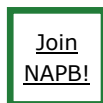


National Association of Plant Breeders

January 2018



NAPB President
Wayne Smith

President's Corner

We have had a productive start to NAPB's 2018 fiscal year. As your president, I had the opportunity to participate in a meeting called by Jane DeMarchi, American Seed Trade Association (ASTA), Kanika Gandhi, National Sustainable Agriculture Coalition (NSAC), Karl Anderson, American Society of Agronomy, Crop Science Society of America, Soil Science Society of America (TriSocieties), and Eric Young, Agriculture Experiment Station Directors. Agronomic and Horticultural commodity groups, USDA-NPGS, Scientific Organizations, Southern Experiment Station Directors, NAPB, and others were represented at the meeting.

The purpose of the meeting was to discuss paths forward to increasing the visibility and value of the National Plant Germplasm System (USDA-NPGS). Peter Bretting, USDA/ARS Office of National Programs, presented the current status of the NPGS and I thought you would be interested in some of the statistics that he presented. In 2015, the USDA-NPGS GRIN web page had 1.5 million visits; in 2016 the NPGS filled about 250,000 requests for germplasm; and in 2016, the NPGS had approximately 584,000 accessions. One emphasis of the meeting was how to obtain and distribute success stories about plant breeding, a goal of NAPB as well as ASTA and others.

Peter presented one such success story about Tomato Spotted Wilt virus (TSWV) on peanut. Many of you will know this story where resistance was found in the 1980s in a peanut (PI 203396) collected in Brazil in 1952. Resistance to TSWV has been incorporated into more than 20 peanut cultivars with an annual impact of over \$250,000,000. In 2011, five peanut cultivars accounting for 95% of the acreage in the Southeast U.S. contained at least 12.5% of its genome from PI 203396 and all were resistant to TSWV. Peter concluded that the key challenges for the NPGS were:

1. managing and expanding the NPGS operational capacity and infrastructure to meet the increased demand for germplasm and associated information
2. developing and applying cryopreservation and/or in vitro conservation methods for clonal germplasm
3. BMPs and procedures for managing accessions (and breeding stocks) with GE traits and the occurrence of adventitious presence (AP)
4. acquiring and conserving additional germplasm, especially of crop wild relatives.

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Special points of interest:

- Message from NAPB President Wayne Smith
- Borlaug Fellowships
- 2018 Meeting Info

I shared that NAPB and PBCC seek to provide platforms for communicating the value of plant breeding and the value of the NPGS, and that NAPB serves to educate and advocate for plant breeding through:

1. annual scientific meetings that encourage graduate and undergraduate student participation
2. presentations and discussions on the latest plant breeding methodology and successes
3. developing tomorrow's leaders through supporting such activities as Congressional Visits Day
4. collaborating with ASTA and others advocating for plant breeding to Congress and other political leaders
5. through our Quarterly NAPB Newsletter.

ASTA has solicited our input and help in informing the public and people within our profession and periphery to our profession about the value of plant breeding in providing food, feed, fiber, bioenergy, shelter and greenspace for mankind. At the Davis meeting, Andy LaVigne invited NAPB to speak to their national meetings. Dave BuBeck recently spoke at the ASTA national meeting in Chicago and Allen Van Deynze will address the attendees at an ASTA meeting in San Diego later this month about the role and value of NAPB and the relationship of NAPB and ASTA. I appreciate both of these outstanding plant breeders for representing our organization at these venues.

You will be hearing (and reading in this newsletter) about our new initiative the Borlaug NAPB Scholars Program. This is the brainchild of Dr. Donn Cummings and will provide travel funding for a few undergraduate students and graduate students to attend the annual NAPB meetings. These students will be mentored at the meetings by professional plant breeders and receive support in their pursuit of a career in plant breeding.

The NAPB Guelph meeting in 2018 is shaping up nicely and will be an event that you won't want to miss. I'm looking forward to it and hope that you are also. Our thanks go to Dr. Liz Lee and her team as they develop the 2018 program.

It's been a great year for NAPB so far and I look forward to serving as your President.

**** NAPB Borlaug Scholars Program Announcement ****

In December 2017, the NAPB Executive Committee approved creation of an exciting new student scholarship fund and committee. The goal is to develop a student mentoring and awards program to connect and mentor upcoming talent within the Plant Breeding and Genetics profession and NAPB.

The Borlaug name was selected to support the Borlaug legacy around plant breeding, global food security, and mentoring the next generation in the ongoing campaign against hunger. NAPB shares these visions and commitments in both our mission and this initiative. The program will include national competition for a limited number of prestigious travel grants to help students attend our NAPB Annual Meetings, beginning with the 2018 Guelph meetings, where they can be both honored and mentored by our society membership.

A sum of \$30,000 is being committed as "matching funds" to attract contributions from members, philanthropists, organizations and other supporting donors to make this program both possible and sustainable. Please be considering your options for donating to the upcoming 2018 campaign to secure the program. Donn Cummings has been appointed chairman of the newly formed NAPB Borlaug Scholarship Committee. He can be reached for your comments and inputs or to volunteer your support at donncummings1@gmail.com.

Details will be forthcoming. Please watch for additional developments in the NAPB newsletters and on the NAPB website and social media.

Bridgestone Americas David Dierig and Mark Cruz



David Dierig and Mark Cruz at Bridgestone's guayule breeding nursery (top) and guayule shrubs being grown in a farmer's field in Arizona (bottom).



What crop do you work on and why (e.g. who is the target consumer, will it be used for food, fiber or fuel)?

We work on a crop native to the Southwest desert of Texas and into Mexico called **guayule**. It is one of the few rubber producing plants with high quality solid rubber for the tire market that is comparable to the rubber tree (*Hevea*) which is commercially grown in Southeast Asia and Africa. Guayule rubber is contained in parenchyma cells in the bark portion of the shrub and must be destructively harvested to extract, while the rubber tree is tapped by shaving its bark to sever laticifer vessels and collected daily as latex. Guayule is a two year perennial crop that flowers indeterminately during long days for seed production. The plant makes rubber primarily in the winter season (temperatures below 40°F) and adds biomass the remainder of the year. Guayule is cold sensitive and limited to the southwest growing region of the U.S.

Guayule has a long history of research and development. In the 1940's an Emergency Rubber Project (ERP) was established by the U.S. government to develop a domestic source of natural rubber (NR) since foreign supplies were cut off during the war.

In the 1950's, with the war ending and development of synthetic rubber (SR) on the rise, it was hoped SR would be equal in quality to natural rubber. SR was never able to replace NR although it is used, especially in car tires. Larger tires for trucks or agriculture and mining equipment, and especially aircraft tires require NR for heat load distribution. Bridgestone's interest is to have a domestic source of natural rubber to supplement the SE Asia imports of *Hevea* tree rubber.

What are some challenges in breeding your crop ?

Polyploid guayule reproduces by facultative apomixis so the seed produced is genetically the same as the maternal plant. This happens at a frequency of 85 -95% in most polyploid lines and limits the amount of new recombination for improvements. Diploids are sexual reproducing and self incompatible but have limited availability. All crop improvements up to this time in history have been through selective breeding. Our Bridgestone program is the first to develop and utilize modern breeding tools to improve rubber yield.

How have you been successful in breeding this crop?

We don't know if we have been successful yet. Our breeding program has only been in place a little over 3 years. We hope soon to establish a partnership with a genomics analytics company that will help us speed progress.

Upcoming Events and Opportunities

Find out about 2018 plant breeding symposia through The Plant Sciences Symposia Series Network at <https://www.facebook.com/PlantSciSym/>

Information for the DuPont Plant Sciences Symposia series: "Reaching the next generation of plant scientists" is at <https://www.pioneer.com/home/site/about/research/PlantSciSymposiaSeries/>

2018 Plant Science Symposium "Advancing Frontiers in Plant Sciences" at the University of Florida, Gainesville, FL on January 25-26. <http://www.ufplants.org/>

The Seed Innovation & Protection Alliance (SIPA) Education Unit will host live and online sessions on intellectual property and ownership January 28th San Diego, California. <http://conta.cc/2qH0UrU>

2018 NC State University Plant Breeding Club Symposium which will be held February 8th at the Talley Student Union. This year's theme is "*Next Generation Plant Breeder's Toolbox*". <http://www.plantbreedingcenter.ncsu.edu/symposium/>

February 8, 2018 is also the Missouri State Plant Breeding Symposium "Utilizing Multidisciplinary Research To Improve Tomorrow's Crops" at the Bond Life Science Center, Columbia, MO. <http://mupioneersymposium.org/speakers.html>

Phenome 2018 Connecting Biology, Systems and Tools will be February 14-17 in Tucson AZ. <http://phenome2018.org/>

Texas A&M Plant Breeding Symposium "The Omics Era - A New Page in Plant Breeding" is February 22nd at the Memorial Student Center, College Station, TX. <http://plantbreedingsymposium.com/2018home>

The 5th annual R.F. Baker Plant Breeding Symposium will be March 1-2 at Iowa State University. There will be a workshop on "Science Communication" on Thursday, March 1st with the main symposium titled "Bridging the Gap: Creating Cross-disciplinary Scientists", on March 2nd. http://www.plantbreeding.iastate.edu/Cu.../Symposium_Main.html

Cornell Pioneer Symposium "Animalia to Plantae" will be March 9th and focuses on how, in the genomics era, the barriers between species focused genetics are eroding and innovations in genetics and genomics are now more broadly applicable across kingdoms. Travel scholarships are available. <https://docs.google.com/forms/d/e/1FAIpQLSeyvCbqVNS11vsOkG7QRqPNGtY06ofpLDrH7bQdmLF1zgN-3w/viewform>

2018 Nebraska Plant Breeding Symposium (NPBS) will be March 13th at the Cornhusker Marriott, Lincoln, NE. This year's theme is "Plant Breeding for Climate Resilient Agriculture". <https://agronomy.unl.edu/plant-breeding-symposium>

2018 NAPB Annual Meeting will be held from August 7-10, 2018 at the University of Guelph in Guelph, Ontario, Canada.

<https://www.plantbreeding.org/content/2018-annual-meeting>

Graduate Students or Post Docs Soft Skills Workshop in Guelph, Ontario

NAPB is pleased to announce a pre-conference workshop on soft skills development for Graduate Students and Post Docs at the 2018 NAPB Annual Meeting. Dow-Dupont and Monsanto will be sponsoring the workshop led by a professional trainer. The workshop provide training for Graduate Students and Post Docs in plant breeding and related fields and will cover:

- **Practical understanding of what it means be a leader in the context of the scientific domain**
- **Clarity on personal leadership strengths and qualities**
- **Approaches to build effective relationships with individuals who may have different styles and priorities**

Please look for further announcements on this training opportunity.

Grad Student Profile: Anna Levina, Ph.D. student at Cornell University

Tell us a little about your background; where are you from, where else have you studied or worked?

I received my B.S in marine biology from Duke University, my M.S. in oncology from University at Buffalo, Roswell Park Cancer Institute Division, and currently I'm working on finishing up my Ph.D. on metabolites in potatoes. Between my undergrad and masters program, I also worked at a TB vaccine research foundation. I have always wanted to work on aspects of biology that have real-world applications, and all of my education has incorporated that theme.

What would you like to do after graduate school?

After graduate school, I would like to either teach on the undergraduate level, or work in industry. I really enjoy teaching introductory biology and exposing undergrads to the importance of non-premed biology and especially plant breeding. I'm also passionate about being out in the field and communicating with the public and farmers about the current Cornell potato varieties.

What would you like the public to know about plant breeding?

I would like the public to know how important plant breeding is in their daily food choices. Plant breeders have helped develop tastier, more nutritious, and higher yielding fruit and vegetables. I also wish the public realized that plant breeding is not just genetics and GMO's and that we work on multitudes of crops and not just corn and soybeans. And if they would like to improve their food supply to support their local plant breeders and extension agents.

What is the biggest plant breeding challenge of our time?

In my opinion, our biggest challenge is to be able to grow enough food with the necessary nutritional value with less water. The planet is getting warmer, and we must be ready to tackle the challenges of extreme weather and water scarcity. That means we need to focus research on crops that will be able to adapt to different growing seasons, but also provide nutrients and not just calories. Our other challenge is how to communicate our work to the public and how to explain the new CRISPR and genetic engineering technology.



Anna Levina combines a love for teaching with an applied potato breeding project for her Ph.D.

Grad Student Profile: Zach Hinds, Ph.D. student at Texas Tech

Tell us a little about your background; where are you from, where else have you studied or worked?

I am a native of Lubbock Texas in the heart of cotton country. I earned my B.S. in Plant Biotechnology from Texas Tech University before continuing on with my M.S. in Crop Science from Texas Tech where I worked with Drs. Dick Auld and Paxton Payton. My master's degree focused on the oil seed crop safflower and the development of molecular markers for abiotic stress resistance. After a stint with Bayer CropScience working primarily with cotton, I decided to return to Texas Tech in pursuit of a Ph.D. focusing on breeding cotton for improved fiber quality. Since I've spent most of my life surrounded by cotton fields, it is fitting that I have decided to focus on cotton research.

Tell us a little about your background; where are you from, where else have you studied or worked?

I am currently a third year Ph.D. student in the Plant and Soil Science Department at Texas Tech University under the advisement of Drs. Eric Hequet and Brendan Kelly. Our research group focuses on cotton quality with the objective of helping the industry to produce cottons that can compete on the international textile market. My focus is applying breeding strategies to improve complex fiber quality traits and help the cotton industry adapt to market demands.

What would you like to do after graduate school?

Whether in industry or academia, after graduation I hope to apply my skills towards the improvement of agricultural crops and help the public to appreciate the importance of such work. My plan is to use a multidisciplinary approach to improve crop performance and help meet the demands of our dynamic world.

What would you like the public to know about plant breeding?

I would like the public to better understand where our food and fiber come from, the great strides in their improvement that we have made in the past, and the progress we are capable of making as we move forward. While fewer and fewer people have a direct connection to the land, we must never forget the importance of agriculture and the science that drives its progress.

What is the biggest plant breeding challenge of our time?

I believe the greatest challenge to plant breeders and all of us in the Ag industry is public perception. We face a very difficult task of feeding more people on less land. This is made all the more difficult when the general public is poorly informed of our efforts. It is our responsibility not only to endeavor to meet our research objectives, but also to help inform the public of its importance.



Zach Hinds in a Texas high plains cotton field.

Join a Committee and Expand Your Professional Network

NAPB is looking for new members for a range of different committees. Find one that best fits your talents and interests and volunteer!

The **Advocacy Committee** works to promote the value of plant breeding to wider audiences. This includes maintaining close communication with groups working on federal policy that may impact plant breeding, and coordinating with other scientific societies in allied fields. The advocacy selects and sponsors graduate student ambassadors each year to attend the Congressional Visits Day organized by ASA-CSSA-SSSA. We also communicate with USDA National program staff and other federal agencies that support plant breeding research and education. Contact Julie Dawson for more information Julie Dawson dawson@hort.wisc.edu.

The **Communications Committee** uses a variety of methods to provide information on NAPB and related activities of interest to members and prospective members. Communication committee officers and graduate student liaisons prepare quarterly newsletters, post updates on social media, and disseminate information on request from NAPB members. These activities raise committee members' visibility profile among the membership and provide experience with current media platforms. To learn more or join email Emily.combs@pioneer.com.

The **Education Committee** is looking for volunteers to serve as general members within the committee. The responsibilities of these volunteers will be to attend conference call monthly meetings of the Education Committee and to assist in various ways to accomplish our yearly goals. These goals include: organizing and implementing our yearly webinar series, improving our YouTube channel, increasing marketing of webinars and the YouTube channel to a wider audience, organizing the NAPB grad student poster competition, and student speaker selection for the annual conference. If interested, please contact Sarah Potts at smpotts@dow.com.

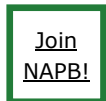
The **Membership Committee** is responsible for recruiting and retaining members for the NAPB. This is essential to ensure our members represent *all* plant breeders, and the membership fees generated play an important role in allowing the NAPB to carry out its mission. The membership committee works to find different ways to recruit members can provide committee members with an excellent overview of the plant breeding community, as well as allowing the development of marketing skills. To learn more or join, email hannah.senior@pbsinternational.com.



Left: NAPB Members at the 2017 Annual Meeting. Get to know your fellow members and serve the plant breeding community on a committee!

Stay in touch with NAPB!

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



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

Chair: Emily Combs Emily.Combs@Pioneer.com

Vice Chair: Virginia Sykes vsykes@utk.edu

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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!

Thank you to our 2017 Annual Meeting Sponsors!

Diamond (\$10,000+)

Platinum (\$7,500)

Gold (\$5,000)

Silver (\$2,500)



Join us for the 2018 Annual Meeting!

The 2018 NAPB Annual Meeting will be held from August 7-10 at the University of Guelph in Guelph, Ontario, Canada. The meeting registration website will open by February 1, 2018.

We look forward to seeing you there.

More info: <https://www.plantbreeding.org/content/2018-annual-meeting>