

TEXAS A&M PLANT BREEDING BULLETIN

June 2013

Our Mission: Educate and develop Plant Breeders worldwide.

Our Vision: Alleviate hunger and poverty through genetic improvement of plants.

The National Association of Plant Breeders (NAPB) met in Tampa, FL from June 2 through June 5. This year's theme was Positioning Plant Breeding for the Future and hosted by the University of Florida. Texas A&M plant breeding was well represented at the meetings with Dave Stelly presiding as President and a member of the Executive Committee, Seth Murray serving as Web Master and a member of the Executive Committee, and Wayne Smith serving as a member of the Communications Committee. Seth Murray was honored with the Early Career Award for his work in Maize Genetics and Breeding. Approximately 175 scientists and graduate students attended the event.



Seth Murray (left) receives the Early Career Award from Allen Van Deynze, Chair of Plant Breeding Coordinating Committee (center) and Dave Stelly (President NAPB).

You can find additional information on Seth and his activities at:

<http://soilcrop.tamu.edu/texas-am-corn-breeder-recognized-by-national-association/>),

and in the February 2013 Plant Breeding Bulletin at:

http://soilcrop.tamu.edu/newsletters_bulletins/plant_breeding/Plant%20Breeding%20Bulletin%20FEBRUARY%202013%20rev.pdf)



Charlie Dowling, Ph.D. candidate with Dr. Russell Jessup, presented a poster entitled “Characterization and Introgression of Cold Tolerance in Napiergrass: Towards Expansion of Feedstock Production Potential.” The following is his abstract from the poster.

“Perennial C₄ grasses, such as napiergrass, *Pennisetum purpureum* Schumach; 2n=4x=28, are vital in the current rise in the demand for more energy output from renewable energy sources. The advancements occurring in the area of biomass feedstock processing and conversion technology makes the lignocellulosic energy platform provided by biomass feedstocks like napiergrass more feasible in the long term. In comparison to other high yielding dedicated and dual use energy crops, napiergrass’ production region is limited to areas of the southern United States. Wild species within *Pennisetum* harbor enhanced cold tolerance in comparison to the cultivated *Pennisetum* species, pearl millet and napiergrass, which allows for the opportunity to incorporate cold tolerance into the napiergrass genome by way of interspecific hybridization. Wide interspecific crosses utilizing the wild species Oriental grass [*P. orientale* (2n=4x=36)] and flaccid grass [*P. flaccidum* (2n=4x=36)] as pollinators with napiergrass as the female parent are being analyzed for viable hybrid production. Embryo rescue techniques in the instance of zygotic termination in the napiergrass ovule are being investigated while the production of natural hybrids may be a possibility. The characterization of genetic diversity for cold tolerance within the napiergrass species also is being investigated with genotypes that exhibit superior adaptation for winter hardiness and cold tolerance already present in the napiergrass germplasm collection from the Perennial Grass Breeding Program at Texas A&M University. The development of species-specific microsatellite markers for napiergrass, Oriental grass, and flaccid grass currently are underway for rapid hybrid verification.”

The following individuals were honored at the 2013 NAPB meeting

Dr. Roger Boerma, Executive Director of Georgia Seed Development, was honored with the 2103 NAPB Plant Breeding Impact Award. This annual award recognizes an individual

who has made significant contributions to mankind through the development of new cultivars of crops and/or technology development that resulted in a measurable impact on crop production. The award also recognizes accomplishments in teaching and collaboration. Roger has developed 25 soybean cultivars and has been a leader in developing organizations that will ensure the training of future generations of plant breeders. He is a nationally recognized soybean geneticist and Professor Emeritus at the University of Georgia.

Dr. Seth Murray, Assistant Professor at Texas A&M University, received the 2013 NAPB Early Career Award. This award recognizes a young scientist who has established evidence of impacting the science of plant breeding, and who received their Ph.D. within eight years of the award. Seth also is a member of the Faculty of Professional Program in Biotechnology and the Faculty of Genetics at Texas A&M. Seth has released three germplasm lines of maize with improved aflatoxin resistance and yield potential in Texas; mapped a QTL for aflatoxin resistance in maize; established that many QTLs for aflatoxin resistance were likely a result of pleiotropic with other traits (e.g., flowering time) by co-localization; and identified novel alleles in two maize lipoxygenase genes. He teaches an advanced class in Quantitative Genetics in Plant Breeding, the final class in a series of plant breeding classes for PhD students. In five years, he has mentored five M.S. students and four Ph.D. students to completion.

Dr. Johnie Jenkins, Research Geneticist with the USDA-ARS in Starkville, MS, was honored with the 2013 NAPB Lifetime Achievement Award. Johnie joined ARS in 1961 and has made and continues to make significant contributions to the science of plant breeding. Dr. Jenkins has been recognized in many other venues during his career, including induction into the USDA Hall of Fame in 2007. Johnie has been a leader in developing interdisciplinary teams to research host plant resistance in cotton, an effort that has brought about reduction of damage by several insect pests and nematodes. He pioneered the understanding of the effects of chemical differences among cotton strains on the variability of damage done by pests and performed seminal work on cotton fruiting, retention, and yield, developing the technique of "plant mapping" that is used throughout

the industry today. Dr. Jenkins' research has benefited the global cotton community through his mentoring of 71 graduate students from 12 countries.

Graduate Student Poster Competition

Steve Becker's poster on improving the diversity and yield potential of bread wheat won first place. Steve is from Colorado State University at Fort Collins.

Jill Recker of North Carolina State University won second place for work on the effects of genetic introgressions from the maize progenitor, teosinte, on improving resistance in corn to gray leaf spot disease.

Gerardo Nunez of the University of Florida received the third place award for his poster describing breeding for root traits in blueberry.

Student awards were supported by RAPiD Genomics of Gainesville, FL.

Honorable mention in the poster competition went to Alan **Chambers**, **Dario Chavez**, **Duke Pauli**, and **Steve Thornton**. Chambers, Chavez, and Thornton all study at the University of Florida. Their work emphasized flavor quality in strawberry, genetic variation in peach, and disease resistance in peanut, respectively. Duke Pauli of Montana State University used association mapping techniques to link DNA sequence variation to important traits in barley.

The Plant Breeding Coordinating Committee serves as a forum regarding issues and opportunities of national and global importance to the public and private sectors of the U.S. national plant breeding effort.

The National Association of Plant Breeders was begun as an initiative of the Plant Breeding Coordinating Committee and is the advocacy group that represents plant breeders in federal, state, commercial, and non-government organizations.

Distance Education in Plant Breeding at Texas A&M University

This program is an extension of the existing Plant Breeding programs offered by the Department of Soil and Crop Sciences and the Department of Horticultural Science at Texas A&M University. We offer a non-thesis option M.S., thesis option M.S., and Ph.D. in Plant Breeding completely at a distance to students unable to study on-campus in a traditional setting. This program is designed for individuals employed in private industry, CGIAR centers, government agencies, non-government organizations, and other agriculture professionals who need and desire additional knowledge and training in plant breeding but cannot relocate to a university campus. Distance Education students will take advantage of the same curriculum available to on-campus students with identical course content and professors. Our unique program is designed to deliver a high quality plant breeding education to students across the globe. No campus visit is required. For more information visit <http://soilcrop.tamu.edu/academics/distance-education/> or contact LeAnn Hague, Distance Education Coordinator in Soil and Crop Sciences at leann.hague@tamu.edu or (979)845-6148.



Continuing Education in Plant Breeding at Texas A&M University

Continuing education course modules in plant breeding and genetics, and related disciplines are available from Texas A&M University to clientele interested in gaining new information in plant breeding or simply seeking refresher courses. This program is designed for individuals employed in private industry, CGIAR centers, government agencies, non-government organizations, and other agriculture professionals who need and desire additional knowledge and training in plant breeding but who are not interested in an additional academic degree. A professional certificate can be a part of this program. No campus visit is required. Course modules include Introduction to Plant Breeding; Breeding Self-Pollinated Crops; Breeding Cross Pollinated Crops; Host Plant Resistance; Advanced Plant Breeding; Selection Theory; Marker Assisted Selection; Genomic Analysis; Factorial Designs in Experimentation; Unbalanced Designs; BiPlot Analysis; Field Crop Diseases; Field Insects; Essential Nutrients in Crop Growth; and others. For more information visit <http://soilcrop.tamu.edu/academics/distance-education/> or contact LeAnn Hague, Distance

Education Coordinator in Soil and Crop Sciences at leann.hague@tamu.edu or (979)845-6148.

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