholars, cont.

Session Two

“Marco Lopez Cruz from Michigan State University presented a method of high-throughput crop imaging phenotyping technology used to capture multiple time points for wheat phenology using Image-derived Penalized Selection Indices (PSI). Cruz concluded that the PSI was more efficient for indirect selection than traditional methods. This experience provided further depth into the possibilities within plant breeding which has incorporated many disciplines to improve the quality and success of conventional breeding tools. Also, this crop imaging technique increased the number of tests genotypes by half, increasing genetic gains every year.”

~ Jodi Callwood

Session Three

“Breeding for a Budding Industry by Greg Baute with Anandia Labs, brought to attention the projected increase of activity in the cannabis industry during the next 5-10 years within Canada. Cannabis has been bred as a crop for its fiber, flower, or seed. The flower is most commonly associated with the plant and was the highlight of this talk. An unstructured breeding population has led confusion of products, which is making it difficult for the producers and consumers to develop and consume a consistent product.”

~ Stephen Harvey

Session Four

“This summer I had the privilege of attending the National Plant Breeding Association meeting in Ontario, Canada at the University of Guelph. I had the opportunity to network with professionals in the plant breeding field from diverse backgrounds. Also, I was fortunate to hear presentations and talks related to breeding and the industry. As an attendee and awardee of the Diversity Enhancement Enrichment program, we were given the task to summarize a session of many that went on throughout the meeting. Me and my partner/mentor, Leynard Leyton, were given Session #4.

A memory I won't forget is when Mr. John Clark broke out the whole building in song. His musical talents engaged the audience to his presentation of opportunities and challenges we face in the industry. He emphasized the importance of reaching beyond your dreams, as well as the idea that the field of plant breeding is constantly evolving. Another high point of the session was the presentation of successful Brassica breeding programs at the University of Manitoba. Rob Duncan gave a captivating talk about the booming Canola Oil industry and the promising possibilities of how breeding can positively impact the production of this plant (rapeseed).”

~ Rito Medina

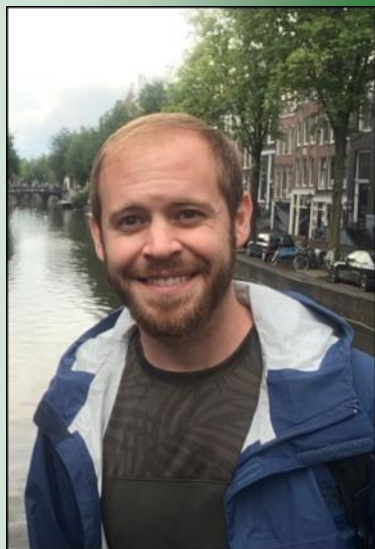
Session Five

As a young scientist, I personally benefitted from hearing how interdisciplinary the project [Breeding strategies in long-lived species by Dr. Barb Thomas, University of Alberta] was—encompassing policy, economics, social scientist, plant scientist, and community outreach amongst many more. It was impressive to see how professionals can merge disciplines for a common goal of creating and maintaining resilient forest.

~Emilia Tolbert

Graduate Student Spotlight

Paul Mihalyov



Paul Mihalyov is a graduate student at Washington State University working in spring wheat breeding. Paul was our 1st place student poster award winner at the 2018 annual meeting in Guelph.

**Connect with Paul
on LinkedIn [here.](#)**

Where do you come from and what is your background?

Growing up in the Southwest, pre-destination led me to a chile pepper breeding program at New Mexico State University. I received my B.S. in Genetics under the guidance of Dr. Ian Ray and Dr. Paul Bosland. Throughout my education, I occasionally strayed from plant breeding by venturing into organic chemistry, neuroscience, and molecular biology; but somehow I kept finding my way back home to a classical breeding program.

What institution do you attend and who is your advisor?

I am currently wrapping up my Ph.D. in Molecular Plant Sciences at Washington State University. After doing a “rotation” in plant pathology under Dr. Axel Elling, I joined a spring wheat breeding program led by Dr. Michael Pumphrey.

What is the focus of your research?

While there are many angles for tackling the same problem, plant breeders usually focus on one general task: accelerating genetic gain. In theory, the most direct ways to accomplish this are by evading environmental interference, modeling yield potential with statistical sorcery, and creating high-throughput surrogate phenotypes. My research aims to apply these strategies to support breeding decisions in hexaploid wheat.

What is your favorite part of your job?

The best part about plant breeding is the open-ended pool of technology to draw from. At the interface between fundamental research and product development, I enjoy the ability to interact with the entire spectrum of applied biotechnology.

What would you like to do after graduate school?

Despite the success of corporate consolidation and my unquenchable thirst for an industry position, launching a start-up project after graduation makes the most sense to me.

What will be our biggest challenge in the future of plant breeding?

Delivering food and medicine to the world is gridlocked by socio-political rather than technological issues. As plant breeders, we created our own biggest challenge: properly rewarding visionary scientists while firmly upholding our social and environmental responsibilities.

Announcements

- “Agricultural Genetics II” by author James L. Brewbaker will soon be released. It will be available online as an e-book from the University of Hawaii’s College of Tropical Agriculture. Version one from the author in 1963 had 9 chapters. The 18 chapters of Version II fully represent the amazing growth during this half-century of the sciences of plant and animal genetics and breeding. It is written as an advanced text for online readers with extensive use of hyperlinks. The 18 chapters range over the four themes of Biological Variation, The Amazing Gene, Quantitative Genetics, and Breeding. Please contact Dr. Brewbaker (brewbake@hawaii.edu) if you would like to review a draft of the full contents.
- The 2019 NAPB Annual Meeting will be held from August 25-29,2019 at Callaway Gardens, Pine Mountain, GA. Stay tuned for more info: <https://www.plantbreeding.org/content/2019-annual-meeting>
- Do you have an announcement relevant to the plant breeding community? To have your announcement included in our next newsletter, please email vsykes@utk.edu.

Stay in touch with NAPB!

Website: <https://www.plantbreeding.org/>



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Have an idea for a future newsletter? Email the communication committee:

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NAPB: Improving Plants to Improve Lives

Our Mission: The National Association of Plant Breeders strengthens plant breeding to promote food security, quality of life, and a sustainable future.

Our Vision: The NAPB works to help create a future in which 1) Strong public and private sectors work independently and together to deliver varieties and improved germplasm to society, 2) The value and importance of plant breeding to food security, quality of life, and a sustainable future are known and appreciated by the public, and 3) Plant breeding is viewed as dynamic, problem solving, and creative. The NAPB intends to become a recognized and valued advocate for plant breeding research and education, helping to guide and implement a cohesive national plant breeding agenda.

[Join us today!](#)

