



NAPB Newsletter

September 2015

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President's Comments



David Francis – NAPB President

In the next year an emphasis for the NAPB will be capacity building in the area of plant germplasm and genetic diversity. Why germplasm and genetic diversity? Recent human history provides several examples of how the lack of diversity in our agricultural systems leads to profound consequences on a world and regional scale. The financial and human costs of agricultural loss due to disease, temperature fluctuations, draught and flood often has roots in a lack of crop diversity and a lack of genetic diversity within crops. During the 2015 NAPB annual meeting we saw examples of how *increasing the diversity of crops and the genetic diversity within crops can mitigate risk.*

We saw examples of how teams of agricultural scientists, including plant breeders, worked together to introduce new rotational crops, develop plant-based soil conservation strategies, and improve existing crops. With these stories as inspiration, we hope to stimulate investments in the maintenance and acquisition of genetic variation, the construction of breeding populations, as well as the capacity for coordinated evaluation and data acquisition in relevant environments. Crop improvement is measured as genetic gain through successive generations. We must invest in the creation and evaluation of multi-generational populations, in order to realize the transformative power of scientific innovation. The NAPB hopes to stimulate upward investment in agricultural research, including developing and promoting models that actually translate discoveries into problem-solving outcomes and products.

Educating the next generation of professionals is also a clear part of NAPB's mission. Recent surveys of educational needs for private, public, and developing country plant-breeders highlight the changing requirements and requisite skill set of plant breeders with the impact of new technology. The congruence of next generation sequencing, computational power, biological assessment and real-world problem solving is a key reason why plant breeding was highlighted as one of "Science's 10 hottest fields" by the Financial Times Magazine. Plant breeding has the added attraction of being a discipline that takes us out of the office and lab and into the outdoors. Our discipline is a great example of a Science, Technology, Engineering and Math (STEM) field which may better be described by the acronym STEAM. The intuitive "art" that comes with a feeling for the organism is a key to driving innovation and new markets. The issue of attracting students into STEAM fields is also a hot topic, and plant breeding like other STEAM disciplines is also struggling to meet demand. The quality of work presented by the large number of students who participated in the oral and poster competition at our annual meeting gives reason for optimism.

In the coming year our education, communication, membership and advocacy committees will work to advance the goals and objectives of our strategic plan. We have both challenges and opportunities ahead. <https://www.plantbreeding.org/about-us/goals-and-objectives>

2015 NAPB Meeting Summary

Washington State University hosted the 5th annual meeting of the National Association of Plant Breeders (NAPB) and 9th annual meeting of the Plant Breeding Coordinating Committee July 28 through July 30 in Pullman, WA. The theme of the annual meeting was "Identifying and Utilizing Genetic Diversity", an issue emphasized by incoming President, David Francis, in this newsletter.

Participants at the well-attended meeting heard presentations on identifying and utilizing genetic diversity; plant breeding organization, policy, and funding; breeding for consumer product quality; and career development. Poster abstracts numbered 75, with 44 graduate students giving 1-minute mini-presentations. Three graduate students were selected from submitted abstracts to give oral presentations during a graduate student session. James A. Heilig of Michigan State University presented his work on greenhouse assays to predict yield and symbiotic nitrogen fixation field performance of dry bean; Kathleen Russell from University of Kentucky presented her work on field screening for selection to tolerance of heat stress in soft winter wheat using an artificially warmed environment; and Jozer Mangandi of the University of Florida presented his research on pedigree-based QTL mapping of resistance to two crown rot pathogens in allo-octoploid strawberry.

A pre-conference tour held August 27 gave participants the opportunity to tour WSU research farms at Othello and Prosser, and affiliated programs National Clean Plant Center, AgWeatherNet, and Center for Precision and Automated Agricultural Systems. Additional field trips during the conference included WSU and USDA-ARS facilities local to Pullman.

Please see the "Giant Views" videos produced by Seed World at the 2015 NAPB meetings at <http://seedworld.com/leadership/giant-views/>

Thanks to our sponsors who helped make the meeting possible.

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2015 NAPB Career Awards

During the 2015 Annual Meeting, NAPB presented awards for Lifetime Achievement, Plant Breeding Impact, and Early Career Scientist. Rita Mumm prepared these summary reports on the recipients.

The Lifetime Achievement Award recognizes distinguished long term service to the plant breeding discipline through research, teaching, extension outreach, and leadership. This year's recipient of this award was **Dr. Stephen Baenziger**, Professor and Nebraska Wheat Growers Presidential Chair at the University of Nebraska at Lincoln. Dr. Baenziger joined the University of Nebraska faculty in 1986 as a small grains breeder, following positions at USDA and Monsanto Company. His wheat breeding program has focused on improving grain yield, quality for bread and noodles, disease resistance, and drought tolerance. Dr. Baenziger used every tool available, including genomics-based technologies and cytogenetics, to develop varieties to meet the world food demands in a sustainable way.



He has developed and released 35 wheat varieties which are currently grown on >60% of the Nebraska wheat acreage and credited with boosting income of Nebraska farmers by \$71 million. In 2013, his winter wheat varieties were recognized by the Wheat Quality Council as “Best of Show” for exhibiting the highest quality. In addition to wheat, Dr. Baenziger has released 6 barley and 4 triticale cultivars. Truly, Dr. Baenziger sets the standard for this generation of public and private plant breeders. Furthermore, Dr. Baenziger has trained more than 50 students who have gone on to achieve greatness and wield influence across the globe. He is an inspiring leader and a generous public servant, having served in numerous leadership positions including President of CSSA in 2003 and Board of Trustee Member of International Rice Research Institute (IRRI) from 2010 to 2015; Dr. Baenziger was the first Chair of the Plant Breeding Coordinating Committee (PBCC), parent organization of the NAPB, when this organization formed in 2007. In short, Dr. Baenziger is a positive, solution-oriented, savvy professional and leader in crop improvement who has worked tirelessly to advance science of the plant breeding. <http://seedworld.com/leadership/giant-views/>



The Plant Breeding Impact Award recognizes significant advancements in the field of plant breeding, specifically in the area of varietal or technology development. It is open to public or private plant breeders whose improved germplasm or technological contributions have had a measurable impact on crop production. The 2015 recipient of the NAPB Plant Breeding Impact Award is **Dr. Rex Bernardo**, Professor and Endowed Chair in Corn Breeding and Genetics at the University of Minnesota.

Dr. Bernardo joined the faculty at the University of Minnesota in 200 after holding positions at Limagrain Genetics and Purdue University. Recognizing that virtually all corn hybrids in the USA are developed by the seed industry, Dr. Bernardo chose to focus on contributions to breeding methods and development of best practices for application of genomics-based technologies. He pioneered work on BLUP (Best Linear Unbiased Prediction) in plants, testing strategies to employ early generation testing, and breeding strategies for use with doubled haploidy and genomic selection. Dr. Bernardo has authored >90 referred publications, a number of which are seminal articles on ‘hot’ topics in plant breeding applications. He literally ‘wrote the book’ on breeding for quantitative traits in plants releasing two textbooks which are widely utilized in plant breeding education. Dr. Bernardo is a visionary leader in modern quantitative genetics. He has been a catalyst for change, influencing the application of new technologies in a powerful way. The impact of his work has been cross-cutting, cross-crop, and felt worldwide. <http://seedworld.com/leadership/giant-views/>



The Early Career Scientist Award recognizes a private or public sector scientist in early stages of their career active in the field of plant breeding, who exhibits the ability to establish strong research foundations, to interact with multi-disciplinary teams, and to participate in professional societies relevant to their discipline. The 2015 recipient of the Early Career Scientist Award is **Dr. Jennifer Yates**, Global Soybean Breeding Agronomic Traits Lead for Monsanto Company. After earning her PhD in 2006, Dr. Yates went to work for Monsanto as a soybean breeder at Galena, MD. Dr. Yates is credited with developing or co-developing 86 soybean varieties in Maturity Groups 3 to 5 during the transition to the RoundupReady2Yield platform, facilitating net sales of \$1 billion.

She established a protocol for marker-assisted selection and implemented changes to proprietary marker-tracking software. Her work in marker development and trait mapping led to 5 marker-related patents. Dr. Yates earned several internal company awards for accomplishments that include development of a pollen preservation technique and elucidating the role of the *rhg1* paralog in conferring soybean cyst nematode resistance. In 2011, Dr. Yates stepped into her current role which involves responsibility for soybean disease and abiotic stress pipeline screening and discovery in the USA, Argentina, and Brazil. Her team is engaged in the prescriptive agricultural space, facilitating early selection for resistance to new pathogens, to enable growers to produce soybeans in a more sustainable manner. In addition, Dr. Yates coordinates Monsanto’s internship educational program for post graduates and mentors other female scientists in crop improvement. With such an impressive list of achievements already in her young career, Dr. Yates is on course to make many more contributions to the plant breeding profession in the years ahead.

The 2015 awardees demonstrate exceptional problem-solving abilities and leadership abilities and model persistent dedication. These outstanding professionals inspire plant breeders everywhere.

2015 NAPB Student Poster Winners

1st Place – David Eickholt, North Carolina State University

David P. Eickholt is a current PhD student at North Carolina State University working with Dr. Thomas E. Carter Jr. in the USDA-ARS Soybean Nitrogen Fixation Unit. David grew up on a multi-generational farm in Chesaning, Michigan with his parents and sister. Prior to beginning his graduate work at NCSU, David completed his undergraduate in the Department of Crop and Soil Sciences at Michigan State University. He did his masters work in tobacco breeding at NCSU as a Monsanto Fellow under the direction of Dr. Ramsey Lewis. David is currently focusing on improving soybean yield through the inclusion of genetic diversity from *Glycine soja* for his doctoral work. He was awarded a fellowship from the United Soybean Board to pursue this research. In his free time, David enjoys fishing, reading, welding, and cheering on the Spartans.



2nd Place – Andrea Varella, Montana State University

Andrea Varella is a PhD candidate in the Department of Plant Sciences & Plant Pathology, Montana State University, where she works under the supervision of Dr. Luther Talbert and Dr. David Weaver. Her primary research interests are plant resistance to insect pests, plant breeding and genetics. Currently, she studies the genetic basis of wheat resistance to the wheat stem sawfly. Before coming to the US, she received a BS degree in Biological Sciences and a Masters degree in Agricultural Entomology, both at São Paulo State University, Brazil. Her intended career focus is to be part of a multi-disciplinary team of researchers in a crop breeding and plant resistance research and development center.



3rd Place – Paul Sandefur, Washington State University

Paul Sandefur is now a Ph.D. candidate in the Horticulture Department at Washington State University, Pullman under Dr. Cameron Peace. His research focus is on the development of apple, peach, and sweet cherry DNA tests for routine prediction of fruit quality traits in fruit breeding programs. Paul was born in Sturgeon Bay, Wisconsin and grew up in Fayetteville, Arkansas. He received his B.S. in 2009 and M.S. in 2011 from the University of Arkansas studying Horticulture. Paul is working toward a dream career as a fruit breeder.



American Seed Trade Association Statement

The National Association of Plant Breeders endorsed the American Seed Trade Association’s statement “Promoting Innovation in Seed and Crop Plant Development”

<http://www.amseed.org/pdfs/issues/innovation-and-policy/promoting-innovation-in-seed-and-crop-development.pdf>

The NAPB endorsement specifically highlights the need for uniform, science-based standards for regulating new technology in order to maintain genetic improvements of food, feed, fiber, shelter, and greenspace while protection the environment and insuring food security. NAPB hopes implementation of new technologies will be size neutral and available to public breeders and other public scientists. NAPB felt that principles articulated in ASTA’s statement should be extended to vegetatively-propagated crops.

National Academy of Sciences Study on GE Crops

The National Academy of Sciences’ ongoing study on genetically engineered crops, *Genetically Engineered (GE) Crops: Past Experience and Future Prospects* <http://nas-sites.org/ge-crops/is> investigating past experiences with GE crops, evidence for their purported benefits and purported negative effects, and future implications for agricultural innovation and sustainability as GE technology evolves. A short video outlining the objectives of the study is available here: <http://nas-sites.org/ge-crops/2015/02/19/study-objectives-video/>.

Over the past several months, the report’s authoring committee has held a series of public meetings and webinars with a diverse group of speakers on topics including pest control, quality traits, and the safety of foods with GE ingredients. More than 80 of the [archived video presentations](#) from these sessions are available, and there is also an active [Twitter](#) account.



NAPB Video Competition

Raising Awareness of Plant Breeding



In 2-4 minutes:

- **Introduce plant breeding and relate...**
 - ✓ **Value to society**
 - ✓ **Relevance to global issues**
 - ✓ **Careers**
 - ✓ **Benefit of knowledge**

Video guidelines posted at:

www.plantbreeding.org

Contest opens: Sept. 15th, 2015

Cash prizes to 1st and 2nd place winners!!!

Brief

The purpose of this video is to increase awareness of the plants around us and the role that plant breeders have in shaping plants to fit society's needs. Further we hope the video will stimulate young adults to think about plant breeding as an interesting field, which will lead to more students seeking a career in plant breeding. The video should also illustrate what personal attributes, attitudes, knowledge, skills and training one might need to pursue a career in plant breeding. The winning video of this competition will be hosted on the NAPB website (plantbreeding.org) and used by NAPB members for plant breeding education and outreach activities. A grand prize of \$750 will be awarded to the best video and a \$250 prize will be given to the runner-up.

Video requirements

1. Brief introduction describing plant breeding and what a plant breeder does for a living.
2. Basic examples illustrating the value of plant breeding to society.
3. Explanation of how plant breeding will be used to address impending global issues.
4. Description of personal attributes, attitudes, knowledge, skills, and training that are needed to pursue a career in plant breeding.
5. Show the benefits of a basic understanding of how food and plant-based products are improved by plant breeders.

Rules

Submission requirements:

A video no shorter than 2 minutes and no longer than 4 minutes, must include all video requirements above and meet all official rules and additional requirements. All videos will be uploaded directly to a shared Dropbox folder. To gain access to this folder, please contact Shelby

Ellison at slrepinski@wisc.edu at least 48 hours prior to submission. Please save files as NAPB_Video_Firstname_Lastname. Uploaded videos must be in AVI (Audio Video Interleave), FLV (Flash Video Format), WMV (Windows Media Video), MOV (Apple QuickTime Movie) or MP4 (Moving Pictures Expert Group 4) format.

Key Dates:

September 15th, 2015 – Contest opens

December 1st, 2015 – Last day to submit your video (by 11:59 p.m. ET)

Judging Criteria:

Videos will be evaluated on a 100 point scale based on the following criteria:

Educational merit and accuracy: How well did you achieve the educational goals presented in the contest brief and how much do viewers learn from your video. (50 points)

Creativity and engagement: Video presents educational content in a memorable way; viewers are compelled to watch the video to completion. Video conveys message in an artistic and innovative manner. (40 points)

Quality of video production: Video has high resolution and audio quality, and effectively employs visual aesthetics and cinematography. (10 points)

Appropriate content: Videos containing indecent, obscene, hateful, defamatory, or offensive material will be disqualified.

The NAPB reserves the right to modify rules and conditions of this video competition.

Prizes:

A grand prize of \$750 will be awarded to the best video and a \$250 prize will be given to the runner-up. Prizes will be paid in US dollars.

Additional Requirements:

The video's creator must be 18 or over.

You must be a US citizen to participate.

You must properly clear and credit any source music, film clips, images, or locations you use.

You may only submit one original entry per contestant.

Late submissions will not be accepted under any conditions.

Video ownership will be relinquished to the NAPB after uploading the video.

At the end of the video, please acknowledge all of those who helped create the video.

Events and Opportunities

New MemberFirst Latin American Conference on Plant Phenotyping and Phenomics for Plant Breeding, November 30 through December 2, 2015, Universidad de Talca, Talca, Chile

Synergy in Science: Partnering for Solutions. 2015 ASA-CSSA-SSSA Annual Meeting with the Entomological Society of America, November 15-18, Minneapolis, MN

Conference on Advances in Field-based, High-Throughput Phenotyping and Data Management: Grains and Specialty Crops, November 9-10, 2015, Washington State University, Spokane, WA
<http://bsyse.wsu.edu/faculty/sankaran/phenomics-conf/>

The Farmer 2 Farmer (F2F) East Africa program is looking for a wheat breeding expert to conduct a 3-week training assignment at Kulumsa Agricultural Research Center in Ethiopia. For more information contact Martin Bohn, University of Illinois, mbohn@illinois.edu.

Reminder to Sign Up for NAPB!

Membership is now fee based and required in order for you to receive NAPB's benefits.

\$80 for Professionals \$35 for Students

Use our link <https://www.plantbreeding.org/> and click on the Membership tab. It only takes a minute to join.

Mark Your Calendars!

Join us August 15-19, 2016 for the 6th annual NAPB and 10th annual meeting of the Plant Breeding Coordinating Committee in Raleigh, North Carolina, hosted by Cotton Incorporated and North Carolina State University.



Please direct comments and suggestions about the NAPB Newsletter to:

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